

REVIEW OF LEGAL SUPPORT OF CLIMATE CHANGE ADAPTATION MECHANISMS

Anna Liubchych*

Scientific and Research Institute of Providing Legal Framework for the Innovative Development, National Academy of Law Sciences of Ukraine, Kharkiv, Ukraine.

Email: anna.n.l@ukr.net | ORCID: <https://orcid.org/0000-0002-6492-4179>

Olena Savchuk

Department of Environmental Law, Yaroslav Mudryi National Law University, Kharkiv, Ukraine. Email: helensavchuk13@gmail.com

ORCID: <https://orcid.org/0000-0003-3299-7936>

Oleksii Onishchenko

Department of Environmental Law, Yaroslav Mudryi National Law University, Kharkiv, Ukraine. Email: o.yu.onischenko@nlu.edu.ua

ORCID: <https://orcid.org/0000-0002-0369-9334>

*Corresponding author

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ABSTRACT

Climate change presents significant challenges for legal systems, as effective regulation of adaptation measures is necessary. The lack of a unified approach to the legal framework for adaptation mechanisms complicates the implementation of state policy in this area. This study aims to analyze the legal mechanisms for adapting to climate change and their compliance with international standards. The methodology encompasses a systematic analysis of national and international legislation, a comparative examination of the legal approaches employed by different countries, and legal modeling to evaluate the effectiveness of existing mechanisms. Doctrinal analysis and legal hermeneutics methods were employed. The results of the study indicate the fragmentation of normative-legal support for climate change adaptation. It has been established that the implementation of effective adaptation measures requires harmonization of national legislation with international obligations and the expansion of the powers of local authorities. It is recommended to develop a comprehensive law on climate change adaptation that takes into account European approaches and ensures a clear mechanism for the implementation of adaptation measures.

Keywords: Climate; Environment; Environment protection; Energy security; European climate law

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1. INTRODUCTION

Climate change is one of the acutest global environmental problems that calls for immediate response at all socio-economic levels. The resulting increased instances of extreme weather events, growth of average annual temperatures, decline in biodiversity, and natural environment degradation create a need to form efficient legal mechanisms for adapting to new climatic conditions. To this effect, studying the legal provision of adaptation mechanisms to climate change is determined not only by the need to minimize the negative effects of climate change but also by the need to develop the regulation encompassing the sustainable development of states under changing environmental factors.

Notably, the study by Jodoin and Loftis¹ examined how Global South countries - specifically Bangladesh, South Africa, and Kenya - institutionalize adaptation policies by integrating climate risk considerations into national development planning. Meanwhile, Klein et al.² conducted a comparative analysis of regulatory frameworks in EU member states and North America, highlighting a more coherent and legally structured approach within the European Union, as opposed to the more fragmented and policy-driven model observed in the United States. Further deepening the discourse, Voigt and Ferreira³ focused on the constitutional dimensions of adaptation obligations, illustrating how countries such as Colombia and Germany are embedding climate adaptation within the framework of constitutional environmental rights.

As climate change accelerates, the imperative for robust adaptation mechanisms extends beyond environmental resilience to encompass the full spectrum of human rights. Adaptation is no longer solely an issue of environmental governance - it is increasingly framed as a matter of legal protection for individuals and communities whose fundamental rights are jeopardized by climate-induced disruptions. The right to life, health, housing, water, food, and an adequate standard of living are all placed under strain as environmental conditions deteriorate, particularly for vulnerable populations such as Indigenous peoples, persons with disabilities, coastal communities, and women and children.

Among the most pressing human rights challenges emerging from climate change is the protection of climate-displaced persons – often referred to as “climate refugees.” Although the 1951 Refugee Convention does not

¹ Jodoin, S., & Loftis, K., ‘Adaptation to Climate Change in the Global South: Development, Human Rights and Climate Governance’, (2013) 9(1) *McGill Journal of Sustainable Development Law* 25–52.

² Klein, R. J. T., Midgley, G. F., Preston, B. L., Alam, M., Berkhout, F. G. H., Downing, T. E., & Shaw, M. R., ‘Adaptation opportunities, constraints, and limits. In *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the IPCC* (Cambridge University Press 2017), pp. 899–943.

³ Voigt, C., & Ferreira, F., ‘The constitutional protection of the environment and climate change: A global overview’, (2020) 29(2) *Review of European, Comparative & International Environmental Law* 210–222. <<https://doi.org/10.1111/reel.12323>>.

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formally recognize environmental displacement as grounds for refugee status, a growing body of scholars and policy advocacy highlight the urgent need to address this normative gap. For instance, New Zealand has taken tentative steps toward humanitarian visa frameworks designed to accommodate climate-affected migrants from the Pacific Islands⁴. Simultaneously, the UN Human Rights Council has emphasized that states have a duty to safeguard the rights of those displaced by climate change within both domestic and international human rights regimes.⁵ In this evolving legal landscape, adaptation cannot be adequately understood without incorporating a human rights-based approach. Ensuring that legal frameworks address the intersection between environmental vulnerability and structural inequality is critical to promoting climate justice. This requires not only legal innovation but also interdisciplinary collaboration across environmental, human rights, and migration law to develop holistic and equitable models of climate adaptation.

