IASI – AN ECOLOGICAL CITY

Valerian Dragu[*]
Andreea - Elena Stoican[**]
Cătălin - Dumitru Stoican[***]

Abstract

An ecological city represents a geographical and social-historic category which has various shapes depending on the different terrestrial regions. It is also called "the town of the future", being considered by a vast majority of people as an utopia, because of the major criteria which gives it the appellative of "ecological" – the lack of pollution. Nowadays, it is impossible to have zero pollution in a city, but the main purpose is to diminish as much as possible all type of pollution and the natural degradation and disequilibria.

The purpose of the paper is to identify and explain those solutions which can promote Iasi as an ecological city. Therefore, we decided upon some main objectives:

1. identify the characteristics of an ecological city;
2. observe and explain the spatial and functional evolution of the city of Iasi;
3. analyze the possibilities for Iasi to become an ecological city;
4. suggest the solutions for Iasi to become an ideal city from an environmental perspective.

Keywords: ecological city, urbanisation, green spaces, Bahlui river valley

[*] Mr.Valerian Dragu – coordinator - is a Lecturer at "Mihail Kogălniceanu" University in Iasi, Romania
Contact: +40 746 431560; E-mail: val_dragu@yahoo.com
[**] Mrs. Andreea-Elena Stoican is a master student, at the Faculty of Geography and Geology, Present Environment and Sustainable Development Specialisation, „Alexandru Ioan Cuza" University of Iasi, Romania
[***] Mr. Cătălin-Dumitru Stoican is a student at the Faculty of Chemistry, „Alexandru Ioan Cuza" University of Iasi, Romania

Chapter I: Introduction - What does it suppose an ecological city?

An ecological city, after a strict definition, represents a geographical and social – historic category which has various shapes depending on the different terrestrial regions. It is also called "the town of the future", being considered by a vast majority of people as an utopy, because of the major criteria which gives it the appellative of "ecological" – the lack of pollution. Nowadays, it is impossible to have zero pollution in a city, but the main purpose is to diminish as much as possible all type of pollution and the natural degradation and disequilibria.

The purpose of the paper is to identify and explain those solutions which can promote Iasi as an ecological city. Therefore, we decided upon some main objectives:

1. identify the characteristics of an ecological city;
2. observe and explain the spatial and functional evolution of Iasi city;
3. analyze the possibilities for Iasi to become an ecological city;
4. suggest the solutions for Iasi to become an ideal city from the environmental perspective.

On an international scale, there are specific criteria which have to be accomplished for a city to become an ecological one. Firstly, each individual has to realize the fact that its actions might be daunting, or even destructive for the environment, therefore he has to pay for the prejudices. The most common thing one can think when he hears the concept of "ecological city" is a "green city", with as much natural space as possible, in the shape of: parks, forests, botanicals gardens, water bodies surrounded by green places etc. This is true, taking into account the fact that, an ecological city is meant to have over 30% of its territory occupied by plants.

Another important characteristic is the waste management. An ecological city means a clean city. A clean city refers to the waste disposal too, not only to garbage collection. It has to be encouraged the recycling of waste, or at least its burning for producing thermal energy, but not its land-filling.

Thirdly, the local authorities should proceed efforts towards building enterprise and installations exploiting alternative which, despite the high maintenance cost, guarantees the same efficiency, but without the risk of excessive pollution of the biosphere. For example, the implementation of certain means of transport in common, based on hydrogen power would significantly reduce pollution in the urban area, which would contribute to a decrease in temperature and big cities that are already overcrowded. Energy derived from renewable resources is definitely preferable, since fossil fuels are the main factors which amplify the greenhouse effect.

Another innovative greening plan of a city is structured in seven steps which should be followed strictly for a better management of the city. The first of

these measures is the establishment of vast pedestrian spaces, to the detriment of roads. Car circulation should be prohibited in overcrowded, central touristic or historic areas, in this way people being ablt to enjoy the peace, quite and the beauty of the moments and of that part of the city.

The second step would be tracks for bicycles, especially because they are non/pollutant and faster than walking by foot. However, it is essential that these tracks to be extended in very safe and well defined zones, in order not to endanger the lives of cyclists. Closely linked to these two steps is a network and the development of environmentally friendly public transport (tram or trolleybus) covering all areas of the city and to ensure a decent transport to all those who are using it.

