

**UNIVERSITY "BABEȘ-BOLYAI"**  
**FACULTY OF GEOGRAPHY**

**PERCEPTION AND ENVIRONMENTAL BEHAVIOUR, PREMISES OF THE  
SUSTAINABLE DEVELOPMENT – TERRITORY MODEL: HUNEDOARA  
MUNICIPALITY**

**Abstract of the Doctoral Thesis**

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## INTRODUCTION

The present paper continues the research started in the years 1995-1996, in the license project with the subject „The influence of urban environment on the mentality of the population who lives in Hunedoara Municipality”.

The justification for choosing this topic for the present thesis are the fact that I have lived for many years in the studied area and my experience acquired at my working place, in the public administration of the county seat.

Both in terms of the inhabitant, and the officer of the government, I realized that the desire to achieve sustainable development depends on the cooperation between citizens and government decision makers.

Because in the current situation, deficiencies are recorded in this tandem, by this work I plan to identify the determinants of the above situation and possibly to suggest solutions for improving this situation.

To realise the research, I conducted a multidisciplinary survey to assess the quality of life perceived by the citizens of Hunedoara Municipality, whose results are presented in Chapter IV of the thesis, but I applied also the methods of observation and interview with the local government staff.

The present paper represents a multidisciplinary approach, operating with the notions and concepts of urban sociology, environmental psychology and geography.

**Key words: perception, environmental behaviour, sustainable development, environmental education.**

## **CHAPTER I**

### **PERCEPTION AND ENVIRONMENTAL BEHAVIOUR THEORETICAL REFERENCES**

In this chapter, I proposed to approach the theoretically environmental perception and behaviour, both in terms of geography and environmental psychology and urban anthropology, with emphasis on perception and behaviour in urban environment.

#### ***1.1 Perception and environmental behaviour***

The environmental perception is realized based on the experience and knowledge about the environment. Receiving stimulations, the individual interiorise what he perceives, passing the perceived elements through the filter of his own personality and social norms, determining the representation of the perception object.

The mental representations are mainly made of significations and emotions related to the perception object; during his life, the individual accumulates experiences and for each perception is created another representation correlated with the previous ones, creating a structured and complex vision on the environment.

The environmental perception is realised as follows: the perception of environmental components, the perception of environmental processes, the perception of the global environmental state (Mac, 2003).

The environmental perception, the interpretation of reality and the action (behaviour) are closely related, the behaviour being determined by the mental „map” of the perception object.

## ***1.2 The evolution of man-nature relations in terms of geographical trends***

The relation between nature and society are subject to different and sometimes contradictory interpretations in the geographical discourse, and the geographical space is currently analysed not only by geographers, but also by specialists in other fields: ecologists, sociologists, economists. The approaches of man-nature interactions are going to be treated hereunder:

*The environmental determinism* – the relation between man and environment was considered as unidirectional, as a vector that were passing from physic to human.

*The possibilism* – if the determinism promoted, with some tinting, the “existence of a unidirectional relation directed from the environment to human behaviour, the possibilism sustained the bidirectional relation, made of impulses generated by the environment and others generates by the community: impulses that interact and change in time” (Vallega 1989).

*The behaviour geography* or the geography of perception, in the Anglo-Saxon literature referred as „behavioural geography”, studies the space represented/perceived both at the individual and collective level. The way the individuals behave and the environment representations are analysed through space implications.

According to J. Sonnenfeld, there are: a geographical, an operational, a perceptual and a behaviour environment.

The geographic environment represents the largest sphere, referring to the planet level of the environment. At a higher dimensional level of analysis, the geographical environment refers to the state specific to Terra, resulted from the combination and cooperation of all the components of Earth. It is measurable and quantifiable, and it is the most comprehensive, having as source everything that becomes objective, perceptual and behavioural operational (Mac, 2003).

