

# **SPATIAL ORGANIZING OF SUBURBAN TERRITORIES AND URBAN DEVELOPMENT. CASE STUDY: BISTRIȚA MUNICIPALITY, ROMANIA**

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**Abstract.** The spatial organizing of the suburban territories of municipal cities and towns in Romania has become a priority in the context of their accelerated economic growth. Previous to the integration of Romania into the European Union in 2007 the rhythm of economic growth of these municipal cities and towns was rather slow, registering subsequently a quite accelerated rhythm. Under these circumstances the urban spaces have become overcrowded in terms of new investments, therefore an expansion of these cities in the adjacent areas – the suburbs becoming inevitable. The inefficient exploitation of the suburban areas as well as of the perspective ones of the cities, without establishing priorities for the categories of use according to the actual necessities, becomes a damaging practice. Both the unorganized occupancy of the fields with non classified uses and the perpetuating of individual, group and political interests for suburban territorial spatial organizing may lead to the blocking of urban development. In order to surpass this obstacle and place the urban development on the coordinates of sustainable development it is compulsory to previously elaborate studies of territorial arrangement for this category of geographical space as well. Our research, having as a study case the area of Bistrița Municipality constitutes a first attempt in the field, establishing the highlights of application of the sustainable spatial organizing method to this category of geographical space. The novelty lies in the fact that this category of territory has not yet been the subject of the urban and territorial planning. This suburban territory, placed between the limit of the urban area and the administrative limit, appeared to be the most adequately approached as an object of either urban planning (General Urban Plan, Zonal Urban Plan, Detail Urban Plan) or territorial planning (Inter-Communal Territorial Planning, Zonal Territorial Planning, County Territorial Planning). This aspect determined that the authorizations for different types of works and constructions would be the issue of the County Councils for a territory that is organically part of the locality as well as its administrative propriety. This is the reason that made the urban localities lose their interest in this territory, thus its development becoming quite discordant than in accordance with the interests of the city. Therefore, we notice a degradation of the communication and transport infrastructure, an uncontrolled spreading out of constructions, a degradation of agricultural activities, and significant excesses over diverse environment factors. Based on the Law of Local Public Administration, No. 215 in April, 23<sup>rd</sup>, 2001, it was clearly established the affiliation of this territorial category (art. 4, align. 2), by which the local public administration (the Local Council) becomes autonomous with regard to “*organizing, functioning, competencies and attributions, as well as management of resources that, according to the law, are parts of the commune, city or county, in any case*”. This judicial aspect reveals a new side of this territorial category that, unexpectedly, becomes very interesting and attractive for the urban development. Previously, the fight for the development of cities in Romania was only at the level of the urban areas, but consequently the interest in urban development has extended to the suburban areas, as well. This moment stands for an almost exponential growth of interest towards the fields, resources, environment factors in the suburban area thus constituting the active factors of a sustainable development. Nevertheless, at the moment, the major issue is reflected by the lack of methodology and a model of planning this category of territory at a national level. This study represents a first attempt in the field, which tries to combine a territory of dichotomy in a single study, whose final goal is to establish the rules of developing this new category of territory – *the suburban territory*. Furthermore, this study stands for the synthesis of a project established for and applied to Bistrița Municipality in between 2007-2008 entitled “*Delimitation of the Suburban Area of Bistrița Municipality*” and which is the first of this kind in Romania, elaborated by urban geographers, mainly aiming at the unblocking the process of urban development and coordinating it towards sustainable development. The proposals for both urban and territorial planning were successfully put into practice; hence, the first results were soon obvious (i.e. unblocking the urban traffic, stopping the uncontrolled enlargement of the city, setting the right locations for industrial parks, stopping the degradation of environment, the optimum management of the territory, etc.). This paper can constitute a model of approach of the urban development problems at a national level and, at the same time, it represents another proof for the practical –applicative character of geography as a science.

