

LEGAL ASPECTS OF ENVIRONMENTAL SUSTAINABILITY AND CLIMATE CHANGE: THE ROLE OF INTERNATIONAL AND NATIONAL LEGISLATION

Denys Kovach*

Department of Law and European Integration, State Biotechnological University,
Kharkiv, Ukraine. Email: denyskovach08@gmail.com
ORCID: <https://orcid.org/0000-0002-6065-9793>

Brunela Kullolli

Department of Justice, Aleksander Moisiu University of Durres, Durres, Albania
Email: brunelakullolli@outlook.com | ORCID: <https://orcid.org/0009-0002-9832-1074>

Sakarhan Djararova

Department of Ecology and Environmental Protection, Osh Technological
University named after M. Adysheva, Osh, Kyrgyz Republic
Email: s.djararova@hotmail.com | ORCID: <https://orcid.org/0009-0005-0836-1702>

Liudmyla Mikhnevych

Department of Agrarian, Land and Environmental Law named after V.Z. Yanchuk,
National University of Life and Environmental Sciences of Ukraine, Kyiv, Ukraine
Email: mikhnevych_lyda@outlook.com | ORCID: <https://orcid.org/0000-0002-4774-079X>

Iryna Myskovets

Department of Environmental Studies, Lutsk National Technical University, Lutsk,
Ukraine. Email: myskovets-iryna@hotmail.com
ORCID: <https://orcid.org/0000-0001-9248-4919>

**Corresponding author*

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ABSTRACT

Today, the world is facing environmental problems, pollution and climate change that have arisen as a result of irresponsible use of natural resources and outdated technologies. The study aims to identify new approaches to solving environmental problems, study international standards adopted at the level of the world community, and the possibility of their application, in particular in post-communist countries. To achieve this goal, the following scientific methods were used: analysis, comparative analysis, synthesis, dialectical method, induction, and deduction methods. The research resulted in an overview of international regulations adopted by the European Union (EU) and recommended for use by all states regardless of their membership in the Union. The problems arising from climate change, particularly in developing countries, require immediate solutions and the development of mechanisms for implementing state environmental policy. The

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article analyses the peculiarities of adaptation policy to climate change and its implementation in Albania, Kyrgyzstan and Ukraine on the example of international experience in combating the effects of climate change and measures taken to adapt to new climate conditions. The study analyses the problems that are typical for post-Soviet countries. The results identified the most effective and promising mechanisms that contribute to environmental protection and prevent the negative effects of climate change. The study concluded that it is necessary to consolidate the efforts of all countries to ensure a solution to the issue of adaptation to climate change and suggests ways to improve the mechanisms for implementing the environmental policy of countries through integration into the EU.

Keywords: Innovative technologies; Circular economy; Natural resources; Low-Carbon economy; Sustainable development; Environmental intellectual property

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1. INTRODUCTION

Climate change is one of the biggest challenges of our time. According to the Intergovernmental Panel on Climate Change, human activity has caused global climate change in the form of extreme climate events such as droughts, heavy rainfall and greenhouse gas emissions. Statistics on cataclysmic events show that carbon concentration has been the highest in the last 2 million years; the rate of ocean level rise is the highest in the last 3,000 years; and glacier melting is faster than in the last 2,000 years. The critical temperature increase is 2-2.5 degrees, which causes catastrophic destruction of the biosphere.¹ Scientists around the world are working to reduce greenhouse gas emissions. It remains necessary to provide a legal framework for implementing various programmes. This is especially true for developing countries, including post-Soviet economies.²

Volchenko et al.³ addressed how climate change affects the social, economic and environmental systems of all countries. Therefore, to effectively address this problem, it is necessary to develop an international legal framework that will create certain standards and rules that all states must adhere to. The most effective policy on the environment and climate change is that of the European Union. Today, the EU is committed to implementing green development, using renewable energy sources and taking measures to reduce greenhouse gas emissions.⁴ Seeking consensus with all states initiates international agreements. The first official document that formulated the basic principles of European environmental policy was the First Environment Action Programme, which was the result of the Report of the United Nations Conference "On the Human Environment".⁵ However, the First and Second Environmental Action Programmes enshrined the principle of preventing pollution rather than dealing with the consequences of negative impacts. Kobzar⁶ investigated the economic mechanism of regulation of environmental activities in Ukraine and Albania. This tool is

¹ Intergovernmental Panel on Climate Change. Sixth Assessment Report (2023). Retrieved from: <<https://www.ipcc.ch/assessment-report/ar6/>> accessed on 28 May 2024.

² Assylkhanova, G., Bayandin, M., Dautova, Z., Tantybaeva, B., Shaikhova, B., and Baidalinova, B., 'Measuring the living wage in the Republic of Kazakhstan: Theoretical and methodological aspects' (2017) 97 (6) *Man in India* 275-287.

³ Volchenko, N., Zhmakin, S., Udovenko, R., Soldatkin, S., and Soldatkin, I., 'Combating climate change through the international law perspective: The role of the EU in environmental diplomacy' (2023) 32 (5) *European Environmental Law Review* 257-266. <<https://doi.org/10.54648/eelr2023016>>.

⁴ Klymchuk, I., and Arkhytova, L., 'Research on climate change in the Carpathian region: Consequences and challenges for ski resorts' (2023) 14 (1) *Ecological Safety and Balanced Use of Resources* 66-74. <[https://doi.org/10.31471/2415-3184-2023-1\(27\)-66-74](https://doi.org/10.31471/2415-3184-2023-1(27)-66-74)>.

⁵ United Nations. Report of the United Nations Conference "On the Human Environment" (1972). Retrieved from: <<https://shorturl.at/zJHpr>> accessed on 27 May 2024.

⁶ Kobzar, O.M., 'Economic mechanisms of environmental policy: Comparative analysis of Ukraine and Albania' (2014) 4 *Mechanism of Economic Regulation* 24-31. Retrieved from: <https://mer.fem.sumdu.edu.ua/content/articles/issue_23/OLENA_M_KOBZAREconomic_Mechanisms_of_Environmental_Policy_Comparative_Analysis_of_Ukraine_and_Albania.pdf> accessed on 2 June 2024.

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based on the “polluter pays” principle. This includes environmental payments such as transport and product taxes. However, such tools are not fully effective today. They lack a regulatory framework and methodological support, as they are regulated only by the Tax Code of the countries.

Participation in various programmes initiated by the global community is an important aspect of solving environmental problems. Alcani et al.⁷ studied the programme implemented in Albania to adapt to climate change. Similarly to all developing countries, Albania’s economy is sensitive to the challenges posed by climate change. In this regard, the country adopted a National Strategy on Climate Change and Action Plan (NSCCAC) for 2020-2030. One of the most important objectives of the programme is to mitigate the effects of climate change and adaptation in Albania using the latest technologies in energy efficiency, hydrogen as a fuel, and carbon capture and storage.

For programmes aimed at preserving and protecting the environment to function effectively, adequate financial support is required. Dashi⁸ examined green finance as a way to reduce climate change and can be used as an indicator of sustainable economic growth in Albania. Green finance involves investments aimed at achieving sustainable development goals, mitigating climate change risks and preserving natural resources, and should contribute to the transition to a low-carbon economy.⁹ If properly applied, funding can ensure effective environmental management with targeted resource allocation. In recent years, Albania has ratified international conventions and developed strategic legal documents to address climate change. However, not all documents are fully enshrined at the national level. The research sector is an important element in the development of innovative technologies, projects and programmes to stabilise the ecosystem. Public and private institutions are directly involved in EU initiatives.

The situation concerning the environment is particularly acute in countries experiencing an economic crisis that arose as a result of the collapse of the Soviet Union in 1991.¹⁰ Shigaeva et al.¹¹ studied the situation in Kyrgyzstan after independence. The decline in industrial and agricultural production has impoverished many people. To improve the situation, it is

⁷ Alcani, M., Bebi, E., Geta, A., and Torri, A., ‘Decarbonization of the industrial sector in Albania. Problems and challenges’. Proceedings of the Joint International Conference: 10th Textile Conference and 4th Conference on Engineering and Entrepreneurship (Cham: Springer 2024) 234-243. <https://doi.org/10.1007/978-3-031-48933-4_22>.