The operational environment represents the operational part of the geographical environment that surrounds the individual and influences his behaviour. Unlike the geographical environment, which is the same for everybody, the operational environment differs according to the personal characteristics of the individual.

- The perceived environment refers to the environment parts perceived by the individual; it is embedded in the operational environment, being the part where the environment information is received by the individual, who perceives and know the environment in this way.

The behavioural environment contains a much more limited area, being located in the perceived environment, representing that part of the environment that gives a behavioural answer to the individual or to the groups of individuals. The term “behavioural environment” was introduced in geography by Kirk (1951), who affirmed that “the wider are the man’s knowledge about the environment, the more influenced will be his activities by this one” (Mac, 2003).

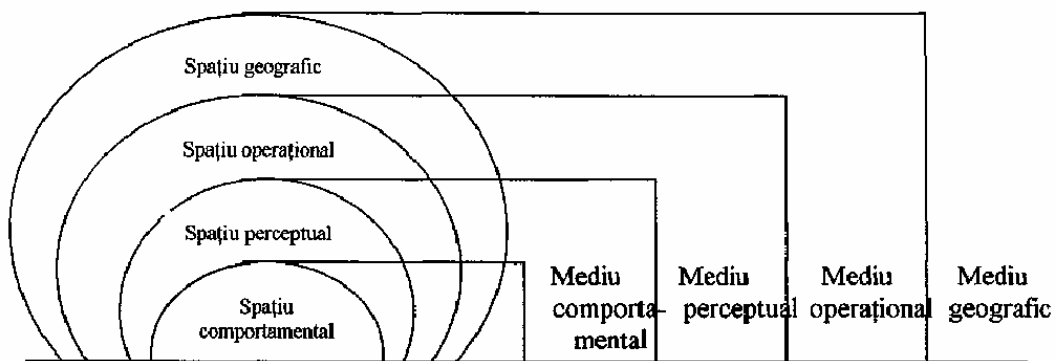


Figure 1 The types of environment, according to J. Sonnenfeld (1972), in relation to the operant component – the man (Mac, 2003)

### ***1.2 The urban anthropology and the environmental psychology***

The urban anthropology focuses on the urban environment study, in particular of the spaces that differ from the ones defined as „normal”: metropolises, ghettos, etc.

The first systematic study of environmental psychology was realised by Kenneth Craik in 1970, being the first who used the term *environmental psychology*, defining the new discipline as „the one which tries to take advantage of the rich connotations acquired by the environment due to the numerous studies and systematic attempts to analyse the

contemporary physical environment, including the physical aspects and the ones influenced by man” (Craik, 1975).

Of particular importance are the schemes for environmental perception and mental maps. The concept of “scheme” was introduced by the representatives of the „ecological theory”, in the environmental psychology, under which information is perceived as pre-existing mental schemes.

The mental maps are orientation schemes, “our inner representation of an environment, ways to follow, the most representative elements, the objects that can be useful for our purposes or the ones which can put us in danger or can obstruct us in reaching the target” (Baroni, 2000).

### ***1.3 The urban perception***

The city is defined as stimulations perceived by the individual due to his visual and phenomenological perceptual mechanisms. The form of the city is not self-referential by itself, but it is the form represented by the individuals who perceive and interpret, sometimes unconsciously, the forms and spaces, relating to the city and behaving as such.

### ***1.4 The geographical attachment***

The “place attachment” – represents a positive bonding between an individual and a particular place, the main characteristic being the tendency of the person to preserve the attachment of this one (Hidalgo e Hernandez, 2001).



## CHAPTER II

### THE SUSTAINABLE DEVELOPMENT – CONTENT AND SIGNIFICATIONS

The present chapter makes an overview of the evolution of the sustainable development concept and the programmatic documents referring to the environmental problems.

