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ENVIRONMENT AND SECURITY IN WESTERN UKRAINE - SHORT OVERVIEW

Absztrakt/Abstract

Az elmúlt évek változásai jelentősen átformálták a közép és kelet-európai térség geopolitikai helyzetét, amellyel párhuzamosan előtérbe került a környezet és a biztonság kérdésköre is. Jelen tanulmány az Európai Unió külső határai mentén elterülő, nyugat-ukrajnai területek (Ivano-Frankivsk, Csernivci, Lviv, és Kárpátalja ukrán megyék) rövid, környezetbiztonsági szempontú áttekintésére tesz kísérletet. A cikk a környezetbiztonság fogalomkörének tisztázását követően, földrajzi szemlélettel igyekszik áttekinteni - többek között - a mesterséges és a természeti katasztrófákhoz sorolható összetevőket (hátrahagyott katonai szennyezések, légszennyezés, ipari szennyezés, olaj és gázvezetékek, veszélyes anyagok, árvizek) az ukrán oldalról is prioritásként megjelenő nyugat-ukrajnai területek esetében.

The changes of the past years have significantly modified the Central and Eastern European region's geopolitical situation, and the issue of environment and security came to the fore in parallel with. This present essay attempts to overview the situation of the Western Ukrainian (Ivano-Frankivsk, Chernivtsi, Lviv, Transcarpathia counties) territory which lies near the European Union's external borders from the aspect of environmental security. Concerning the Western-Ukrainian regions as security priority areas, after the clarification the category of environmental security the article focuses on the components of artificial and natural disasters and environmental problems (military pollution left behind, air pollution, industrial pollution, oil and gas pipelines, hazardous materials, floods) with geographical approach.

Kulcsszavak: *környezetbiztonság, környezetszennyezés, katasztrófák ~ environment and security, environmental threats, pollution, natural disasters*

ENVIRONMENT AND SECURITY IN WESTERN UKRAINE

The recent geopolitical changes, namely, the NATO and European Union (EU) enlargement, have profoundly modified the geopolitical situation in the Central Eastern European region. The rise of new threats of non-military in nature, have also accompanied these changes, thus linking environmental and security concerns.

Because of the EU expansion, Ukraine has become a neighbouring country to the EU, making it worthwhile to examine its environmental security problems. The western Ukrainian territories, which are near the EU, are of particular concern. These Ukrainian administrative regions – the Ivano-Frankivsk, Chernivtsi, Lviv, and Transcarpathian oblasts – are the part of the “Carpathian Euroregion”¹, which is a transfrontier association spanning across the border of five neighbouring countries.

This brief essay tries to indicate the importance of the relationship between environmental and security problems in the Carpathian Euroregion (CE), focusing on the environmental threats and dangers. In examining the different security threats, it becomes apparent that there is a real threat to the environment in these regions.

There are many definitions of “environmental security” in various studies, but accepted the definition of Millennium Project [1], the environmental security is:

- ...the relative safety from environmental dangers that are caused by natural or human processes due to ignorance, accident, mismanagement or design, originating within or across national borders.
- ...the state of human-environment dynamics that includes restoration of the environment damaged by military actions, amelioration of resource scarcities, environmental degradation, and biological threats that could lead to social disorder and conflict.

Sources of environmental dangers exist “within” a country and “transborder”. The causes range from “natural” to man-made (“human” type), and are brought about by military, industrial, agricultural, terrorist, and societal activity, or by natural disasters.

BACKGROUND

In 1991, after the Soviet Union collapsed, Ukraine became independent. Being sandwiched between the European Union and Russia, Ukraine has a special location between the East and West. Its population is more than 46 million² people, and its territory is 603,700 square kilometers [2]. The perimeter of Ukraine’s border is 6993.63 km, sharing 1391.39 km (19.9%) with EU states (Hungary – 136.7 km, Romania – 613.8 km, Republic of Slovakia – 98.5 km, Republic of Poland – 542.39 km).

The particular areas of interest in the Carpathian Euroregion (area 51,600 km², and the population 6,362 million [3]) are the Ivano-Frankivsk, Chernivtsi, Lviv, and the Transcarpathian regions. This part of the country is at the intersection of the north-south and east-west transit economic routes.

¹ The Euroregion was established in 1993 and is located in the neighbouring areas of Poland, Ukraine, Slovakia, Hungary and Romania. The member areas: Poland (Krosno, Przemysl, Rzeszow and Tarnow voivodships), Slovakia (Kosice and Presov regions), Hungary (Borsod-Abaúj-Zemplén, Hajdú-Bihar, Szabolcs-Szatmár-Bereg, Heves, and Jász-Nagykun-Szolnok counties), Ukraine (Ivano-Frankivsk, Chernivtsi, Lviv, Transcarpathian oblast), Romania (Satu Mare, Maramures, Bihor, Suceava, Zilah, Botosani counties).