⁸ Dashi, K., ‘Green finance development in Albania’ (2023) 18 (1) Green Economy and Sustainable Development 164-171. Retrieved from: <<https://www.dp.univ-danubius.ro/index.php/EIRP/article/view/320/300>> accessed on 10 June 2024.

⁹ Siddo, S., Gambo, Y., and Hamadou, I., ‘Perception of climate change impacts of agropastoralists and adoption of innovations in Niger’ (2024) 18 (1) International Journal of Biological and Chemical Sciences 172-185. <<https://doi.org/10.4314/ijbcs.v18i1.14>>.

¹⁰ Fedoniuk, T.P., Pyvovar, P.V., Skydan, O.V., Melnychuk, T.V., and Topolnytskyi, P.P., ‘Spatial structure of natural landscapes within the Chernobyl Exclusion Zone’ (2024) 60 Journal of Water and Land Development 79-90. <<https://doi.org/10.24425/jwld.2024.149110>>

¹¹ Shigaeva, J., Kollmair, M., Niederer, P., and Maselli, D., ‘Livelihoods in transition: Changing land use strategies and ecological implications in a post-Soviet setting (Kyrgyzstan)’ (2007) 26 (3) Central Asian Survey 389-406. <<https://doi.org/10.1080/02634930701702696>>.

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necessary to address the issues of land and water, as most of the arable land is irrigated. Environmental assessments have shown that the country's policy vector is aimed at increasing community participation in improving legislation, establishing control over more irrigated land, and increasing livestock numbers.

Familiarisation with alternative approaches in the field of ecology is important for making effective decisions in future legislative activities. The development of environmental legislation in Central Asia was investigated by Orazaliev et al.¹² Kyrgyzstan is facing global and regional environmental challenges that are leading to a serious reduction in water resources and water shortages. General Assembly resolution 1803 (XVII) on inherent sovereignty over natural resources¹³, according to which peoples and nations have the right to their natural wealth and resources, had a bearing on the development of water legislation in Kyrgyzstan. The Water Code of Kyrgyzstan¹⁴ should ensure the use of water resources in Kyrgyzstan. It establishes a system of permits for water use, including for irrigation, industrial purposes and drinking water supply. One feature of the code is the regulation of the creation of water user associations, which are public organisations responsible for water management at the local level.¹⁵

Identification of working methods and ways to prevent irreversible consequences of environmental disasters, as well as improvement of the legislative framework and involvement of more countries in environmental protection programmes is the purpose of this study.

2. MATERIALS AND METHODS

To study the topic, the author reviewed international documents regulating environmental protection, in particular, the Declaration of the United Nations Conference "On the Human Environment"¹⁶, Rio de Janeiro Declaration on Environment and Development¹⁷, United Nations Framework Convention on Climate Change¹⁸, which resulted in the adoption of The Paris

¹² Orazaliev, K., Mukasheva, A., Ybyray, N., and Nurekeshov, T., 'Current regulation of water relations in Central Asia' (2024) *Regional Science Policy & Practice* 100038. <<https://doi.org/10.1016/j.rspp.2024.100038>>.

¹³ United Nations. General Assembly resolution 1803 (XVII) on inherent sovereignty over natural resources (2012). Retrieved from: <https://legal.un.org/avl/pdf/ha/ga/ga_1803/ga_1803_ph_r.pdf> accessed on 10 June 2024.

¹⁴ Water Code of Kyrgyzstan (2005). <<http://cbd.minjust.gov.kg/act/view/ru-ru/1605>>

¹⁵ Adamkulova, C., and Aitbaev, Z., 'Ensuring climate resilience in Central Asia through the establishment of a water management education program' (2024) 15 (4) *Journal of Water and Climate Change* 1551-1564. <<https://doi.org/10.2166/wcc.2023.560>>.

¹⁶ United Nations. Declaration of the United Nations Conference "On the Human Environment" (1972). Retrieved from: <<https://www.un.org/en/conferences/environment/stockholm1972>> accessed on 2 June 2024.

¹⁷ United Nations. Rio de Janeiro Declaration on Environment and Development (1992). Retrieved from: <<https://www.un.org/en/conferences/environment/rio1992>> accessed on 20 May 2024.

¹⁸ Verkhovna Rada of Ukraine. United Nations Framework Convention on Climate Change (1996). Retrieved from: <https://zakon.rada.gov.ua/laws/show/995_044#Text> accessed on 20 May 2024.

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Agreement¹⁹, and identified the special significance of this agreement, which recognised the threat to humanity from greenhouse gas emissions. The Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters²⁰, which provided guarantees of human rights to access to information and participation in environmental decision-making, was addressed.

The participants were familiarised with the Treaty establishing the European Community²¹, certain provisions of which define the competence of member states in the field of environmental protection, the Guiding Principles on Business and Human Rights²², Regulation of the European Parliament and of the Council (EU) 2016/679 “On the Protection of Natural Persons in Connection with the Processing of Personal Data and the Free Movement of Such Data”²³, Sustainable Development Goals²⁴, General Assembly resolution 1803 (XVII) on inherent sovereignty over natural resources.²⁵

In analysing the ways of solving environmental problems in Ukraine, Kazakhstan, and Albania, the main legal sources used are the national environmental legislation of the countries, namely the Law of Ukraine “On Environmental Protection”²⁶, the Tax Code of Ukraine²⁷, the Water Code of Kyrgyzstan²⁸, and innovative programmes in the field of environmental protection. Secondary materials include studies, articles, and electronic media sources published in international journals and collections on climate change issues around the world. The study used the dialectical method to examine the global practice of applying environmental legislation based on examples of state participation in various environmental projects.

¹⁹ Verkhovna Rada of Ukraine. The Paris Agreement (2016). Retrieved from: <https://zakon.rada.gov.ua/laws/show/995_161#Text> accessed on 3 May 2024.

²⁰ Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (1998). Retrieved from: <<https://unece.org/DAM/env/pp/documents/cep43e.pdf>> accessed on 27 May 2024.

²¹ Verkhovna Rada of Ukraine. Treaty establishing the European Community (2005). Retrieved from: <https://zakon.rada.gov.ua/laws/show/994_017#Text> accessed on 19 May 2024.

²² United Nations Human Right. Guiding Principles on Business and Human Rights (2011). Retrieved from: <https://www.ohchr.org/sites/default/files/documents/publications/guidingprinciplesbusinesshr_en.pdf> accessed on 30 May 2024.

²³ Regulation of the European Parliament and of the Council (EU) 2016/679 “On the Protection of Natural Persons in Connection with the Processing of Personal Data and On the Free Movement of Such Data” (2016). Retrieved from: <<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679>> accessed on 15 June 2024.

²⁴ United Nations Development Programme. Goals of sustainable development (2015). Retrieved from: <<https://www.undp.org/uk/ukraine/tsili-staloho-rozvytku>> accessed on 10 June 2024.

²⁵ United Nations. General Assembly resolution 1803 (XVII) on inherent sovereignty over natural resources (2012). Retrieved from: <https://legal.un.org/avl/pdf/ha/ga/ga_1803/ga_1803_ph_r.pdf> accessed on 10 June 2024.

²⁶ Law of Ukraine “On Environmental Protection” (1995). Retrieved from: <https://www.vertic.org/media/National%20Legislation/Ukraine/UA_Law_Environmental_Protection.pdf> accessed on 5 June 2024.

²⁷ Verkhovna Rada of Ukraine. Tax Code of Ukraine (2010). Retrieved from: <<https://zakon.rada.gov.ua/laws/show/2755-17>> accessed on 19 May 2024.

²⁸ Water Code of Kyrgyzstan (2005). Retrieved from: <<http://cbd.minjust.gov.kg/act/view/ru-ru/1605>> accessed on 3 May 2024.