The historical perspective on human activity and relations with the environment show that we can define several stages of the human relationship with nature (I. Mac, 2008):

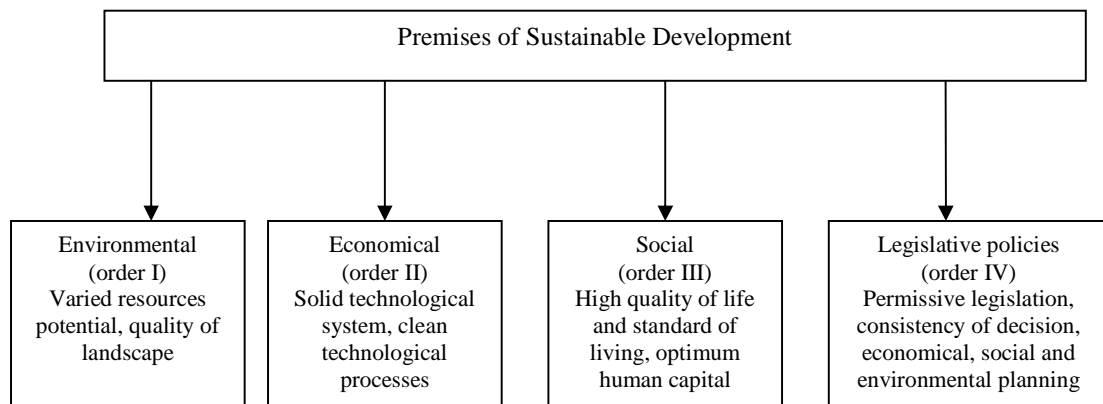
- intrinsic integration;
- the man, attached by the nature, too little attached by an ecosystem, but connected with the nature through the existence means offered by it;
- opponent of nature, causing major imbalances with adverse effects by exerting pressure on the natural systems and overcoming the limits of their toleration.

The environment degradation is the effect of the „development” in anthropocentric and economic way, and the consequences of which the human actors are aware or not have an adverse impact on the economic and demographic life conditions. As a response to the environmental crisis caused by irrational use of resources, the demographic boom, expanding the industrialisation and urbanisation process, the scientific community initiates events, debates and research studies which have as purpose the development of programming documents and action plans for the future, to find solutions to these problems; among the first steps have included the four Reports of the Club of Rome („The Limits to Growth”, „Mankind at the crossroads”, „Restructuring the International Order”, „Let’s get out of wasting time”), the Stockholm Conference regarding the urban environment, in 1972, in which it is firstly use the term of “eco-development”, establishing of the Voluntary Fund for the Environment in 1973, according to the financial procedures of the United Nations, signing the protocol regarding the wetlands of international importance, especially as waterfowl habitat – The

RAMSAR Convention. In 1983, the United Nations have established the World Commission on Environment and Development, that developed and published in 1987 the document "Our Common Future" (the Brundtland Report), under which there were formulated the premises of those 40 chapters of Agenda 21 and those 27 principles of the Rio Declaration which firstly defined the sustainable development as "*the development which meets the needs of the current generation, without compromising the ability of the future generations to meet their own needs*"; from that time until now there are over 60 definitions of the sustainable development.

According to A. Vădineanu, the integrated approach to sustainable development is based on four categories of indicators:

- economical;
- ecological;
- environmental;
- political.



*Figure 2 The synthetic scheme of the sustainable development premises for a territory (I. MAC, 2008)*

The sustainability as environmental state, at geographical level, can appear into a territory in two aspects (I. Mac, 1996):

- at the physical components level, highlighting the stability and robustness;

- at the level of relationships between the human activity and the environmental system, that can be manifested in the territory by disturbances and risks.

## **CHAPTER III**

### **HUNEDOARA MUNICIPALITY - TERRITORIAL ADMINISTRATIVE UNIT**

In this chapter, I highlighted the fact that the evolution of Hunedoara Municipality, in the modern period is intrinsically linked to the steel tradition in these places and the development and decline of the integrated iron-steel plant.

