REGIONAL ANALYSIS OF ENVIRONMENTAL PROBLEMS. CASE STUDY: REGION CENTER AND REGION BUCHAREST - ILFOV

ANALIZA REGIONALĂ A PROBLEMELOR DE MEDIU. STUDIU DE CAZ: REGIUNEA CENTRU ŞI REGIUNEA BUCUREŞTI-ILFOV

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Abstract:*The environmental problems are phenomena determined by essential modifications that are produced in nature under man's influence. Initially the environmental problems have a local origin, yet they affect large areas and finally become regional or global problems.*

Key words: *environment, environmental problems, regional analysis*

INTRODUCTION

The environment represents the total range of natural conditions and elements: water, air, soil and subsoil, all the atmosphere strata, the totality of organic and inorganic matter, as well as the living beings, the material systems in action comprising all the previously mentioned elements, also including material and spiritual values.

Environment degradation represents one of the great problems that mankind is facing. This process presents a multitude of regional and national aspects, depending on the economic and social development level, as the environment can be positively and/or negatively affected both by excessive development and by underdevelopment.

MATERIAL AND METHOD

The paper intends to put together the main environmental problems from Region 7 Center and Region 8 Bucharest Ilfov.

The study was based on methods specific to selective research: identification of problem under research, delimitation of research framework, information collection, data processing, analysis and interpretation and drawing up the conclusions.

The information sources that have been used are the official data and the data obtained from field surveys conducted under a research project. [1]

RESULTS AND DISCUSSIONS

Environmental problems, Region 7 Center

The region center consists of the following counties: Alba, Braşov, Covasna, Harghita, Mureş and Sibiu.

Due to its physical-geographic conditions, a wide range of **soils** exists in Region 7 Center, this diversity resulting from the complex action exercised by the lithological conditions, relief units, hydrological factors as well as the topoclimatic factors.

Table 1. Agricultural land distribution by categories of use in Region 7 Center, in the period 2007-2009

Crt. No.	Category of use	Area (thousand ha)		
		2007	2008	2009
1.	Arable	762.813	764.479	762,344
2.	Pastures	663.772	662.763	662,225
3.	Natural pastures and hayfields	477.021	475.399	475,577
4.	Vineyards	9.119	9.250	8,793
5.	Orchards	13.415	13.244	13,685
Agricultural total		1926,140	1925.135	1922.624

Source: Reports on environmental factor situation in Region 7 Center, ARPM Sibiu, 2007, 2008 and 2009

In the period 2007-2009, a slight diminution of agricultural land area can be noticed in Region 7 Center. Throughout the investigated period, it can be noticed that the agricultural activities are carried out on two main land operation types, arable on one hand and pastures and hayfields on the other hand.

The main constraints to soil quality in region 7 Center are determined by: acidity, fine texture, moisture excess, non-uniformity of land, erosion, landslides, slope, etc. For example, in the county Covasna, the main constraint is represented by the sanitary protection areas that are found

[1] Economic-social models for inequality attenuation in the rural area by regions (MESAIR), contract 92072/2008, period 2008-2011.

around the drinking water supply wells of towns, as well as of the other localities. In the county Harghita, the most important constraints of soil quality are the following: moisture excess, depth of phreatic water layer, land slope, edaphic volume, taking into consideration the fact that from the relief point of view, the county belongs to the hilly and mountain area. For the county Mureş, there are constraints related to soil supply in humus, nitrogen, phosphorous and potassium. In the county Sibiu, the main constraints to soil quality are determined by: acidity, moisture excess, depth erosion, landslides and moisture excess, anthropic degradation and pollution of soils.

The industrial activities and agriculture are the main **air** pollution factors in the Region 7 Center.

In the county Braşov there are many economic operators who carry out their activity in different industrial branches and the critical areas with regard to air pollution are the following:

- the central area of the county, consisting of Braşov municipality and the neighbouring activities: Săcele, Cristian, Codlea;
- the central-northern area of the county, with the localities Hoghiz, Racoş, Rupea;
- the central-western area of the county, with the localities Făgăraş and Victoria.

In the county Harghita there are critical areas under air pollution:

- industrial activity areas: in the locality Miercurea Ciuc (due to the Mining Exploitation SC Exploatarea Minieră Harghita SA Miercurea Ciuc), in Gheorghieni (due to the working point Voşlobeni);
- refuse dumps remained after the mining and geological exploitations from SC Bălan SA (Sântimbru), Jolotca, Borsec, Tulgheş, Heveder, Belcina, Cianod.

An important air pollution source in the county Mureş is represented by SC Azomureş SA where the maximum accepted limit of ammonia is often exceeded.