Another critical yet often underexplored dimension of climate adaptation legislation is the role of subnational and local legal frameworks. While international agreements and national strategies establish overarching goals, it is regional and municipal authorities that are frequently at the frontline of climate impacts and therefore responsible for designing and implementing adaptive responses tailored to local conditions. In jurisdictions such as the United States, Germany, and India, subnational entities have developed innovative legal instruments to address climate-related risks through land-use planning, building codes, emergency management policies, and localized resilience strategies.^{6,7}

These decentralized legal approaches not only enable context-sensitive adaptation but also foster legal pluralism and policy experimentation. However, they also raise concerns regarding regulatory fragmentation, inconsistent enforcement, and disparities in adaptive capacity across regions. Understanding how local legal mechanisms interact with national and international obligations is thus essential to constructing a coherent and effective legal framework for climate adaptation. In parallel with normative developments, the effectiveness of climate adaptation governance hinges on the availability of adequate financial and legal instruments. Climate finance mechanisms, such as adaptation funds, green bonds, and climate risk insurance, serve as vital tools to operationalize legal commitments, especially in resource-constrained jurisdictions. Legal provisions that mandate

⁴ Burson, B., & Bedford, R., 'Climatic change and migration from Oceania: Imagining legal and policy responses. In: J. McAdam (Ed.), *Climate Change and Displacement: Multidisciplinary Perspectives*, (Hart Publishing, 2013), p.177–202.

⁵ United Nations Human Rights Council (UNHRC), 'Analytical study on the promotion and protection of the rights of persons in the context of climate change', (2020). A/HRC/47/46. <<https://undocs.org/A/HRC/47/46>>.

⁶ Craig, R. K., 'Adapting to Climate Change: The Potential Role of State Common-Law Public Trust Doctrines, (2010) 34(4) Vermont Law Review 781-852.

⁷ Dubash, N. K., & Jogesh, A., 'From Margins to Mainstream? Climate Change Planning in India as a 'Door Opener' to a Sustainable Future' (2014) Centre for Policy Research Working Paper Series, New Delhi.

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dedicated adaptation budgeting, incentivize investment in resilient infrastructure, or integrate climate risk into public procurement can significantly enhance implementation. For instance, the EU Taxonomy Regulation (2020) and the Climate Resilience Principles of the Green Climate Fund explicitly tie financial flows to legally defined adaptation criteria.^{8,9}

Equally important are accountability mechanisms that ensure compliance and provide recourse in cases of maladaptation or state inaction. Strategic climate litigation is emerging as a powerful enforcement tool, as seen in cases such as Urgenda Foundation v. the State of the Netherlands¹⁰, where courts held governments accountable for failing to meet their adaptation and mitigation obligations under human rights law. Legislative frameworks that establish justiciable adaptation targets, require transparent monitoring and reporting, or impose duties of care on public authorities, such as France's Loi Climat et Résilience¹¹, illustrate how binding obligations and sanctions for non-compliance can be institutionalized within domestic law. These instruments help transform climate adaptation from a discretionary policy goal into an enforceable legal duty.

Research objective includes analyzing and evaluating the legal framework for mechanisms of adaptation to climate change, as well as to develop recommendations for improving regulatory legal frameworks in this area. The research tasks include:

1. Analyzing international legal instruments related to climate change adaptation.
2. Identifying key adaptation mechanisms and examining their legal integration.
3. Evaluating national legal practices in selected countries to identify best practices and common challenges.
4. Recommending legal reforms to improve national adaptation frameworks.

2. GLOBAL CLIMATE GOVERNANCE: CHALLENGES AND OPPORTUNITIES FOR MITIGATION AND ADAPTATION

According to the Intergovernmental Panel on Climate Change, if global emissions of greenhouse gases are not decreased in the next decade, humanity will face a climate crisis, mass migration, food scarcity, etc. In turn, the attainment and support of clean and zero global anthropogenic emissions of

⁸ European Union, 'Regulation (EU) 2020/852 on the establishment of a framework to facilitate sustainable investment (EU Taxonomy)' (2020) Official Journal of the European Union.

⁹ Green Climate Fund 'Updated Strategic Plan for the Green Climate Fund 2020–2023' (2021). <<https://www.greenclimate.fund>>.

¹⁰ The Netherlands Urgenda Foundation v. The State of the Netherlands (Ministry of Infrastructure and the Environment), (2019) Supreme Court of the Netherlands, Case No. 19/00135, 20 December 2019.

¹¹ Republic of France, 'Loi n° 2021-1104 du 22 août 2021 portant lutte contre le dérèglement climatique et renforcement de la résilience face à ses effets or the UK's Climate Change Act (2008) UK Parliament Climate Change Act 2008. (2021), <<https://www.legislation.gov.uk/ukpga/2008/27/contents>>.

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greenhouse gases and a decrease in gross radiation impact unrelated to them may stop human-induced global warming for the next decades and slow down the rates of climate change.¹² It is for this reason that global environmental problems related to climate change, ozone layer degradation, chemical and radiological pollution of the environment, and the need for biodiversity preservation have long become the foundation for globalizing processes uniting national socio-economic formations into a unified worldwide economic and social system and coerce the global community to seek consistent, efficient and, most importantly, timely means to address them.¹³

Climate change has always been a topic for many generations because the future of mankind depends directly on the environment and the possibility for a person to live and evolve within it. Therefore, of utmost significance is environmental awareness and the development of plans that will not only prevent deterioration of the current state of affairs but will also enable taking care of generations to come.¹⁴ The climate as an individual protected object should be maintained in its normal state, suitable for the existence of the planet and people. The consequences of climate change are extremely serious. In case of failure to avoid adverse changes, the average global temperature will rise due to the greenhouse effect.¹⁵ The climate change effectiveness index, as an instrument, analyzes and compares efforts concerning mitigation of the climate change consequences in 60 countries demonstrating the largest emissions volumes, including those of the European Union. Together, the Climate Change Performance Index (CCPI) countries account for 90% of global emissions. The index is intended to increase transparency of international climate-related policies and to facilitate a comparison of the efforts on consequences mitigation and the progress achieved by individual states.¹⁶ Proper interpretation of obligations is a rather weighty element in the mechanism for incorporation of climate agreement norms into states' national legislation.¹⁷

