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2. Tools for achieving climate neutrality: some universal, European and Ukrainian perspectives

Introduction. The challenges climate change poses for the whole humanity have been highlighted in scientific literature, expert reports, political speeches as well as normative documents and judicial decisions. To face them, the international community elaborates and offers to national governments for implementation some instruments, including legal tools, in order to establish a firm basis for sustainable development of nations. One of such instruments is climate neutrality which helps to transform harmful consequences caused by different climate change mitigation measures into resilient development for all states and individuals. Climate neutrality is an interdisciplinary concept elaborated in the course of the implementation of the Paris Agreement of 2015 (hereinafter – Agreement) and the European Union law on energy and climate issues. Now this concept outlines the universal and regional law-making agenda and determines principal directions of national legislative process of different states on their path to reach sustainable development and green transition.

Climate neutrality itself as well as its main instruments has been duly considered in the works of such authors as Huang M.-T., Zhai P.-M., Falduto Ch., Rocha M., Adashek J., etc. Furthermore, the European dimension of climate neutrality has been the subject matter of the articles of Zeben J., Schlacke S., Wentzien H., Thierjung E.-M, Köster M., Beaufils T., Ward H., Jakob M., Wenz L., Sun X., Mi Zh., Cheng L., Coffman D'M., Liu Yu, Setzer J., Narulla H., Higham C. and Bradeen E. We used the ideas and conclusions of the above-mentioned scholars in order to substantiate our own views on the place of climate neutrality on the modern global and regional political and legal landscape.

The Russian Federation war against Ukraine led to deaths and destructions on the Ukrainian territory as well as to energy crisis on the European continent, food crisis in the developing counties, large-scale and long-lasting environmental damage. This armed conflict impacts the efforts of the world community to achieve low-carbon

development and build a resilient economy. That's why it is important to analyze the concept of climate neutrality through the lenses of this war.

The purpose of this chapter is to consider the concept of climate neutrality, its main instruments under the Paris Agreement, describe its main tools under the European Union law, explore climate litigation, investigate the issue of climate neutrality in the situation of the Russian aggression against Ukraine.

Climate neutrality: the concept and policy instruments under the Paris Agreement. The notion of climate neutrality is used alongside with other similar terms, some of them having synonymous meanings and some – having slightly different ones, e.g., carbon neutrality, net-zero emissions, decarbonisation, etc. To find those differences is out of the scope of the present chapter, however, one thing in common is that all of them indicate the desire of the international community to find some solutions to the problem of negative consequences of climatic changes by cutting down the emissions of the anthropogenic greenhouse gases (hereinafter – GHGs) and increasing the capacity for their absorption, that requires a qualitative and rather rapid economic transition in such areas as energy, industry, infrastructure, transport, land use, agriculture, forestry, etc. Climate neutrality denotes the conditions under which GHG emissions into and their removal from the atmosphere are clearly balanced [80, c. 282]. Climate neutrality doesn't mean the complete absence of any GHG emissions, but their neutralization with the help of different traditional and modern tools.

Paragraph 1 of the article 2 of the Paris Agreement proclaims its principal aim – to hold the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels [81]. The key long-term goal of the Agreement is to be achieved through a number of steps: the parties must, firstly, reach the global peaking of the GHG emissions as envisaged in paragraph 1 of the article 4[5]; secondly, communicate and maintain their nationally determined contributions (hereinafter – NDCs) as

[5] The peak of GHG emissions means the point in time when emissions of those gases will decrease each subsequent year until they reach the level the humankind considers safe.

envisaged in paragraph 2 of the article 4; and thirdly, elaborate their long-term low GHG emission development strategies (hereinafter – LT-LEDSs) as envisaged in paragraph 19 of the article 4. The peak of GHG emissions means the point in time when emissions of those gases will decrease each subsequent year until they reach the level the humankind considers safe. Paragraph 1 of the article 4 of the Agreement also stipulates the need to achieve a balance between anthropogenic GHG emissions by sources and removals by sinks of GHGs in the second half of this century [81]. This wording fully corresponds to the notion of climate neutrality, as it is understood in the doctrine, and details the main objective of the Agreement. Although the term 'climate neutrality' is not used explicitly in the text of the treaty, it is clearly enshrined into its article 4 structure.

The commitments of state parties to hold the increase in the global temperature at certain levels and to reach the peak of GHG emissions are the obligations of conduct which are rooted in the due diligence concept. If a state acts with due diligence it means that it ensures as far as possible that any activity within its jurisdiction don't harm the global environment or the environment of any neighbouring state. For this reason, a state has to adopt relevant legislation, set up appropriate bodies and enforce its rules, including with the view to combat climate change. Under the due diligence principle, this state cannot be held responsible for not achieving the final desired result. It must employ all possible means at its disposal and undertake such a course of conduct so as to prevent climate change, hold the increase in the planet temperature and to reach the peak of GHG emissions but that state doesn't incur international responsibility because the climate neutrality is not reached. In contrast, the obligation of result means that a state has to achieve a particular concrete result, e.g. to adopt and communicate its NDC or LT-LEDS in accordance with a climate treaty. If that state doesn't do that, it will be held liable under international law. NDCs and LT-LEDSs are the main policy instruments to achieve the goals of the Paris Agreement and to reach the final desired result – climate neutrality. These instruments are the principal obligations for state parties to the Agreement which are monitored by its respective bodies, namely the

Secretariat of the 1992 United Nations Framework Convention on Climate Change (hereinafter – UNFCCC, or Convention).