**Key words:** *territorial arrangement, suburban area, sustainable development, technical infrastructure*

## **INTRODUCTION**

The study applied to the suburban area of Bistrița Municipality represents a first in the field and it presents the manner of sustainable planning of this category of geographical space. The novelty lays in the fact that this category of territory has not been, for a long period of time, the subject of urban and territorial planning. The suburban territory, situated between the limit of intra-urban and the administrative one, has been integrated as subject of urban planning studies, (PUG<sup>1</sup>, PUZ<sup>2</sup> and PUD<sup>3</sup>) and territorial planning (PATIC<sup>4</sup>, PATZ<sup>5</sup>, PATJ<sup>6</sup>)

<sup>1</sup> General Urban Plan.

<sup>2</sup> Zonal Urban Plan.

so far. As a consequence, the construction authorizations for various types of works and constructions were emitted by the County Councils within the territory belonging to the locality that administers it. Therefore, urban localities administrations have lost their interest towards this territory, its development within the urban localities being rather discordant in respect to the interests of the city. We notice a decrease in the quality of transport and communication infrastructure, an uncontrolled expansion of terrains destined for constructions, a decrease in agricultural activities, severe excesses affecting all environment factors etc.

In basis of the Local Public Administration Law, no. 215, in April, 23, 2001, which clearly regulated the status of this territorial category (art. 4, align. 2) the local public administration (The Local Council) gained autonomy in which concerns „*the organizing, the functioning, the competencies and liabilities, as well as the management of resources, that, according to the law, are part of the commune, city or county, according to the case*”. This legislative aspect highlights a different new perspective upon this territorial category that consequently gains interest and attractiveness for the development of the cities. Before 2001, the battle for the development of the cities in Romania was carried out only at the level of intraurban area. Beginning with that date the interest in urban development moved in the extraurban (the suburban area). This moment represents the beginning of an almost exponential increase in the interest towards land, resources and environment factors in the suburban area, all becoming active factors of sustainable development.

The major issue emerging now is the fact that at a national level there is no methodology and no pattern for planning this territorial category.

Our research portrays the first attempt to join a dichotomist territory in a single study, whose final purpose is to give a solution of how the development of this new territorial category – *the suburban territory*, should be regulated.

This research embodies the synthesis of a project that was drawn and applied to Bistrița municipality, in between 2007-2008, entitled „*The Delimitation of the Suburban Area of Bistrița Municipality*” being the first of this kind, elaborated by urban geographers, and whose main aim was to prevent possible blockage situations caused by the urban development process, and to establish its coordinates of sustainable development. The urban and territorial planning proposals were successfully put into practice. Hence, the first results were immediately noticed, i.e. preventing urban traffic jams, stopping the uncontrolled urban expansion, optimizing the management of territory, setting up proper establishments for industrial parks, stopping environment destruction, etc.

This may be considered a pattern for approaching the urban development issues at a national level, as well as ulterior proof of the practical and applicative character of geography as a science.

On the other hand, the paper tries to highlight the main principles and criteria for **organizing the suburban area**<sup>7</sup> by establishing a set of complex policies applied at a local-urban, regional, district level in order to accomplish the equilibrium between the urban and the rural at a territorial level.

Taking into consideration the suburban area as being *the area situated nearby the cities or at their space/border and that characterizes through an urbanisation level lower than the classical standards, and whose inhabitants a specifically rural way of living and behaviour*, both the extraurban territory and three of the localities, parts of the urban, those of Ghinda, Sărata and Sărățel were taken into discussion.

The study focused mainly on solving **the territorial dysfunctions within the suburban territory** and on defining **the relations** of interdependence in the domains of economy, infrastructure, urban development, assuring leisure activities and green spaces, and in assuring with alimentary products. Again, it focuses on solving the dysfunctions both at the interface between intraurban and extraurban, as well as those at the interface between the administrative territory and the periurban from a juridical point of view, taking into account that this territory represents the resource for the development of Bistrița Municipality.