¹² Masson-Delmotte, P., Zhai, H. O., Pörtner, D., Roberts, J., Skea, P. R., Shukla, A., Pirani, W., Moufouma-Okia, C., Péan, R., Pidcock, S., Connors, J.B.R., Matthews, Y., Chen, X., Zhou, M.I., Gomis, E., Lonnoy, T., Maycock, M., Tignor, T. & Waterfield, T., 'An Intergovernmental panel on climate change Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty' (2018).

<https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_Low_Res.pdf>.

¹³ Bredikhina, V.L. & Prikhodko, V. Y., 'Adaptation to Climate Change as a Factor of National Security of Ukraine' (2020) 82 (C) Journal of Eastern European Law 22– 31.

<<https://doi.org/10.5281/zenodo.4665949>>.

¹⁴ What is the Kyoto Protocol? <https://unfccc.int/kyoto_protocol>.

¹⁵ Ibid, n.13.

¹⁶ The climate change performance index 2024. <<https://ccpi.org>>.

¹⁷ Nevara, L.M., & Kotvytska, K., 'The current state of implementation of international climate agreements into the national legislation of states' (2022) 4 Kyiv Law Journal: Science 226–231.

<<https://doi.org/10.32782/klj/2022.4.34>>.

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3. INTERNATIONAL LEGAL FRAMEWORK FOR ADAPTATION TO CLIMATE CHANGE

For the first time, the concept of sustainable development, closely related to general environmental protection issues and specific concerns regarding climate change, served as the basis for the agenda of the 1972 UN Stockholm Conference on the Human Environment.^{18,19,20}

3.1 Early International Environmental Agreements and the Evolution of Legal Instruments

The beginning of global climate regulation was put by the Vienna Convention on the Ozone Layer Protection of March 22, 1985, and the additional Montreal Protocol of 1987.²¹ The Vienna Convention on Ozone Layer Protection laid the foundation for further efforts to control chemical emissions that destroy the ozone layer. This document did not stipulate specific obligations concerning the reduction in the use of ozone-depleting substances, but it established the framework for international cooperation, research and information exchange on the state of the ozone layer and the consequences of anthropogenic activities to protect it. Further development in legal frameworks for ozone layer protection occurred based on the Montreal Protocol on Substances that Deplete the Ozone Layer, which was adopted on September 16, 1987. The Montreal Protocol became the key international agreement that established distinctive obligations for participating states concerning gradual reduction in and consequent cessation of production and use of ozone-depleting substances. It became the first international agreement to impose specific quotas on the reduction in the manufacture and use of these substances.

Owing to these instruments, the Montreal Protocol is considered to be one of the most successful international environmental protection agreements. It not only facilitated a considerable decrease in the use of ozone-depleting substances but also exercised a positive impact on climate regulation in general. Overall, it is possible to state that the Vienna Convention and the Montreal Protocol became important stages in the evolution of international climatic policies. They not only contributed to saving the ozone layer but also laid the foundation for global cooperation in

¹⁸ Matiushyna, O., 'Formation and development of EU climate policy in the context of international legal cooperation of states to combat climate change' (2023) (3) Law Review of Kyiv University of Law 226-232. <<https://doi.org/10.36695/2219-5521.3.2023.46>>.

¹⁹ Programme of action (ECSC, Euratom, EEC) on the environment, 1973–1976. <<https://cordis.europa.eu/programme/id/ENV-ENVAP-1C>>.

²⁰ Resolution of the Council of the European Communities and of the representatives of the Governments of the Member States, meeting within the Council, of 7 February 1983 on the continuation and implementation of a European Community policy and action programme on the environment (1982 to 1986). <<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A41983X0217>>.

²¹ Getman, A. P., Getman, Y. A. & Lozo, V. I., 'Climate Protection Laws: European Reality and Ukrainian Prospects' (2019) 49 (2/3) Environmental Policy and Law 190–195. <<https://dspace.nlu.edu.ua/handle/123456789/16708>>.

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the environmental protection area, proved the effectiveness of international cooperation and provided valuable experience which is applied in contemporary climate agreements like the Kyoto Protocol and the Paris Agreement.

Later on, another pivoting point in this area was the signing of the Maastricht Treaty on the foundation of the European Union, in which the goal for the member states was affixed concerning attaining sustainable development, and the EU policies in the field of environment protection were defined and were given in effect the status of politics. Article 174 of Section XIX of the Treaty defined the goal of the EU policies in the environmental protection area, which consists of the preservation and improvement of the environmental quality; people's health; ensuring rational use of natural resources; and support of international dialogue concerning regional and global problems related to environmental preservation.²²

Although the main focus of the treaty was on political, economic and currency integration, it also played a significant role in shaping joint environmental policy, including that of environmental protection. The essence of the Maastricht Treaty in terms of environmental protection consists in the environment-related issues being officially included in the agenda of priority areas for the European Union, having provided the legislative foundation for shaping a unified environmental policy for member states. It was defined in the Treaty that environmental protection is one of the main goals of the European Union, and all member states have obligations to cooperate in this field and promote sustainable development. Besides, the Maastricht Treaty for the first time established a legal foundation for joint environmental policies and environmental legislation harmonization among the EU states. It also introduced the notion of sustainable development as one of the fundamental targets of the Union. This has enabled the EU to develop and implement environmental protection measures and combat climate change on the supranational level.