States are obliged to prepare their NDCs, meanwhile they only seek to formulate and report on their LT-LEDSs. NDCs are individual voluntary obligations of the parties to the Paris Agreement to reduce GHG emissions relative to a certain base year, which must be updated every five years and become more ambitious each time. NDCs are subject to 'normative expectations of progression and highest possible ambition' [82]. The parties formulate their NDCs in the form of short- and medium-term strategies for mitigating the consequences of climate change and notify them to the Secretariat of the Convention which maintains the relevant register. As of September 2022, and starting from 2020, 193 parties to the Agreement have submitted or updated 166 NDCs (the EU has submitted NDC on behalf of all its 27 Member States). The 2022 NDC Synthesis Report at the UNFCCC site shows that the majority of parties (90%) provided quantified mitigation targets in their NDCs, while the rest 10% included only their plans, policies and actions without clear numerical emission targets [83]. This fact, in our opinion, reveals drawbacks in the mechanism of implementation of the Agreement, because if one desires to measure the fulfilment of the obligation of result, some concrete and clear tools must be at his disposal to effectively accomplish that task and find out if a state is under commitment to rectify its activities in order to achieve the common good – climate neutrality. Meanwhile, one of the good indicators is the fact that almost 74% of the parties have already strengthened, i.e., made more ambitious, their commitments to reduce emissions by 2025 and/or by 2030 [83]. That trend shows that many states are really responsible and conscientious about performance of their commitments of result in a good faith.

The European Commission representing the EU as a whole and all its member states submitted the first NDC in 2015. It envisaged the 40% GHG emission reduction target. Due to the adoption of the European Green Deal (hereinafter – EGD) in 2019, the EU updated its first NDC in 2020 with the aim of making it more ambitious: the EU and its Member States, acting jointly, were committed to a binding target of a net domestic reduction of at least 55% in GHG emissions by 2030 compared to 1990 [84].

In addition, the NDC of the EU proclaimed the goal of achieving climate neutrality by 2050. In 2023, the EU again updated its NDC in light of the implementation of its new climate policy but reiterated its commitment to cut down GHGs by at least 55% by 2030 [85]. The USA and China as the biggest GHG emitters also communicated their NDCs. According to the NDC presented by the USA after returning to the Paris Agreement in 2021, this country committed to reduce GHG emissions by 50-52% by 2030, compared to the 2005 level [86]. In its updated NDC, China announced a goal to reduce CO2 emissions per unit of GDP by more than 65% from 2005 levels [87].

LT-LEDSs are considered by developing countries as a certain alternative to binding targets on the cutting down of GHG emissions [88, c. 51], but many developed countries also use them in order to shape their long-term climate policy. As of July 2023, 64 states have notified the Secretariat of the Convention of their LT-LEDSs. LT-LEDS Synthesis Report at the UNFCCC site shows that 94% of the submitted strategies refer to a quantifiable long-term mitigation goal and 6% describe policies and actions without a quantifiable long-term goal [89]. As in the case with the NDCs, the existence of any numerical tools boosts the efficacy of the monitoring process in the mechanism of implementation of obligations of result in accordance with the Paris Agreement. In 87% of all strategies, the time frame for achieving climate neutrality is defined as 2050 [89]. These documents usually encompass climate mitigation and adaptation strategies and present some instruments in order to cut down GHG emissions across all sectors of the economy. We can title them as a long-term vision of each state on the issue of climate neutrality which is based on a thorough analysis of different scenarios best suited for the achievement of low-carbon development. LT-LEDS is usually prepared by official governmental authorities in cooperation with all stakeholders, including the public, and is subject to regular revision and monitoring procedures within a state. Some strategies rely on the climate justice principle, and some cite the principle of common but differentiated responsibilities; some strategies are incorporated into binding national laws, and some are described as mere aspirations to be achieved with the help of various policy tools and instruments. Today about 35

states have proclaimed the goal of achieving climate neutrality in their national legislation.

In 2020, the EU submitted its LT-LEDS where the integration organization reiterated its intention to reach climate neutrality by 2050. According to the LT-LEDS of the USA communicated in 2021 this country plans to achieve climate neutrality by 2050 too. China announced its plans to become climate neutral by 2060.

NDCs, like LT-LEDSs, differ in terms of scope, sectoral coverage, targets, time frames, level of detail [90, c. 15]. In any case, NDC must be in conformity with LT-LEDS in order to fulfil the tasks of the Paris Agreement, in particular, to achieve climate neutrality, as declared in Article 4 thereof. Meanwhile, scientists and experts warn that there is a significant gap between the short- and medium-term goals for mitigating climate change, which are included by states into their NDCs, as well as the long-term goals for climate neutrality, enshrined in their LT-LEDSs, on the one hand, and the level of GHG emission reductions on a global scale, which is necessary to achieve the most ambitious temperature goal of the Paris Agreement [91, c. 102].