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A comparative analysis was used to address relevant aspects of international practice in the field of environmental protection and its legal regulation. The analysis method was used to identify shortcomings in the legislation of individual countries in the environmental sphere. Covering the norms of the current international law and national regulations, the ways of solving environmental problems were identified. The synthesis identifies the main points that define the main issues in climate change and the challenges in addressing them. The deduction method was used to study the latest programmes and technologies in the field of environmental protection and to conclude that they should be implanted in the practice of application by states.

The author identifies the main functions of the state in the ecosystem conservation system, such as legislation, investment, judiciary, and public participation in the environmental sphere. An analogy is used to compare the practice of application of international acts and national legislation in the environmental field and the impact of its application on the indicators of countries' adaptation to climate change. Summarising the results, the main problems in international cooperation in the field of preserving the Earth's resources for future generations of people were identified.

3. RESULTS

3.1. Environmental Compliance Programmes.

The World Society's environmental policy has shaped European environmental law. It is aimed at preserving, protecting and improving the quality of the environment. Based on the principles of international law, to address regional and global environmental issues, the countries that signed The Paris Agreement²⁹ must independently determine their Nationally Determined Contributions (NDCs) to reduce greenhouse gas emissions by 2030.

Each country develops domestic climate change adaptation strategies based on the country's budget. The EU is implementing policies to reduce the negative impact on the environment, based on the fundamental human rights to life, food, and health. The environmental situation affects not only human life. Adverse conditions pose a threat to all wildlife.³⁰ Some ecosystems are on the verge of extinction. One of the environmentally friendly technologies is the circular economy.³¹ It is an economic concept that aims to minimise waste by recycling and implementing energy-saving technologies. The circular economy is one of the ideas of sustainable development. The European Commission adopted several documents to

²⁹ Verkhovna Rada of Ukraine. The Paris Agreement (2016). Retrieved from: <https://zakon.rada.gov.ua/laws/show/995_161#Text> accessed on 3 May 2024.

³⁰ Danilenko, I., Gorban, O., da Costa Zaragoza de Oliveira Pedro, P.M., Viegas, J., Shapovalova, O., Akhkozov, L., Konstantinova, T., and Lyubchik, S., 'Photocatalytic Composite Nanomaterial and Engineering Solution for Inactivation of Airborne Bacteria' (2021) 64 (13-16) Topics in Catalysis 772-779. <<https://doi.org/10.1007/s11244-020-01291-2>>.

³¹ Gavkalova, N., Martin, J., Shumska, H., and Babenko, K., 'Landscape and circular economy as a mechanism of sustainable development in globalisation and digitalisation of the world economy' (2024) 23 (2) Economics of Development 80-90. <<https://doi.org/10.57111/econ/2.2024.80>>.

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implement this idea. As a result, all member states can conduct international negotiations and conclude international agreements in the field of environmental protection. However, this does not prohibit them from taking other measures that do not contradict the provisions of the treaties. This enables society to converge on the solution of environmental problems.³²

Climate change is one of the biggest threats to human life and the planet. It hurts the environment and violates all internationally recognised human rights. Large companies have the greatest impact on the environment in the course of their operations. Accordingly, they should first and foremost pay attention to climate-related human rights and take measures to reduce this impact. The concept of involving large companies in solving human environmental problems should be long-term and perform an important function in implementing climate mitigation strategies. It is derived from the UN Framework on Respect, Protection and Remedy and the UN Guiding Principles (UNGPs). According to these documents, states are obliged to take measures to protect human rights from violations by business structures. First of all, it should include the development of a legislative framework, ensuring compliance with laws, and developing methodological support. Engaging businesses in innovation programmes and monitoring compliance with human rights and environmental legislation should be a priority in public policy.³³

Following Article 6 of the Paris Agreement, mechanisms have been introduced to promote sustainable development and the transition to a low-carbon economy, such as fuel switching from coal to gas. The most well-known renewable energy technologies are the use of solar energy: photovoltaic, concentrated, thermal; wind energy, hydropower, marine energy, geothermal, biomass energy and biofuels.³⁴ The use of nuclear power, which has domestic production characteristics, also prevents carbon emissions. One of the methods of decarbonisation is carbon capture and storage technology carbon capture and storage technology (Table 1).

This process should involve all companies, regardless of the number of employees and production volumes, and should cover all human rights, including social, trade union, labour and environmental rights. The EU Disclosure Regulation requires producers of products and services to disclose information on issues related to human rights and anti-corruption. Economic growth leads to an increase in environmental pollution. One example of how to solve this problem is the example of China. In response to the growth of the economy and production, which leads to negative environmental impacts, the number of environmental NGOs is growing in the country. They influence

³² Cifuentes-Faura, J., 'European Union policies and their role in combating climate change over the years' (2022) 15 Air Quality, Atmosphere & Health 1333-1340. <<https://doi.org/10.1007/s11869-022-01156-5>>.

³³ Bright, C., and Buhmann, K., 'Risk-based due diligence, climate change, human rights and the just transition' (2021) 13 (18) Sustainability 10454. <<https://doi.org/10.3390/su131810454>>.

³⁴ Abdibattayeva, M., Bissenov, K., Zhubandykova, Z., Orynbassar, R., and Tastanova, L., 'Complex Oil-containing Waste Treatment by Applying Solar Energy' (2020) 24 (1) Environmental and Climate Technologies 718–739. <<https://doi.org/10.2478/rtuect-2020-0045>>.

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local authorities and encourage them to disclose environmental information. Interaction with government agencies has a positive impact on environmental management. Cities with many such environmental organisations have high rates of environmental information disclosure. Thus, on their initiative, local authorities should inform the public about the state of pollution, lists of environmental violators, and fines for pollution.³⁵

Table 1: Innovative technologies

<i>Technologies in carbon capture and storage technologies</i>	<i>Radical methods that can affect the Earth's temperature regime</i>
Capture of atmospheric carbon by biomass through photosynthesis and storage for use in energy production by combustion.	Technologies for regulating the Earth's radiation energy to stabilise or reduce global temperatures.
Afforestation and reforestation (trees capture CO ₂ from the atmosphere as they grow); wetlands (restoration of marsh peatlands to absorb carbon).	The introduction of aerosol into the stratosphere by injection creates a cooling effect.
Biochar - produced by heating in the absence of oxygen, as well as by gasification and hydrothermal carbonisation of specialised crops and their residues and forestry waste).	Illumination of the sea cloud. The cooling effect is achieved by seeding the clouds with seawater particles or chemicals.
Soil carbon sequestration is the capture of CO ₂ by enriching the soil with carbon.	Transporting space mirrors or reflectors into orbit around the Earth to reflect the sun's rays.
The direct capture and storage of carbon in the air through a chemical process that removes atmospheric CO ₂ from the air and stores it in geological reservoirs to produce chemicals or mineral carbonates.	Brightening the Earth's surface to increase the Earth's albedo by painting city roofs and roads white and covering deserts and glaciers with plastic sheets with a high level of solar reflectivity.
Fertilisation, enrichment of the ocean with nutrients such as phosphorus and nitrates, iron and other trace elements to enhance CO ₂ uptake by stimulating the biological activity of microscopic organisms, and ocean absorption of	Thinning of cirrus clouds by injecting aerosols into cirrus clouds to reduce their optical thickness to increase the Earth's radiation into space.

³⁵ Pien, C.P., 'Local environmental information disclosure and environmental non-governmental organizations in Chinese prefecture-level cities' (2020) 275 Journal of Environmental Management 111225. <<https://doi.org/10.1016/j.jenvman.2020.111225>>.

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atmospheric CO ₂ through the diffusion of CO ₂ from the atmosphere into the water.	
Enhancement of surface weathering by metal ions, as well as carbonate and/or bicarbonate ions.	Methods of radiation management, creation of an insulating layer for greenhouse gases, and transmission of thermal radiation into space.

Source: ³⁶

Adaptation to climate change is one of the biggest challenges for developing countries. The agricultural sector is particularly sensitive to climate change. Overcoming poverty and development in developing countries are inextricably linked to the environmental situation. To minimise the negative impacts of climate change, adaptation planning is essential. For instance, today, all over the world, there is a difficult situation with water use. Water quality affects everything from food to public health to the country's economic development. This shortage particularly affects agriculture and the food strategy of countries. Efficient use of forest resources is essential for the planet's ecosystem. Uncontrolled deforestation has led to environmental disasters in many regions. The increase in natural disasters demonstrates the need to make decisions not only to eliminate their consequences but also to prevent them. Robust decision-making (RDM) approaches in national adaptation programmes of action (NAPAs) of least developed countries are gaining importance in many developing countries (Table 2).

