Climate Policy in the European Security Context: Implications of the Russian Aggression and Post-War Reconstruction and the Recovery of Ukraine

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This article discusses the implications of the Russian aggression for the climate and security policies in Ukraine and regionally. The author argues that building a secure climate-neutral Europe needs new approaches to avoid the creation of security threats in the region while Ukraine's green post-war recovery provides a unique opportunity for building a climate-resilient economy that contributes to European climate resilience and security.

Introduction

The connection between climate change and security has become more urgent and has acquired a new dimension and meaning due to the beginning of the full-scale Russian invasion of Ukraine on 24 February 2022, as it showed the vulnerability of international supply chains. Considerations of climate change challenges in security policy planning are on the agenda of the EU and many countries but viewed inversely (how security issues affect climate policy) needs rethinking and new approaches. The main research question explores the implications of the Russian aggression while addressing climate change in Ukraine from different perspectives (local, regional, national, and global). The article starts with an overview of the impact of the war on the environment and the climate. Then it discusses Ukraine's climate policy before and during the war as well as how citizens see the connection between reconstruction and climate change. It also addresses relevant aspects of international, national, and local levels of planning for the reconstruction of Ukraine. In addition, it highlights some aspects of the global dimension of the impact of climate change on security and the role of Ukraine.

The impact of the war on the environment and the climate

Russia's armed aggression against Ukraine not only takes human lives every day but also destroys energy and transport infrastructure, enterprises, housing and even entire cities. It causes enormous damage to Ukraine's environment and produces emissions of climate-change-relevant greenhouse gases. Currently, it is difficult to estimate the damage inflicted on Ukraine's environment and climate as the war is still ongoing and causes new destruction every day. It should be noted that the environmental and climate effects of the war go far beyond the borders of Ukraine. These effects have transboundary (pollution of water resources, drinking water and air, damage to ecosystems) and often pan-European impacts (Black Sea, emissions of greenhouse gases). As of 7 August 2023, the losses estimated by the State Environmental Inspection of Ukraine amount to 2,080 billion hryvnia (€52 billion) (Ministry of the Environmental Protection and Natural Resources of Ukraine, n.d.). Forests, nature reserves, soils, water resources, flora and fauna have been significantly affected by military actions and led to waste of war, fires, air, water and soil pollution and moreover threatened radiation due to the occupation first of the Chornobyl, and then of the Zaporizhzhia nuclear power plants (NPP).

The war also increases greenhouse gas emissions, which has a significant impact beyond the borders of Ukraine. According to the data of the Initiative for Accounting for Greenhouse Gas Emissions, those emissions amounted to 120 million tons of CO₂ equivalent during the first twelve months of the war. This corresponds to Belgium's total volume of greenhouse gas emissions during this period (de Klerk et al., 2023). Experts estimate the total emissions of greenhouse gases from hostilities at 21.9 million tons of CO₂ eq., the largest share being fuel consumption by Russian (14.1 million tons) and Ukrainian (4.7 million tons) troops. Emissions from fires increased significantly, too: from two million tons in the period of February 2021 - February 2022 to 19.7 million tons. It is worth noting that additionally a large part of greenhouse gas emissions has moved outside Ukraine with millions of Ukrainian refugees abroad, the relocation of production to other European countries and changes in passenger and cargo transport flows in Europe and the rest of the world (de Klerk et al., 2023).

A specific example with vast consequences is the destruction of the Kakhovska hydropower plant (HPP) in June 2023. It demonstrates how military aggression, which causes environmental and climate impacts, becomes also a source of devastating effects on food security, population migration, changes in production chains and the absence of a just transition.

Russia's repeated and often deliberate attacks on water infrastructure have caused enormous damage. More than 11 million Ukrainians – or a quarter of Ukraine's pre-war population – were left without reliable access to clean water. The destruction of the Nova Kakhovka dam worsened an already dire situation. This environmental disaster, caused directly by Russia's unprovoked full-scale invasion, forced thousands of Ukrainians to leave their homes and put many thousands more at risk of disease and starvation (U.S. Mission to the OSCE, 2023). In addition, as a result of the detonation, at least 150 tons of heavy oils leaked into the Dnipro River, with the risk of further leakage of an even larger amount (State Agency of the Water Resource of Ukraine [SAWRU], 2023); more than 80 settlements were in the zone of possible flooding (SAWRU, 2023); 333 species of animals and plants, which have different environmental protection statuses and 25 types of habitats are under threat of destruction (SAWRU, 2023). 14.775 km³ of fresh water were lost (this is about 70% of the original volume) (SAWRU, 2023), 16,000 residents are immediately at risk of flooding due to damage and destruction (dams), and about 20,000 people needed to be relocated (Matiash, 2023).