3.2 International Climate Change Agreements: From the UNFCCC to the Paris Agreement

Because climate change constitutes a global problem which is impossible to solve within one state only, it is international legal regulations that play an important role in the cause of combining mankind's joint efforts for solving this problem. They include the international framework documents like the UN Framework Convention on Climate Change, approved in 1992 at the UN Conference on Environment and Sustainable Development, the so-called "Earth Summit"²³, supplemented with the Kyoto Protocol approved in 1997, and the Paris Climate Agreement passed in 2015. The Rio Declaration on Environment and Sustainable Development has

²² Treaty on European Union (Maastricht, 7 February 1992) [1992] OJ C191/1.
<https://www.cvce.eu/obj/treaty_on_european_union_maastricht_7_february_1992-en-2c2f2b85-14bb-4488-9ded-13f3cd04de05.html>.

²³ Rio Declaration on Environment and Development (1992). <<https://shorturl.at/BGAvy>>.

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become one of the key documents in the field of environmental protection and sustainable development. It is made up of 27 principles that regulate relations between economic development and environmental protection, laying the foundations for global environmental policies for the future. Overall, the Declaration has given a significant impetus to climate-related policy development, having formed a foundation for subsequent international agreements that regulate the measures concerning a decrease in climate impact and promoting sustainable development at the global level.

Another important document is the Kyoto Protocol, which is an international treaty passed within the UN Framework Convention on Climate Change (UNFCCC) in 1997 in the Japanese city of Kyoto. The Protocol has become the first legally binding document which established precise quantitative obligations for participant states to decrease greenhouse gas emissions. The main goal of the Kyoto Protocol was to reduce the rate of global warming using a decrease in the emission of greenhouse gases like carbon dioxide (CO₂), methane (CH₄), nitrogen oxide (N₂O), and others. The Paris Agreement is, in turn, a historic international treaty that lays the foundations for global efforts to counteract climate change. Its primary goal is to curb the rise of global average temperature to a level much lower than 2°C exceeding that of the pre-industrial period and aspires to limit the temperature growth by 1.5 °C. This goal takes into account scientific researches which demonstrate that even a slight increase in temperature may lead to catastrophic changes in the climate system.

Many governments have claimed that they will have achieved zero emissions by 2050. Nevertheless, several present-day studies point out that the expenses on emissions reduction are rather too high and that zero-emissions programs require a large-scale development of biomass systems with carbon dioxide catching and storage (BECCS). Therefore, its feasibility is very uncertain from both economic and political standpoints.²⁴ Sam Adelman is positive that the Paris Agreement is a step in the correct direction, but decades overdue²⁵, and it is also an ample foundation for considerable progress with the related issue of climate change.²⁶

The mechanism model put into the content of this document is characterized by some authors as “a ratcheting up mechanism”, which can be defined as an “increase in something at controlled intervals during a certain period”. The mechanism is supposed to encourage more ambitious actions on the part of the signing states concerning nationally defined contributions (hereafter NDC) and the ambitious goal (first proclaimed in

²⁴ Keigo Akimoto et al., ‘Climate Change Mitigation Measures for Global Net-Zero Emissions and the Roles of CO₂ Capture and Utilization and Direct Air Capture’ (2021) 2 Energy and Climate Change 100057. <<https://doi.org/10.1016/j.egycc.2021.100057>>.

²⁵ Adelman, S., ‘Editorial: Beyond the Paris Agreement – Ambitions, Hopes, Fears and Flaws’ (2018) 9(1) Journal of Human Rights and the Environment 1-5. <<https://doi.org/10.4337/jhre.2018.01.00>>.

²⁶ Stavins, R. & Stowe, R., ‘Market Mechanisms and the Paris Agreement’ (2017) Harvard Kennedy School Papers & Reports. <<https://www.belfercenter.org/publication/market-mechanisms-and-paris-agreement>>.

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Article 2 of the Paris Agreement): to inhibit the growth of global average temperature to a level much lower than 2°C exceeding that of the pre-industrial period and aspire to limit the temperature growth up to 1.5°C exceeding pre-industrial levels, admitting that this will decrease significantly the risks in climate changes. The new temperature level was offered by small island states and the least developed countries, which are most susceptible to climate change. One of the central challenges of global climate governance lies in the effective domestic implementation of the Paris Agreement. Under the framework of Nationally Determined Contributions (NDCs), signatory states possess considerable flexibility to align international climate commitments with their specific legal and political contexts. Case studies from various jurisdictions reveal a broad spectrum of implementation strategies - ranging from direct legislative incorporation to the creation of specialized institutions and monitoring mechanisms.