The main objectives of this study are:

- to identify new landscapes to be preserved;
- to identify and preserve archaeological sites;
- to assure green spaces according to the European standards;
- to identify areas with geographical risk;
- to identify protective areas for the Bistrița river bed and for the registered water courses;
- to identify the expansion tendencies of the inhabited and service areas;
- to identify new locations for leisure activities and sports;

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<sup>3</sup> Detailed Urban Plan.

<sup>4</sup> Inter-Communal Territorial Plan.

<sup>5</sup> Zonal Territorial Plan.

<sup>6</sup> County Territorial Plan.

<sup>7</sup> Even though the technical conditions book/roll specifies the term „periurban area”, references were made only regarding the extraurban territory of Bistrița Municipality. Due to the fact that annex 3of Law 350/2001 defines the periurban area, term used in the title of the project as “*The territory surrounding municipalities and cities, set by specialty studies, within which interdependent relations in the fields of economy, infrastructure, work migration, assuring leisure activities and green spaces as well as assuring agrifood products, etc are created*”, the term suburban area was used in order not to create confusion.

- to identify several locations for industries and storage;
- to assure easy access to the areas of interest.

As a result of the proposed measures the project aimed at:

- fortifying the role of Bistrița Municipality as a **regional equilibrium** pole, by diversifying its functions and by attracting some specialised regional functions;
- pushing Bistrița Municipality out of the **“cone of shade”** and alienating it to the important transregional and transcontinental corridors of development;
- rehabilitating the ambiance and improving the general image of Bistrița Municipality, which had been damaged as a consequence of the uncontrolled urban expansion;
- widening the attractive spaces meant to urban tourism and recreation activities and developing their deriving specific services;
- restructuring of sectors and prioritizing the stimulation of development of high added-value economic activities and of those playing the role of **“attractor”** in the national economy;
- selectively attracting young, highly trained migrants
- balancing and stimulating the usage of resources and the development potential of the suburban area of Bistrița Municipality in accordance with the strategies of regional and sector development;
- stipulating diverse opportunities of jobs openings and dwelling construction, providing an infrastructure of social services and a technical infrastructure at a European level, under the condition of preserving the environment, the social integration and safety;
- developing new tourism structures and promoting the area of Bistrița Municipality as a pole zone of tourism attraction;
- Managing the natural potential, including patrimony assets. Shaping the ecological frame, by integrating it in the „Nature 2000” Network.

## 1. CONCEPTUAL ASPECTS REGARDING THE SUBURBAN AREA

Suburbanism as a geographical phenomenon must be considered in its two main aspects:

- the transfer of some of the urban characteristics to the urban adjacent space;
- the fact that this space exerts some functions, which individualize it among other geographical spaces, in favour of the city.

In other words, suburbanism is an expression of the relations between **the city** and **the surrounding area**, relations which do not always end in urbanizing that space.