The following items on the list above are represented by both the existence of several green spaces within urban and renewable energy which, by the installation of solar panels on some official and residential buildings of the municipality, could contribute to the reduction of expenditure from the budget of the local energy and the need to heat the allocated to each consumer. All these measure are rather an individual choice, and therefore, need to be take by every citizen, than by municipality, even though it would be ideal such measures to be takes on a broad scale.

Another solution is to ensure a stable organic deposit, which is required at an European level. The possibility for selective collection will significantly reduce the amount of garbage in the city.

The last step, but not least, is encouraging and supporting local producers. They need special places to sell their products and, of course, to benefit from the infrastructure necessary to get to market. The benefits of the consumption of food produced locally are already well known: in addition to economic criteria and low emissions due to transport, shipping, most local producers are small farmers who do not use pesticides or herbicides and who bring healthier products than those existing in the shops.

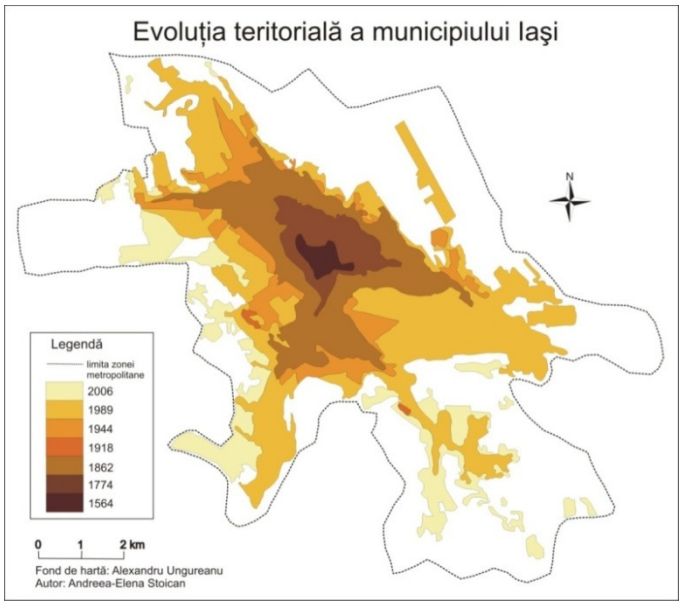
Chapter II: Territorial evolution of Iasi city

Iasi, historically certified since 1408, has grown around a medieval center which is today a quadrilateral bounded by the Stefan cel Mare Boulevard (Ulita Mare), Alexandra Lapusneanu, Independentei Boulevard (Podul Hagioaiei), Elena Doamna and Grigore Ghica (Ulita Ruseasca).

The city expanded later in all directions known today.

In the XVIII – XIX centuries, Copou, Sararie, Ticau, Tătăraşi, Ciurchi, Galata, Păcurari and partially Nicolina areas were merged, and in the second phase, meaning in the twentieth century Păcurari (west), Nicolina (northern part) Frumoasa - Poitiers, Socola, Bucium, Canta, Mircea cel Batran, Alexandru cel Bun, Dacia and Gradinari neighbourhoods plus the Industrial Zone.

The trend of development and territorial expansion can be indicated by analyzing the evolution of the territorial map of Iasi and the boundaries of districts.

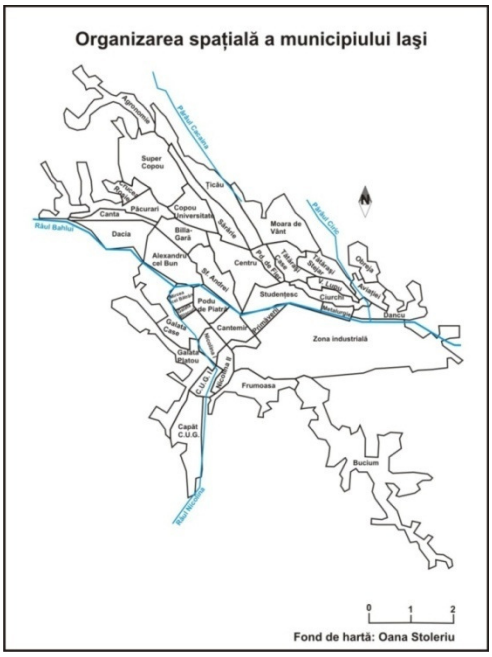


Source: Stoleriu O. M., (2008) – Evolution of human and urban geography of Iasi in the postwar period