Table 2: Adaptation strategies

Urbanisation, the nexus of water, energy, food and transformative adaptation	Planning urban and suburban infrastructure in developing cities
Forest resources management	Ensuring socio-economic links between local communities and ecosystems
Disaster risk management	Reduce risk and increase resilience through timely decision-making
Conservation management	Biodiversity conservation, efficient use of natural resources

Source: ³⁷

³⁶ Fawzy, S., Osman, A.I., Doran, J., and Rooney, D.W., 'Strategies for mitigation of climate change: A review' (2020) 18 Environmental Chemistry Letters 2069-2094. <<https://doi.org/10.1007/s10311-020-01059-w>>.

³⁷ Bhave, A.G., Conway, D., Dessai, S., and Stainforth, D.A., 'Barriers and opportunities for robust decision-making approaches to support climate change adaptation in the developing world' (2016) 14 Climate Risk Management 1-10. <<https://doi.org/10.1016/j.crm.2016.09.004>>.

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The European Executive Agency for Climate, Infrastructure and Environment (CINEA)³⁸ (2021) was established to implement EU programmes. One of CINEA's tasks is to implement the Green Deal. To this end, CINEA announces competitions, one of which is the LIFE 2024 Environment and Climate Action Programme. Ukraine is participating in this project as it provides an opportunity to attract international finance and cooperate with the international community. Following the updated Nationally Determined Contribution under The Paris Agreement³⁹, the Government of Ukraine has set a target to reduce greenhouse gas emissions by 65% by 2030 compared to 1990 levels. To achieve this goal, it is necessary to introduce measures to modernise energy infrastructure and industrial enterprises; introduce renewable energy sources and energy efficiency measures; modernise buildings to insulate them; develop organic agriculture and use efficient agricultural technologies; increase the use of electric vehicles and modernise old vehicles; reduce waste; and reform forestry.⁴⁰ Following the EU4Climate program, the United Nations supports countries that intend to mitigate the effects of climate change and transition to a low-carbon and climate-resilient economy in line with The Paris Agreement. In particular, the EU4Climate Project is currently operating to help six partner countries.

The City Climate Finance Gap Fund was established at the initiative of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), the Federal Ministry for Economic Cooperation and Development (BMZ) and the Luxembourg Ministry of Environment, Climate and Sustainable Development.⁴¹ The Fund assists cities, especially in developing countries, with adaptation and mitigation to the effects of climate change. Many countries participate in the Gap Fund programme, including Albania, Kyrgyzstan and Ukraine. In Ukraine, the Gap Fund is supporting climate change adaptation measures along the Southern Bug River in the city of Pivdennyi Buh. Vinnytsia is developing a pre-investment inventory of greenhouse gas emissions and identifying key sectoral priorities for decarbonisation in Poltava and Vinnytsia. Lviv, where feasibility studies are being conducted in five selected districts to improve climate-friendly mobility (pedestrian accessibility, use of public transport and cycling) and cycling) while improving road safety. According to a study by the NGO Ecodia, the war in Ukraine has caused significant carbon dioxide emissions into the atmosphere. Rebuilding in the country could cause additional greenhouse gas

³⁸ European Union. European Executive Agency for Climate, Infrastructure and Environment (2021). Retrieved from: <https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=uriserv%3AOJ.L_.2021.050.01.0009.01.ENG&toc=OJ%3AL%3A2021%3A050%3ATOC> accessed on 20 June 2024.

³⁹ Verkhovna Rada of Ukraine. The Paris Agreement (2016). Retrieved from: <https://zakon.rada.gov.ua/laws/show/995_161#Text> accessed on 3 May 2024.

⁴⁰ Government portal. The government approved the goals of Ukraine's climate policy until 2030 (2021). Retrieved from: <<https://www.kmu.gov.ua/news/uryad-shvaliv-cili-klimatichnoyi-politiki-ukrayini-do-2030-roku>> accessed on 3 June 2024.

⁴¹ European Investment Bank. City Climate Finance Gap Fund (2020). Retrieved from: <<https://www.eib.org/en/products/mandates-partnerships/donor-partnerships/trust-funds/city-climate-finance-gap-fund>> accessed on 11 June 2024.

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emissions. Therefore, Ukraine needs a more sustainable approach to the restoration process with the use of new resource-saving technologies.⁴²

Under the Ukraine Facility financial support programme, the European Union has allocated EUR 50 billion to finance the state budget, stimulate investment, and help Ukraine recover from the effects of the war.⁴³ The main ideas of the financial support programme for 2024-2027 are to strengthen energy security, increase the share of green energy, reduce environmental impact, increase international investors' confidence in the energy sector, improve the productivity of the agri-food sector, increase exports, create new jobs, ensure food sustainability and safety, and promote ecological production. The plan identifies sectors that can directly contribute to the restoration of Ukraine's ecosystem and reconstruction based on a low-carbon, circular and nature-based approach (Table 3).

Table 3: Financial support for Ukraine

<i>Energy sector</i>	<i>Agricultural and food sector</i>	<i>Green transition and environmental protection</i>
Attracting investment in renewable energy	Development of the industry with due regard for environmental technologies	Combating industrial pollution
Market integration into the EU	Automation of all processes	Implementation of the climate neutrality policy
Independence of gas and electricity markets	Ensuring the food security programme	Introduction of emission quotas
Energy-efficient heat supply	Mine clearance of agricultural land	Combating illegal deforestation
Construction of energy-saving buildings	Integration with European markets	Waste management

Source:⁴⁴

The countries of the Balkan Peninsula are facing challenges related to climate change. Albania is a country in the Western Balkans with a

⁴² de Klerk, L., Shlapak, M., Shmurak, A., Gassan-zade, O., Mykhaleiko, O., Korthuis, A., Zasiadko, Y., Andrusyevych, A., and Horodyskyi, I., 'Climate damage caused by Russia's war in Ukraine in 18 months' (2023). Retrieved from: <https://en.ecoaction.org.ua/wp-content/uploads/2023/12/20231201_ClimateDamageWarUkraine18monthsEN_1.pdf> accessed on 5 June 2024.

⁴³ Shubalyi, O., 'Transformation of the principles of behavioral and management economics in the conditions of war, European integration and adaptation to climate change' (2023) 13 (3) Economic Forum 40-47. <<https://doi.org/10.36910/6775-2308-8559-2023-3-5>>.

⁴⁴ Plan for the Ukraine Facility Objectives and Content 2024. Retrieved from: <https://www.ukrainefacility.me.gov.ua/wp-content/uploads/2024/03/plan-dlya-ukraine-facility_prezentacziya.pdf> accessed on 16 May 2024.

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Mediterranean climate with humid, mild winters and dry, warm summers. Today, the country is a potential candidate for EU membership. Integration into the EU is an important step towards reducing greenhouse gas emissions and producing energy from renewable sources. The EU's political influence will contribute to the climate and environmental situation in the country. Several strategies have been developed to mitigate the effects of climate change in Albania. These include the transition to clean energy power plants in the energy sector; the use of manure, grazing and crop rotation in agriculture; limiting the incineration of household waste; and the rational use of forestry. The Western Balkan countries are only on the way to adopting the necessary regulations to mitigate the effects of climate change. The situation requires urgent decisions.⁴⁵

Environmental taxation is one of the ways to combat violators of environmental legislation. Such fees are levied for polluting emissions, taxes on petrol, and production resources that cause less damage to the environment to influence business entities. In this way, they encourage polluters to find ways of doing things that are less harmful to the environment. To coordinate all activities in Albania, a national climate change adaptation plan was approved, which includes the following measures: modernisation of environmental disaster prevention systems, cooperation between agencies responsible for environmental issues, informing the population about the state of the environment, participation of vulnerable populations in environmental decision-making, conducting educational activities on climate change adaptation, involving economic actors in climate change issues, and implementing international and regional cooperation.⁴⁶

Albania's National Action Plan (NAP) under the Framework for Climate Change (NSCCAC) for 2020-2030 was approved following the framework conditions, considering its economic development. It was developed by experts for developing countries and funded by public, national, private and international sources. The NAP should introduce several measures aimed at reducing climate risks (Figure 1).

