

**THE ECOLOGICAL DIMENSION OF CRAIOVA  
MUNICIPALITY. CASE STUDY: CRAIOVIȚA NOUĂ DISTRICT**

**DIMENSIUNEA ECOLOGICĂ A MUNICIPIULUI CRAIOVA.  
STUDIU DE CAZ: CARTIERUL CRAIOVIȚA NOUĂ**

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**Abstract:** The inhabitants of Craiovița Nouă district, like most of the people of Craiova, presently live in an urban environment marked by numerous dysfunctions. The study of different aspects related to the state of the urban environment in this district enabled us to identify the following types of dysfunctions: household waste management, lack of modern road infrastructure, chaotic parking even within green spaces, high percentage of asphalt and concrete surfaces, air, water, soil and noise pollution, uneven distribution of green urban spaces, unpleasant odours caused by household waste, sewage or gases released into the atmosphere from various sources.

**Key words:** *urban ecosystem, dysfunctions, pollution, ecological education, Craiovița Nouă.*

**Cuvinte cheie:** *ecosistem urban, disfuncționalități, poluare, educație ecologică, Craiovița Nouă.*

## **1. INTRODUCTION**

The preoccupations regarding the assessment of the state of the environment in an urban ecosystem represent a topic of great relevance, the results of the analyses being at the foundation of the policies and strategies for the sustainable development of the urban administrative-territorial units.

The urban ecosystem, dominated by an intense development of human activities and changes of the environment induced by human intervention, is undergoing a continuous process of transformation, which, in some cases, leads to irreversible effects on the environmental factors (Searle, 2011).

In the space of Craiova municipality, the habitat of Craiovița Nouă district covers a whole complex of aspects, as a consequence of the diversification of the anthropogenic pressure on the environmental factors, with visible or still unknown effects on the comfort of its inhabitants.

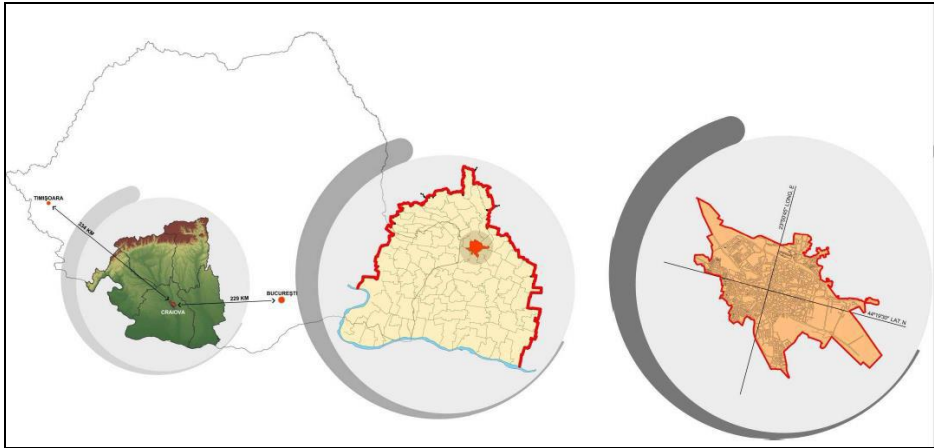
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## 2. DATA AND METHODS

Craiovița Nouă is the most populated district of Craiova, with approximately 100,000 inhabitants (Fig. 1), being located in the northwestern part of the city and northeast of Lake Craiovița (Fig. 2). The name of the district comes from the old name of the neighbouring district (Breștei, former Craiovița), which later became "*Craiovița Veche*".



**Fig. 1. Geographical location of Craiova Municipality at national, regional and county level**

In order to carry out this study, there were used the following research methods:

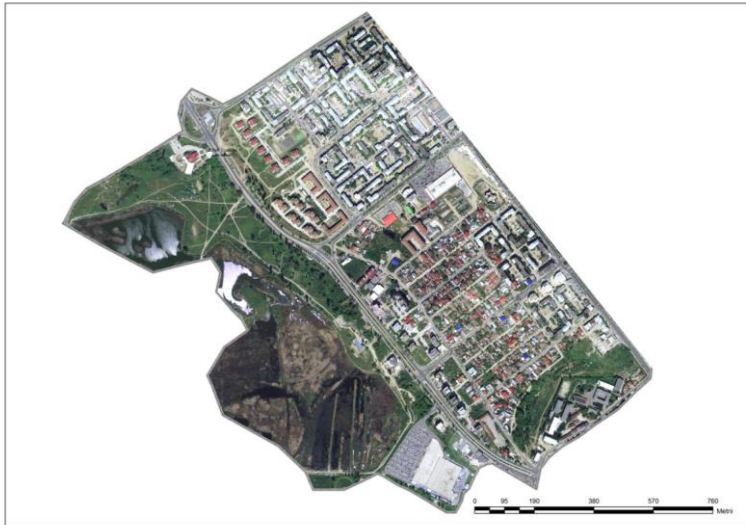
- ◆ Field survey;
- ◆ Questionnaire.