It can be observed that the core is represented by what is today the historic centre, the Piata Unirii area, a development that the city had in 1564. Afterwards, there was a radial expansion, with a predominance in the north and east for the year of 1774. For 1862, the development consists of two main axes, north-west and south, a trend which is kept for the following periods.

Several main axes of movement are shaped, which represent the direction of expansion, such as Pacurari Road in the north-west, Nicolina until the former industrial platform CUG (current Fortus) in the south-western, Bucium Road in the south-east and the road to Dancu in east-south-eastern part of the city.

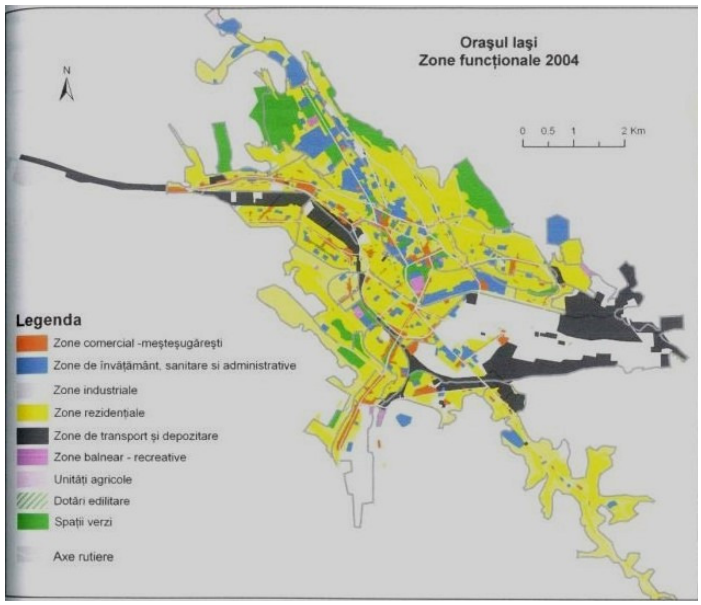
The maps show the trends of urban development the city of Iasi, in accordance with the foregoing, on its evolution. They can be useful tools in the creation of forecasts on future development, territorial expansion, and places that might confer the status of ecological city, more precise, the location of green spaces.



Source: Stoleriu O. M., (2008) – Evolution of human and urban geography of Iasi in the postwar period

As the river Bahlui is a key element in the positioning of many buildings in town, having influence on the city landscape, and the people's habits, we consider important its role in the complex arrangement of the municipality, for conferring the status of ecological city, offering proposals for sustainable development of its major bed and first terrace.

Chapter III: Can Iasi become a green city?



To analyze the possibilities of becoming a green city, and to develop solutions, especially for its spatialization, by identifying environmental issues, in order to remedy them, and to find new spaces to be transformed into green areas, a very useful tool is using the functional areas map from 2004.

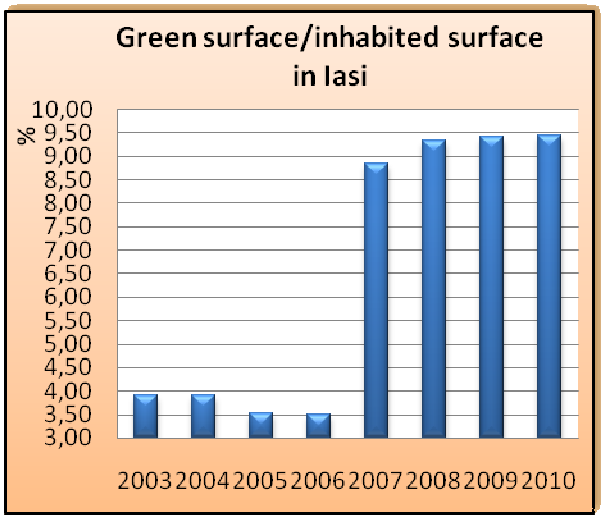
The map contains: commercial areas - crafts, the education, health and administrative, industrial areas, transport and storage, the spa - recreational, agricultural units, municipal facilities, green spaces, which are grafted over the main roads.