Ukraine's climate policy before and after the war

Climate policy and legislation in Ukraine are at the stage of formation. Crucial factors influencing the developments are international climate processes as well as the European Green Deal launched in 2019. Despite the war, climate issues occupy a significant place on the country's political agenda, mainly in relation to post-war Ukraine and obligations in the context of Ukraine's aspired accession to the EU.

Ukraine is an active participant in international climate negotiations and processes, such as the Global Methane Initiative (n.d.), the Declaration on Forests and Land Use (UN Climate Change Conference UK 2021, 2021) and others. The country is also a party to all major international legally binding

agreements, including the UN Framework Convention on Climate Change, the Kyoto Protocol and the Paris Agreement.

According to the updated Nationally Determined Contribution to the Paris Agreement (UNFCCC, 2021), Ukraine aims to reduce greenhouse gas emissions to 35% compared to 1990 and achieve climate neutrality no later than 2060.

The European Green Deal (EGD) (European Commission, 2019), adopted in December 2019, had a significant impact on the development of Ukraine's climate policy. Ukraine's involvement in the EGD and its desire for green transformation and climate neutrality received immediate support after it was adopted. Energy efficiency, the transformation of coal regions, the development of hydrogen energy, industrial alliances and the climate governance architecture have become priorities within this context (Council of the European Union, 2021b). The implementation of the principles and the achievement of the goals of the EGD were also supported through a high-level dialogue (Moving forward together, n.d.).

Another stimulating factor for reforming climate policy and legislation was Ukraine's obligations under the EU-Ukraine Association Agreement and Energy Community Annex XXX to the Association Agreement (EUR-Lex, 2023). It contains the obligation to implement three EU acts in the field of climate change: Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, Regulation 842/2006 on certain fluorinated greenhouse gases, and Regulation 2037/2000 on substances that deplete the ozone layer. For the implementation of the climate component of the Agreement, two laws, "On the principles of monitoring, reporting and verification of greenhouse gas emissions" (Verkhovna Rada of Ukraine, 2019a) and "On the regulation of economic activities with ozonedepleting substances and fluorinated greenhouse gases" (Verkhovna Rada of Ukraine, 2019b), were adopted. According to the Pulse of the Agreement (Cabinet of Ministers of Ukraine, n.d.b), the governmental system for monitoring the level of implementation of European legislation, Ukraine has achieved great progress in the field of environment and climate (80%). Nevertheless, Ukraine received a low score in this field according to a report published by the European Commission in February 2023 (European Commission, 2023a).

Activities under the Energy Community are focused on achieving decarbonisation goals and developing a National Energy and Climate Plan (Energy Community, n.d.). In this regard, Ukraine is currently working on the development of such a plan, which should be adopted by June 2024. In this regard, the role of strategic planning is very important. In 2021, the Strategy for Environmental Security and Adaptation to Climate Change for the period of 2030 was adopted (Cabinet of Ministers of Ukraine, 2021c). Furthermore, climate issues were integrated into the National Economy Strategy until 2030 (Cabinet of Ministers of Ukraine, 2021a), the Energy Strategy (Cabinet of Ministers of Ukraine, 2023) and the State Forest Management Strategy of Ukraine until 2035 (Cabinet of Ministers of Ukraine, 2021b). Since the beginning of the war, however, the issue of climate has been put on halt for a while. However, the planning process of Ukraine's post-war reconstruction (National Council for the Recovery of Ukraine from the War, n.d) and the status as a candidate country of the EU (European Council, 2022) have put the focus on the topic again, requiring giving it additional attention.

Post-war reconstruction and recovery of Ukraine: climate issues

How citizens see the issues of reconstruction and climate change

Despite the war, environmental protection continues to be important for 95% of the Ukrainians. An opinion poll on environmental problems in the context of war shows the citizens' concern about the impact on the environment, especially the mining of territories and the waste of war (debris of buildings, destroyed military equipment). Yet, corruption and the misuse of funds are the biggest concerns. In addition, the vast majority of Ukrainians believe that the reconstruction of cities should first of all ensure safety (in particular, the availability of shelters). This leads to the conclusion that the population's support of a climate policy can be ensured and substantiated only through its positioning within the framework of safety and security considerations.