To sum up, the NDCs and LT-LEDSs are the main policy instruments for achieving the goals of the Paris Agreement, including climate neutrality, which states have to formulate and communicate to the UNFCCC Secretariat. These policy instruments provide the governmental responses to climate change and describe principal steps in different sectors to be taken on a legislative level so as to facilitate green transition to a carbon neutral economy and development.

Climate neutrality: legislative tools from the European Union's experience. States, civil society and international organizations use various tools to achieve climate neutrality. These tools are mainly elaborated by means of legislation and are enforced through relevant mechanisms including climate litigation. Since the European Union is the world leader in global climate policy, we'll consider its legislative tools as a demonstrative example.

Since 2015, the principal goal of the EU institutions has been to transform the Union into 'a sustainable, low-carbon and climate-friendly economy that is designed to last' [92]. To accomplish this task, a package of proposals has been submitted and a

set of legislation has been implemented at the EU level which united the European energy and climate policy into a complex integrated piece of regulations. One of the pillars of this policy is the Energy Union which *inter alia* is aimed at achieving decarbonization. Decarbonization means a large-scale transformation of the economy with the aim of reducing and gradually eliminating CO2 emissions from all its sectors and is the main tool for the realization of the climate neutrality goal. The regulations on the Energy Union implement different strategies to meet the EU commitments under the Paris Agreement [93], in particular the so called integrated national energy and climate plans for member states and their long-term strategies for cutting down GHG emissions.

Since 2019, the EU energy and climate policy has been shaped by a new instrument – the European Green Deal which was drafted as a response to global challenges and in particular – to climate change and global warming and affirmed the EU aspiration to achieve climate neutrality by 2050 [94]. It is a road map for achieving climate neutrality by amending EU legislation in all key sectors of its economy including energy supply, food systems, healthy environment, etc. One of the important points envisaged in the EGD is the recognition that global environmental challenges are not limited by national borders, that's why the EU will play a central role in all climate neutrality initiatives. In the EGD, the Commission set a new GHG emission reduction target for 2030 – at least 50% and towards 55% compared with 1990 levels – and to review and revise all relevant climate-related policy instruments if necessary to implement it [94]. This short-term ambition target together with the long-term goal to reach climate neutrality by 2050 was fixed in the EU legislation making aspirations a legal obligation for the EU and its Member States. Regulation on 'European Climate Law' touches upon all sectors of the EU economy, repeats the EU climate neutrality goal and provides its commitment to uphold negative emissions after the year 2050 [95]. The Regulation provided a short-term climate goal of the EU (to reduce GHG emissions by 55% by 2030) and set an obligation towards the institutions of the Union to determine the medium-term goal by 2040 (Article 4) [95]. It is worth noting that the European Scientific Advisory Board on Climate Change, set up on the basis of the

Regulation, recommended that the EU reduce emissions by 90-95% by 2040, taking 1990 as a base year. According to the 'European Climate Law', the European Commission received additional powers to review any legislative proposals within the EU for compliance with the goal of climate neutrality (Article 4), as well as to evaluate the compliance of short- and medium-term climate targets with the goal of climate neutrality (Article 8) [95].

With a view to implementing the EGD and 'European Climate Law', a package of legislative proposals titled 'Fit for 55' was approved in order to make the EU fit for its 55% climate pledge and undertake all necessary changes across its economy, society and industry in order to reach 'green transition by 2030 and beyond' [96]. The Package strengthens some existing EU legislative acts and offers some new legislative initiatives, across a range policy areas and economic sectors such as climate, energy and fuels, transport, land use, forestry and buildings [96].

We can distinguish several most important, interesting and novel legislative tools of the EU in pursuit of its climate neutrality goal.

GHG Emissions Reduction Target. NDC is the main universal form of GHG emissions reduction target today. The EU GHG emission reduction target is enshrined into its NDC and reiterated in the EGD and European Climate Law. Current EU energy and climate law divides all targets to cut down GHG emissions by 2030 between the sectors which are covered by three pieces of legislation, namely the ETS Directive (for energy-intensive industry sectors, electricity and heat generation, maritime transport, aviation, etc.), Effort Sharing Regulation (for domestic transport, agriculture, small industry, buildings, waste, etc.) and LULUCF Regulation (for land-use and forestry) [84]. Each EU member state has to prepare its integrated national energy and climate plan which include its own national contribution to achieve the combined energy and climate pledges as well as related commitments under the Paris Agreement [84].

Emission Trading System and International Carbon Market. GHG emission trading mechanism or similar market tools are considered to be cost-effective means of achieving climate neutrality. According to climate agreements, ETS is the form of carbon pricing which enables one state that emits GHG below its commitments' level

to sell credits to another state that finds it difficult or expensive to meet its own obligations on the GHG emissions reduction. The positions of state parties to the Paris Agreement and experts differ on whether international carbon markets really help in fulfilling the tasks of the Agreement in general and reaching climate neutrality in particular. Some states include international carbon market mechanisms into their NDCs and LT-LEDSs, some exclude them as a contribution to meet their targets, and some do not express an unequivocal position on this issue [90, c. 24]. In our opinion, ETS and international carbon markets envisaged by the Paris Agreement in Article 6, can only be used as a transitional and temporary tool: in order to achieve climate neutrality, states and non-state actors (for example, companies and individuals) should, first of all, resort to intentional reduction of GHG emissions as well as use renewable energy sources, introduce energy-efficient and energy-saving technologies, rather than look for ways to avoid such a reduction through trade benefits.