Kyrgyzstan has been experiencing socio-political and economic changes since the 1990s. This factor also affects the environmental sector. The country is a producer of most agricultural products, where water is of key importance. Water is becoming more and more expensive and limited in every region. This situation creates bureaucratic mechanisms for access to water. The local authorities insufficiently address environmental issues, which creates unfavourable conditions for the application of international legislation in the field of environmental protection.⁴⁷ Kyrgyzstan has committed itself to tracking land cover, land productivity and soil organic

⁴⁵ Knez, S., Štrbac, S., and Podbregar, I., 'Climate change in the Western Balkans and EU Green Deal: status, mitigation and challenges' (2022) 12 *Energy, Sustainability and Society*. <<https://doi.org/10.1186/s13705-021-00328-y>>.

⁴⁶ Kamberi, M., Islami, B., Bruci, E., and Salisbury, E., 'The Fourth National Communication of Albania on Climate Change' (2022). Retrieved from: <<https://shorturl.at/HgnvN>> accessed on 11 June 2024.

⁴⁷ Ibid.

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carbon stocks in line with the UN's Sustainable Development Goals (SDGs). However, the first report already showed a lack of standards in the monitoring of indicators. The case of Kyrgyzstan is an example of the mismatch between global databases and local natural conditions.⁴⁸

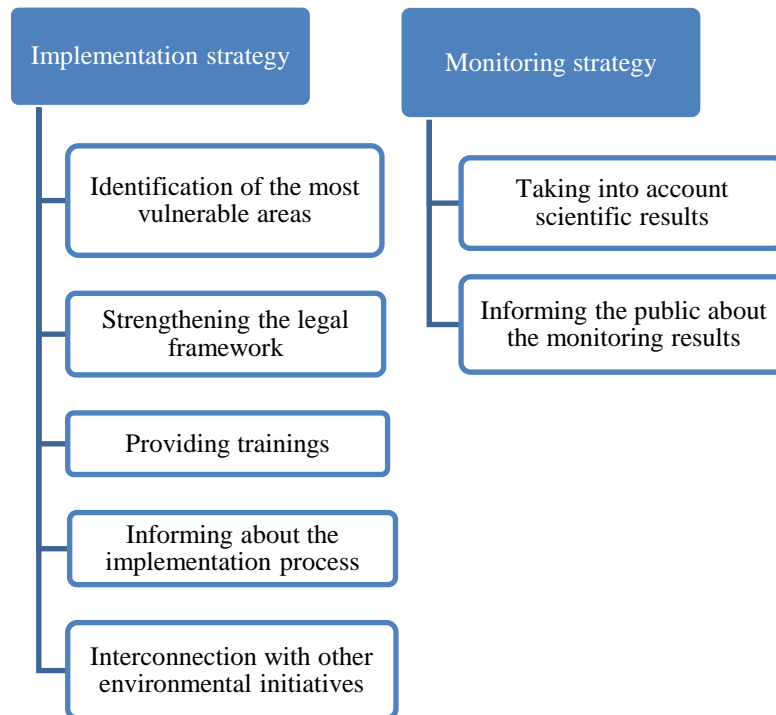


Figure 1: National strategy in Albania [Source: ⁴⁹]

Latvia is one of the countries that survived the post-Soviet period and chose the principle of sustainable development. Today, the country is a developed European country whose policy is aimed at the welfare of society, including the balanced development of the economy to meet the current needs of society and protect the environment without compromising future generations. The Latvia 2030 Sustainable Development Strategy aims to ensure environmental safety through cooperation with other countries. Latvia's environmental policy can serve as an example to use in our work. As a member of the European Union, the country has fully integrated political and economic development towards European standards.⁵⁰

⁴⁸ Rakhmatullaev, S., Abdullaev, I., and Kazbekov, J., 'Water-energy-food-environmental nexus in Central Asia: From transition to transformation'. *Water Resources in Central Asia: International Context* (Cham: Springer 2017) 103-120. <https://doi.org/10.1007/698_2017_180>.

⁴⁹ Resource Environmental Center. Climate change strategy in Albania 2020-2030 (2022). Retrieved from: <<https://shorturl.at/qJxMT>> accessed on 1 June 2024.

⁵⁰ Kipāne, A., and Vilks, A., 'Legal framework for environmental protection in the context of sustainable development' (2022) 11(4) *European Journal of Sustainable Development* 169-179. <<https://doi.org/10.14207/ejsd.2022.v11n4p169>>.

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3.2. Impact of Environmental Law Compliance on Natural Resources

International environmental law contains many multilateral agreements. At the national level, each state develops its environmental policy. It is noteworthy that countries with effective climate laws, including the European Union, are achieving significant results in reducing greenhouse gas emissions. Countries such as Denmark and Costa Rica are demonstrating innovative and effective climate strategies. Denmark's Climate Act and Costa Rica's decarbonisation policy have led to significant environmental decarbonisation. This success is based on the role of local governance and community participation in enforcing climate laws. To achieve more sustainable results, significant financial support and enhanced international cooperation are needed. This is especially important for developing countries. Weak institutional capacity and limited financial resources impede the implementation of climate policy.⁵¹

All international environmental agreements were created to stabilise the situation with environmental legislation at the local level. Today, however, all processes have become global in scope, and therefore a new environmental law is needed to protect natural and man-made resources for future generations.⁵² Environmental law is influenced by such areas of international law as trade, business and human rights. Numerous organisations have been established to reduce pollution, such as the World Health Organization (WHO), which works to ensure environmental sustainability to improve human health, and the World Economic Forum (WEF). It aims to support private and public efforts to reduce environmental disasters. With the support of the WEF, several programmes have been developed, such as the Transition of Industrial Clusters to Net Zero, Clear Sky, Zavtra Coalition, Green Trade, and Zero Net Carbon Cities. Agencies such as Air Quality News are working to tackle catastrophic climate change and air pollution at the regional and national levels: United Kingdom, United States Environmental Protection Agency (EPA), United Nations Development Programme (UNDP), European Environment Agency (EEA), and the Oceanic and Atmospheric Administration. The International Union of Air Pollution Prevention and Protection Associations (IUAPPA) was established as a non-governmental organisation that promotes the implementation of policies for the prevention of environmental pollution and sustainable development of countries. Every state is obliged to prevent environmental hazards that can undermine human life and well-being. Environmental protection is therefore fundamental to guaranteeing fundamental human rights. Based on this principle, several national and regional documents have been adopted (Table 4).

⁵¹ Nyham, K.A., 'The role of law in tackling climate change: Policy and implementation in various countries' (2024) 1 (1) International Journal Assulta of Law Review 31-42. Retrieved from: <<https://edujavare.com/index.php/ILAW/article/view/376>> accessed on 13 June 2024.

⁵² Fedoniuk, T., Bog, M., Orlov, O., and Appenroth, K.J., 'Lemna aequinoctialis migrates further into temperate continental Europe—A new alien aquatic plant for Ukraine' (2022) 133 (4) Feddes Repertorium 305-312. <<https://doi.org/10.1002/fedr.202200001>>.