According to the more detailed results of the above-mentioned all-Ukrainian sociological public opinion poll carried out in January 2023 (Resource & Analysis Centre "Society and Environment", 2023), the main principles of post-war recovery should be a tough fight against corruption when using funds for reconstruction (43.1% of the respondents), "to rebuild better than

it was" (41.6%) and to take into account the opinion of communities and people (41.1%). Reconstruction on green principles is supported by only 25.7% of the Ukrainians. It is interesting that the most frequent combination of the principles of urban reconstruction is "safe" and "energy-efficient and environmental". After all, reconstruction on the basis of energy efficiency and environmental friendliness is the second priority of urban reconstruction (57.7%). 63.5% of the citizens believe that new, but modern, modernised and environmentally friendly facilities should be built instead of the destroyed ones. One out of five believes that instead of old enterprises new promising production sites, which previously did not exist in Ukraine, should be developed. 95.2% of the Ukrainians believe that the restoration of nature is important in the post-war reconstruction of Ukraine. The public opinion poll further highlighted that the main sources of funds for the restoration of nature should be state funds (61.5%), reparations (58.6%) and international aid (53.4%).

According to the polled Ukrainians, the two most important priorities of energy policy are energy independence (54.2%) and affordable prices (54.4%). The lowest priority was given to "reduction of consumption and energy efficiency" (14.6%). This indicates the low awareness of the ways to achieve energy independence and affordability of prices. Moreover, the Ukrainians seem not to see the connection between energy efficiency and reducing dependence on energy imports. Priorities considered to achieve energy independence are to increase production of their own energy resources (64.5%) and green energy (66.7%). These data allow the interpretation that Ukrainians do not consider the environmental friendliness of energy as a priority, and this echoes the answers given regarding energy policy priorities.

Nevertheless, 91.1% of the Ukrainians consider climate change a serious problem. The main conclusion might be that the respondents understand the problem of climate change, do not consider it far-fetched and, apparently, are not sufficiently informed about it. This issue should be distinguished from their assessment of the importance of this problem for Ukraine (only 20.6% single out climate change among the main problems of Ukraine). This may indicate a lack of awareness among Ukrainians about the impact of climate change on their lives and the country as a whole.

Reconstruction and recovery on the local level

Despite the fact that the war has not yet ended, post-war reconstruction and recovery is already underway. It is necessary to ensure the primary needs of communities and people: to repair damaged housing, to restore destroyed infrastructure, and to prepare for power and heat blackouts in the winter due to shelling, etc.

Adaptation to climate change should be of high priority to cities and communities when rebuilding, since adaptation measures are a key element of preventing climate-related conflicts in the future (Council of the European Union, 2021a). There are already several successful examples of green reconstruction or transformation. Often the initiators and implementers are public organisations, local activists, or community leaders.

For example, the non-governmental organisations "Ecoaction" and "Green-peace", together with their partners, restored the damaged heating system of the local dispensary in the village of Horenka, in the Kyiv region. It was restored in the most ecological way – a soil-water heat pump was installed. In addition, solar panels were put on the roof of the hospital covering 40-60% of its electricity needs (Ryhlitskiy, 2023).

Another good example is the Sumy community, where 300 infrastructure objects, including energy infrastructure, were damaged. Thanks to the support of the NGO "Ecoclub" (Rivne), a solar power plant was installed for the needs of a local hospital. In July 2023, it generated 6,425 kWh of electricity, thanks to which it was possible to save 44,461 hryvnia (1,100 euros) (Ecoclub, 2023).

There are also examples of green recovery and transformation at the policy level. Many communities are currently working on plans to rebuild their communities: some are at the concept level, and some are discussing the first steps with residents. For example, the Makariv community (Kyiv region) developed and approved the Concept of Recovery and Development, which, among other things, takes energy conservation, waste management and land-scaping into consideration (Bespalov et al., 2023).