ETS Directive establishes a scheme for GHG emission allowance trading within the EU in order to promote reductions of GHG emissions in a cost-effective and economically efficient manner [97]. The EU ETS is based on the 'cap and trade' principle which was duly analyzed in modern literature. A second ETS phase was established for the buildings and road transport sectors [98, c. 4]. In order to address adequately additional costs arising from such stringent measures and support vulnerable stakeholders, a Social Climate Fund was set up by a special Regulation. The new amendments to the ETS Directive stipulate an increase of the ambition towards emission reductions target on 62%, compared to 2005 levels, by 2030.

Carbon Border Adjustment Mechanism (hereinafter – CBAM). CBAM is the type of the emission trading system which is the unique tool elaborated by the EU and, thus, deserves a special attention. CBAM applies to imports of some categories of products derived from the so-called carbon-intensive industries, e.g. cement, steel, iron, electricity, aluminium, hydrogen, fertilisers, etc., in order to prevent the risk of carbon leakage as well as to create incentives for operators in third countries to cut down their own GHG emissions [99]. There is a transition period for the mechanism enforcement starting from the 1st of October, 2023 and lasting until 2026. During this transition

period obligations of the importers will be limited to reporting but starting from 2026, they will have to pay adjustments. *It is expected that in* 2032, the mechanism will be fully implemented.

CBAM must be in full compliance with international trade rules, however, time will show if there will be any trade disputes concerning the mechanism. Analytical studies have shown that, even though the CBAM 'could in principle motivate emissions reduction abroad, key EU trade partners could as well retaliate with trade sanctions' [100, c. 2]. This is explained by the fact that such unilateral acts often cause 'territorial extension' problem, when a regulatory state or integration organization (EU) applies trade measures (CBAM) within its territory but takes into account the circumstances or behaviour of natural persons and legal entities (CO2 emissions from industry) committed abroad (in third non-EU countries). Experts warn that the CBAM effectiveness depends on different internal and external factors [101, c. 1-2].

Renewable Energy Sources and Energy-Efficiency. 'Fit for 55' Package proposals are targeted to the encouragement of the use of more renewable energy sources and improving energy-efficiency and energy savings. Directive 2018/2002 stipulates that in order to cut down GHG emissions, it is necessary to improve energy efficiency throughout the whole energy chain [102]. According to the 'Fit for 55' Package, the revised Directive must result in 9% energy consumption by 2030 [96]. Directive 2018/2001 sets a binding Union target for the share of renewable energy sources: member states must collectively ensure that 'the share of energy from renewable sources in the Union's gross final consumption of energy in 2030 is at least 32%' [103]. According to the EGD and 'Fit for 55' Package proposals, the EU modified target must be at least 40% by the same year.

There are a lot of sources of renewable energy, but we'd like to highlight the EU action towards the development and use of 'clean' hydrogen which gains rapidly growing attention in the world in recent years due to its climate-neutral potential. 'Clean' or green hydrogen is produced with the help of renewable energy sources, which makes it impossible to emit GHGs into the atmosphere. That is why it offers a certain solution to decarbonise industrial processes. In 2020, the European Commission

issued a Communication on a Hydrogen Strategy for a Climate-Neutral Europe. Its goal is to help the EU to reach climate neutrality by 2050 and achieve the goals of the Paris Agreement.

Taxation of Electricity and Products from Energy Sector. The EU taxation policy is a very important tool to achieve the objectives of the Energy Union and climate neutrality. Directive 2003/96 envisages the EU rules on taxes in relation to electricity, all motor fuels and most heating fuels. Member States are obliged to impose taxes on electricity and energy products according to the levels of taxation listed in Article 2 [104]. The legislative proposal of the 'Fit for 55' Package to revise this Directive is aimed to combine taxation of electricity and products from energy sector with the EU's climate and energy policies. These objectives are to be achieved by switching from volume to 'energy content-based' taxation, i.e., the taxation which is grounded on the energy content of the electricity and energy products as well as their environmental performance [105].

Innovative Geoengineering Technologies. Geoengineering refers to a set of tools that are aimed at deliberately altering the climate system in order to combat climate change [106]. Generally, global warming geoengineering technologies can be divided into two categories: solar radiation management and carbon dioxide removal [107, c. 163]. The former denotes the technologies which are based on strategies to increase the ability of the Earth's surface or atmosphere to reflect solar radiation (e.g., the use of chemicals to cool the atmosphere, the use of different aerosols to reflect sunlight back into the outer space, the placement of special solar shields in the outer space), while the latter – strategies to remove GHGs from the atmosphere (e.g., traditional technology is planting forests, the innovative one is fertilizing the ocean with iron to boost the phytoplankton photosynthesis process, and CO2 capture and geological storage, etc.). Solar radiation management techniques are only at the stage of hypotheses and projects, while carbon dioxide removal techniques are actively developing and being tested. Nevertheless, both involve unknown risks for the Earth's ecosystem and humans. They are even considered by many experts to be immoral because they shift the emphasis from the necessity to consume less and curb the GHG

emissions to the need to utilize more natural resources, including fossil fuels, for the development and use of these unproven innovative technologies.