#### *3.1. Formation in time; Geo-identity*

In 1276, it was created Hunedoara County, one year before the confrontation of Hungary with Prince Litovoi (1276-1277). This country is mentioned in 1247 in Diploma Cavalerilor Ioaniți, Hunedoara District being part of it. The new county was named “Hunedoara” probably after the capital city name.

Since 1968, Hunedoara is a Municipality in Hunedoara County, made of:

- Răcăstie township, located in the North-West side of the municipality, 3 km away from the city itself, link being made by the village road 16;
- Boș village is located in the South-West side, on the village road 115, 8 km away from Hunedoara;
- Groș village is located in the West side of the municipality, on the village road 115, 11 km away from Hunedoara;
- Hășdat village is located in the South side of the municipality, on the county road 680, 4 km away from Hunedoara;
- Peștisu Mare village is located in the North side of the municipality, on DN 60, 8 km away from Hunedoara.

### *3.2. Economical development*

In 1882, it started the construction of Hunedoara Plants, and in 1919, The Iron Plants of Hunedoara passed with their full capacity in the property of the Romanian state, knowing successive developments in the coming years.

Until 1965, Hunedoara was the first in the country in terms of production of steel and cast iron, and during 1961-1975 it was the first in terms of investment in the mining industry, primarily used to enhance the capacity of mines and the existing preparation plant.

Population growth, due to the massive migration from the years 1948-1976, determined specific industries and tertiary sector activities, able to absorb the female workforce in the area and to ensure services to a more and more numerous population.

Since 1990, the Integrated Steel-Iron Plant of Hunedoara registered a visible decline, due to the higher and higher price of raw materials, the outdated, non-competitive and polluted technologies, and the product sales was not ensured at the required level. Since 1989, when the number of employees was approx. 20,000 at S.C. SIDERURGICA S.A., it decreased from year to year. In 1991 were 17,500 employees, in 1992 were 17,300 employees and in February 1993 were 16,900 employees, and in 2009, at S.C. ArcelorMittal Hunedoara S.A. remained only 200 employees.

### *3.3. The environmental state*

In present, the pollution is reduced due to the drastic reduction of the activity volume of the integrated steel plant, and no other big polluters appeared.

In January 2010, according to the Environment Report of the Environmental Protection Agency of Hunedoara, the quality of the environment actors in Hunedoara Municipality was as follows:

- Air quality – compared with 2009: at the nitric oxides, the average values remained constant, without exceeding the maximum allowable concentration; at the sulphur dioxide and ammonia, the values are lower, without exceeding the maximum allowable concentration; at the settled dust: the average values decreased in

Hunedoara Municipality, but in Zlaști the maximum allowable concentration was exceeded;

- Water quality: the quality of Cerna River is good (first class of quality);
- Noise level: only one overcome of the noise level was recorded, according to STAS 10009/88, in the leisure areas, in one point of Hunedoara – Central Park.

## **CHAPTER IV**

### **PERCEPTION AND ENVIRONMENTAL BEHAVIOUR AS PREMISES OF THE SUSTAINABLE DEVELOPMENT**

In this chapter, I approached the perception and the environmental behaviour during the development period of the integrated iron-steel plant, when the industrial activity, the demographical boom and the urbanization caused major unbalances to the environment.

To evaluate the life quality currently perceived in the urban environment, I conducted a multidisciplinary research, in the following fields: urban housing, employment, civic involvement, conviviality, satisfaction with neighbourhood and city.

#### *4.1 Perception and behaviour in the past*

The milestones with repercussions in terms of anthropogenic changes in the geographical environmental are: building of the Coke-Chemical Plant (1951-1960), the modern blast furnaces (since 1952), the iron ore preparation plant (in Teliuc), the iron ore crushing & sorting station (in Peștiș), the Electrical Steel Plant no. 2. The main anthropogenic transformations of the relief had place in the iron ore processing area, correlated with the development stages of Hunedoarea iron-steel production. The most representative slag dumps are located in the North-East side of Hunedoara Municipality,

on the right slope of Cerna River, disposed as great terraces, on three levels. The most important source of soil pollution is represented by the industrial pollution, especially around the integrated iron-steel plant, with products emanated by the pollution sources typical for the iron-steel making processes: carbon monoxide and carbon dioxide, sulphur dioxide, sediment particles. From the data of the National Institute of Statistics, it results that in 1992 the percent of population exposed to air pollution was 100%.