On the eve of Russia's full-scale invasion of Ukraine, the Vinnytsia territorial community declared the Green Deal of Vinnytsia (Vinnytsia City Council, 2022) and adopted an ambitious roadmap for its implementation. This policy continued during the war. This is particularly true in the area of food and industrial policy. Thus, the Programme for the Development of the Agricultural Sector and Ensuring Food Security for 2023-2025 was developed and approved and a number of measures for the development of renewable energy sources, "greening" of industrial parks, etc., were implemented (In Vinnytsia work continues on the implementation of the Green Deal: what was achieved in 2022, 2023).

International and national level of planning for the reconstruction of Ukraine

The post-war reconstruction based on green principles and principles of sustainable development will contribute to the strengthening of the environmental and climate component of the entire process of reconstruction. It will also have a positive impact on the interrelation of climate and environmental protection issues with security issues. The support of international partners in the rebuilding process will contribute to the "greening" of such a reconstruction of Ukraine. One example in this regard is the Lugano Declaration endorsing guiding principles of the recovery process. In particular, sustainable development is defined as one of the principles. It stipulates that...

"...the recovery process has to rebuild Ukraine in a sustainable manner aligned with the 2030 Agenda for sustainable development and the Paris Agreement, integrating social, economic and environmental dimensions including the green transition." (Ukraine Recovery Conference, 2022)

The 2023 Ukraine Recovery Conference in London emphasized the importance of development and reconstruction through the attraction of private investment. It also addressed security issues, particularly in the context of the green transition. In his congratulatory speech, the President of Ukraine, Volodymyr Zelenskyy, highlighted that "green transformation is one of the key foundations of security... it is green energy that guarantees real energy stability." (President of the Ukraine, 2023, para.27)

In April 2022, by the decree of the President of Ukraine, the National Council for the Recovery of Ukraine from the Consequences of the War was es-

tablished (President of Ukraine, 2022). The main tasks of the Council included the development of a plan of measures for post-war recovery and development, determining the directions of priority reforms and preparing strategic initiatives. As a matter of fact, in 2022 the National Council (in the format of 24 working groups) put forward a draft plan of measures for Ukraine's post-war reconstruction and development (Cabinet of Ministers of Ukraine, n.d.a). Currently, the main results are the materials put forward by the working groups, as the document itself has not yet been formally approved.

Climate issues were considered in this process in the context of environmental security. The main focus was placed on the development of a climate policy and the adoption of a climate legislation, including financial incentives and instruments. In part, climate issues were integrated into other sectors of the draft plan, such as agriculture policy, energy, and regional development. Security issues are mainstreamed into almost all sections of the draft plan, but the link between climate and security has practically not been made, partly only in the context of energy security. Nevertheless, there is an understanding that new challenges should be integrated in the strategic planning. In particular, this concerns security issues, risks associated with the destruction of energy and other critical infrastructure as well as consequences to the environment and climate caused by Russia's armed aggression. For example, the State Strategy for Regional Development until 2027 is revised within this context (Ministry for Restoration of Ukraine, 2023).

The support of green reconstruction by international partners through financial instruments is very important. In particular, the recently announced Ukraine Facility (European Commission, 2023b) instrument establishes a vision for the green transition. Among its goals, it defines overcoming the social, economic and environmental impacts of the war. The Ukraine Facility aims at promoting social, economic and environmental sustainability and at contributing to the reconstruction and modernisation of the country. Activities to be financed under the new instrument should be the basis of climate change mitigation and adaptation, environmental protection, human rights, and gender equality. The Ukraine Facility must not support activities or measures that are incompatible with the National Energy and Climate Plan (if any), the NPP of Ukraine as well as investments in fossil fuels. It will not support projects that cause significant damage to the environment or climate.

Climate and security nexus

The global dimension of the impact of climate change on security and the role of Ukraine

Since climate change and environmental degradation know no bounds, the risks arising from them can also go far beyond national borders and affect entire regions, or even be global in nature. Global efforts to mitigate and adapt to climate change will have a significant impact on countries whose economies depend on fossil fuels. Climate change and environmental degradation are recognised as risks to international peace and security, and new geopolitical challenges deriving from climate change and the green transition can exert additional pressure on global, regional and local security (European External Action Service, 2021).