Geoengineering is governed within the framework of three universal legal regimes, namely the Convention on Biological Diversity (1992), UNFCCC and the Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1996). The latter allows CO2 dumping and the use of ocean fertilization under strict requirements. In accordance with international law, the EU allowed geological storage of carbon dioxide under Directive 2009/31. Besides, CO2 capture and geological storage technologies are regulated under the ETS Directive and are mentioned in the preamble of the 'European Climate Law'.

Thus, the EU by means of its legislative acts on the Energy Union, 'Fit for 55' Package, European Climate Law, and European Green Deal tries to establish a coherent and integrated system for reaching climate neutrality by 2050. Directives and regulations relating to GHG emissions reduction target, emissions trading system, renewable energy sources and energy-efficiency, carbon border adjustment mechanism, taxation of energy products, innovative geoengineering technologies, etc. are adopted and regularly renewed to be in full compliance with the EU central climate neutrality goal as well as long-term temperature target of the Paris Agreement.

Climate neutrality and European climate litigation: an interplay. Climate litigation refers to cases brought before national, regional or universal courts and other bodies which raise legal issues pertaining to climate change mitigation and adaptation. Such cases became very frequent before the UN monitoring bodies, the European Court of Human Rights (hereinafter – ECtHR), the Court of Justice of the European Union (hereinafter – CJEU) and many national courts of different countries all over the world. Applicants usually claim that their governments do not make enough efforts to cut down the GHG emissions and to reach the goals of the Paris Agreement. They rely on their human rights to life, sustainable standard of living, private and family life, etc. in order to force the respondent states to adopt more stringent legislation with more ambitious emission reduction targets in pursue of common climate neutrality goal. We'll consider climate litigation related to the EU or its Member States.

The case of *Urgenda Foundation v. State of the Netherlands* is one of the first cases in climate litigation process. It was the first case in which the courts obliged the defendant state to limit GHG emissions, based on the principles of 'no harm', precaution, common but differentiated responsibilities, concepts of due diligence (duty of care) and human rights. The applicant was an environmental NGO representing the rights of present and future generations, in particular in the face of global warming. Courts of various instances of the Netherlands including the Dutch Supreme Court ruled in favour of the applicants. In 2019, the Supreme Court drew to the conclusion that the state had to prevent the imminent danger of climate change it poses for human rights under Article 2 (right to life) and Article 8 (private life, family life, home, and correspondence) of the European Convention on Human Rights by taking and implementing relevant policy measures [108]. The Court upheld the judgment of the Court of Appeals having ruled that the government of the Netherlands was obliged to limit GHG emissions to 25% below 1990 levels by 2020 and found that the state's existing pledge to reduce emissions by 17% insufficient to meet the climate treaties' goals [108]. The Court of Appeals didn't prescribe any particular legislative measures and din't indicate any specific tools to reach climate neutrality by the Netherlands but upheld that the Treaty on the Functioning of the European Union doesn't prohibit a member state from taking more ambitious climate action than the EU as a whole [108]. The Dutch Supreme Court further reasoned that 'it remains for the State to determine what measures will be taken and what legislation will be enacted to achieve that reduction' [108]. Therefore, in this case, a violation of Articles 2 and 8 of the European Convention was established, and the government was obliged to reduce its GHG emissions by any means at its disposal.

The *Urgenda* case inspired similar climate change litigation within the ECtHR. Although the EU is not a party to the European Convention on Human Rights, its Memeber States have to adhere to the standards of the treaty and comply with the judgments of the ECtHR. One of the recent cases is *Verein Klimaseniorinnen Schweiz and others v. Switzerland*. The judgment was issued by the Grand Chamber on the 9th of April, 2024. The case was brought by a Swiss association and its members, a group

of elderly people concerned about the effects of global warming on their living conditions and health. They complained about various shortcomings of the Swiss authorities in the field of climate change policy. The applicants alleged, in particular, that the respondent State failed to fulfil its positive obligations to effectively protect life (Article 2 of the Convention) and to ensure respect for their private and family life, including their home (Article 8 of the Convention). The Court highlighted that states have a wide margin of appreciation in outlining respective governmental policies to protect human rights in the face of climate change. It reasoned that 'effective respect for the rights protected by Article 8 of the Convention requires that each Contracting State undertake measures for the substantial and progressive reduction of their respective GHG emission levels, with a view to reaching net neutrality within, in principle, the next three decades' [110]. It seems that it is the first ECtHR case where it explicitly referred to the concept of climate neutrality. The Court went further and underlined certain measures a state has to adopt at the legislative, executive and judicial levels in order to comply with climate neutrality goals, e.g. to specify a target timeline for achieving carbon neutrality, set out intermediate GHG emissions reduction targets, to update these targets, etc. [110]. In its argumentation the Court relied on the primary and secondary legislation of the EU, including its regulations on emission reduction targets and Energy Union, directives on the use of energy from renewable sources and energy efficiency as well as the European Climate Law.

There are several climate cases decided or pending before the Court of Justice of the European Union which concerned the attempts of the member states or public to adjust the EU climate neutrality targets. The CJEU has the powers to shape the EU climate policy and, in this way, makes a direct input into the achievement of the climate neutrality goal. More than 60 cases have now been filed before the CJEU dealing with climate issues and the majority of these cases have focused on the EU ETS in general and the ETS Directive in particular since 2005 [111]. The CJEU has rendered 27 'climate-friendly' judgments, 6 'climate-unfriendly' judgments, and 8 judgements with a 'neutral' outcome [111]. The claimants in these cases were mainly legal entities and

governments [111]. We'll turn to the analysis of two cases brought by the representatives of the public – individuals and NGOs.