The status of the inhabitants of a city is not determined only by the relations with a space where the urban functions are gathered, but especially by the appearance of the feeling of belonging to that space, indispensable to create a composite society, but with common social behaviour.

The increase in territory and population of the city after 1900 is closely related to the plant development, which was the main economic activity of the municipality, concentrating 56% of the active population.

#### *The period called “the shock of urbanisation”*

In the period 1930 – 1966, the population increased from 4,600 to 68,207 inhabitants, the increase being caused by the people migration. From less developed areas, or deficient in jobs, many young persons came to Hunedoara, who further settled down here. The adaptation shock was felt especially by those coming from rural areas.

#### *The adaptation period*

The adaptation period (1967–1982), the economical boom period, when the urbanisation process was completed, the built space became homogenous and coherent, being characterised by the improvement of the working conditions in the integrated iron-steel plant, due to the German top technologies.

It was created a “memory” of the place based on the previous feelings, from the arriving moment, and the individuals are satisfied that they participated to the construction of a place that was going to become theirs.

*The period 1984–1989 “oppressive”*, is characterised by fear of political repression and social vulnerability. In these conditions, the individuals are trying to

isolate themselves in the vicinity of the social conscience, moving away from friends and colleagues.

*The period after 1989* is the period of transition to the market economy, being marked by the destruction of the economic activities.

The social vulnerability put its mark on the population. The individuals that couldn't adapt to the shock of losing their jobs, and the ones who had no chances of finding another job, left Hunedoara. They went to other working places, to other destinations with potential, or they went to work abroad.

#### *4.2 Perception and behaviour in present*

The results of the research, the interviews and observations highlighted the fact that it is manifesting a functional, esthetical and affective attachment for the house and neighbourhood, the social conscience vicinity being very strong (at the family level) and the homogeneous vicinity in the groups with similar social level, fact showed by the conviviality index and the reluctance of changing the residence for a better working place.

The deterioration of urban transport infrastructure displeases both the car owners and the pedestrians and the common transportation users, due to the discomfort provoked during the travel, the increase of the transportation duration inside the city, and these influence the perception of its geographical distances. The visual discomfort is produced by the deterioration of the built space, either in the industrial area or in the exterior appearance of the blocks that have a dull tint, the facades being not rehabilitated. The negative image is reflected in the city aesthetic perception, but it is somehow complemented by green spaces, which produce the feeling of relaxation after the stress provoked by the great density of buildings. The dissatisfaction with the non-use of the land in the industrial area refers to there potential to attract investment activities able to create new working places.

The perception of a high degree of delinquency both at the district and the city level, associated with the decrease of incomes and the risk of losing the job determines social vulnerability and insecurity, being possible to appear social tensions and the destruction of cohesion.

The involvement index, which is approx. 1 in most subjects, highlights the fact that the citizens are not involved in the decision making process and don't exert organised social activities, invoking the low degree of interest in the decisional and information process regarding the local events. With all these, they accuse the public authorities that don't elaborate development strategies at local level according to the citizens' needs, and lack of decisional transparency.

In turn, the representatives of public authorities claim that the citizens are not actively involved in the actions that take place in the municipality and don't participate to public debates.

#### *4.3 Perception and behaviour in the future*

In the conditions when the public administration elaborates concrete action plans, based on real analyses, in the finding-normative-operational-projective-applicative spirit that correspond to the development vocation of the municipality, actively involving the citizens, we will be able to appreciate that we are going to create the premises of a sustainable development.

