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**THE ENVIRONMENTAL FALLOUT OF ARMED
CONFLICTS : ASSESSING THE IMPACT OF THE WAR IN
UKRAINE**

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Abstract:

Our paper subject is about the war waged by Russia against Ukraine which generated disastrous effects on the environment both in Ukraine and in its neighboring, cross-border countries. We consider that this issue is about losses of human life, as well as massive air, soil and water pollution. In this sense, the European Economic and Social Committee requested the Commission and the EU Council to identify the negative effects on the environment and their implications on human rights. Also, we will have mention in this paper about the current political situations indicating that national and international security are dependent on each other, and peace and security in Europe is a priority of all its citizens.

Key words: environmental protection, war, pollution of environmental factors, the European Union, military factors, the effects of military conflicts;

1. Introduction

Romania is located at the crossroads of trade routes, at the crossroads of civilizations and at the edge of the European Union. It is the state from which what was called in geopolitics the Slavic continent from the east, with Ukrainians and Russians together. We are, what Nicolae Iorga called: "a state of European necessity." [3]

From a geopolitical point of view, the favorable position of Romania often involved elements of vulnerability. Russia's unjust war of aggression against Ukraine also produced effects in its neighboring countries: Romania, Hungary, Poland, the Baltic countries.

The environment is increasingly affected by the war, leading to an expanding ecological crisis in Ukraine and the neighboring regions.

National and international security are interdependent, and the protection of the environment and citizens are interconnected, being part of this security.

2. War kills nature

According to the Rio de Janeiro Declaration on Environment and Development (1992), "sustainable development is that development process that meets current needs without jeopardizing the ability of future generations to meet their own needs [...].

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Environmental protection will be an integral part of the development process and cannot be approached independently of it." [1]

The European Union sent a series of conclusions and recommendations related to Ukraine's candidacy for EU membership [2, 5].

"1.2. Among the damages caused by the war to the environment is the degradation of ecosystems, air and water pollution, as well as the contamination of arable land and forests.

[...]

1.5. It draws attention to the social and environmental impact of Russia's invasion [...] to build the foundations of a green and sustainable post-war recovery."

1.6. Invites the Commission and the Council to identify the negative environmental effects of Russia's illegal war against Ukraine.

1.7. Urges the E.U. to contribute to the protection of the environment in Ukraine and to repair the damage caused by the war to the environment.

1.8. [...] The interconnection between the environment and human health is obvious, especially in the field of food security. [...] Human health cannot be separated from the quality of the environment." [3]

According to the sociologist Gaston Bouthoul (1896-1980), war has a series of features, such as: "violent, methodical and organized character, limitation in time and space, legal constraint, bloody character." [4]

The improvement of the means of combat led to the appearance of radioactive chemical and bacteriological weapons: it has direct and indirect effects on living beings and the environment, destroying them; the effects are sometimes irreversible. Soil, water, air are polluted and destroyed; there are imbalances in everything that represents life and biodiversity. These can have long lasting effects, up to hundreds of years.

"All kinds of smart weapons have been invented and perfected, with the ability to track moving targets, with laser beams, with microprocessors and chips." [10] "Military risks and threats to the environment represent a problem related to the means of war [...] to produce the destruction and annihilation of the human and material potential of the adversary." [10] The long-term effects can be seen in climate change and in everything that represents environmental protection (or the lack of environmental protection).

Russia's unjust war against Ukraine also affects the environment. In addition to the human victims, the destruction of the economy, the infrastructure, the environment is strongly affected. The impact is global and long-term.

The war, hostilities are ongoing; the figures and calculations provided and synthesized by local and international observers represent an estimate of the environmental crisis in Ukraine and neighboring countries [11].

"Ecocide refers to the massive destruction of the environment through serious, repeated, large-scale actions, with serious consequences on the biodiversity of the earth, waters, forests, air, fauna and flora by reducing the space considered natural habitat." [7]

The UN General Assembly adopted the 2030 Agenda through the Resolution of September 25, 2015, regarding "The right of future generations to a clean and healthy environment." The signatory states are committed to prevent and resolve armed conflicts, to support the post-conflict recovery of the countries involved. The document includes "the environment-armed conflict relationship." [8]

The European Parliament recommended to the European Council on February 8, 2022: "In this sense, the European Parliament encourages the EU and the member states to promote the recognition of ecocide as an international crime, based on the Rome Statute of the International Criminal Court."