In the county Sibiu, due to historical pollution (over 60 years) and to recent pollution, the zone Copşa Mică is highly affected by air pollution, being characterized by inadequate quality of ambiental air. SC SOMETRA SA is the main polluter in Copşa Mică, this being a company with non-ferrous metallurgy profile. The negative impact of sulphur dioxide

emissions and dust with heavy metals is quite significant among the environmental factors in the area.

The surface waters were monitored in Region 7 Center, on a total length of 2891.2 km river sections.

The surface waters in Region 7 Center mainly fall into quality classes I and II, and as a result these water categories can be used as drinking water sources.

Table 2. Length of river sections in Region 7 Center, by quality classes, in the period 2007-2009

Year	Total km	Class I	Class II	Class III	Class IV	Class V
2007	2981.2	1090	1487.23	247.79	122	34
2008	2891.2	1046	1550.5	258.7	76	50
2009	2891.2	1039	1486.2	260	60	46

Source: Reports on environment situation in Region 7 Center, ARPM Sibiu, 2007, 2008 and 2009

In the period 2007-2009, for the **ground waters**, 159 drillings in Region 7 Center were monitored by chemical, biologic and bacteriologic tests. In the county Harghita (12 drillings) were within the accepted quality limits. Yet critical zones were found as regards ground water pollution; thus, in the county Alba (18 drillings) the accepted limits were exceeded in the following indicators: conductivity, dissolved manganese, sulphates, chlorides, nitrates, nickel, dissolved cadmium, total hardness, organic substances; in the county Braşov (28 drillings) were under the legal limits, except for a few indicators: ammonium, total iron, total hardness, lead, conductivity; in the county Covasna (26 drillings) the limits were exceeded in the indicators: manganese, iron, ammonium, lead, conductivity; in the county Mureş (59 drillings) it was found out that ground waters cannot be included in the drinking water category; in the county Sibiu (16 drillings) it was found that the ground waters have an inadequate quality in the rural areas, as the liquid waste reach the ground layers directly through the non-impermeable latrines or the street drainage ditches, as well as indirectly, from the manure storage places and from the domestic waste storage places.

In the investigated period, the situation of **forests** was generally good, the main pressures exercised upon forest being of anthropic nature, namely: forest operations without respecting the legal provisions in the field, fires, illegal cuttings of timber, constructions built on forestland or in

adjacent areas, illegal storage of domestic or industrial waste in the neighbouring areas of localities, uncontrolled tourism activities.

Table 3. Forestland evolution in the counties from Region 7 Center, in the period 2007-2009

thousand ha

Nr.crt.	Județul	2007	2008	2009
1.	Alba	227.885	206.800	206.800
2.	Braşov	174.565	174.195	204.323
3.	Covasna	165.161	165.161	165.161
4.	Harghita	237.681	225.024	225.024
5.	Mureş	208.711	208.079	208.779
6.	Sibiu	204.352	203.220	201,057
Centru Region 7 Center total		1218,355	1182.479	1211.144

Source: own calculations and data from the Reports on environmental factors in Region 7 Center, ARPM Sibiu, years 2007, 2008 and 2009

Environmental problems in Region 8 Bucharest-Ilfov

Region 8 Bucharest – Ilfov consists of Bucharest Municipality, Romania's capital and the county Ilfov.

In Region 8 Bucharest-Ilfov, the most common types of **soils** are the clay soils, followed by Mollisols and younger soils.

Table 4. Agricultural land distribution by categories of use, in Region 8 Bucharest-Ilfov, in the period 2007 – 2009

Crt. no.	Category of use	Area – ha		
		2007	2008	2009
1.	Arable	107452	105868	102012
2.	Pastures	2342	2382	1973
3.	Natural pastures and hayfields	83	58	58
4.	Vineyards	1571	1445	1412
5.	Orchards	1184	977	847
Agricultural total		112632	110730	106302

Source: Reports on environmental factors in Region 8 Bucharest-Ilfov, ARPM Bucharest-Ilfov, years 2007, 2008 and 2009

In the period 2007-2009, the agricultural land area decreased by 5.6%, by categories of use the largest decline being found in the areas under natural pastures and hayfields, followed by the land areas under orchards. In

the Region 8 Bucharest – Ilfov, the main type of agricultural operation is arable land farming.

