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REDUCING CLIMATE IMPACTS ON WATER RESOURCES AS THE LEGAL AND ECONOMIC BASIS FOR ENVIRONMENTAL SECURITY IN THE EU CANDIDATE COUNTRIES: THE CASE OF UKRAINE

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Abstract. As climate change is one of the greatest challenges of our time, the legal and economic issues of global environmental security deserve high praise. In the area of industrial competitiveness, where the negative effects of global climate change include floods and droughts, forest fires, and rising sea levels, climate change is highly problematic. Climate impacts affect public and private agricultural infrastructure (including the coastal zone), resulting in lost productivity and increased costs for agriculture. The article applies climate change on a global scale in the form of greenhouse gas (GHG) emissions to determine how the mixtures and emissions of any one entity affect other areas (e.g., individual, community, company or country emissions). Exploring the theoretical and practical premises of climate change as a complex phenomenon, the novelty of this article is that it examines the current framework of the environmental-legal concept, not just the political implications of the legal framework. The research aim of the article lies in two dimensions: the European Union's current climate change policy framework (the climate and energy package, a set of climate change strategies and related policies targeting EU candidate countries); recent environmental operations in Ukraine as an EU candidate country under extraordinary conditions. This article examines recent changes in climate legislation and climate policy in EU member and candidate countries, as well as other highly developed countries, such as the United Kingdom, the United States, and China. Focusing on the impact of the EU Climate and Energy Package (2020 and 2030), this article examines the main implications of EU climate legislation regulating the EU Emissions Trading Scheme and promoting the role of renewable energy in global energy consumption and energy efficiency in general. As a result of this study, this analysis offers multifaceted conclusions based on the interaction of a number of current administrative acts on climate change and environmental policy on a global scale.

Key words: climate change, comparative advantage, equitable and reasonable use, EU law and policy on climate change, EU climate and energy package, EU-Ukraine Association Agreement, environmental security, greenhouse gases, water resources.

JEL Classification: Q54, Q59

1. Introduction

It is common knowledge that the Earth's surface temperature is expected to rise before mid-century, at least under all available emission scenarios (Sixth assessment report (IPPS) Headline Statements from the Summary for Policymakers). GHGs spread beyond the borders of states, and what follows is a domino scenario where pollution in one country can go viral and exacerbate the current environmental condition in another country-no matter how far apart the two countries are, it can threaten the natural environment on a global scale.

Even if one or more countries succeed in reducing greenhouse gas emissions to zero, this will not solve the problem of climate change. To this end, it is worth noting that efforts to prevent climate change require international action to protect the environment. However, some states with the world's largest

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economies, notably the United States and China, have reasonable doubts about abandoning the international climate change regime.

Frequent extreme disasters such as floods and droughts affect water resources around the world. Droughts and drier soils can be expected in West Africa and the Amazon during the June-August season, and in the Asian monsoon region during the December-February season (Soha M. Mostafa; Osama Wahed, et al., 2021). It is particularly evident in the Hindu Kush Himalaya (HKH) region that increasing temperature is melting glaciers and reducing snowfall, impacting the flow of China's domestic and shared rivers (Devlaeminck, 2018); besides there is more rainfall in northern Europe which will lead to an increased number of water sources in the north and in a decreased one in the south (Radu Ioan Mogos, Negescu-Oancea Mihaela Diana, et al., 2021).

Since then, 2021 Intergovernmental Panel on Climate Change (IPCC) report provides that climate change is dramatically affecting the water cycle: the average rate of sea level rise was 1.3 [0.6 to 2.1] mm yr–1 between 1901 and 1971, increasing to 1.9 [0.8 to 2.9] mm yr–1 between 1971 and 2006, and further increasing to 3.7 [3.2 to 4.2] mm yr–1 between 2006 and 2018 (high confidence) (IPCC, 2021). Rising sea levels are already affecting coastal ecosystems, biodiversity, agriculture, food systems, aquifers, and reducing natural water supplies in ice and snow. In addition, the UN World Water Development Report 2020 (UNESCO, UN-Water, 2020), decline that water is the "climate connector" that allows for greater collaboration and coordination across most targets for climate change, sustainable development, and disaster risk reduction. In a recent 2021 UNICEF report on climate risks to children, some 144 million children worldwide under the age of five are stunted, 335 million children are highly exposed to river flooding, 240 million children are highly exposed to coastal flooding, and 400 million children worldwide live in areas that are highly exposed to tropical cyclones (The Climate Crisis is a Child Rights Crisis).

In July 2020, the European Council approved a 750 billion euro economic recovery plan called the Next Generation EU (NGEU), which will begin in 2021, and the Multiannual Financial Framework for 2021–2027 (MFF) (Jonatan Echebarria Fernández, 2021). The NEGU allocates 30 percent of the total package to climate protection, contributing to the Union's new 2030 climate goals and meeting the EU's climate neutrality goal by 2050[1]. This interprets to more than EUR 500 billion over the next seven years (Ewa Krukowska, Laura Millan Lombrana).