Regarding the field survey, the aim was to identify the sources of degradation:

- household sources (amount of household waste, water consumption);
- mobile sources (road traffic);
- quality of environmental factors in the analyzed area (noise pollution and air quality);
- green spaces.

For a more objective analysis of the state of the environment, we also applied a number of 100 questionnaires to people of all ages and with all types of training. The questionnaire was filled in by a number of 50 men and 50 women, the predominating age category being between 40 and 60 years old with a percentage of 50%, followed by people aged between 20 and 40 years old - 25%, then by people under 20 - 25%. In terms of education, people with higher education registered the highest percentage – 50%,

followed by those with high school 40%, while those with general or vocational school training each had 5%.



**Fig. 2. Craiovița Nouă District**  
(Source: Google Earth Map)

### **3. RESULTS AND DISCUSSIONS**

We will further present the main aspects related to the current state of the environment in the perimeter of Craiovița Nouă district, as well as the impact of economic and social activities. Elements such as air, water, sound, waste were taken into account.

**3.1 The main road arteries** from Craiovița Nouă district are:

- Tineretului, Oltenia and Dacia boulevards, as well as George Enescu and Elena Farago streets.

George Enescu Street represents the main connection between Craiovița Nouă district and the central area of the city (Nicolae Titulescu Blvd.).

Tineretului Blvd., Oltenia Blvd. and Dacia Blvd. are disposed on three parallel alignments, namely: Tineretului Blvd. crosses the eastern side of the district, Oltenia Blvd. crosses the district from south to north through the central area, and Dacia Blvd. crosses the district on the western side.

**3.2 Buildings and green spaces**

There mainly predominate the blocks of flats, green spaces, children's playgrounds, schools (4 general schools and 6 kindergartens), a large number of commercial spaces, two agrifood markets (Bigul Nou complex and Orizont complex), commercial complexes of supermarket-type (Kaufland, Lidl, Auchan, Billa and Penny), several places of worship (Church of St. John Sebastian / Ioan Sebastian, Church of Nicodemus / Nicodim, Greek-Catholic Church of the Annunciation/ Buna Vestire, Church of St. John the Wallachian / Ioan Valahul).

There were built many playgrounds, which have swings and other equipments for children.

### ***3.3 The characteristics of the streets***

The three main boulevards, Oltenia, Tineretului and Dacia, have two driving directions with four traffic lanes, having a width between 8 and 10 m.

Small parks with a beautiful environmental appearance were built between the two driving directions.

There are also three roundabouts in operation, with ornamental vegetation.

There are many garbage bins installed to maintain cleanliness, but also ecological toilets in areas with heavy traffic.

### ***3.4 Pedestrian traffic***

The pedestrian traffic is made on the sidewalks and alleys specially arranged and well maintained by the municipality. There are also elements of urban furniture - the musical fountain, green spaces - fences and protection poles, which delimit the pedestrian pavement network from the road network and do not allow parking of vehicles on these alleys for pedestrians.

***3.5 Public transport*** is mainly represented by RAT buses, but they are insufficient in relation to people needs. It should be mentioned that some of these buses are so old that they have a major impact on the environment because of the pollution caused by the exhaust gases.

Public transport raises difficulties for the residents who are interested in reducing travel time. The number of vehicles increased much faster than the length of roads in operation, which has led to a sharp increase in traffic values and thus accidents, blockages and pollution. Transport in the area is also done with taxis, as well as other transport and courier companies (Pătroescu & Marinescu, 2004).

There are 4 large stations for the public transport of the citizens in the main areas of the district: Segarcea Complex, Racheta Complex, Orizont Complex, station 30 – Cinema.

### ***3.6 Physical condition of the buildings***

The structure of the buildings in the area is sustainable. The newer buildings are in very good condition. The old buildings are in good or mediocre condition, suffering mainly due to the lack of concern in preserving or maintaining them. From the structural point of view, earthquakes are the main factor affecting their structure, while from the finish point of view, they suffered due to the lack of maintenance of the roofs and drainage systems (gutters and downspouts) that have affected the facades and even the structure. Most buildings are Gf + 10 storeys or Gf + 4 storeys blocks, which are generally well maintained.

***3.7 Waste.*** A particularly important environmental problem is the uncontrolled storage of household waste. The location of these uncontrolled dumps is an element of aesthetic pollution of the landscape, but, at the same time, they are potential sources of pollution of environmental factors (Badiu et al., 2016).

With regard to the analyzed area, urban waste is present, but also garbage containers, located mainly behind the blocks of flats, and public trash cans located along the main arteries and in places intended for recreation.

Green spaces are represented by the gardens located around the blocks of flats, squares and playgrounds (Marinescu, 2006).

Human pressure is not a major factor of environmental degradation in the studied area due to the fact that most buildings are blocks of flats, which have their own heating systems and do not affect the environment very much. At the same time, household waste is deposited in specially designated areas with mobile or stationary garbage containers. Garbage is picked up in a timely manner and this waste collecting activity is very well monitored. There are also large plastic containers for garbage recycling (plastic - paper - glass) throughout the district. The commercial spaces are equipped with mobile garbage containers.