Source: Stoleriu O. M., (2008) – Evolution of human and urban geography of Iasi in the postwar period

The map suggests a mixed distribution of the functional areas in the city, without any strict laws of the underlying purposes of concentration. However, it can explain the location of the city's main industrial areas in the southern part, because the dominant wind flow direction is northwest to southeast, thus avoiding air pollution over the city's core.

Another secondary industrial area can be seen in the south-west, where the plant Fortus former CUG, was placed for the same reasons of wind flow dominant

direction. A correlation can be made with residential neighbourhoods, working-class blocks, in their immediate neighbourhood, which formerly housed the workforce concentrated in industrial areas.



A connection can also be established between transportation and storage areas and industrial areas because the storage areas were referred as storage spaces of raw materials used in industry, but also final products obtained from various companies, temporary stored before their transportation to destination.

The map reveals another undesirable reality for a modern social and cultural city, that of the absence of green spaces in many areas of the city, or their underrepresentation.

Larger proportions and areas can be noticed in the north-north-west - Botanic Garden, north-east - the forests and Sorogari-Breazu, and south-eastern forests.

The map is relevant for choosing the direction that development should take to become a green city, as it highlights the lack of green spaces in some neighbourhoods or their unequal distribution, and too little of the existing surfaces, relative to the total built surface area and the number of inhabitants.

Given the arguments and measures presented in the previous chapter, we can say that Iasi city can become a green city only with the support of local authorities and advisers dealing with the environmental problems of the city.

The plans that have been presented are applicable to a large extent, because they do not require excessive funds and also enjoys the support of most young citizens that participate as volunteers, in planting actions of shrubs and trees meant to replace the arid areas in Iasi.

A measure aiming at greening the city of Iasi is represented by the preservation of existing green spaces and the improvement of new ones. Currently, within the city area there are recorded over 660 hectares of green space, which represent about 21 square meters for each inhabitant.

Based on the existence of these parks and undeveloped land, recreation areas were developed such as: Copou Garden, Exposition Park, Ghica Voda Park, green spaces allocated to owners association by educational or economic institutions.

Over the past seven years, the number of natural areas in the urban area grew by more than six percentage points. The evolution of the percentage of green space per inhabited area can be represented as followed: in 2003 - 3.91%; in 2004 - 3.91%; in 2005 - 3.53%; in 2006 - 3.49%; in 2007 - 8.83%; in 2008 - 9.32%; in 2009 - 9.40% and in 2010 - 9.43%.

Besides the 660 acres of natural area, there are forest covered areas such as: Galata Breazu, Ciric and Ticau which also serve as recreational areas.

Project type	**Total value (lei)**	**Suggested year to start the project**	**Deployment Time**	**Completion time**
Improvement of green spaces-Dacia neighbourhood	2.000.000	2009	12 months	2010
Improvement of green spaces- Nicolina-Tătăraşi-Bularga neighbourhood	4.500.000	2009	24 months	2011
Arrangement of 20 hectare of green space I.C. Brătianu (Bucium) neighbourhood				2013
Arrangement of 20 hectare of green space-Vişani neighbourhood				2013
Arrangement of 20 hectare of green space-Dacia neighbourhood				2010
Improvement of square green spaces- Dancu neighbourhood, Holboca commune				2009

Source: PLAM reports,2008 and PIDPCI,2009

In the next chapter we will try to debate some measures that contribute to the greening of Iasi and the adjacent area. In our opinion there should be taken into account three main directions in which the city would have to undergo a process of cleansing and refreshing.

Chapter IV: Proposals for Iasi city to become a green city

From our perspective, the focus is on the major refurbishment of the river floodplain of Bahlui and the adjacent area.

For this reason, the three most important directions of greening Iaşi are: rearranging the first terrace of the river that crosses the city, a sustainable development project for improvement of green spaces and parks in the city, and ultimately, a project of sustainable management of waste, locating several containers for selective waste and of a recycling centre.