² In 2008 - 46.372 million. Source: State Statistics Committee of Ukraine

Regions	Total population, thousands	Area, thousands sq.km	Density, people per sq.km	Part of urban population
Transcarpathian	1252	12,8	97,8	41
Ivano-Frankivsk	1424	13,9	102,4	42
Lviv	2748	21,8	126	59
Chernivtsi	938	8,1	115,8	42
Total:	6362	51,6	110,5	46

source: <http://www.franko.lviv.ua>

The territory of the Euroregion spreads through the Carpathian Mountains, and is divided among Ukraine and neighbouring Romania, Poland, and Slovakia. Approximately half of Ukraine's CE region is mountainous (24,000 km²), while the other half is plains. The Ukrainian Carpathians are covered predominately by forests and grasslands, and rich in flora and fauna. There are almost "1,500 protected territories" (e.g. nature preserves, biosphere preserves, natural parks, regional landscape parks, dendrological parks, botanic gardens, etc.) [4]. Because of the Carpathians, the proportion of area categorized as forest in the CE is high (more than the average in Ukraine, which is 17.3% of the total land area).

Ukraine has good trade connections with their Eastern and Western neighbours, but suffers from the impact of international economic crisis. The primary industries are manufacturing heavy machinery, chemicals, and timber. The country and the Euroregion territory are rich in different natural resources. There are many mineral deposits in the CE territory [e.g. sulfur in the Yavoriv area, potassium salt in the Lviv and Ivano-Frankivsk oblasts (Stebnykiv, Dobrogostivsk, Boryslav, Kalush-Golyn, Trostyanets, Turo-Velytsk), table salt in Precarpathia and Transcarpathia (Drogobych, Kalush, Dolyna, Solotvyne), zeolite tufa deposits in Transcarpathia] [5].

The area of CE in Ukraine is a transit route for the major east-west gas pipelines, which pass through Poland, Slovakia, and Hungary, and for the oil pipeline towards Slovakia. The oil and gas fields are situated in the center of the above-mentioned four oblasts. Refineries and processing plants were installed in the Precarpathian region. The major oil fields are located in Dolyna, Boryslav, and Bytkiv. Larger gas fields can be found, for example, in Dashava, Kalush, Bilche-Volytsk, and Ugorsk.

Concerning the nuclear security factor, besides Chernobyl mention must be made the Khmelnytsky and Rivne operating nuclear power plants, which are relatively close to Ukraine's Euroregional territory.

In summary, according to a study of Environmental and Security Initiative (ENVSEC), this part of Ukraine – where is located the West-Ukrainian industrial area and the Carpathian Mountains as well – is one of the environment and security priority areas in Eastern Europe.

ENVIRONMENT AND SECURITY

At the beginning of the last decade, the countries in the Central Eastern European region coped with many environmental problems. Most of them occurred during the communist period. Steps were taken in order to solve the problems, but even now the western part of Ukraine has been the scene of many security problems.

The issue of the environmental security of the CE has been at the top of the agenda for cross-border cooperation. In recent years, this diversified territory of Ukraine was the subject of much research concerning the environment and “sustainable development.” There are also studies and publications about these environmental problems, protecting the environment, and strategic regional development. Obviously, the accident at the Chernobyl Nuclear Power Plant was Ukraine’s biggest environmental disaster, which has created an unprecedented situation in the region. However, this study will only focus on the western, EU-neighbouring sections.

This Western-Ukrainian region also has environmental risks of its own caused by

- the military,
- hazardous waste disposal,
- industrial air contamination,
- water pollutants,
- floods, mudflows, landslides, illegal logging, etc.

MAN-MADE ENVIRONMENTAL POLLUTION AND NATURAL DISASTERS

In 1991, after the dissolution of the Soviet Union, Ukraine inherited outdated technology and an obsolete industrial infrastructure. Today the situation has improved, but many environmental problems still exist in the country. Certain industries continuously pollute the water and air, but the western parts of Ukraine are not in the hot-spots of industrial pollution. The main industrial zones, located mostly in the eastern part of the country, have high levels of environmental pollution (Donetsk, Dnipropetrovsk, Kharkiv, Zaporizhya, Lugansk, Odessa, etc.).

Currently, the main sources of *air pollution* are coal-burning, metallurgy, mining, chemical production, and energy, but transportation vehicles (car, train, air transport, etc.) also create detrimental emissions to air. Nevertheless, the energy sector is predominately responsible for the air pollution: “Ukraine's power sector is the twelfth-largest in the world in terms of installed capacity”[6] .