They should make efforts to act and remedy the major problems existing at the municipality level, mainly regarding the poor quality of the transportation, the required greening of the historically polluted lands and the preparation for new activities able to attract investors, especially in the added-value fields, to absorb the working force available or unsatisfied by the salaries. If, in the future, it will be manifested the same lack of reaction and lack of accessing the European funds, the quality of environment will continue to degrade, the quality of life will decrease, installing the state of imbalance.



## **CHAPTER V**

### **OPTICS AND MODELS OF ENVIRONMENTAL RECONVERSION**

#### *5.1 The environment of places*

##### *5.1.1 The „natural” environment of places*

According to the data provided by Hunedoara City Hall, in 2008, in Hunedoara Municipality the total area of green spaces (acc. to the inventory of the public domain and the recent topographical measurements) was 1,690,943 m<sup>2</sup>, the green spaces area per capita being 23.74 m<sup>2</sup>.

The forest zone had in 1998 an area of 3,425 ha, which represented 35.3% of the administrative territory of Hunedoara Municipality. In 2007, the area of the forest zone was 4,030 ha, which represented 41.5% of the administrative territory of Hunedoara Municipality, with an increase of 20.1% compared to 1998.

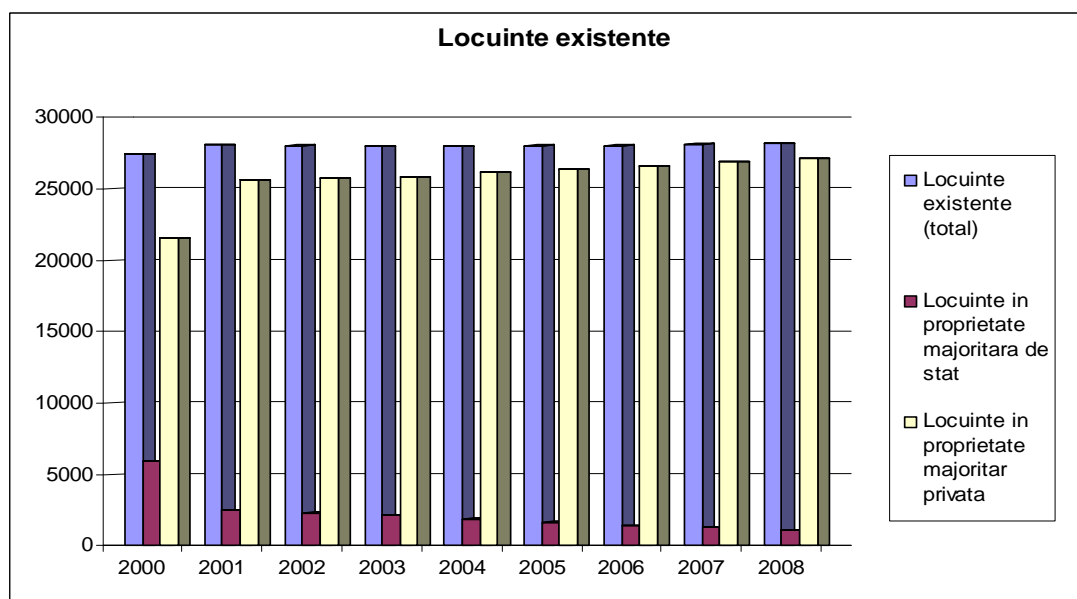
The existing forest zones haven't been affected yet, due to their position on the slopes of the hills and of the very little penetration inside the intravilan places.

On the territory of Hunedoara Municipality it is only one protected natural area, i.e. the “Chizid Forest“, with an area of 50 ha (acc. to Law no. 5/2000 regarding the approval of the plan for developing the national territory - Section III – protected areas). The Forestry Department of Hunedoara is the custodian of the protected natural area “Chizid Forest“, since 08.07.2004.