In 2018, a petition was brought by a group of plaintiffs against the EU Parliament and Council in the General Court. The case is known as *Carvalho Case,* or *the People's Climate Case*. Claimants from several EU and non-EU countries, together with the organization representing Sami people, demanded the abolishment of three EU legal acts: Directive 2018/410 on enhancing the cost-effective emission reductions and low-carbon investments, Effort Sharing and LULUCF Regulations [112, c. 108]. They argued that the EU targets stipulated in these legal acts were not in conformity with the Paris Agreement and required from the EU bodies to adopt a more ambitious target for the reduction of GHG emissions in order to comply with the treaty goals [112, c. 108]. The claimants grounded their position on the Charter of Fundamental Rights of the EU stating that the EU's 2030 climate target violates their human rights [113, c. 42]. Although the petition was dismissed on the procedural grounds by the Court, we can affirm that it influenced the adjustments the EU made in its recent climate initiatives regarding new 55% GHG emission reduction target for 2030.

One of the recent cases is *ClientEarth v. European Investment Bank* (2021). In 2018, the European Investment Bank provided a loan for the construction of a biomass power plant in Spain. Environmental NGO 'ClientEarth' applied to the Bank with a request for internal review of the decision because the organization insisted that the project would not make a contribution to renewable energy objectives [114]. Since the Bank rejected the request as inadmissible, the organization filed a suit in the CJEU against the Bank in 2019. The Court issued its decision on January 27, 2021, where it addressed a number of legislative acts, namely: Article 191(1) of the Treaty on the Functioning of the European Union stipulating the EU climate policy objectives; EU Environmental Action Programme for the period 2014-2020 setting the transition of the European Union into a lowcarbon economy as one of its objectives; 2020 and 2030 climate and energy packages comprising binding national targets on renewable energy; climate policy documents of the European Investment Bank, etc. [115]. The Court delivered an order that the Bank must satisfy 'ClientEarth's' request for internal

review. Meanwhile, on April 2, 2021, the Bank appealed that judgment and the case is now pending.

Thus, climate litigation is also used as an efficient tool to advance climate action. The judgments of different national and regional European courts show that there is a solid link between climate neutrality targets and human rights protection. Though states are granted wide discretion to adopt measures to reduce their GHG emissions, there is a trend in current climate litigation to demand from respondent governments the application of some specific tools of climate neutrality.

Climate neutrality in the context of the Russian aggression against Ukraine. *GHG Emission Reduction and Climate Neutrality Targets in NDC and LT-LEDS*. Ukraine undertook its obligations to reduce GHG emissions under the UNFCCC, the Kyoto Protocol (1997) and the Paris Agreement as a country with economy in transition in accordance with Annex I to the Convention. Ukraine recognized 1990 as the base year for estimating anthropogenic emissions of GHGs. After the ratification of the Paris Agreement in 2016, Ukraine submitted its first NDC to the Convention Secretariat, according to which it set the goal of not exceeding 60% of the level of GHG emissions in 1990 by 2030. Since this target was not ambitious enough, in 2021 Ukrainian NDC was adjusted in such a way that from now on Ukraine undertakes to achieve a reduction of GHG emissions by 65% by 2030 compared to 1990 levels and to achieve climate neutrality no later than by 2060 [116].

In 2018, Ukraine was one of the first countries to submit its LT-LEDS to the Secretariat of the Convention. Ukrainian LT-LEDS till 2050 provides strategic vision on climate neutrality which must be based on such pillars as energy efficiency and energy savings, clean transport, sustainable land-use, forestry and agriculture, sound waste management, etc. [117]. Unfortunately, the LT-LEDS doesn’t refer to a year when Ukraine plans to achieve climate neutrality. Thus, climate neutrality target was proclaimed not in the LT-LEDS, but in the NDC.

Legislation and Tools for Achieving Climate Neutrality. Ukraine has created a solid legal basis for the achievement of climate neutrality. For example, the Law of Ukraine ‘On the Basic principles (strategy) of the state environmental policy of

Ukraine for the period until 2030' envisages that conditions must be created for the decarbonization of the energy sector, active use of energy-saving technologies and energy efficiency, introduction of the best available low-carbon and resource-saving technologies, increase the portion of renewable and alternative sources in energy production, which will lead to significant reduction of GHG emissions. The Strategy refers to the concepts of sustainable and low carbon economic development. In order to achieve climate neutrality, Ukraine adopted some other legislative instruments, namely in the form of national concepts and plans dealing with such areas as climate change mitigation, climate change adaptation, economic development, energy production, transport, waste management, energy efficiency, etc. These concepts and plans have 2030 as a base year when some significant results concerning climate neutrality must be achieved. Besides, Annex XXVII to the European Union-Ukraine Association Agreement providing our country's obligations in the sphere of climate change and energy before the EU was amended due to the adoption of the Paris Agreement and new directives and regulations on EU climate and energy policy.