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Table 4: Illustrative legal documents

<i>Document</i>	<i>What the document says</i>
Aarhus Convention	Right to access to information public participation in environmental decision-making
Czech Republic constitution	The right to timely and complete information on the state of the environment and natural resources
French Environmental Charter	Every person is obliged to participate in the preservation and improvement of the environment
Portuguese Constitution of 1976	Everyone has the right to a healthy and ecologically balanced environment and the duty to protect it
African Charter on Human and Peoples' Rights, 1981	All people have the right to a satisfactory environment favourable to their development
Arab Charter on Human Rights 2004	Everyone has the right to an adequate standard of living, ensuring well-being and dignity, as well as food, clothing, housing, services and the right to a healthy environment
Additional Protocol to the American Convention on Human Rights of 1988	Everyone has the right to live in a healthy environment

Source: ⁵³

Today, there is a strong public opinion that respect for fundamental human rights is an important element in the fight against climate change. The negative impact of environmental problems is particularly noticeable in marginalised groups. Every state must respect the rights of every citizen and create protection, including in the context of climate issues. The fairness and effectiveness of such decisions create positive consequences for the population and the enjoyment of rights when they are made.⁵⁴

Progress is a feature of modern society where technological inventions often precede legislative and methodological developments. Therefore, before applying such technologies, it is necessary to address the environmental impact they may have. They should combine progressive achievements with sustainability. Green technologies provide for the patenting of rights to inventions to their owners. Such patents should

⁵³ Asif, S., Khan, A., and Usman, M., 'Analyzing international environmental law in addressing air' (2022) 3 (1) Asian Social Studies and Applied Research 272-283. Retrieved from: <<https://asarcouncil.com/papers/1702121061.pdf>> accessed on 30 May 2024.

⁵⁴ Jodoin, S., Savaresi, A., and Wewerinke-Singh, M., 'Rights-based approaches to climate decision-making' (2021) 52 *Current Opinion in Environmental Sustainability* 45-53. <<https://www.sciencedirect.com/science/article/abs/pii/S1877343521000762>> accessed on 28 May 2024.

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provide their owners with advantages in economic activity and in attracting investment in eco-innovation.⁵⁵ Energy, oil and gas companies are the main sources of energy for countries. They should become innovators in patented green technologies. The most influential patent holders of technologies such as carbon capture are energy producers.⁵⁶ Often, their patents are produced in-house with the help of research and development. This approach has both positive and negative aspects, as such companies are generators of innovation and owners of capital at the same time, which often creates a conflict of interest within companies.⁵⁷

The concept of green intellectual property and green intellectual capital has emerged in the concept of sustainable development. The term “environmental intellectual property” refers to the protection of innovations in the field of green technologies. Its peculiarity lies in the fact that it is beneficial for the environment and is quite well protected by law as an intellectual property right. However, without financial resources, the spread of green technologies is quite limited. A positive aspect of green intellectual property is the reduction of pollutant emissions into the environment. However, there are risks in patenting intellectual property rights, as other technologies that may be harmful to the environment may be developed against this background. Green intellectual property management should be an important aspect in this regard. It should provide financial benefits for the owner without interfering with the interests of society and without closing access to new technologies. The incentive for further technological research should be the proper protection of such technologies by law and their focus on sustainable development (Figure 2).

One of the ways to protect human rights and the effects of climate change is to take legal action. Recently, the number of court cases involving climate change has increased. In such cases, court decisions can be a source of law, as they set a precedent and force governments and businesses to take action to mitigate climate change and create conditions for adaptation. The courts argue that insufficient action by states violates the constitutional rights to life, health, food, water, liberty, and family and, in turn, creates a separate type of climate rights.⁵⁸

⁵⁵ Khan, Z.A., and Singh, S., ‘Intellectual property rights regime in green technology: Way forward to sustainability’ (2023) 22(4) *Nature Environment and Pollution Technology* 2145-2152. <<https://doi.org/10.46488/NEPT.2023.v22i04.040>>.

⁵⁶ Pukhkal, V., Bieliatynskiy, A., and Murgul, V., ‘Designing energy efficiency glazed structures with comfortable microclimate in northern region’ (2016) 14 (1) *Journal of Applied Engineering Science* 93-101.

⁵⁷ Cohen, L., Gurun, U.G., and Nguyen, Q., ‘The ESG – Innovation disconnect: Evidence from green patenting’ (2021) *European Corporate Governance Institute (ECGI) - Finance Research Paper Series*. <<https://doi.org/10.2139/ssrn.3718682>>.

⁵⁸ United Nations Environment Programme. *Global Climate Litigation Report*. (2020). Retrieved from: <<https://wedocs.unep.org/bitstream/handle/20.500.11822/34818/GCLR.pdf>> accessed on 28 May 2024.

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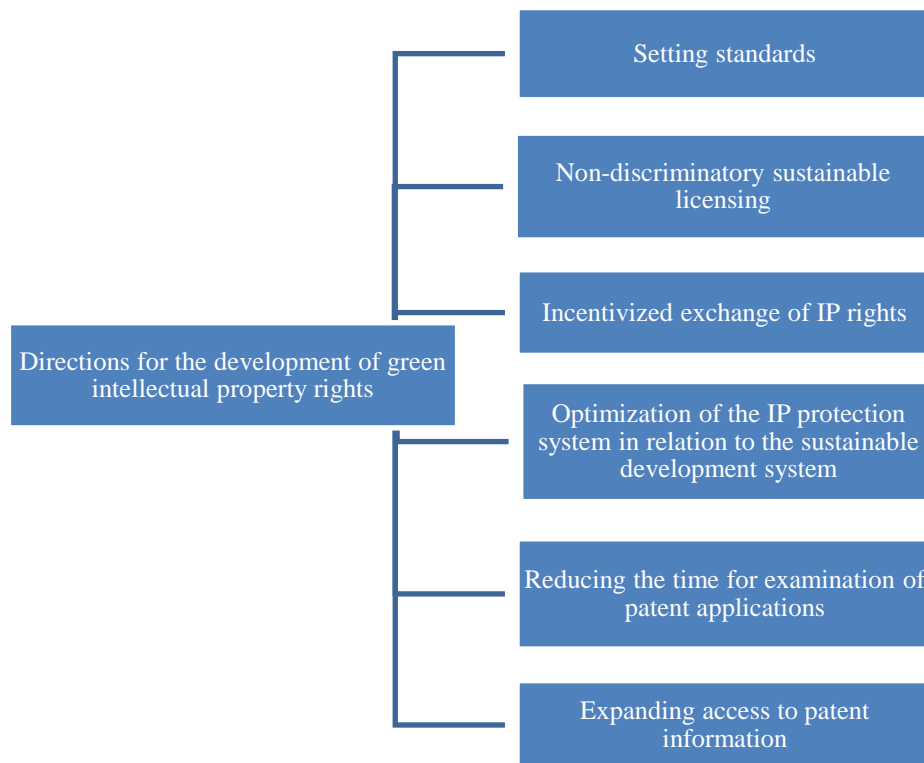


Figure 2: Scheme for the development of green intellectual property rights
[Source: ⁵⁹]

Persistent climate change, such as floods and droughts, causes disease epidemics, power outages and food insecurity. This is happening against a backdrop of underdeveloped public service infrastructure, a weak economy, high unemployment, and small state budgets. Such negative impacts are likely to be exacerbated unless significant investments are made, and measures are taken. Thus, there is a clear need to include climate risks in decisions that shape urban development and management.⁶⁰ Contrary to the outcome of the decisions, court documents show the importance of society's attention to addressing climate change and the issuance of certain conclusions that will form the basis of judicial practice in similar cases.⁶¹

⁵⁹ Dereń, A.M., and Skonieczny, J., 'Green intellectual property as a strategic resource in the sustainable development of an organization' (2022) 14 *Sustainability* 4758. <<https://doi.org/10.3390/su14084758>>.

⁶⁰ Komilova, N.K., Ermatova, N.N., Rakhimova, T., Karshibaeva, L.K., and Hamroyev, M.O., 'Urboekological situation and regional analysis of population health in Uzbekistan' (2021) 9 (Special Issue) *International Journal of Agricultural Extension* 65-69.

⁶¹ Taylor, A., Jack, C., McClur, A., Bharwani, S., Ilunga, R., and Kavonic, J., 'Understanding and supporting climate-sensitive decision processes in southern African cities' (2021) 51 *Current Opinion in Environmental Sustainability* 77-84. <<https://doi.org/10.1016/j.cosust.2021.03.006>>.