2. Interception between climate change and water cycle: international legal issues

Global warming and climate change are caused by the natural presence of so-called greenhouse gases such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbon (HFC), perfluorocarbon (PFC) and sulfur hexafluoride (SF6) in the atmosphere of Earth[2]. These gases are used in various economic sectors and have many applications. For example, hydrofluorocarbons (HFCs) are used as refrigerants in refrigeration and refrigeration engineering; perfluorocarbons (PFCs) are commonly used in the electronics sector as well as in the cosmetics and pharmaceutical industries; sulfur hexafluoride (SF6) is mainly used as an insulating gas in high voltage switchgear as well as in magnesium and aluminum production[3]. In the United Nations Framework Convention on Climate Change of 1992[4] associates the term 'climate change' with human activity and composition shifts in global atmosphere due. Climate change affects the quality of water and poses challenges for beneficial uses of water resources. According to the Intergovernmental Panel on Climate Change (IPCC) 2021, states face a highly uncertain future of water availability (quality and quantity) and need to adapt their transboundary water management regime to meet their needs.

Transboundary cooperation seeks to address climate impacts that cross national boundaries (e.g., droughts or flooding on transboundary rivers) to avoid de-adaptive effects from a basin perspective and to exploit the potential co-benefits of improved regional cooperation, such as reduced uncertainty through data sharing, peace and stability, expanded planning space, and shared costs and benefits (UN-Water Policy Brief on Climate Change and Water).

Currently, there are more than 260 transboundary agreements between riparian states (Jafroudi, 2020). However, as the UNECE study confirms, many transboundary water agreements existed before climate change adaptation entered the water management discourse, and therefore assume relatively fixed water conditions in the respective basins (Spijkers, 2019).

[1] Report by the Joint Research Centre Global Energy and Climate Outlook 2020: A New Normal Beyond COVID-19. Available at: https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/global-energy-and-climate-outlook-2020-new-normal-beyond-covid-19

[2] Available at: https://www.epa.gov/ghgemissions/overview-greenhouse-gases

[3] Available at: https://ec.europa.eu/clima/policies/f-gas_en

[4] The UNFCCC was adopted on 9 May 1992, having entered into force on 21 March 1994. Available at: https://unfccc.int/resource/docs/convkp/conveng.pdf

To this extent, one should mention the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (the Transboundary Water Convention), concluded in Helsinki on 17 March 1992 (entry into force on 1996)[5], the Convention on the Law of the Non-navigational Uses of International Watercourses (the Watercourse Convention), concluded in New York on 21 May 1997 (entry into force on 2014)[6]. These general rules are complemented by more specific rules relating to state responsibility in the context of the management of international watercourses. Some compliance mechanisms can also be found in in regional water law, such as the EU Water Framework Directive of 23 October 2000[7] and treaties regulating the joint management of a specific international watercourse, such as the Convention on the Protection of the Rhine on 12 April 1999 (entry into force on 2002)[8], The Danube River Protection Convention on 29 June 1994 (entry into force on 1998.)[9], Agreement on the Nile River Basin Cooperative Framework on 14 May, 2010[10] and so on.

Many provisions of international water law can also help adapt to climate change, such as the "equitable and reasonable use" principle, the "no significant harm" principle, and the "precautionary principle".

The principle of equitable and reasonable utilization of water is one of the cornerstones of international freshwater law. This principle requires states to take into account considerations of equity in exercising their rights and fulfilling their obligations when using the freshwater resources they share with others. As M. Jafroudi underlines, this reading of the principle of equitable and reasonable use of water comes from the notion of 'perfect equality of states' enshrined, inter alia, in the judgment of the PCIJ in the case relating to the Territorial Jurisdiction of the International Commission of the River Oder, were court ruled out any preferential privilege of any one of the riparian states over others in using he water of the basin for navigational purposes (Jafroudi, 2020).

Most international instruments interpret equity in the exercise of the rights of riparian states with respect to a transboundary basin as the equal right of each riparian state to benefit from the waters of such a basin. For example, the Watercourses Convention establishes an obligation for states to "utilize" and "participate in the use, development and protection" of an international watercourse in an equitable and reasonable manner (Art. 5). The Convention also clarifies that when using an international watercourse on its territory, a State must take all necessary measures to prevent significant harm to other watercourse States. The Water Convention takes the same approach and requires States to "...ensure reasonable and equitable use of transboundary waters, taking into account their transboundary character, in the case of activities which cause or are likely to cause transboundary impact." (Spijkers, 2019).

D. J. Devlaeminck emphasized that China's water treaties reflect the reciprocal aspects of international water law, illustrating that in some way China believes in and adheres to international water law principles (Devlaeminck, 2018). For example, China adheres to the principle of fair and reasonable use in individual treaties, expressed using mutually enforceable terms such as "equitable," "equitable," and "rational". In addition, the obligation not to cause substantial harm often takes a broad, reciprocal approach that protects both upstream and downstream states, but some of China's treaties contain a narrow definition, focusing on types of harm that primarily affect downstream states, which is potentially more onerous for China (Devlaeminck, 2018).

An important debate regarding the interaction between climate change and water law is ongoing in the United States. R. K. Craig argues that it is unlikely to be resolved until (1) the full implications of climate change for the water resources of the United States are better understood and assessed; and (2) patterns of voluntary human adjustments become clearer. For example, it matters a great deal to the future of Western water law whether the average flow of the Colorado River falls by 10 percent, or by half, or whether the river runs dry-and how quickly that change occurs. As for the second example, California would face a very different water law problem if its Silicon Valley industry, Hollywood movie studios, agriculture, and accompanying social support systems moved en masse to Michigan

[5] Convention on the Protection and Use of Transboundary Watercourses and International Lakes. Available at: https://treaties.un.org/doc/Treaties/1992/03/19920317%2005-46%20AM/Ch_XXVII_05p.pdf

[6] Convention on the Law of the Non-navigational Uses of International Watercourses. Available at: https://legal.un.org/ilc/texts/instruments/english/conventions/8_3_1997.pdf