In order to fulfil our state's obligations under the Association Agreement, the national Concept of green energy transition of Ukraine until 2050 (the so called 'Ukrainian Green Deal') was developed. According to the document, the strategic goal of Ukraine is to reach a climate-neutral economy by 2070. The National Economic Strategy for the period until 2030, adopted in 2021, highlights the need to achieve climate neutrality no later than by 2060. The Energy Strategy of Ukraine for the period until 2050, adopted in 2023, plans to reach climate neutrality by 2050. Thus, 'Ukrainian Green Deal', the National Economic Strategy, the Energy Strategy and the NDC determined different terms for achieving climate neutrality by Ukraine.

Concerning concrete tools to achieve climate neutrality we should mention the following. The adoption of the Law of Ukraine 'On the principles of monitoring, reporting and verification of greenhouse gas emissions' was the first step towards the creation of the Ukrainian ETS. It is estimated that national ETS will be fully enforced in 2025, however, the system today encounters many problems because annual reporting by all enterprises, the creation of a single register for GHGs monitoring and

registration of installations are implemented only partially. Meanwhile, active negotiations are underway with other countries to conclude agreements on emission trading within the framework of the Paris Agreement in order to make it possible for Ukraine to enter the international carbon markets by 2025.

To be in full compliance with the EU CBAM, Ukraine has to introduce its national ETS and relevant carbon pricing within it. Iron and steel occupy the largest share (almost 85%) in the structure of Ukrainian exports of CBAM goods, that's why to maintain competitiveness on the EU market in the long term, Ukrainian enterprises will have to be technological restructured, which will require the development of carbon-free electricity, in particular, from renewable sources, including hydrogen [118, c. 4]. Ukraine may be exempted from CBAM on general grounds if it fulfils its obligations under the Association Agreement with the EU and the Treaty Establishing Energy Community in relation to decarbonization of economy and functioning of ETS.

Liberalization of the gas and electricity markets in Ukraine contributed towards the implementation of policies on energy efficiency and investments in renewable energy [116]. Today 63 % of electricity generated in Ukraine is low-carbon in terms of GHG emissions [116]. This is achieved both through the high share of nuclear and hydro generation and by increasing the share of renewable energy [116]. The amendments to the Law of Ukraine 'On alternative energy sources' introduced a green tariff to ensure the use of renewable energy sources [119, c. 224]. Besides, within the framework of the EU Hydrogen Strategy, Ukraine is given a special priority: our state is mentioned in the context of EU cooperation with neighboring countries on the production of clean hydrogen.

Ukraine doesn't use the mechanism of taxation of energy products and electricity, nevertheless, it applies environmental taxes. Among them we'd like to mention a carbon tax (tax on CO2 emissions) provided in 2011. Under Ukrainian Tax Code, if the annual volume of CO2 emissions exceeds 500 tons per year, relevant stakeholders have to pay a carbon tax. Ukraine is not very active in the development and use of innovative geoengineering technologies. It also lacks climate litigation practice.

Impact of the Russian-Ukrainian Armed Conflict on the Global Climate Neutrality. There is no doubt that the armed aggression of the Russian Federation against Ukraine is undermining the efforts of the world community to fight climate change and is slowing down the pace of achieving the short-, medium- and long-term goals of the Paris Agreement, particularly in the context of climate neutrality. This armed conflict has resulted in the release of at least 120 million tons of CO2, including (1) about 39 million tons of CO2 emitted as a result of warfare, fuel used by military units, ammunition production, and fires; and (2) about 50 million tons of CO2 which will be emitted as a result of future recovery of the damaged infrastructure after the end of the war. The number of fires with an area of more than 1 ha during 2022 when the full-scale invasion started increased 35 times compared to the same period last year. The fires exterminated at least 2 million hectares of forests – natural carbon sinks necessary to achieve climate neutrality goals. The most popular projects in renewable energy sources like wind and solar power plants created in the southern part of Ukraine before the war which are now under the Russian occupation have been decommissioned. As a result of the Russian armed aggression against Ukraine the EU experienced acute energy insecurity, given its heavy dependence on Russian fossil fuels [120, c. 7]. Thus, this war became the trigger for the formation of a complex of risks for the implementation of above-mentioned measures on the achievement of climate neutrality by Ukraine.

The breach of the Kakhovka dam by Russian troops in June 2023 led to the drainage of the reservoir, which, according to many experts, will lead to the desertification of the southern region of Ukraine. Flooding of vast territories resulted in the destruction of the fertile soil layer, forests, wetlands and irrigation systems, which are the necessary components in absorbing GHGs. The UNEP report states that the destruction of the dam will affect the drainage of the Dnieper River with such possible consequences as sandstorms, accelerated effects of climate change and potential desertification of neighbouring regions [121, c. 27]. Moreover, large-scale flooding of the southern territories of Ukraine will increase their vulnerability to the negative consequences of climate change, in particular, due to the destruction of

infrastructure (water supply systems, irrigation, etc.), as well as the destruction of agricultural lands. During the 28th Conference of the Parties to the UNFCCC in December 2023, Ukraine initiated the inclusion of a mechanism for compensating the damage to the environment and climate as a result of an armed conflict titled 'Aggressor Refunds' within the framework of the Paris Agreement. The implementation of this initiative is possible thanks to Article 8 of the Agreement on the averting, minimizing and addressing adverse effects of climate change as well as the Warsaw International Mechanism for Loss and Damage.