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A Dutch environmental group, Urgenda Foundation v. State of the Netherlands⁶² and 900 Dutch citizens sued the Dutch government, demanding radical measures to prevent climate change. The court ordered the Dutch government to take measures to limit greenhouse gas emissions by 25%, recognising the government's existing commitments as insufficient to curb the rise in global temperatures. The case of Greenpeace Nordic Ass'n v. Ministry of Petroleum and Energy⁶³ is illustrative. The claim alleged that the Ministry had violated the Constitution of the country by issuing a package of oil and gas licences for deep water production from blocks in the Barents Sea. As the first instance and appellate courts found the licences valid and the Ministry's actions did not contravene the Constitution or violate the European Convention on Human Rights, Greenpeace Northern Europe and Young Friends of the Earth (Nature and Youth) and six individuals appealed the national court's decision to the European Court of Human Rights. The case is currently under consideration.

Indian National Green Tribunal has issued a judgement on its initiative, imposing several restrictions on activities around Rattan Pass, an environmentally sensitive area in the Himalayan state of Himachal Pradesh. The court ordered the Government of Himachal Pradesh to take drastic measures to reduce pollution, including random pollution checks, restricting transport in certain areas to compressed natural gas and electric buses, and implementing a reforestation programme. These measures are to be monitored by a Monitoring Committee, which reports to the court every quarter.⁶⁴

4. DISCUSSION

Given the critical state of the environment, the issue of raising standards for its protection and adaptation to climate change remains particularly relevant today and requires detailed study. Today, the idea of a green economy can become a guideline for countries trying to ensure a happy future for their citizens. It is necessary to ensure its implementation by investing in programmes aimed at preserving the environment. Teleuyev et al.⁶⁵ consider the Green Economy programme from the perspective of a legal phenomenon. Indeed, the irrational use of natural resources leads to severe consequences. To preserve the environment, it is necessary, first, to introduce

⁶² Climate Change Litigation Databases. Urgenda Foundation v. State of the Netherlands. (2015). Retrieved from: <<https://climatecasechart.com/non-us-case/urgenda-foundation-v-kingdom-of-the-netherlands/>> accessed on 11 May 2024.

⁶³ Climate Change Litigation Databases. Greenpeace Nordic Ass'n v. Ministry of Petroleum and Energy (People v Arctic Oil). (2016). Retrieved from: <<https://climatecasechart.com/non-us-case/greenpeace-nordic-assn-and-nature-youth-v-norway-ministry-of-petroleum-and-energy/>> accessed on 28 May 2024.

⁶⁴ Climate Change Litigation Databases. In re Court on its own motion v. State of Himachal Pradesh and others. (2013). Retrieved from: <<https://climatecasechart.com/non-us-case/sher-singh-v-state-of-himachal-pradesh/>> accessed on 11 May 2024.

⁶⁵ Teleuyev G, Kobbassarova G, Chingayeva B, Sherimova N, and Tultabayev Z, 'Legal regulation of the transition of Kazakhstan to green economy' (2020) 11(3) Journal of Advanced Research in Law and Economics 1053-1059. <[https://doi.org/10.14505/jarle.v11.3\(49\).40](https://doi.org/10.14505/jarle.v11.3(49).40)>.

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state control and participate in international programmes to develop waste-free and resource-saving technologies. To this end, the global community is considering various methods and ways to stabilise the environmental situation. The authors agree that the idea of a green economy requires special attention. However, it is important to note that the project should receive support from government agencies and become an investment target. It is important that all parties are interested in the programme: the state, producers and society.

To ensure control over the state of the environment, it is necessary to introduce monitoring following international standards⁶⁶. Chinese scientists Wu et al. (2020)⁶⁷ analysed data from 30 provinces in China on gas, wastewater and solid waste emissions. The result showed a deterioration in environmental quality, despite the measures taken by the state and local authorities. They believe that to improve the quality of the environment, control by the local population is necessary. The authors of the article are right to agree that climate change is a threat to the well-being of the world's population, despite the measures taken by the global community. The scale of such changes is growing every year. One of the ways to solve the problem is to involve society in the process of controlling the activities of states and businesses.⁶⁸

The concept of sustainable development should become one of the directions of development of the European Union countries⁶⁹. Artene et al.⁷⁰ considered the issue of solving environmental problems from the perspective of sustainable development policy. One of the ways to ensure the principles of sustainable development was to introduce non-financial indicators in the companies' reporting that relate to environmental, social and other aspects of their activities.⁷¹ The purpose of introducing such indicators is to enable monitoring of climate change at the regional level and the impact of companies' activities on the environment. One cannot but agree with the authors that the introduction of corporate social responsibility for the environment should become a priority of state policy in every country. This is especially true for companies that pollute the environment.⁷² An important

⁶⁶ Kondratenko, D., Savchuk, O., and Liubchych, A., 'Foreign practices in land cadaster systems: An experience for Ukraine' (2020) 9 (2) *European Journal of Sustainable Development* 325-337.

⁶⁷ Wu, L., Ma, T., Bian, Y., Li, S., and Yi, Z., 'Improvement of regional environmental quality: Government environmental governance and public participation' (2020) 717 *Science of the Total Environment* 137265. <<https://doi.org/10.1016/j.scitotenv.2020.137265>>.

⁶⁸ Sannikov, D.V., 'Problems of land legislation of Ukraine and European Union integration' (2017) 20 (Special issue 1) *Journal of Legal, Ethical and Regulatory Issues* 1-17.

⁶⁹ Tyliczszak, B., Gaca, K.Z., Sobczak-Kupiec, A., and Dulian, P., 'Mechanochemical synthesis and investigations of calcium titanate powders and their acrylic dispersions' (2014) 34 (10) *Journal of the European Ceramic Society* 2259-2264.

⁷⁰ Artene, A., Bunget, O.C., Dumitrescu, A.C., Domil, A.E., and Bogdan, O., 'Non-financial information disclosures and environmental protection – Evidence from Romania and Greece' (2020) 11(8) *Forests* 814. <<https://doi.org/10.3390/f11080814>>.

⁷¹ Tyliczszak, B., Drabczyk, A., Kudłacik-Kramarczyk, S., Grabowska, B., and Kędzierska, M., 'Physicochemical properties and cytotoxicity of hydrogels based on Beetosan® containing sage and bee pollen' (2017) 64 (4) *Acta Biochimica Polonica* 709-712.

⁷² Ospanova, A., Anuarova, L., Shapalov, S., Gabdulkhayeva, B., Kabieva, S., Baidalinova, B., and Maui, A., 'Fungal pathogens found in tissues of herbaceous plants growing in the Yereymentau

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point is to encourage investors to invest in government programmes that promote adaptation to new climate conditions.

Establishing an appropriate legal framework to prevent environmental violations is a crucial element in the environmental protection system. British researchers Mehryar and Surminski⁷³ analysed erosion and flood control in 33 countries and analysed 139 laws in force in 30 countries. Five countries with different levels of economic and social development and different systems of political and public administration were studied separately. The study concluded that the number of laws in a country does not affect the legal mechanisms for environmental protection, but the quality and mechanisms for responding to climate change are important. Disagreeing with this conclusion, it is possible to add that the introduction of mechanisms for environmental protection and preservation into the legal field is an important step in the legal sphere of each country. This should mean acknowledging the problem and joining international cooperation.

The development of new technologies with energy- and resource-saving features should be a priority for research institutions. Konomi et al.⁷⁴ analysed the use of electricity generation from small photovoltaic installations. By estimating CO₂ emission savings and the cost of the installation, the study concluded that it is feasible to use such technologies. The photovoltaic power plant provided electricity to the settlement, avoiding carbon emissions.⁷⁵ Analysing the study, it should be noted that in the current global environment, the use of alternative energy is essential. Even if the production of such energy is carried out in small quantities on a global scale, it can be crucial. When analysing international legal frameworks, respect for fundamental human rights and environmental safety are inextricably linked. Jodoin et al.⁷⁶ noted that human rights in the context of environmental issues and sustainable development are recognised at the international level. Human rights systems expand the range of decisions and reports made following international law. They are based on human rights and should ensure equity and effectiveness for all segments of the population. There is no disagreement with the conclusions of society as human security concerns various aspects of human life, including the right

District, Akmola region' (2021) 28 (1) Saudi Journal of Biological Sciences 55-63.
<<https://doi.org/10.1016/j.sjbs.2020.08.031>>.