In France, the core objectives of the Paris Agreement have been embedded into national legislation through the Law on Energy Transition for Green Growth (Loi relative à la transition énergétique pour la croissance verte), which outlines ambitious targets for greenhouse gas reduction and the expansion of renewable energy sources. Furthermore, the said Agreement has been formally integrated into the French Environmental Code, reinforcing its normative weight within the domestic legal order. Germany, as a member of the European Union, implements the Agreement primarily through EU regulatory mechanisms. However, at the national level, the Federal Climate Change Act (Klimaschutzgesetz) establishes legally binding emission reduction targets up to 2030 and provides a framework for annual monitoring and compliance review. In Kenya, a Global South country, implementation is driven by the Climate Change Act 2016, which establishes the legal and institutional foundation for national climate action. This includes the creation of the National Climate Change Fund and an interagency coordination mechanism to ensure policy coherence across sectors. Canada has adopted the Pan-Canadian Framework on Clean Growth and Climate Change, which operationalizes its Paris commitments through a mix of fiscal incentives, emissions standards, and intergovernmental coordination with provincial governments. In Brazil, the Paris Agreement holds constitutional status, having been ratified by the National Congress and incorporated into the country's legal system. Complementary legislative measures have been enacted to address deforestation in the Amazon, a critical factor in Brazil's pathway to meeting its climate targets. These case studies illustrate the diversity of institutional arrangements and legal mechanisms through which countries have operationalized the mentioned Agreement. They also highlight varying levels of ambition, political will, and resource mobilization. Comparative analysis of such models provides valuable insights into both best practices and structural barriers in the pursuit of effective climate governance.

Considering the above, it is possible to conclude that the Paris Agreement is the first international legal document in the field of countering

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global climate change that establishes the universal obligation concerning defining their nationally determined contributions by the member states and forming a balanced monitoring system that includes the transparency system, periodicity of summarizing and an instrument to enhance implementation and encourage observation of the agreement, which is viewed as a model for taking multilateral decisions on the consensus basis. Moreover, the Paris Agreement is the first international legal document in the field of climate. Its preamble refers to human rights, native people's rights, gender equality, the broadening of possibilities for women, and justice for different generations. The Office of the UN High Commissioner for Human Rights noted at one time the need for further incorporation of human rights into the procedural aspects of this document implementation, calling for states "to respect, promote and account for their respective obligations in the human rights area". The next several years will become a period of analyzing the efficiency of the new approach to the Agreement within the framework of collective environment-related measures and its impact on the environment.²⁷

Overall, the Paris Agreement is a key international instrument that defines the direction of global climate-related efforts. Its implementation and efficiency depend on the political will and cooperation of all the states as well as on the involvement of business, civil society and other interested parties. It not only defines the framework for emissions reduction but also serves as a platform for stimulating innovations and the development of environmentally friendly technologies. While global efforts to strengthen legal responses to climate adaptation reflect a growing consensus on the urgency of action, the approaches remain highly heterogeneous across jurisdictions. Against this global backdrop, the European Union stands out as a unique supranational entity with a comparatively coherent and evolving legal and policy framework for climate adaptation. The following section examines how the EU integrates climate adaptation into its legal architecture, policy planning, and multilevel governance structures.

4. INTERNATIONAL PRACTICES, PROBLEMS AND CHALLENGES OF LEGAL REGULATION OF ENSURING MECHANISMS FOR ADAPTATION TO CLIMATE CHANGE

4.1. Global Developments and Legal Challenges in Climate Adaptation

It should be noted that on March 25, 2009, the UN Council on Human Rights passed the "Human Rights and Climate Change" resolution, which determines that "the issues related to climate change impact the possibility of realization of human rights ... (the right to life, proper nutrition, health protection, proper housing conditions, self-determination, quality potable

²⁷ Nanarova, O., 'Mechanisms of International Legal Regulation of Global Climate Change under the Paris Agreement' (2021) 7 (43) *Knowledge, Education, Law, Management* 115–121.
<<https://doi.org/10.51647/kelm.2021.7.2.21>>.

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water, etc.). To this effect, when combating global climate change, the states should conceptually depart from the basic premise that, for securing the main human rights, the solution to the climate change problem is vital.²⁸ In 2010, the 16th Conference of the Participating States took place in the Mexican city of Cancun, which resulted in the adoption of the worldwide agreement on the prevention of exceeding the limit of atmospheric heating by more than 2°C. Political leaders understood that without new, more radical steps in the field of technological modernization of the search for environmental innovations and new international agreements, no compromise would be achieved in the climate stabilization area.²⁹

In order to prepare the text of the new climate agreement, a special work group was formed at the Durban Platform for enhanced action (ADP). In the course of its work, 15 meetings were held, with joint efforts resulting in the first 90-page draft text of the agreement.³⁰ During the initial technical talks, the parties failed to reach an agreement as to the legal form of the new climate agreement: a protocol, a separate agreement, or an implementing agreement.³¹ Despite this, the scientists who currently analyze China's NDC in terms of observing the Paris Agreement have concluded that 18 to 62% of potential spending on this document implementation at the national level will be compensated by undeniable advantages for national health by 2030. Thus, the so-called health advantages by 2050 may increase considerably up to 3 – 9 times. Such proportionality for expenditures, losses and potential benefits, especially in the example of China, may cause other states to intensify their efforts in combating climate change.³²

In countries without dedicated climate legislation, the binding nature of NDCs is typically limited. Without a statutory or constitutional mechanism to translate international commitments into domestic obligations, NDCs often lack legal teeth. They function more as policy goals or political declarations rather than enforceable legal duties. This legal gap creates a risk of non-compliance without formal consequences, unless broader public accountability, civil society pressure, or international reputational concerns act as external enforcement mechanisms. Moreover, the Paris Agreement itself avoids imposing strict legal obligations on states to achieve their NDC targets, focusing instead on procedural commitments

²⁸ Expert Advisory Center "Legal Analytics", 'Climate Diplomacy in the EU: Conclusions and Recommendations for Ukraine' (7 October 2017). <<https://www.civic-synergy.org.ua/wp-content/uploads/2018/04/climate-diplomacy.pdf>>.