[7] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0060

[8] Convention on the Protection of the Rhine. Available at: https://op.europa.eu/en/publication-detail/-/publication/fa42cafd-30ee-4d8f-94a8-bc404d0ee550/language-en

[9] Convention on cooperation for the protection and sustainable use of the Danube river (Danube River Protection Convention). Available at: https://www.icpdr.org/flowpaper/app/#page=1

[10] Agreement on the Nile River Basin Cooperative Framework. Available at: http://www2.ecolex.org/server2neu.php/libcat/docs/TRE/Full/En/TRE160035.pdf

and Wisconsin than if they remained in place (Craig, 2020). Furthermore, the United States has a major problem with the protection of Native water rights. Ultimately, the only way to adequately protect tribal rights and resources is to place American Indian tribes on an equal footing with the states and the federal government by recognizing tribes as equal partners in the management of water resources in their territories (Dylan R. Hedden-Nicely, Lucius K., 2020).

It is important to emphasize that climate change is a serious obstacle to the realization of the rights to water and sanitation. Water is a key medium through which climate change affects populations and ecosystems, especially in relation to projected changes in water quality and quantity.

Unfortunately, water is not explicitly mentioned in the most important international instrument to combat climate change, the Paris Agreement, which was adopted on December 12, 2015 and entered into force on November 4, 2016 (Paris Agreement). The Preamble makes clear that "Parties must respect, promote and accommodate their respective human rights obligations, the right to health, the rights of indigenous peoples, local communities, migrants, children, the disabled and people in vulnerable situations, and the right to development, as well as gender equality, women's empowerment and intergenerational equity."

The relationship between climate, human rights, water, and sanitation is dominated by various disciplines: political, economic, natural sciences, and lawyers, in the latter case.

In May 2020, a group of Torres Strait Islanders petitioned the UN Human Rights Committee against the Australian government for not setting sufficient goals and plans to reduce greenhouse gas emissions, and for not funding adequate measures to protect and improve shoreline resilience on islands threatened with inundation from rising sea levels[11]. Petitioners claim that Australia violates their human rights under the International Covenant on Civil and Political Rights: Article 6 (right to life), Article 17 (right to be free from arbitrary interference with privacy, family and home) and Article 27 (right to culture).

There is another case in Canada seeking damages because of climate change. Ontario Burgess v Ontario Minister of Natural Resources and Forestry, Court File No. 16-1325CP (Burgess v. Minister of Natural Resources and Forestry), the plaintiff sued a provincial official in Canada responsible for managing the water level in several Canadian lakes, alleging that the government failed the plan of adaptation to climate change and an obligation to prevent flooding which caused property damage to the plaintiffs' homes around the lakes. In 2018, Burgess voluntarily discontinued the case.

Peruvian farmer Luciano Lliuya sued the German utility RWE AG (Germany's largest electricity producer) seeking compensation for the costs of protecting the plaintiff's town of Huaraz (population 120,000) from melting glaciers (Case Luciano Lliuya vs RWE AG). The case was dismissed for lack of a "linear causal chain" linking the plaintiff's injury and RWE's emissions. On appeal, however, the court reversed the decision and has now begun the evidentiary phase of the trial, gathering evidence on, among other things, the extent of the defendant's greenhouse gas emissions and how those emissions contribute to a warming atmosphere (United Nations Environment Programme, 2020).

As a conclusion, it should be noted that transboundary water agreements existed prior to the adaptation of the international climate change regime, and therefore such agreements are being reviewed and modified. Thus, when developing new transboundary water and climate change cooperation agreements, states should design new transboundary agreements with flexibility in mind. A flexible regulatory framework can accommodate the significant changes in water policy and legislation needed to account for future climate change impacts. A flexible approach that allows for adjustments in the event that climate change makes previously adequate water quantities inadequate. New agreements must include flexibility in water allocation schemes. Regulations for transboundary cooperation related to water quality should include provisions stating what, how, and when to evaluate when determining climate change impacts.

To meet obligations to adapt transboundary water agreements to climate change, states can establish joint climate monitoring and forecasting programs. If states fail to take all possible measures to allow them to adapt their transboundary water agreements to such changes, they risk failing to meet their environmental obligations and violating the rights of non-party basin states to beneficially use water, thereby committing an internationally wrongful act. (Spijkers, 2019).

3. Long-term EU climate policy framework

The environmental and climate legislation of the EU candidate countries is mainly characterized by long-term political goals is a fertile ground for the adoption of the above-mentioned objectives (Alessandro Monti, Beatriz Martinez Romera, 2020).

[11] Petition of Torres Strait Islanders to the United Nations Human Rights Committee Alleging Violations Stemming from Australia's Inaction on Climate Change. Available at: http://climatecasechart.com/climate-change-litigation/non-us-jurisdiction/united-nations-human-rights-committee/

EU environmental policy implies a set of objectives necessary to create and maintain the well-being of the state and its society. In terms of the EU Treaty on Climate Change, "EU climate policy" is used as a legal term referring to the European Union's policy aimed at achieving a specific EU environmental goal, namely combating climate change (Kenig-Witkowska, Krämer, Ubysz, Stoczkiewicz, 2015). The first ECCP (2000–2004) examined a wide range of policy sectors and instruments for reducing GHG emissions: the EU emissions trading system; the Clean Energy Development Mechanism; energy supply; energy demand; energy efficiency; transport; industry; research; agriculture. In addition, impacts on other policy areas, including co-benefits such as energy security and air quality, were examined. The main goal was to create a rational, medium- and long-term climate policy based on the "No Bridge Burned Behind" strategy. Under ECCP II, climate change involves some significant adjustments in our societies and economies, especially in terms of restructuring the energy system and the public transportation system.