**3.8. Air quality.** The air quality in Craiova and the suburban area is influenced by anthropogenic activities and the sources of polluting emissions can be grouped into three categories:

- car traffic, with the emission of pollutants specific to fuel combustion;
- various industrial activities, with specific emissions (gases, vapours or particulate matters) depending on the technological processes;
- specific urban activities, with emissions mainly generated by fuel combustion (in centralized or individual systems).

The determinations for particulate matters in the breathed air showed that the highest values were recorded in the area of the triage railway station (1.091mg / m<sup>3</sup>), due to the fact that there are several factors that make the values of the dust in suspension to be higher, namely: heavy traffic, railway traffic, concrete preparation station in the area, as well as the lack of a protection vegetation belt.

### **3.9. Water quality**

The Jiu River is the main river that is located in the immediate vicinity of the city, which also ensures the water supply of this district together with the water supply that comes from Izvarna. Drinking water is ensured from the second source, but it is also often combined with water from the Jiu, which then is treated at the wastewater treatment plant.

### **3.10. Noise pollution**

The noise mapping process in the perimeter of Craiovița Nouă District was carried out on the field in three different points, during the day, at 7 a.m., 2 p.m. and 8 p.m. There were performed 20 measurements for each point, respectively:

- The park next to the Church of St. John Sebastian;
- Bigul Nou intersection (the busiest one);
- Triage Railway station – Craiovița Nouă.

The results clearly show that in terms of noise level, high values are recorded at the busiest intersection in the district where noise is generated by road traffic (93.9 db), while the highest value is registered near the triage railway station, where besides heavy road traffic, there is also rail traffic (99.5 db).

In order to increase the quality of the environment, emissions of polluting substances from motor vehicles can be reduced by creating vegetation belts in the busiest areas or by planting trees on both sides of the streets, introducing traffic

restrictions during the busiest intervals or ensuring an optimal surface of green spaces for each inhabitant.

### ***Interpretation of the questionnaire***

To the question "*Are you satisfied with the cleanliness of the public spaces?*" most citizens answered that they are rather dissatisfied (60%), 30% of those surveyed answered that they are quite satisfied and 10% are totally dissatisfied.

When asked "*Are you satisfied with the number and quality of green spaces in your district?*" the percentage of those who are rather dissatisfied (40%) is identical to that of those who are quite satisfied (40%), while those who are dissatisfied represent 20% of those surveyed. Thus, it results that there are areas where green spaces are well maintained, but there are also areas where their maintenance is not proper.

30% of the population in the studied area is rather dissatisfied with the *quality of drinking water*, while 20% is satisfied, respectively dissatisfied and 10% rather satisfied.

*The main source of noise* seems to be road traffic in the proportion of 90%, while buildings account for 10% of the noise registered in the district.

*Road traffic* affects the inhabitants as follows: noise 40%, pollution caused by exhaust gases, as well as congestion during peak hours 20%, and accidents 10%.

*To improve the quality of the environment*, the most important things seem to be: ecological education 50%, proper management of urban waste 30% and the use of renewable energy sources 20%.

Most respondents *want to recycle paper, plastic and glass in the household* (80%) and 20% recycle depending on the available time.

To the question "*What suggestions related to environmental conditions (air, water, noise, waste, green spaces), would you give to the authorities?*" the most common answers were related to:

- increasing the surface of parks and green spaces (30%);
- the intensification of educational programs and the improvement of selective waste collection account each for 20%.
- the increase in the frequency of public transport 10%.
- the increase of parking spaces and the promotion and creation of conditions for the use of bicycles, each with 5%.

## **4. CONCLUSIONS**

This study analyses the state of the environment and the dysfunctions of a segment of the urban ecosystem in Craiova. Using methods and means by which the perception of resident communities and the awareness of environmental issues can be assessed, it was possible to select the following aspects:

- the ecosystemic approach of the urban environment allowed the complex analysis of the natural and anthropogenic factors that influence its sanogenesis state;

- the extension of the built surfaces to the detriment of the natural ones has led to environmental dysfunctions that, presently, the residents have to endure or to remedy;
- the main problems that characterize the environment of Craiovița Nouă district today are related to urban development: relatively small area, exclusively vertical development, reduction of oxygenating surfaces, insufficiency of green spaces, poor sanitation, heavy road traffic, air pollution generated by multiple sources, but especially by road traffic;
- there were identified the areas vulnerable to technogenic risks, the sources of which were prioritized as follows: gas stations, car washes, thermal power plants, apartment thermal plants, material warehouses of some enterprises, as well as the location of a railway line in its immediate vicinity, without a protective belt;
- the change for the better of a society is objectively related to its educational level. The knowledge of the population about the environment, but especially the skills, attitudes and motivations expressed in this direction, represent the measure of an educated society, which is concerned with its sustainable development.

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