##### *5.1.2 The built environment*

Of the total intravilan of Hunedoara Municipality (approx. 2,092 ha), the industrial zone represents today about 700 ha, i.e. about 33%. We can find this percent only in Moskow, (approx. 34%). In the rest of the European cities, the percent is less than 10%. So, in Paris the percent is 7.5% and in Seul is 5%. The industrial zone divides the city in two parts, making difficult its extension. Now, in the industrial zone is located the Industrial Park. A great part of the constructions that belonged to the integrated iron-steel plant are ruined now, giving the area a deplorable aspect.

Regarding the existent number of homes, the situation is:



### 5.1.3 Territory and administrative cooperation – premises of remodelling the Geo-identity

Within the context of continuing development and the ongoing integration efforts with the European Union, the regions need assistance in order to overcome their structural deficiencies and to rise to a level of competitiveness that would afford a successful presence on the domestic and the foreign market. Considering the rising development gaps among certain regions the external assistance becomes even more important. The European Union development economic, social and environment policies are supported with Structural Funds and the Cohesion Fund. One principle that may enable a successful implementation of such policies is the active involvement of all concerned parties: national, regional and local administrations, civil society, business and dedicated research and development centers. Such ideas and considerations led to the founding of “CONURBATIA CORVINA” association, a joined effort of Hunedoara municipal council, the Hunedoara County regional council, the Deva municipal council, elected officials from neighboring Simeria and Calan towns and several villages like Bacia, Cirjiti and Petisul Mic. The general objective of this association is to promote the development of communities in and around the Hunedoara, Deva municipalities and the Calan, Simeria townships through:

- implementing of development projects considered of regional interest.

- support for national programs aimed to promote European economic and social standards.
- establishing market practices within the region in conformance with international standards.
- enhancing quality of life through promoting regional social and economics cohesion.

#### *5.1.4 Environmental education*

The environmental education involves knowledge, values, behaviours, direct experiences on the functionality and evolution of the natural ecosystems, on the changes brought by the human activities, on the contribution of the scientific research and technological innovation. The environmental education forms the active population and determines the understanding of the complexity of relations between nature and human activities, renewable resources, heredity, dynamics of production, consumption and solidarity. The environmental education is global; it prepares the individual for his entire life and forms the respective conscious.

The education regarding the sustainable development should become a strategic element for the promotion of a critical and positive character of the citizens towards their own environmental context. The environmental education should contribute to the reconstruction of the identity and roots of the individuals and groups, to develop the civil and responsibility sense regarding the political problems, to spread the culture by participation and to take care of the environment quality, creating an affective relation between persons, community and territory.

The activities and initiatives of environmental education:

- Involve knowledge, values, behaviours, direct experiences for respect and interaction between the plurality of the life forms existing in the environment;
- Have the possibility to build, to spread a modern culture “capable for the future”, able to go beyond “use and throw” and to direct the own actions in the "limitation direction";
- Promote the opportunities and contexts to favour the development of the dynamic quality, to build the decision-making capacity in uncertain conditions, to develop

the conscious before the unpredictable, to educate the persons with different points of view;

- Strengthen the coherences between reacting and knowing, between saying and doing.

The public education for environment protection must be an organic component in all public policies, especially in formative efforts.

## **Conclusions**

Our research indicates that the Hunedoara municipality has suffered radical territorial changes through rapid explosive growth for a brief period of time. The development of the town is strongly connected with the local tradition for ore mining and industrial iron processing. The development of siderurgical industry has furnished an identity and a reason for the developing city.

From 1884 when the first furnace was built until 1940 the process of territorial extension is relatively slow. From 1940 until 1983 the environmental policies change supporting industrial and residential development. The agricultural and forested areas and the natural environment in general have suffered a marked decline with effects visible even today.

In order to overcome the adverse effects on the natural environment, long term strategies and realistic and coherent plans must be implemented. It is to be desired to improve the natural environment along with the quality of life through balanced urban development. The collaboration between local administration, the community and the civil society are essential for durable development.

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