This classification is a logical one, since it treats different problems, both in terms of chronology, as well as from an ecological point of view.

As a consequence, water pollution is to be removed first, because water is an essential human environment, but may be the forerunner of many diseases and malfunctions if treated poorly (in wastewater treatment or purification platforms), or due to uncontrolled spill of non-degradable waste.

The Bahlui river has a historical and geographical importance for Iasi city, as it supports on its terraces a large proportion of the city population. Another problem is the development of green spaces. As shown in the previous chapter, they have increased in the past seven years as a share expressed in meters of green area per inhabited area.

Nicolina – Bahlui confluence. Minerva area. Water pollution and degradation of riverbanks, May 2010

However, these natural areas do not cover the share of carbon dioxide that is released in amounts almost exponentially larger than the oxygen produced by green areas.

Paradoxically, in Iasi history there aren't any testimonies of atmospheric poisoning, just because the carbon dioxide is absorbed by the forests that surround the city, acting as an air filter.

Parks in Iasi are also a problem to be discussed, because, besides insuring the process of photosynthesis, they are areas of recreation where people can breathe a less polluted air, and can therefore lead a life free of diseases attributed to pollution

by various agents. One of them is lead, which inhaled in the form of very fine powder, but in large amounts, causes the disease called saturnism.

Thirdly, we can say that an urgent problem that the municipality is trying to solve is that of selective waste collection dumpsters. Although in the past, the city hall initiated an efficient project to equip each household with one bin, the action had only partial success, because the garbage was stored all together thus increasing the risk of biological pollution.

Currently, it is tried to educate people in using organic waste bins, the separate compartments in which to dispose separate waste: metal, paper, plastic etc.

These will be subsequently recycled in a process more efficient and will consume much less time, it will no longer be needed sorting the collected waste.

We also want to plant as many grass species that will lead to the greening of the area and improve the quality of urban life. However, this work is an important one because it articulates the maintenance of a constant control on the main riverbed, which means the elimination of parasitic plants that could endanger the grass or bushes.

This plan can be achieved through the participation of authorities and by hiring qualified personnel who will be involved in the actions mentioned above. On the other hand, more trees that would reduce the amount of sediment reaching the water should be planted on the first terrace of river Bahlui.

Location of waste bins and baskets would improve water quality and soil of related area, of course, if the citizens will contribute to maintaining the cleanliness through civic sense.

Another measure that we consider important is the positioning of automated units that contain gloves and bags for collecting animal waste from pets.

Chapter V: Conclusions

Through our project we want to ponder a problem that represents a challenge not only for the local authorities, but also for its citizens.

The main objective of the project is closely linked with the implementation of new environmental strategies, as existing ones do not seem to cope with the high amount of greenhouse gases released from many industrial processes or vehicles that use fossil fuels.

By presenting the existing measures and the subjective approach of the present work, embodied by a strict set of proposals relating to the rehabilitation of certain areas of our city, we hope to mobilise more people who understand the importance of maintaining a clean city.

Only in this way living standards will truly increase because in addition to a financial factor that dramatically influences our daily life we must turn our attention to our environment and admit our mistakes: the uncontrolled pollution, voluntarily or involuntarily, to stop using green spaces for our own interests, but to

see them as living entities that must be maintained in a perfect state of health. But what really matters is accepting these mistakes and correcting them gradually but steadily.

In conclusion, we can say that no matter how many discussions appear around the idea of pollution in our city, we are confident that the changes are already occurring, and whether or not we are aware of them, the city is already marked by a different mentality that will ensure its success and prosperity in time.

REFERENCES:

Ungureanu, Al., Turcanasu, G.: Geografia asezarilor umane, ed. Performantica, Iasi, 2008
Stoleriu O. M., (2008) – Evoluția uman-geografică şi urbanistică a oraşului Iaşi în perioada postbelică, Ed. Terra Nostra, Iaşi
Raportul Agenției pentru Protecția Mediului Iaşi, pentru anul 2008
Raportul PLAM 2008 (Plan Local de Acțiune pentru Mediu)
Raportul PIDPCI 2009 (Planul Integrat de Dezvoltare pentru Polul de Creştere Iaşi)