This chapter of the paper offers a brief overview of the current EU and global legal framework.

In 2014, the European Council approved the EU 2030 Climate and Energy Framework. In its conclusions adopted, the European Council endorsed these key important targets 2030, namely:
(a) a binding EU target of at least 40% less greenhouse gas emissions by 2030, compared to 1990 (as the EU's contribution into the Global Climate Agreement);
(b) a target, binding at EU level, of at least 27% renewable energy consumption in 2030;
(c) an indicative target at EU level of at least 27% improvement in energy efficiency in 2030.

Further on, the Paris Agreement in 2018[12] was signed and the EU Climate and Energy Policy Framework 2030 was amended. The EU Climate and Energy Policy Framework 2030 reaffirmed the following key targets:
1) 40% cuts in greenhouse gas emissions by 2030 regarding (from 1990 levels, as the EU's contribution into the Global Climate Agreement);
2) 32% for renewable energy in the energy consumption of 2030;
3) 32.5% improvement in energy efficiency for 2030 from energy consumption projections.

Climate and Energy Policy 2030 (2018) seeks to revise the Energy Efficiency Directives, the Renewable Energy Directives (RED II), and the Emissions Trading System (ETS). Besides, it supplemented the current framework with the two new instruments (Kati Kulovesi, Sebastian Oberthür): first, the Regulation on the Governance of the Energy Union and Climate Action (the Governance Regulation) established crucial integrated structures for the planning, reporting and review of the climate and energy policy; second, the LULUCF Regulation set a key important target for the LULUCF sector to prevent any net GHG emissions and strengthen the rules on accounting for emissions and removals in the LULUCF.

On November 28, 2018, the European Commission proclaimed the EU Climate Policy 2050, which presented the European Commission's long-term strategic vision for a prosperous, modern, competitive and climate-neutral economy by 2050. The 2015 Paris Agreement introduced the principle of climate neutrality, in which EU member states agreed to limit global temperature rise to well below 2 degrees Celsius compared to pre-industrial levels. To achieve this overall goal, EU member states have pledged to achieve a balance between current anthropogenic emissions from sources and their removal by absorption of GHGs by 2050 in order to achieve a balance between GHG emissions and absorption (in the natural course of things).

In this respect, the path to a net-zero economy must be based on a joint action plan that is compatible with seven major strategic pillars, such as energy efficiency; renewable energy; clean, safe and networked mobility; competitive industry and circular economy; infrastructure and interconnections; biosphere carbon and clean carbon sinks; carbon capture and storage capacity to address other emissions. The European Commission argues that the implementation of all these strategic priorities will contribute to the implementation of the concept of climate neutrality.

Notably, in December 2019, the European Commission presented to the European Parliament, the European Council, the Council of the European Economic and Social Committee and the Committee of the Regions the Communication "The European Green Deal". This communication proves the growth of the EU's climate ambitions for 2030 and 2050. The European Green Deal is an ambitious package of measures that will allow European citizens and businesses to benefit from a sustainable green economy.

The European Green Deal resets the European Commission's commitments, presented below:
1) achieving climate neutrality by 2050, boosting momentum for climate action and stepping up EU's climate ambition 2030. With the 2030 Climate Target Plan, the Commission proposes to raise the EU's ambition on reducing greenhouse gas emissions to at least 55% below 1990 levels by 2030 (2030 Climate Target Plan);

[12] The Paris Agreement was concluded on 5 October 2016, on the basis of the EU Council decision (EU) 2016/1841.

2) promotion of nature-friendly solutions while protecting and restoring the current ecosystems and biodiversity (necessity to broaden the scope of the forest restoration plan in Europe);
3) implementation of the EU 'Farm to Fork' strategy implies the development of a fair, healthy and environmentally friendly food system (need for a balanced diet and further sustainable consumption in Europe);
4) elimination of all sources of pollution to resolve the water pollution problem, reduce freshwater biodiversity loss and build resilience to the climate change;
5) inclusion of finance and investment into the mainstream policy and fair transition to the dedication of 25% of the overall future EU budget to climate action;
6) setting up a new partnership between the EU institutions and EU Member States to enable the European Commission to align the Sustainable Development Goals with the EU system;
7) streamlining the EU's role as a global pioneer (future trade agreements should set forth the binding and enforceable commitments to start a new chapter on the sustainable development, specifically, as regards to the current environmental and social legislation).

However, the European Parliament and Council Regulation setting the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 establishes a binding EU climate neutrality target by 2050 to achieve the long-term temperature goal under Article 2 of the Paris Agreement, providing the necessary framework for achieving the Global Adaptation Goal set out in Article 7 of the Paris Agreement (see Article 1 of the European Climate Law).

In this context, M. Peeters and M. Chamon argue that this contribution will address both of the above aspects in the light of primary EU law, i.e., the Commission's delegated authority to decide on the trajectory to 2050 and to assess the impact of measures taken by EU member states. The greatest danger of this proposal is that the EU's hard law-based approach to emissions reduction becomes too soft (Peeters, Chamon, 2020). If the Commission considers that national measures do not correspond to the trajectory, it can make public recommendations to member states. Under Article 288 TFEU, these would be non-binding obligations, but the Climate Act would oblige EU member states to "take into account" these recommendations. If a member state does not follow the recommendation (or only partially follows it), it will have to explain why it does not follow the recommendation. In essence, this mechanism does not differ much from the already well-known open coordination method: although no binding substantive obligations are imposed on EU member states, there are still attempts to change their behavior through public "branding and shaming" and imposing the obligation to state reasons (fulfill or explain). It remains to be seen whether this soft approach will lead to sufficiently ambitious climate action on the part of EU member states.