⁷³ Mehryar, S., and Surminski, S., 'National laws for enhancing flood resilience in the context of climate change: Potential and shortcomings' (2020) 21(2) Climate Policy 133-151.
<<https://doi.org/10.1080/14693062.2020.1808439>>.

⁷⁴ Konomi, I., Malka, L., and Rrapaj, E., 'Environmental aspects and GHG credits impact on LCOE and key indicators for small installed PV plants in Albania' (2022) 7(1) Science. Business. Society 33-37. Retrieved from: <<https://stumejournals.com/journals/sbs/2022/1/33>> accessed on 30 May 2024.

⁷⁵ Lyubchik, A., Lygina, O., Lyubchik, S., Fonseca, I., Tulepov, M., Mansurov, Z., and Lyubchik, S., 'Activated carbons from co-mingled liquid and solid organic wastes' (2015) 17 Eurasian Chemico-Technological Journal 47-65. <<https://doi.org/10.18321/ectj339>>.

⁷⁶ Jodoin, S., Savaresi, A., and Wewerinke-Singh, M., 'Rights-based approaches to climate decision-making' (2021) 52 Current Opinion in Environmental Sustainability 45-53.
<<https://doi.org/10.1016/j.cosust.2021.06.004>>.

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to life, health, privacy, social protection and access to justice. Therefore, it is necessary to promote the development of the environmental law system.

The role of women and their place in society is controversial. Today, more and more women are advocating gender equality for women. However, due to the physiological characteristics of women, they are more vulnerable to environmental disasters. Desai and Mandal⁷⁷ argue that the effects of climate change around the world primarily affect the most vulnerable segments of the population. Due to their traditional role as women, women and girls are highly dependent on natural resources. It has been proven that during natural disasters or pandemics, problems in everyday life increase, making women vulnerable to sexual and gender-based violence (SGBV), as well as denial of resources or essential services.⁷⁸ Despite this problem, international legal instruments do not address this issue. In another article, Mandal⁷⁹ draws attention to the fact that the UN has recognised that SGBV against women is a threat to international peace and security and that there is a gap in the legal framework regarding the status of women in addressing environmental issues. Agreeing with the authors, it is possible to state that the issue of gender inequality is relevant today all over the world. Given the precarious position of women in the issue of gender inequality, this problem becomes even more urgent in times of crisis. Ensuring these rights should be introduced not only in the environmental law system, as the problem has a higher meaning and special reasons.

Addressing food security and providing the population with quality food is impossible without addressing environmental change.⁸⁰ Gotgelf⁸¹ assessed the methodology for the accurate assessment of land degradation (LDN), the UN's adopted methodology for collecting data on soil carbon accumulation. During the processing of the first report in Kyrgyzstan, significant shortcomings were identified, namely the lack of standard procedures for monitoring reporting on the following indicators: land cover, land productivity and soil organic carbon stocks. The problems discussed by the author require the adoption of a methodology of mechanisms for collecting and reporting data to assess land condition and availability. Efforts

⁷⁷ Mandal, M., 'Climate change exacerbated sexual and gender-based violence: Role of the feminist foreign policy' (2024) 53(5-6) *Environmental Policy and Law* 401-413. <<https://doi.org/10.3233/epl-239018>>.

⁷⁸ Komilova, N.K., Oblakulov, H.A., Egamberdiyeva, U.T., Mirzayeva, S.K., and Shadieva, N.S., 'Some theoretical issues of social geographical research' (2020) *Supp22 (2) Asia Life Sciences* 157-170.

⁷⁹ Mandal, M., 'Climate change exacerbated sexual and gender-based violence: Role of the feminist foreign policy' (2024) 53(5-6) *Environmental Policy and Law* 401-413. <<https://doi.org/10.3233/epl-239018>>.

⁸⁰ Anand, P., Husain, D., and Prakash, R., 'Sustainable integrated system for rural development: a case study' (2022) 4 (3) *Insights into Regional Development* 96-109. <[http://doi.org/10.9770/IRD.2022.4.3\(6\)](http://doi.org/10.9770/IRD.2022.4.3(6))>.

⁸¹ Gotgelf, A., 'Information governance for sustainable development: Exploring social dilemmas in data provision for international reporting on Land Degradation Neutrality' (2022) 135 *Environmental Science & Policy* 128-136. <<https://doi.org/10.1016/j.envsci.2022.05.002>>.

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should be made to develop them based on scientifically sound methods and national datasets.

Environmental issues affect every country on the planet Earth, as global climate change and warming can lead to irreversible phenomena. However, not all governments and states understand the importance of consolidating efforts in this area. Aware of their responsibility to humanity, highly developed countries are shifting their policies towards energy-saving technologies, zero-waste production, and a circular economy. On this basis, environmental legislation is the only tool that will enable effective management of natural resources and prevent further pollution of the biosphere.

5. CONCLUSIONS

The fight against climate change involves taking measures to mitigate and adapt to its effects, prevent pollution compensate for damage, and promote the renewal of the biosphere. Each country is obliged to implement the concept of the common good through political and economic mechanisms. Understanding the importance of environmental sustainability, the state must choose its way to combat climate change, considering advanced technologies and international legislation. The European Union's policy is aimed at developing measures for sustainable development and joint responsibility of countries for the environment. Given the global nature of the problem, the environment can only be improved through comprehensive measures involving the whole of society. These countries, which have chosen the European direction of development, are interested in joining the policies and initiatives launched by the EU.

The urgent issues that require scientifically based solutions to address them are the implementation of national programmes for observing and studying climate change, combating land degradation and desertification, increasing forest cover, restoring and sustainably using peatlands, increasing the territories and objects of the nature reserve fund, using best practices in land use and agricultural technologies aimed at adapting to climate change and mitigating its negative effects. Given the global nature of the climate change problem, environmental disasters often lead to fatalities and property destruction. People are often forced to leave their places of residence, lose their families and jobs, and look for more favourable regions to live in. Informing the public about the state of the environment should ensure that everyone exercises their right to life, health, access to information, the right to property. There is a problem in obtaining truthful information about the state of the environment, which means that there are no standards for monitoring environmental data. In this context, it is necessary to develop environmental monitoring standards and involve the economic sector and business structures in this process, as they are the largest producers and consumers of energy. It is also worth introducing educational programmes for the public to make them aware of the importance of preserving the

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environment and the risks that an irresponsible and consumerist society poses to the future of the planet.

Effective adaptation to climate change can be implemented based on an effective legal framework and economic policies, including taxation, licensing, subsidies, standards, technologies, investment, development of science and technology, and public awareness and engagement in environmental issues. The economic and political situation of a country plays a fundamental role in the policy of stimulating projects aimed at improving environmental performance, including reducing negative carbon emissions. Environmental issues are quite multifaceted. There are global issues that threaten all of humanity, and at the same time, each country is addressing the issue at the national level.

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AUTHORS' DECLARATION AND ESSENTIAL ETHICAL COMPLIANCES

Authors' Contributions (in accordance with ICMJE criteria for authorship)

<i>Contribution</i>	<i>Author 1</i>	<i>Author 2</i>	<i>Author 3</i>	<i>Author 4</i>	<i>Author 5</i>
Conceived and designed the research or analysis	Yes	No	No	No	Yes
Collected the data	No	No	Yes	Yes	No
Contributed to data analysis and interpretation	Yes	Yes	No	No	Yes
Wrote the article/paper	Yes	Yes	Yes	Yes	Yes
Critical revision of the article/paper	Yes	No	No	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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The author(s) solemnly declare(s) that this research has not involved any animal subject (body or organs) for experimentation. The research was not based on laboratory experiment involving any kind animal. The contexts of animals not even indirectly covered through literature review. Therefore, an Ethical Clearance (from a Committee or Authority) or ethical obligation of ARRIVE does not apply in cases of this study or written work.

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(Optional) PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)

The author(s) has/have NOT complied with PRISMA standards. It is not relevant in case of this study or written work.

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