²⁹ Savaresi, A., 'The Paris Agreement: A New Beginning?' CORE, UK. <<https://core.ac.uk/download/pdf/77611445.pdf>>.

³⁰ Nanarova, O., 'Mechanisms of International Legal Regulation of Global Climate Change Under the Paris Agreement' (2021) 7 (43) *Knowledge, Education, Law, Management* 115–121. <<https://doi.org/10.51647/kelm.2021.7.2.21>>.

³¹ Wewerinke-Singh, M. & Doeblner, C., 'The Paris Agreement: Some Critical Reflections on Process and Substance' (2016). <https://cuncr.org/wp-content/uploads/2019/06/Wewerinke_Doeblner_Paris_Agreement.pdf>.

³² The Lancet Planetary Health, "Can the Paris Agreement Save Us from a Climate Catastrophe?" (2018) 2(4) *The Lancet Planetary Health* E140. <[https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196\(18\)300561/fulltext#%20](https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(18)300561/fulltext#%20)>.

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such as regular reporting, transparency, and progression over time. As a result, even in the international legal sphere, NDCs are more soft law instruments than binding treaties in the traditional sense.

However, in the absence of climate laws, courts in some jurisdictions have begun to play a more active role. Strategic climate litigation, such as the Urgenda case in the Netherlands or Neubauer v. Germany has demonstrated that courts can interpret NDC-related obligations as part of a broader duty of care or constitutional responsibility, effectively enhancing their enforceability through judicial interpretation. In contrast, countries with codified climate laws often embed NDC targets within national statutes, enabling formal mechanisms for monitoring, reporting, and enforcement. This highlights a critical disparity: the legal force of NDCs often depends not on the Paris Agreement itself, but on domestic legal incorporation and political will. The epoch-making climate solutions reflect the growing public concern about climate change and a greater readiness of the courts to pass innovative decisions. One of the mechanisms for solving the climate deterioration problem is to convince individual states to fulfil and even increase their contributions to the Green Climate Fund.³³

Legal frameworks play a critical enabling role in the mobilization, governance, and accessibility of climate finance. Domestic legislation, institutional mandates, and regulatory clarity are often prerequisites for countries to access international funding mechanisms such as the Green Climate Fund (GCF) or the newly operationalized Loss and Damage Fund. In this context, national legal systems act as both gateways and filters for climate finance flows. To access the GCF, for instance, countries must designate a National Designated Authority (NDA) or focal point, ensure fiduciary standards, and often develop legal instruments to facilitate project approval, financial disbursement, and accountability. Countries with clear legal mandates on climate finance, such as climate finance strategies embedded in climate laws or budgetary frameworks, are generally better positioned to attract and manage these resources. Conversely, legal fragmentation, lack of institutional coordination or unclear fiscal policies often hinder access to international funds.

The emerging Loss and Damage mechanism presents a new layer of complexity. As it aims to address irreversible climate impacts, especially in vulnerable countries, there is a growing need for legal clarity on eligibility, compensation structures, and governance principles. Most national legal systems currently lack the normative infrastructure to define and administer loss and damage finance, which raises concerns over transparency, equity, and operational capacity. Therefore, there is a compelling case for legal reform at the domestic level. This includes:

- Enacting or amending climate legislation to define climate finance mechanisms, institutional roles, and fiduciary responsibilities;

³³ Adelman, S., & Kotzé, L., 'Introduction: Climate Justice in the Anthropocene' (2021) 11 (1) *Oñati Socio-Legal Series* 30–43. <<https://doi.org/10.35295/osls.iisl/0000-0000-0000-1168>>.

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- Establishing legal pathways for integration of international finance into national budgets;
- Creating compensation and supervision mechanisms to ensure accountability and social safeguards.

At the international level, legal reform may also be needed to harmonize access criteria across climate finance instruments and to develop binding obligations for donor countries to contribute equitably and predictably. In sum, legal frameworks are not only administrative tools but structural enablers of climate finance. Strengthening these frameworks is essential to ensure that funding mechanisms like the GCF and Loss and Damage Fund are accessible, effective, and aligned with the principles of climate justice.

4.2. European Union's Legal and Policy Framework for Climate Adaptation

In October 2014, the European Council agreed on the climate and energy production frameworks for the EU till 2030. The following main obligatory goals for the EU were approved: to reduce greenhouse gas emissions by at least 40% by 2030 compared with 1990; to ensure renewable energy consumption at the level of at least 27% by 2030; to attain energy efficiency growth by at least 27% by 2030.^{34,35,36} At the end of February 2015, the European Commission introduced its first legislation recommendations concerning the implementation of the climate and energy-related frameworks by 2030. The recommendations, set out in the package related to the Energy Union, are aimed at ensuring a coordinated approach to climate change, energy security and competitiveness, and to facilitate the development and attainment of goals agreed upon within the program framework till 2030. The Commission published its Communication on the Energy Union in 2015, which laid the foundation for the European energy system transformation to build up a stable low-carbon economy where energy crosses the borders freely based on competition and rational use of resources, where citizens assume responsibility for the transition to clean energy, enjoy advantages of new technologies and where vulnerable consumers are protected.³⁷

According to the Strategy of the Energy Union, the main goals of the Union's energy policies are:

³⁴ European Council, 'The 2030 Climate and Energy Framework' (23 October 2014). <https://www.consilium.europa.eu/en/policies/climate-change/2030-climate-and-energy-framework/>.