EU 'Green Deal: Fit for 55 Plan' 2021 suggests amendments to over 10 regulations, i.e.,[13]..:
1) Revision of the EU Emissions Trading System to extend the current EU ETS to the maritime and aviation sector and create a GHG emissions trading scheme for road transport and buildings in 2026);
2) update the Effort Allocation Regulation (ESR) to meet the EU-wide GHG reduction goal of at least 40% in industrial sectors by 2030;
3) development of a carbon border adjustment mechanism as a legal tool to address current market dynamics by reducing GHG emissions in the EU and globally, as well as the modernization of the relevant sectors;
4) development of amendments to the Renewable Energy Directive to increase the overall binding target from the current 32% RES to a new level of 40% RES in the EU energy mix and to strengthen sustainability criteria in bioenergy;
5) revision of the Land Use Change and Forestry Regulation to raise the quality and quantity of the EU's forests and other natural carbon sinks;
6) submission of amendments to the Alternative Fuels Infrastructure Regulation to ensure user-friendly infrastructure for the recharging and refuelling cleaner vehicles across the EU;
7) review of the Energy Efficiency Directive to implement the climate ambition of the new climate target 2030 to achieve 9% reduction in energy consumption by 2030, compared to the baseline projections;
8) re-dressing the Energy Performance of Buildings Directive to accelerate the pace of renovations at buildings, contributing to the energy efficiency and renewable energy targets and reduction of GHG emissions in the buildings sector;
9) update of the Energy Taxation Directive to align the minimum tax rates for heating and transport fuels with the EU climate and environmental objectives;
10) re-addressing the CO_2 emission standards for the new cars and vans for further decline in GHG emissions for these vehicles, providing a clear and realistic pathway towards zero-emission mobility.

[13] Communication from the commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'fit for 55': delivering the EU's 2030 Climate Target on the way to climate neutrality. Available at: https://ec.europa.eu/info/sites/default/files/chapeau_communication.pdf

4. Combating climate change as part of environmental action in the European Union

4.1. EU climate policy as part of the environmental policy of the EU and EU candidate countries

A legal analysis of Article 2 of the Treaty on European Union allows three general environmental objectives to be identified:
1) high level of environmental protection to include high level of climate protection;
2) improvement of environment quality to include climate quality improvement;
3) sustainable development of Europe and the Earth to include the fight against climate change (Kenig-Witkowska, 2017).

Through specific reference to climate change and the strengthening of a common energy policy governing safety, efficiency, interconnectedness of supply and energy solidarity, the Treaty reinforces EU action in these crucial areas covered by environmental policy and energy policy.

Since 2007, climate protection has been partly included in EU environmental policy, emphasizing one of its stated goals in promoting appropriate safeguards at the international level to address regional or global environmental problems. Multiannual action programs are fundamental to environmental policy, since these acts constitute the policy itself. Action programs are drawn up in accordance with Art. 192 Par. 3 TFEU.

This provision states that the general programs of action setting the priority objectives to be achieved will be adopted by the European Parliament and the Council in accordance with the general legislative procedure and after ongoing consultations with the Economic and Social Committee and the Committee of the Regions. The action programs, although not normative in nature, have an impact on the legislative process in the field of environmental protection.

Since 1973, the Commission has announced multi-year Environmental Action Programs (EAPs) to outline future proposals and goals for EU environmental policy. The environmental program of the 1980s addressed the problem of climate change politically.

In the Third Environmental Action Programme (1982–1986) adopted by the Council Resolution on 7 February 1983 climate was mentioned for the first time as one of the resources to determine the quality of life[14]. In the fourth Environmental Action Programme (1987–1992) adopted by the Council Resolution on 19 October 1987, climate was referenced to in the Chapter on the General Policies of the Community[15]. It has been shown that fossil fuel use can pose complex problems if it turns out that the accumulation of atmospheric carbon dioxide and the greenhouse effect have a serious impact on the climate.

In 1989, the Commission presented to the Council the first Communication regarding the climate change where the Council responded quickly in its Resolution of 21 June 1989 on the greenhouse effect and the Community (Council Resolution of 21 June 1989 on the greenhouse effect and the Community (89/C 183/03)). The climate change was addressed not earlier than in the fifth Environmental Action Programme (1993–2000) adopted by the Council in its Resolution of 1 February 1993 (European Community programme of policy and action in relation to the environment and sustainable development "Towards sustainability"). An entire section of the Programme was devoted to climate change where CO_2, CFC, CH_4, and H_2O were determined as the major factors in climate change. The fifth Programme was actuated by Decision No 2179/98/EC of the European Parliament and the Council of 24 September 1998 on the review of the European Community programme of policy and action aimed at the environmental and sustainable development "Towards Sustainability" (Decision No 2179/98/EC). According to this Programme, the Community had to ensure that sustainability is the driving force in future work towards the Biodiversity and Climate Conventions.