In the Region Bucharest-Ilfov, the soil pollution sources are the following: dry and wet deposits from the atmosphere, inadequate storage of domestic and industrial wastes and residues on areas that are not adequately equipped, discharge of sludge, slimes and waste water on agricultural land areas or on other areas; excessive use of chemicals on agricultural land and crops; soil degradation by physical factors, the action of which is favoured by wrong practices (deforestation, absence of consolidation and defense works, etc.); lead pollution specific for the areas with heavy road traffic, mainly in the city of Bucharest.

On the area of Bucharest municipality, the soils experienced strong anthropic modifications, the natural soil types being currently found only on limited areas in certain parks and on peripheral areas. The first stage of strong anthropic modifications was the result of all kind of constructions, by which practically other types of soils were created. The second stage was initiated by the massive industrialization and road traffic intensification.

The prevailing soils in the county Ilfov generally present a relatively low vulnerability to many polluting agents due to the good buffering capacity. Soil destruction processes by excavation works were found in the Argeş canal area and by the storage of garbage or of other construction materials in different areas. On smaller areas soils were polluted with waste water, sludge from the water treatment stations and organic residues from the large livestock farms from the zones Periş, Jilava, Buftea.

Air pollution in Region 8 Bucharest-Ilfov has a specific character, in the first place due to the emission conditions, to the existence of multiple sources respectively, different heights of pollution sources, as well as a non-uniform distribution of these sources, scattered throughout the region territory.

The air pollution sources can be grouped into several large categories:

- industrial objectives – there is a wide range of substances released from the technological processes into the atmosphere, namely organic and inorganic powders that also include metals, gases and vapours, organic solvents, soot;
- road traffic: the air pollution caused by vehicles is a mixture of several hundreds of different compounds. The air pollution levels caused by

road traffic are quite variable in time and space. The concentrations of air pollutants are higher in the areas with traffic roads bordered by high buildings under compact form, which prevent the dispersion of pollutants;

- construction sites and concrete mixers: the share of construction activities increased very much, the construction sites and concrete mixers remaining potential air pollution sources, mainly with dust.
- thermal power stations: the thermal power stations represent main air pollution sources, by their operation on liquid fuels with a high content of sulphur, releasing significant amounts of SO_2, NOx, CO, CO_2, dust, smoke, light ashes into the atmosphere.

Under the National Water Integrated Monitoring System, S.G.A. Ilfov – Bucharest, **water** quality in the hydrographic basins Argeş, Ialomița and Mostiştea is monitored. The situation of inner rivers was monitored, in the period 2007-2009, in 12 surveillance sections in the Argeş hydrographic basin and in 2 surveillance sections in the hydrographic basin Ialomița.

Table 5. Quality classes of waters from Argeş hydrographic basin, in the period 2007-2009

Nr.crt.	River/sections	2007	2008	2009
1	Argeş – 3 sections	II	III	II
2	Dâmbovița – 5 sections	IV	V	IV
3	Colentina – 1 section	III	III	III
4	Ilfov – 3 sections	III	IV	II

Source: Reports on environmental factors in Region 8 Bucharest-Ilfov, ARPM Bucharest-Ilfov, years 2007, 2008 and 2009

In the hydrographic basin Ialomița, the two sections under monitoring fell into quality class III in the period 2007-2009.

Only waters that fall into the quality categories I and II can be used as drinking water sources.

In the period 2007-2009, 11 drillings were monitored, representative for the national observation network, and no exceeding of the threshold values were found.

In the period 2007-2009, the **forestland** of Region 8 Bucharest Ilfov continuously decreased, the main reason being the intensification of construction activities in the peripheral areas of Bucharest municipality and in Ilfov county in this period.

Table 6. Forestland area in Region 8 Bucharest Ilfov, in the period 2007-2009

	2007	2008	2009
Forestland – ha, out of which:	20711	20413	20323
Ilfov county	19928	19663	19653
Bucharest municipality	783	750	670

Source: Reports on environmental factors in Region 8 Bucharest-Ilfov, ARPM Bucharest-Ilfov, years 2007, 2008 and 2009

In the investigated period, forests were subject to increasing pressures from the population's side. Illegal cuttings, uncertain and continuously changing legal framework brought about severe losses to forests. Forest administration under sylvicultural regime contributes to forestland sustainable management.

CONCLUSIONS

The old specific occupations in the Region 7 Center, such as mining, animal husbandry, timber exploitation and quarrying, which have been carried out in this zone for centuries, resulted in an intense exploitation of natural resources and implicitly led to environment degradation phenomena. In time, the industrial activities added to these traditional activities, which amplified the pollution phenomena, by generating secondary processes, which by accumulation endanger people's comfort and health.

In Region 8 Bucharest Ilfov, industry, transport, agriculture and the expansion of the construction sector are the main environment pollution sources.

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