³⁵ International Renewable Energy Agency, 'Renewable Power Generation Costs in 2017' (2018). https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2018/Febr/IRENA_REmap_EU_2018.pdf.

³⁶ European Commission, 'The European Green Deal' (COM (2019) 640 final). <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52019DC0640>.

³⁷ European Commission, 'A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy' (COM (2015) 80 final). <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015DC0080>.

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- 1) diversification of electricity generation sources in Europe, the realization of energy supplies based on cooperation and solidarity between the Union's member states;
- 2) total support of integration of the internal energy market of the Union, adjustment of free movement of energy within the territory of the Union without establishing any regulatory barriers;
- 3) energy efficiency improvement and reduction of dependence on energy resources imports from third countries, decrease in emissions, securing workplaces for specialists in energy generation;
- 4) economy decarbonization and the movement towards fulfilment of the Paris Climate Agreement;
- 5) promotion of the research concerning economy decarbonization and innovations in the power generation sector.³⁸

The European Commission has passed a number of propositions to make the EU climate policies more suitable for greenhouse gas emissions cuts by at least 55% by 2030 compared with the 1990 levels, which is stipulated by the European Green Deal and which is fixed in the European Climate Law. In these two documents, the EU has set for itself the goal of attaining climatic neutrality by 2050.^{39,40} In December 2019, the European Commission adopted the European Green Deal. The European Green Deal is a complex of measures that define the EU policies in the field of countering the consequences of climate change for the years to come and whose primary goal is Europe's sustainable green transition to a climate-neutral continent by the year 2050. Among the main directions of the European Green Deal implementation determined by the Commission are addressing the consequences of climate change through a decrease in greenhouse gas emissions and the improvement of normative and legal regulation of the issues of carbon emissions reduction. It should also be noted that legal support of anthropogenic-induced emissions, greenhouse gas emissions included, is only possible and is to take place within the framework of environmental regulation, a legal environment protection instrument that defines the amounts of maximum permissible anthropogenic loads on the

³⁸ Yakoviyk, I., & Tsvelikh, M., 'Energy Security of the European Union in the Context of Russian Aggression against Ukraine' (2023) (160) Problems of Legality 170–191.
<<https://doi.org/10.21564/2414-990X.160.274518>>.

³⁹ European Commission, 'The European Green Deal' (Communication to the European Parliament, the European Council, the European Economic and Social Committee and the Committee of the Regions, Brussels, 11 December 2019). <<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52019DC0640>>.

⁴⁰ Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No. 401/2009 and (EU) 2018/1999 ('European Climate Law') [2021] Official Journal L 243/1.
<<https://www.eumonitor.eu/9353000/1/j9vvik7m1c3gyxp/vllqc884zfzq>>.

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climate.⁴¹ On June 9, 2021, the European Parliament and the EU Council in its Regulation 2021/1119 approved the climate law which statutory stipulates the goal of the European Union to become climatically neutral by 2050 and an interim goal to reduce greenhouse gas net emissions by at least 55% compared with 1990 till the year of 2030. The law stipulates that climatic neutrality by 2050 means attaining net zero emissions of greenhouse gases by the EU states as a whole, mainly on account of emissions reduction, investment in green technologies and environmental protection.^{42,43}

The climate Law provisions that science and technical expertise concerning climate change will be provided by the European Scientific Advisory Council on Climate Change, the formation of which was provided for by the mentioned EU Regulation №401/2009. Every member state is advised to form a national advisory body on climate issues responsible for providing scientific consultations on matters of climate policies to the relevant national power bodies.⁴⁴ To estimate the efficiency of signing and improvement of the mentioned international legislative acts, the member states decided in 2022 to hold another event dedicated to this global problem. Egypt was officially chosen to receive COP-27 even though, according to statistics, the African continent contributes the least of all to global emissions of greenhouse gases into the atmosphere.⁴⁵ In May 2022, the Eighth Environmental Program till 2030, which confirmed the goals of the European Green Deal aligned with the long-term target of "living well" globally no later than 2050, reaffirmed the strategies and initiatives of the European Green Deal like the EU Strategy on Biodiversity till 2030, the new Action Plan for the Closed Cycle Economy, the Strategy on sustainable use of chemical substances and Action Plan for Zero Pollution, etc. The Eighth Program is aimed at accelerating the "green transition" in a just and inclusive manner to a climatically neutral economy based on renewable energy sources and competitive, resource-efficient business practices, which effect all interested parties are to be involved at all administrative levels to ensure efficient fulfilment of EU laws on climate and environment.^{46,47}

⁴¹ Kopytsia, E., 'Environmental Regulation In the Sphere of Climate Change in the Context of the Implementation of the European Green Course in Ukraine' (2020) Collection of Scientific Papers ΛΟΓΟΣ 48-50. <<https://doi.org/10.36074/20.11.2020.v4.15>>.

⁴² Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No. 401/2009 and (EU) 2018/1999 ('European Climate Law'). [2021]. <<https://eur-lex.europa.eu/eli/reg/2021/1119/oj>>.

⁴³ Zubko, D.O. & Kopytsia, E.M., 'EU Climate Law: Legal Analysis and Prospects for Implementation in Ukraine' (2021) 1 Multidisziplinäre Forschung: Perspektiven, Probleme und Muster, Band 86-89. <<https://doi.org/10.36074/logos-26.11.2021.v1.29>>.