In 2000, the Green Paper on Trading Greenhouse Gas Emissions within the European Union was published (COM (2000) 87 Green Paper on greenhouse gas emissions trading within the European Union). Its purpose was to initiate discussions on the suitability and possible functioning of greenhouse gas emissions trading within the European Union, as well as on the relationship between greenhouse gas emissions trading, other policies and actions aimed at combating climate change.

In the 6th Environmental Action Programme, which was in force from 2001 to mid-2010, halting climate change was defined as one of the four priorities where action should be taken in the field of environmental protection. The 6th Programme was adopted by Decision No 1600/2002/EC (Decision No 1600/2002/EC) where the objective

[14] 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). Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:41983X0217

[15] Resolution of the Council of the European Communities and of the representatives of the Governments of the Member States, meeting within the Council of 19 October 1987 on the continuation and implementation of a European Community policy and action programme on the environment (1987–1992). Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A41987X1207

was set of a maximum global temperature increase of 2 Celsius over the pre-industrial levels and maintenance of CO_2 concentration below 550 ppm. The 6th Programme suggested the references to the Preamble to Directive 2003/87/EC establishing the GHG emission trading scheme within the Community and amending Council Directive 96/61/EC (Decision No 1600/2002/EC).

The 7th EU Environmental Action Programme (2013–2020) was adopted pursuant to the Decision of the European Parliament and of the Council No 1386/2013/EU of 20 November 2013 under the General Union Environment Action Programme to 2020 "Living well, within the limits of our planet" (Decision No 1386/2013/EU). This program identifies priority areas, one key element of which is adaptation to climate change. This area of activity governs the EU in its efforts to transform itself into a resource-efficient and low-carbon economy, aiming to maximize the benefits of environmental legislation, improve knowledge and evidence on the environment and climate to better integrate more coherent environmental policies into action and effectively address international environmental and climate challenges.

For the period of 2021–2027 the Programme for the Environment and Climate Action (LIFE) (Regulation (EU) 2021/783) was established in the EU. The overall objective of LIFE is to contribute to the implementation, updating and development of EU environmental and climate policies and legislation by co-financing projects with European added value. LIFE consists of four subprograms in two areas. The Climate Action area includes subprogrammes on climate change mitigation and adaptation and on the transition to clean energy. The LIFE Mitigation and Adaptation subprogramme promotes the transition to a sustainable, energy-efficient, renewable, climate-neutral and sustainable economy, thereby contributing to sustainable development. Climate change mitigation, adaptation to climate change, climate governance, and information are the key focus areas of this subprogram. LIFE's Clean Energy Transition subprogramme aims to promote the transition to an energy-efficient, renewable, climate-neutral and sustainable economy by funding coordination and support for action across Europe.

4.2. Legislation of Ukraine on environmental impact assessment in extreme conditions: recommendations

The EU-Ukraine Association Agreement[16] is an important impulse for Ukrainian legislation approximation to the EU law. A great deal of attention in the Association Agreement is given to cooperation in the areas of environmental protection, in particular the promotion of the reduction of greenhouse gas emissions; the promotion of energy efficiency and energy conservation. Particular attention is paid to energy-efficient and environmentally friendly technologies, development and support of renewable energy sources (Art. 338). According to Article 365 of the Association Agreement, among other purposes of cooperation between the EU and Ukraine is specified "the development and implementation of climate change policies, in particular those specified in Annex XXXI to this Agreement."

Articles 374 and 376 provide, inter alia, that Parties will develop their scientific capacity to meet their global environmental responsibilities and obligations, including climate change, and strengthen cooperation at the regional and international levels in the context of multilateral agreements such as the 1992 UN Framework Convention on Climate Change.

In order to meet the requirements of the association agreement and to adapt the Ukrainian agreement, amendments were made to the Law of Ukraine "On Alternative Fuels".

The amendments are aimed at simplifying the conditions for conducting business activities in the production of biofuel: the requirements for the state register and business entities that conduct business activities in the production, storage and introduction of liquid biofuel and biogas were abolished. The Law of Ukraine of April 25, 2019 "On amendments to some laws of Ukraine regarding the provision of competitive conditions for the production of electricity from alternative energy sources" amended the existing support system.

In 2017, the Energy Strategy of Ukraine until 2035 "Security, Energy Efficiency, Competitiveness" entered into force. To shape the structure of primary energy supplies, the document uses indicative indicators, which Ukraine must achieve in accordance with its international commitments in the areas of renewable energy development and climate change.

In addition, in order to implement the objectives of the strategy, the Ministry of Natural Resources of Ukraine was instructed to ensure the creation and operation of the trading system of greenhouse gas emissions quotas. In 2018, the Cabinet of Ministers of Ukraine approved the Low-Carbon Development Strategy of Ukraine until 2050.

Ostap Semerak, former Minister of Ecology and Natural Resources of Ukraine, once noted: "Ukraine was one of the first in the world to develop a relevant Strategy and take responsibility for the transition of the country's economy to low-carbon development.

[16] Association Agreement between the European Union and its Member States, of the one part, and Ukraine, of the other part. Available at: https://trade.ec.europa.eu/doclib/docs/2016/november/tradoc_155103.pdf

This document stipulates reduction of emissions and increase of absorption of greenhouse gases, introduction of environmentally safe production using green technologies in all sectors of the economy."[17]

The main objective of the strategy is the transition to an energy system involving the use of low-carbon energy sources, the development of clean electric and thermal energy sources, increasing energy efficiency and energy conservation in all sectors of the economy and at housing and communal infrastructure facilities, and encouraging the use of motor fuels alternative to petroleum products. The goal is also to increase carbon sequestration and retention through the use of best practices in agriculture and forestry, adapted to climate change. The section dedicated to the decarbonization of the energy sector of Ukraine is recognized as the key section of the Strategy[18].