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According to the data provided by the Ministry of the Environment of Ukraine, Ruslan Strelet, the following were found [6]:

- 46 tons of toxic substances were released into the atmosphere in 6 months of 2022 compared to 2 tons of toxic substances released in the previous year;

- 499,000 tons of toxic substances were released from 40 oil depots in Ukraine that were set on fire. Heavy metals, sulfur dioxide, nitrogen oxides, soot were released into the air by burning. These in turn pollute the water and the soil, not only the air.

Ukraine, one of the large countries of Europe, has a total area of 603,628 km², of which 42,000,000 ha is agricultural land.

Fertile lands with consistent layers of chernoziom were strongly affected by the war started by Russia against Ukraine.

Soil degradation occurs through:

- Explosive objects and destroyed equipment: results in heavy metal emissions that pollute the soil for decades. The heavy metals released are: lead, chromium, arsenic, mercury, nickel, zinc, cadmium. Depleted uranium residues may appear.

- During the explosions, toxic substances are released that fall on the ground. Mechanical degradation also occurs, resulting from the passage of heavy machinery over the land.

- Soil pollution occurs through the bombing of chemical and oil processing companies.

All polluting substances from the surface of the soil enter the food chain, affecting it.

The consequences of the war lead to desertification and soil erosion. Dangerous substances enter the soil, eventually ending up in plants and grains consumed by humans.

A major problem is represented by mined areas. Following their explosions, the soil is contaminated with heavy metals.

According to the United Nations and the government of Ukraine, it was estimated that in February 2024 almost 30% of the country's territory was mined.

Tony Blair, executive chairman of the Tony Blair Institute for Global Change, said: "This is not just a Ukrainian problem; it is a global imperative."

The World Bank has estimated that it will be necessary to allocate approximately 37.0 billion dollars to determine Ukraine in safe conditions (according to BBC 2023). Peter Smith, former British army officer and manager of the demining NGO HALO in Ukraine, said that it would take at least 10 years and 10,000 engineers to decontaminate the country.

Air pollution, resulting from sulfur and nitrogen oxides, will have as a consequence acid folds. The spreading directions are vertical and/or horizontal depending on the structure of the atmosphere and the temperature distribution.

The spread of pollutants in the air depends on the humidity and temperature of the air and the speed of air currents (wind). Acid rain affects forests, especially conifers, the productivity and quality of agricultural products.

According to the Environmental State Inspectorate of Ukraine, by the summer of 2023, major damages have occurred that affected the soil, air and water, estimated at 52 billion endowments.

These will be seen in the long term and will affect the entire European ecosystem (see figure below, Fig.1).

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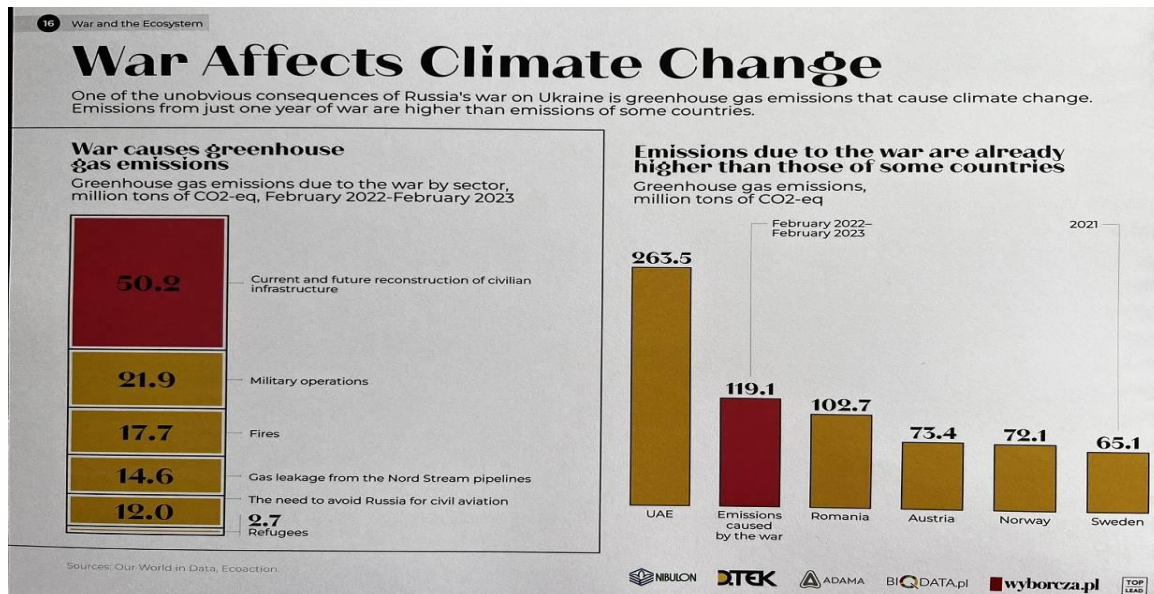