⁴⁴ Ibid.

⁴⁵ 'The COP27 UN Climate Summit Will Start in Egypt' <<https://susipilne.media/311014-u-egipti-startue-klimaticnij-samit-oon-cop27/>>.

⁴⁶ European Commission, 'Environment Action Programme to 2030' (2022). <<https://shorturl.at/RsKZL>>.

⁴⁷ Decision (EU) 2022/591 of the European Parliament and of the Council of 6 April 2022 on a General Union Environment Action Programme to 2030 [2022] Official Journal L 114/22. <<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022D0591>>.

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The international legal landscape reveals a dynamic and evolving approach to addressing climate change through comprehensive policy frameworks, technological innovation, and multilevel cooperation. While these practices vary in scope and effectiveness, they offer valuable insights into mechanisms that balance environmental protection with socio-economic development. For Ukraine, which faces both environmental vulnerabilities and institutional challenges, these global experiences serve not only as benchmarks but also as potential models for legal and policy adaptation. The following section explores concrete legal case studies from various jurisdictions, assessing their relevance and feasibility for implementation within the Ukrainian legal system to strengthen national climate resilience and governance.

5. LEGAL CASE STUDIES IN THE FIELD OF CLIMATE RELATIONS AND POSSIBILITIES OF IMPLEMENTING THEM IN UKRAINIAN LEGISLATION

For a better understanding of the issues in question, we consider it expedient to view this problem from a practical point. As an example, the case of Verein Klima Seniorinnen Schweiz vs Switzerland (2024) can be considered. On April 9, 2024, the European Court of Human Rights (ECHR) ruled a decision on the case initiated by the "Verein Klima Seniorinnen Schweiz", Swiss Retirees Association. The applicants claimed that Switzerland's insufficient measures concerning climate change violated their right to life and health guaranteed by Articles 2 and 8 of the European Convention on Human Rights. The court established that the state had not ensured due protection from the negative consequences of climate change, which led to the violation of the applicants' rights. This ruling has become the first instance when the ECHR recognized the link between insufficient climate-related measures on the part of the state and human rights violations. The court highlighted the duty of states to ensure efficient protection of their citizens from the negative consequences of climate change, which establishes a significant precedent for future climate-related legal actions. A possibility for implementing relevant provisions in the legislation of Ukraine: Ukraine can account for the above court decision in the course of development and improvement of the national climate-related legislation. In particular, the legal framework concerning state obligations in the field of climate-related policies should be expanded. Also, mechanisms for citizens' protection from the negative consequences of climate change should be provided for, along with the responsibility of state authorities for inactivity in this area.

A legal action against the participant states of the Energy Charter (2024). Five young applicants filed a complaint in 2024 against 12 European states claiming that the Energy Charter impedes effective climate measures, thus violating their human rights. The applicants appealed that provisions of the Charter enable power-generation companies to appeal against state-enacted measures on limiting the use of fossil fuels that slow down the

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transition to clean energy. In response to this and other similar cases, the European Union and several other states, Germany and France included, announced their withdrawal from the Energy Charter, recognizing its incompatibility with climate-related goals. This case demonstrates how civil society can influence international agreements and policies of states in the field of climate issues. The reaction of states to the court appeal highlights the significance of the coordination of international obligations with current climate challenges and priorities. Possibility for implementation in the Ukrainian legislation: Ukraine should revise its international obligations and agreements to ensure their consistency with the national climate-related goals and with the Paris Agreement. Also, mechanisms should be developed that would make it impossible to apply international agreements to inhibit the introduction of environmentally friendly policies and transition to renewable energy sources.

The above cases highlight the growing role of the judicial system and civil society in forming and implementing climate policy. They also stress the need for constant improvement of national legislation to ensure efficient counteraction to climate change and citizens' rights.

6. CONCLUSION

Legal provision for climate change adaptation mechanisms is an important constituent of environmental policies and administration in the national and international legal systems. In light of intensifying adversary climate changes and their negative impact on various activity areas, efficient legal mechanisms are a necessary condition for society's adaptation and reduction of risks related to extreme climatic events. An important element in legal provision is the development of national adaptation plans that include the estimation of climate-related risks and define priority measures and financing instruments. Also, legal mechanisms should be developed to ensure transparency and accountability for the implementation of the mentioned measures. Such mechanisms may provision for the introduction of monitoring and assessment systems as well as accountability to international organizations and national power bodies. The need in legal provision for adaptation to climate change is being dictated by the increase in the frequency and intensity of natural disasters like floods, droughts, forest fires and other extreme weather events that pose serious hazards for socio-economic development and people's lives, as well as military hostilities that cause irreversible damage to climate and environment as a whole.

Thus, legal provision for climate change adaptation mechanisms is a vital condition for efficiently countering the consequences of climate change. The provision in question should account for international obligations, national peculiarities and specifics of various regions and be targeted at environmental protection and social well-being under new climatic realities.

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AUTHOR'S DECLARATION AND ESSENTIAL ETHICAL COMPLIANCES

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Contribution	Author 1	Author 2	Author 3
Conceived and designed the research or analysis	Yes	Yes	No
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Research involving human bodies or organs or tissues (Helsinki Declaration)

The author(s) solemnly declare(s) that this research has not involved any human subject (body or organs) for experimentation. It was not a clinical research. The contexts of human population/participation were only indirectly covered through literature review. Therefore, an Ethical Clearance (from a Committee or Authority) or ethical obligation of Helsinki Declaration does not apply in cases of this study or written work.

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