At the end of 2019, the Law of Ukraine "On the Basic Principles (Strategy) of the State Environmental Policy of Ukraine until 2030" was adopted. It provides for several climate goals, such as increasing the use of renewable energy sources by 17% by 2030; reducing greenhouse gas emissions to 60% compared to 1990 levels.

Unfortunately, in Ukraine, the climate is not yet recognized as an independent object of legal protection. The Law of Ukraine "On Environmental Protection" does not contain provisions on climate change prevention at all. Certain regulation of activities affecting climate change is contained only in the Law of Ukraine "On Atmospheric Air Protection".

One of its articles obliges legal entities and individuals to reduce, and in the future completely stop, the production and use of chemicals that have a harmful effect on the ozone layer, as well as to work to reduce emissions of substances whose accumulation in the air could lead to negative climate change. Some other environmental laws only mention the word "climate" without any additional legal mechanisms to combat climate change as a national security challenge.

Agree with O. Kovalova, M. Kornienko, and Yu. Pavlyutin that "...As part of the organizational direction it is necessary: 1) enforce systematic national security reporting legislation within the purview of each of the state actors involved in national security; 2) establish a uniform standard for continuous monitoring of national security cooperation agreements and memoranda between authorities and public organizations; 3) transform the practice of consultative situational cooperation into a practice of ongoing coordination and strategic cooperation in the area of national security; 4) create a unified register of threats within the framework of the National Security Strategy of Ukraine; 5) improve the register of public organizations, in particular, organize them by areas and forms of activity, display links to the official sites of organizations and provide public access to it; 6) to introduce an effective mechanism for coordinating the participation of public organizations in ensuring national security and providing them with donor assistance by creating a unified coordination center on the participation of public organizations in ensuring national security." (Kovalova, Korniienko, Pavliutin, 2020).

For example, the Law of Ukraine "On Environmental Impact Assessment" defines that the impact on the environment is connected with any consequences of the planned activity, including climatic ones (Article 1), and the Law of Ukraine "On Strategic Environmental Assessment" consequences for of the environment are identified as likely consequences for the climate." (The Law of Ukraine "On Atmospheric Air Protection").

As for the transport sector, in order to decarbonize and develop electric transport, the Law of Ukraine "On amendments to some legislative acts of Ukraine regarding access to the infrastructure of charging stations for electric vehicles" was adopted in 2019. The law establishes liability for stopping or parking vehicles in places designated by appropriate road signs and/or road markings, where only vehicles equipped with electric motors are allowed to stop or park, as well as creating obstacles to stopping or parking for drivers of such vehicles.

By 2025 it is planned to gradually reduce the coefficient of the "green" tariff for electricity produced by generating facilities using alternative energy sources. A system of auctions was introduced to distribute the support quota, i.e., to determine the business entities that acquire the right to support from the state in the production of electricity from alternative sources.

In December 2019 the Law of Ukraine "On Regulation of Business Activities with Ozone Depleting Substances and Fluorinated Greenhouse Gases" was adopted, which will come into force in June 2020. Ozone-depleting substances and fluorinated greenhouse gases are classified as "controlled substances". The law prohibits the production of controlled substances and defines the basic principles of their import into Ukraine. Only persons listed in the Unified State Register of Operators of Controlled Substances have the right to conduct operations with controlled substances.

[17] The Low-Carbon Development Strategy of Ukraine until 2050. Available at: https://legalhub.online/energetyka/pryjnyato-strategiyu-nyzkovugletsevogo-rozvytku-ukrayiny-do-2050-roku/

[18] Low-Carbon Development Strategy of Ukraine until 2050. Available at: https://mepr.gov.ua/files/docs/Proekt/LEDS_ua_last.pdf

These persons are obliged to take measures to reduce the consumption of controlled substances, to prevent emissions of controlled substances into the atmosphere, to ensure timely collection and storage of controlled substances in a sealed container for recycling or disposal. Starting in June 2021, the labeling of products that contain or use controlled substances is mandatory. An appendix to the law contains a list of controlled substances, their ozone-depleting potential and global warming potential.

In December 2019 the Law of Ukraine "On the Basis for Monitoring, Reporting and Verification of Greenhouse Gas Emissions" was adopted (entered into force on January 1, 2021). This law defines the legal and organizational framework for monitoring, reporting and verification of greenhouse gas emissions and is aimed at fulfilling Ukraine's obligations under international agreements, including the Association Agreement, as well as the requirements of the UN Framework Convention on Climate Change and the Paris Agreement.

A separate block of legal regulation is devoted to energy efficiency issues. The Law of Ukraine from June 22, 2017 "On the Energy Performance of Buildings", adopted in accordance with Directive 2010/31/EU, introduced energy performance certification of buildings. It is conducted for construction sites and existing buildings in order to assess compliance with the established minimum energy performance requirements for buildings and to provide recommendations for improving the energy efficiency of the building. The Energy Efficiency Fund was established in 2017 to support energy saving measures.

On October 21, 2021, the Verkhovna Rada of Ukraine adopted the Law of Ukraine "On Energy Efficiency". This normative act aims to implement the acquis communautaire of the European Union in the relevant area. It introduces mechanisms to strengthen energy security, reduce energy poverty, sustainable economic development, conservation of primary energy resources and reduction of greenhouse gas emissions. Considerable attention is paid to economic incentives for energy efficiency in the areas of electricity transmission and distribution, natural gas transportation and distribution, and heat supply. The main principles of incentives for consumers to implement energy efficiency measures are formulated.