Fig.1. Putin's War on Nature in Ukraine: Ecological Time Bomb for Europe [9]

Military actions produce emissions of greenhouse gases that negatively accelerate climate change, namely: high temperature currencies, rising temperatures, drought, storms with rains with historic flows and unnaturally strong wind, natural disasters.

As is known, water is an environmental element without which life is not possible. And, by polluting water courses, we can say that the safety of life, of the population, is strongly affected.

As presented by the news from all over the world, in June 2023, it was the Nova Kakhmovka dam in Ukraine (fig.2). The volume of water in the dam was 18 million cubic meters. The serious damage of this dam produced a massive disaster; humanitarian or environmental protection norms were not respected.



Fig.2. The massive floods after the destruction of the Nova Kahovka dam in Kherson / (photo source: Shutterstock) [12]

According to the UN representative, Martin Griffiths, the destruction of the dam on the Dnieper River had a strong impact on the related watershed. Thus, as a result of this:
- agricultural areas were flooded,

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- there was the problem of cooling the reactors at the Zaporozhie nuclear power plant,

- the number of people who needed drinking water was estimated at 700,000,
- about 16,000 people lost their homes,
- the information referred to the western bank of the Dnieper because on the eastern bank, controlled by the Russians, the UN representatives did not have access.

As I said above, water quality is strongly affected by the war in Ukraine. This is because:

- heavy metals migrate into the underground water, as a result the water table is also affected,

- the Dnieper River flows into the Black Sea, which in turn can be more or less polluted, depending on the discharged flows and dilution,

- Russia has suspended and blocked the inspections of international experts regarding the control regime of the weapons used; the disasters caused and environmental pollution are part of Russia's war of aggression against Ukraine.

3. Conclusion

Among the many legal documents that must be respected in the conflict between Russia and Ukraine are those related to the environment:

- The Geneva Convention of 1949,
- The Convention on the Prohibition of Environmental Modification Techniques for Military or Any Other Hostile Purposes from 1976, from The Hague,
- The 1972 Hague Biological Weapons Convention,
- The Hague Chemical Weapons Convention of 1993,
- The 1977 Convention on the use for military purposes of environmental modification techniques.

They represent part of the conventions and treaties related to environmental protection in case of armed conflicts.

Although the war is not over, governments, international organizations and civil society are cooperating to monitor and inventory the damage caused to the environment in Ukraine.

The environment should not be considered a military objective.

After the cessation of hostilities/war in Ukraine, the aftermath of rocket and bomb explosions will continue to affect the environment and life in Ukraine and neighboring countries, including Romania.

The invasion of Ukraine by Russia turned Ukraine into the most mined country in the world, with serious consequences regarding global insecurity.

The degradation of the environment in Ukraine and the neighboring areas represents a threat to the whole of Europe. The war generated unprecedented and long-lasting challenges in the field of the environment.

The reconstruction efforts will be supported by the EU countries, with respect for human rights and environmental legislation.

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