The Russian aggression against Ukraine has shown that the issue of security should be considered beyond its traditional understanding. Security also has energy, economic, food, and climate dimensions. In the field of defence, the EU actively promotes preparing the armed forces for climate change, implementing decarbonisation strategies in the armed forces and taking into account climate issues, reducing the carbon footprint (Council of the European Union, 2020). These are important but insufficient actions to overcome modern challenges. These efforts, in fact, primarily remain part of the climate policy but not the security policy of the EU and its Member States.

In the context of Russia's armed aggression, it is important to ensure the integration of the relationship between climate and security into the policies and instruments of both the EU and individual countries. The new German Security Strategy is a good example of such an integration (Federal Foreign Office, 2023) (though it is based on a traditional climate crisis approach where the primary source of concern is the impact of climate change but not the security implications stemming from the implementation of the climate policies). The issue of taking climate factors into account is important not only in the context of conflict prevention but also for responding to existing crises and conflicts, understanding the sources of possible conflicts in the future and their prevention.

Globally, water and food availability as well as climate change have a growing impact on security, while the dependence on fossil fuels and the supply of renewable energy sources present more strategic risks and challenges (Coun-

cil of the European Union, 2020). The issue of the green transition has and will have an impact in the future on those countries whose economy depends on fossil fuels, especially from Russia. If these countries do not find climate-neutral alternatives for such dependences, this will have a negative socio-economic impact. For example, countries with a high share of oil or gas export income in the public budget will inevitably face gaps in social-expenditures, including pensions and health. Similarly, countries relying on the export of carbon-intensive products to the EU will either need to invest into decarbonised production or find their way into other highly competitive markets.

The development of a new economic paradigm in accordance with the principles of the European Green Deal involves the gradual phasing-out of fossil fuels, the need for access to critical materials and resources, the creation and scaling of new production chains, etc. This should not create new types of dependences, which are a source of conflicts, contradictions and inequalities. It should be based on the principle of cooperation, maximum interaction and diversification of new chains of added value, sources of critical materials, etc. Several emerging and developing countries have raised concerns about some of the EU's recent green initiatives, as those could turn into barriers to their development (European Commission, 2023c). In other words, trying to apply (copy) the principles and approaches of the existing security system to the new climate-neutral economy will lead to the creation (copying) of security threats in the region similar to the existing ones.

Ukraine's security issues are closely related to its participation in the EU market, especially in the context of the European Green Deal, which includes joining green alliances, green hydrogen production, and ensuring food security. The presence of critical materials necessary for the green transition in Ukraine should become a factor in the acceleration of post-war economic development. Ukraine cannot be considered only as a supplier of necessary resources, which may turn it into an object of confrontation between developed states in the future.

It is also important that the climate-security nexus is human rights-based, gender- and age-specific, and ensures that policies and initiatives addressing the climate change-security nexus are also taken into account. It is necessary to factor in the vulnerability of women to climate issues, in particular in the context of their forced migration due to war. Nevertheless, the special lead-

ership role associated with increasing responsibility for their own family, children and professional activities at home should be mentioned. Therefore, including a systematic gender analysis is important. Such an analysis aims not only at understanding vulnerabilities, but also at identifying opportunities for leadership and involving women in the decision-making process (Council of the European Union, 2021a).

Conclusions

The Russian aggression against Ukraine has deepened the understanding in general that the security of the European continent must be considered not only in the military and defence context but also in the energy, climate and food contexts.

In view of the main implications, the following conclusions can be made for the future of the climate and security policies in Ukraine and regionally:

- The climate impact of Russia's armed aggression against Ukraine goes far beyond Ukraine's borders, and the interrelation between climate issues and security has taken on a new dimension and requires the search for new approaches. A series of environmental consequences has demonstrated the close relationship between security, climate and migration issues.
- 2. The post-war reconstruction of Ukraine and the need to implement the EU acquis in the field of climate change gives Ukraine a unique opportunity to develop a high-quality climate policy: it also provides the chance to rebuild the country on green principles. Increasing attention to security issues means that questions of climate and environmental security are becoming as important as questions of energy and food security. Ukraine's potential role in the future as a major supplier of clean electricity and food, as well as a partner in the development of green hydrogen and the critical feedstock base for the green transition, makes a close integration of Ukraine with the EU desirable.
- 3. The European security policy and system should consider the following: building a carbon-neutral economy on the continent must not ignore the need to avoid future contradictions and conflicts related to access to the resources and technologies needed for the green transition and climate neutrality.

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