International studies note that wars, starting with the First World War, affect ecosystems more and more. This is due to the increase in the potential of modern weapons, which cause more damage to the environment (Schillinger, Özerol, et al., 2020). The war in Ukraine affected not only food security, but also economic and environmental research for all countries. All more research on the significant impact of the war in Ukraine on climate change.[19]

As a result of the war, atmospheric air is significantly polluted. According to the President of Ukraine, since February 24, 2022, the Russian Federation has launched about 3,500 missiles over Ukraine[20]. During the detonation of missiles and shells a number of chemical compounds are formed – carbon monoxide, brown gas, nitrogen dioxide, formaldehyde, etc., which pollute the environment. In addition, Russia shells Ukrainian oil depots and industrial enterprises that use various chemicals in their activities. And these are also tens of thousands of tons of harmful substances released into the atmosphere (Dyachuk).

At the same time, experts note that if today energy security is one of the main global problems of the world, water security comes to the fore in conditions of climate change. It is obvious that already now the war unleashed by Russia in Ukraine directly affects the issue of water security in our country. The invaders are shelling water infrastructure, mining dams, and waging hostilities in the Black Sea and the Sea of Azov. For example, as a result of the shelling of the water treatment facilities of the Vasylkivsk water supply and drainage department, the army of the Russian Federation destroyed the building of the sewage pumping station.

"Water is essential to life and a right of every human being," said Osnat Lubrani, humanitarian coordinator for Ukraine, warning of the health risks caused by a water cut, especially for children and the elderly. "Poor water quality can lead to diseases, including cholera, diarrhea, skin infections and other deadly infectious diseases. People are forced to live in crowded conditions and cannot observe basic hygiene measures. This problem needs to be addressed," Lubrani added (UNICEF). As a result, an estimated 1.4 million people in the country currently do not have access to safe water. Another 4.6 million people have only limited access to safe water[21].

Russia's nuclear terrorism is of particular concern. On February 24, 2022, Russian troops seized the Chernobyl nuclear power plant and other nuclear facilities in the Chernobyl Exclusion Zone in an

[19] This is how the conflict between Ukraine and Russia could impact climate change. Available at: https://www.weforum.org/agenda/2022/03/russia-and-ukraine-are-important-to-the-renewables-transition-here-s-what-that-means-for-the-climate; Ukraine War's Latest Victim? The Fight Against Climate Change Available at: https://www.nytimes.com/2022/06/26/world/europe/g7-summit-ukraine-war-climate-change.html; Climate change: Ukraine war prompts fossil fuel 'gold rush' – report. Available at: https://www.bbc.com/news/science-environment-61723252

[20] These days, if you are abroad, be there with the flag of Ukraine and spread the truth about the crimes of the occupiers – address by President Volodymyr Zelenskyy. Available at: https://www.president.gov.ua/news/cimi-dnyami-yaksho-vi-za-kordonom-budte-tam-iz-praporom-ukra-77205

[21] How has the war impacted Ukraine's environment? Available at: https://www.weforum.org/agenda/2022/07/ukraine-war-environmental-impact/

invasion and remained there until March 31. An inventory and assessment of the damage caused by the Russian occupation in the Exclusion Zone is currently underway. According to preliminary estimates, the damage caused by Russian troops in the exclusion zone is almost 2.5 billion hryvnias. The occupiers destroyed almost 100 units of valuable analytical equipment, which has no analogues in Europe.[22] Russia committed another act of nuclear terrorism on June 5, when a Russian cruise missile similar to the Kalibr missile flew at a critically low altitude over the South Ukraine nuclear power plant.

The Zaporizhzhia NPP continues to operate under occupation. The Russian army uses the territory of the nuclear plant as a military base.

The presence of Russian military forces at the Zaporizhzhia nuclear power plant prevents the operator and Ukrainian authorities from fulfilling their nuclear and radiation safety obligations under international conventions and IAEA safety standards, and also prevents the IAEA from fulfilling its safeguards mandate. Read more about nuclear safety in this war at the link (Ukraine: Russia-Ukraine War and Nuclear Energy).

5. Conclusions

Since Russia's military invasion of Ukraine on February 24, 2022, there have been at least 20 separate instances of water infrastructure damage in eastern Ukraine. The recent intensification of fighting in the Donbass and the widespread use of explosives in populated areas threatens to bring the water supply system, already damaged by the previous eight-year conflict, to the brink of total destruction. Just three days after the latest invasion began, Russian troops destroyed a dam in Ukraine's Kherson region that was blocking water access to Russia-annexed Crimea. In Mariupol, a city in southeastern Ukraine, Russian soldiers cut off the local water supply as part of a brutal siege of the city, leaving the trapped population without access to safe drinking water and sanitation.

In 2022, despite military aggression of Russia, Ukraine continued to improve legislation in the field of energy efficiency. In particular, in July the adopted law[23] approves the reduction of number of procedures required for implementation of energy-efficient measures implementation projects and thermal modernization of buildings, introduces the possibility of implementation of partial energy-efficiency measures implementation projects.

As a final note, it is important to emphasize that in today's legal and socioeconomic debates, principles of environmental security are grounded in the parametric features of human rights to a safe environment. While climate change exacerbates human rights to water and sanitation, local governments must focus on the legal framework of economic impact and integrated effects on the capacity of the most fragile water-related regions.

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