Table 2. Energy Sector – Ukraine

	2004	2005	2006	2007	2008
Petroleum consumption thousand barrels/day	325	352	343	369	370
Natural gas consumption billion cubic feet	3,051	3,079	2,483	2,885	2,853
Coal consumption thousand short tons	69,248	70,634	76,104	76,964	73,436
Electricity Net Consumption Billion kilowatthours	140.022	142.170	148.027	153.091	NA
CO2 emissions from the Consumption of Coal Million metric tons of CO2	130.445	134.689	146.083	147.982	140.174

Source: US Energy Administration Information (<http://tonto.eia.doe.gov>)

The air quality in western cities, such as Uzhhorod and Khmelnytsky, is better than in the eastern territory of the country. According to a relevant article [7] in the Transcarpathian Oblast the amount of industrial emissions in 2007 decreased by 10% compared to the previous year (in 2006 - 25,6 and in 2007 - 23 thousand tons). In 2007, the air in Chernivtsi was reportedly the cleanest in Ukraine.

The media often reports of industrial accidents and the pollution of rivers. In recent years, media has had much to say about the polluted Tisa river. The river's contaminations are caused by two main types: on-going sources of pollution, and industrial accidents that cause ecological catastrophes. The sources of the on-going contaminations are factories near the river, or chemical fertilizers.

Taking everything into account, the Carpathian rivers (e.g. Tisza, Laborec) often suffer from *industrial contamination*. There are many examples of recent transboundary chemical pollution (water and air), which are caused by industrial facilities from neighbouring countries.

“...since 2000, there have been several accidental discharges of cyanide and heavy metals in Romania that eventually reached Ukraine and Hungary via the Tisza river. The worst of such spills occurred in 2000 at Baia Borsa and Baia Mara, Romania. These accidents highlight the dangers inherent in gold mining technologies...to pose significant environmental risks...” [8]

The location of *gas and oil pipelines* in Ukraine poses environmental risks as well. These pipelines (e.g. Brotherhood, Druzhba) that transport the oil or gas through the region into Europe have been operating for 20-30 years. Seven oil and gas pipelines pass through the Transcarpathian Oblast, and it has experienced environmental contamination. In 2003, the Druzhba oil pipeline spilled 110 tons of oil into the Latorca River at the Verecke Pass [9].



Map 1. Oil and Gas in Europe

(Source: S. Niel/Oil and Gas Delivery to Europe - <http://www.ifri.org>)

Concerning the heritage of the Soviet Union, it's worth noting the former *military facilities*, which affect environment on the area of CE in Ukraine. Different military facilities and depots (ammunition depots, airstrips, and former missiles sites) are located in the Lviv, Chernivtsi, and Transcarpathian oblasts. The rocket fuel component, melange, of which the

Soviet Army left large stocks in Ukraine, generates permanent environmental risks. According to the website of the Environment and Security Initiative (ENVSEC), 16,764 tons of melange is stored in eight depots in Ukraine [10], and two are located in the western part of the country. Also, Ukraine inherited a huge nuclear weapon arsenal from the Soviet Union, but moved its nuclear weapons to Russia.

In the beginning of the decade, *hazardous waste* was illegally imported into Ukraine. Most of the imports came from Central and Eastern European countries. Now it is a serious problem in the affected regions (e.g. in the Lviv and Transcarpathian oblasts), where “the waste is being dumped or stored in and around several villages and railway yards.”

According to a study by ENVSEC, in the four Carpathian oblasts there are about 540 tons of pesticides stored close to the transboundary watercourses., which comprises about 2.5% of Ukraine’s water resources.

“...During 1999-2005, according to a contract with the Hungarian company “ELTEX,” a private company imported industrial waste from Hungary. This waste was mentioned in the contract as raw material for the rubber industry. In total, more than four thousand tons were imported and stored near a village in the Zakarpatska Oblast...” [11]. The problem of the industrial additive “premix” dumped near the border has been unsolved for years. This material was transported from Hungary years ago, yet even now its elimination has not been arranged.

Excluding environmental risks posed by humans, *flooding* is likely *the main transborder environmental risk* in this region. Heavy rainfall and melting snow often cause floods in the Transcarpathian Oblast, where there are more than nine thousand rivers and creeks. The largest rivers are the Tisa (233 km in Zakarpatya), Latorca (156 km), Ung (113 km), and Borsava (112 km) rivers [12]. There were well-remembered floods in 1998, and later in 2006, but this natural catastrophe occurs almost every year. Besides endangering people’s lives and generating economic losses, floods effect soil erosion and even chemical pollution of the water when industrial sites are affected. The volume of logging has increased year by year (from about 11.4 million m³ in 1997 to 15.2 million m³ in 2005) too [13]. Due to deforestation, not extraordinary are the landslides, and mud-flows (e.g. in the beginning of 2008, in the western part of the Zakarpattya Oblast, 500 m³ slid into the road) [14].