On the other hand, there are certain predictions and hopes that after this war, the transition to a sustainable energy will be accelerated. The armed conflict in Ukraine forced some authors and experts to come to the conclusion that now is 'the time for the EU to … accelerate the implementation of the objectives and ambitions underlying the EGD' [120, c. 5]. As one of the responses to the energy crisis inflicted by the war, in 2022 the European Commission presented REPowerEU Plan which calls for energy efficiency, energy savings, renewables as well as diversification of the EU energy supplies to enhance European energy security in the situation of existing armed conflict between the Russian Federation and Ukraine [122, c. 87]. The Plan reflects the differences in energy sector between member states and proposes balanced responses corresponding to their specific energy needs without compromising the ability of the EU to cut down the emissions of GHGs by 55% by 2030 and achieve climate neutrality target by 2050 [123]. The EU Energy Platform is also open for Ukraine. According to the Plan, Ukraine is considered as one of the corridors for the importation of hydrogen. Thus, REPowerEU Plan with the help of Ukraine will make a huge input into the efficient enforcement of EU climate and energy policy in the context of transition to climate neutrality.

Climate litigation is not so popular in Ukraine as in other countries, nevertheless it has the potential to become an influential tool to frame Ukrainian climate policy.

Conclusions. Climate neutrality is one of the instruments of a green economy. Climate neutrality denotes the conditions under which GHG emissions into and their removal from the atmosphere are clearly balanced. It doesn't mean the complete

absence of any GHG emissions, but only their neutralization using traditional and modern methods. NDCs and LT-LEDSs of State Parties to the Paris Agreement are main policy instruments for achieving its long-term temperature goal, part of which is ensuring climate neutrality. The majority of all states' strategies define 2050 as the time frame for achieving climate neutrality. The commitments of state parties to hold the increase in the global temperature at certain levels and to reach the peak of GHG emissions are the obligations of conduct which are rooted in the due diligence concept. In contrast, commitments of state parties to adopt and communicate their NDC or LT-LEDS are the obligations of result. NDCs and LT-LEDSs are the principal obligations for state parties to the Paris Agreement which are monitored by its respective bodies.

The European Union, which is the global leader in climate agenda-setting, has a coherent and integrated system of legislation providing tools for achieving climate neutrality on the whole European continent. The EU enforces its climate targets with the help of legislative acts on the Energy Union, 'Fit for 55' Package, European Climate Law, European Green Deal, various directives and regulations relating to GHG emissions reduction, emissions trading system, energy-efficiency, renewable energy sources, carbon border adjustment mechanism, taxation of energy products, innovative geoengineering technologies, etc. These acts are adopted and regularly renewed to be in full compliance with the EU central climate neutrality goal and long-term temperature target of the Paris Agreement.

Climate litigation is also used as an efficient tool to advance climate action. Applicants claim that their governments do not make enough efforts to cut down the GHG emissions and to reach the goals of the Paris Agreement relying on their human rights to life, sustainable standard of living, private and family life, etc. Usually national and regional European courts neither prescribe any particular legislative measures to reach climate neutrality by respondent states. Recent case-law of the ECtHR reveals another changing trend: to force the governments to adopt more stringent legislation with more ambitious emission reduction targets in pursue of common climate neutrality goal, the Court indicates specific tools to reach climate neutrality.

Before the Russian invasion, Ukraine has created a solid legal basis for the achievement of the climate neutrality. Ukraine presented its NDC and LT-LEDS as the main policy instruments of the climate neutrality to implement its commitments under the Paris Agreement. In 2021 Ukrainian NDC was adjusted to become more ambitious and our state pledged to achieve climate neutrality no later than by 2060. In 2018, Ukraine was one of the first countries to submit its LT-LEDS to the Convention Secretariat. The adoption of the Law of Ukraine 'On the principles of monitoring, reporting and verification of greenhouse gas emissions' became the first step towards the creation of national ETS which is expected to be fully enforced in 2025. Ukraine introduced other elements of the climate neutrality concept, such as green tariff, carbon tax, energy efficiency and renewable energy mechanisms.

The Russian war against Ukraine put many of these green initiatives on hold. The armed aggression of the Russian Federation against Ukraine is undermining the efforts of the world community to fight climate change and is slowing down the pace of achieving the short-, medium- and long-term goals of the Paris Agreement, particularly in the context of climate neutrality. The war became the trigger for the formation of a complex of risks for the implementation of above-mentioned measures on the achievement of climate neutrality by Ukraine. The breach of the Kakhovka dam by Russian troops will certainly aggravate climate crisis. Ukrainian initiative 'Aggressor Refunds' under the umbrella of the UNFCCC and Paris Agreement may become a promising instrument to invoke Russian Federation responsibility for the damage caused to the climate system during its aggressive war against Ukraine.

On the other hand, there are certain predictions and hopes that as a result of the Russian-Ukrainian war, the transition to a sustainable and green energy will be accelerated. As one of the responses to the energy crisis inflicted by the war, in 2022 the European Commission published its ambitious REPowerEU Plan. After the victory, Ukraine will certainly take its own place on the political, economic, social, environmental European landscape and play a crucial role in the process of achieving climate neutrality on the European continent.