Table 3. Natural Disasters and Environmental accidents in the region
(Some examples by author)

- Flooding in western Ukraine (Transcarpathian oblast) (November 1998), when the flood has destroyed many homes (32,833 people suffered from the flood, 1,316 homes are destroyed completely, etc. [15]
 - Flooding – Tisa – in Transcarpathian region (Febr. 1999), or because of rains in Romanian and Ukrainian highlands (Carpathian Mountains) (May 2000) [16]
 - Flooding in the Tisa River Basin in the Transcarpathia oblast (9-11 March 2001) (9 people had died, 11,579 people were evacuated, 942 buildings had been completely destroyed, 3 bridges completely destroyed etc.)
 - „A cargo train, en route to Poland from Kazakhstan, derailed near Lviv, releasing gas from six tanks and generating fire” – 2007. [17]
 - Approximately 5 tonnes ammonia liquor flow away in Znyacevo (Munkacevo district) – 2008 [18]
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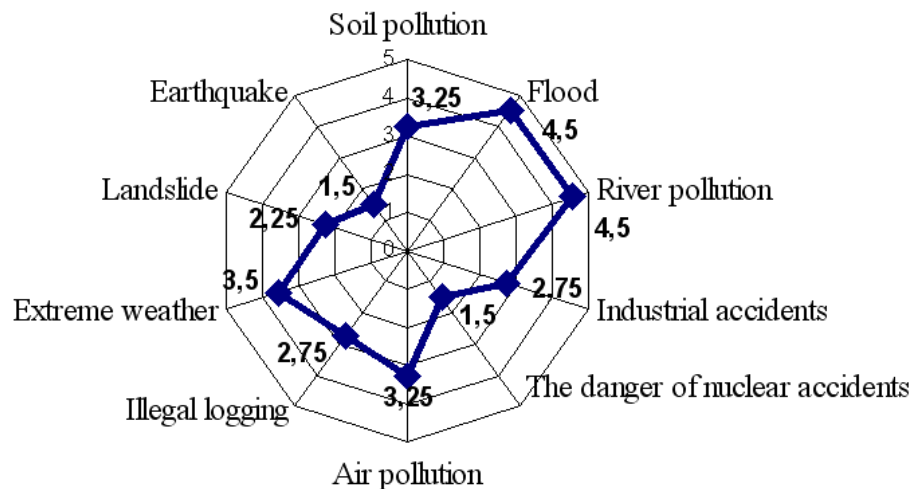
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- "...until 2001, eleven tons of pesticides were stored in the village of Sianky in the Lviv Oblast.... In 2001, the pesticides were repackaged in concrete containers, but this has not prevented further leaks." [19]
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At the end of the last year a short questionnaire was created by the author related to the CE. It's true, that the answers based on the subjective opinions of the local professionals [20] in the different national part of the Euroregion, but indicated that:

- the main „cross border” environmental threats and risks are floods, river pollution, pollution in general, domestic and industrial waste management,
- the most polluting economic and industrial activities in the nation part of the Carpathian Euroregion are heavy industry, chemical industry, oil and gas industry and pipelines, wood processing industry.

According to the respondents the most significant natural, or human caused environmental problems in the national parts of the CE, summarized are the undermentioned (5 is the most significant):

Diagram 1.
The most significant natural, or human caused environmental problems in the national part of the CE



Source: by author

CONCLUSION

The aim of this short essay was not to review the environmental problems in full. It was only to show some aspects of the environmental security from a regional viewpoint, and the regional “frame” of this essay was the western territory of the EU’s new neighborhood. The Ukrainian part of the five-nation Euroregion has some aspects concerning environmental security:

- Transit economic routes, gas and oil pipelines, etc.
- The Carpathian Mountains, with its untouched and well preserved ecological

systems.

- Ukraine's inherited "Soviet-type" industry, with high-level emissions of pollutants.
- There were many soviet military facilities in this region.
- Geographically it's close to the location of Chernobyl Nuclear Accident.
- Recent exportation of hazardous materials from the new EU member countries to the western part of Ukraine.
- The crossborder environmental dangers (e.g. floods) concerning the European Union.

Our neighbour, Ukraine, faces the same environmental problems as other parts of Central and Eastern European countries. The *natural disasters and other environmental problems do not stop at the administrative borders* of the countries. Therefore, the cooperation of the neighbouring countries in this region is extremely important.

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