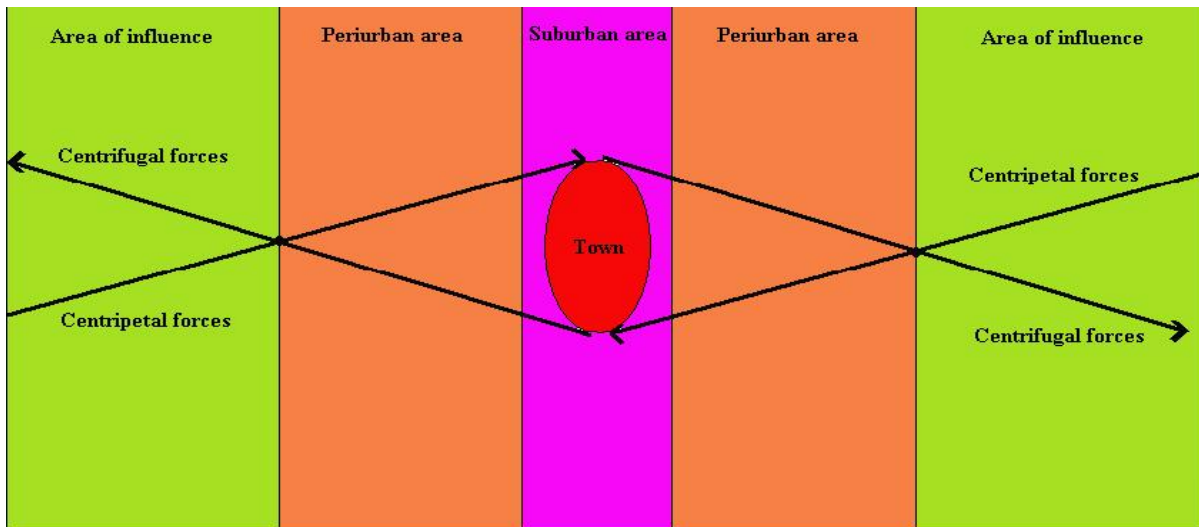
The relationship between **the city** and **the surrounding area** has never been simple and univocal. There has always been, and there still is, a certain dependency of the city in which regards the supplying of agricultural products, dependency that had been unbalanced by its “Power” position expressed in terms of territory influence by its political, administrative, military, religious, social and economic function.

*The suburban area, in which we can find phenomena encountered neither within the city nor within the rural space, can be considered a border space between the rural and the urban, which either separates or connects the two main types of area.* This buffer space is not homogenous and it does not evolve simultaneously and uniformly in all its directions and compartments, its evolution being related to the stimuli induced by the city through the means and along the communication axes. As the city consolidates and expands territorially and functionally, the suburban area alters its parameters and consistency, being “absorbed” by the city, and consequently being spatially “displaced”. Hence, what used to be suburban, becomes urban, this tending to become a continuous process, in the phenomena of **“oil slick”** type uncontrolled expansion of the urban organism. The suburban area assumes different shapes, according to the specificity of the steps it takes in its dynamics towards the city, both in its social and economic frame and in its cultural (in terms of material culture) particularities. That is the reason for which suburbanism always has a **“transition”** aspect, characteristic of a phenomenon that both externalizes and materialises the process of urban evolution in time and space. Consequently, the material forms specific to the suburban area do not completely disappear once with its absorption into the urban, preserving still the trait of a slow progression towards its complete transformation into an urban space.

The main characteristics of the suburban area are the following:

- *the suburban area may be defined by considering the intensity of its specific (suburban) functions and not by the degree of evolution of the urbanisation process.* Most of the already existing definitions concerning the suburban area highlight three fundamental attributes, which are: space proximity to the city; functional relations with it; landscape characteristics (ways of exploiting the terrain including the construction areas);
- *the suburban area is an element of the geographical landscape;*
- *the suburban area has continuous/ permanent cooperation relations with the city, is continuously changing under the city influence, it is an area for which the city provides a series of services;*

- *the spatial development of the suburban area must be seen in correlation with the city spatial development, according to the principle of the interaction of centrifugal forces of the city and centripetal forces of the region, forces that overlap (intersect) in the area nearby the city;*



**Fig. 1. Space delimitation of the urban influence. Graphical method**

- *the suburban area participates in the creation and development of an urban agglomeration, in accordance with the theory of polarized development. The concentration of workplaces and, implicitly, of the population of a city amplifies the influences of the city over the adjacent space. Thus, a huge investment in the city extends over the suburban space (workforce, changes in the transport network and agricultural land use) as well;*
- *we can often find production or commerce establishments, branches of important enterprises in the neighbouring city;*
- *favourable natural conditions (soil, climate, relief, vegetation, etc.) are not always sufficient for the development and expansion of intensive agriculture, the constraining factor often being the lack of workforce;*
- *the suburban area attracts a larger number of week-end tourists, but the leisure and recreational activities related services and tourism infrastructure adapted to these needs are not fully developed;*
- *the transportation function is one of the most important functions of the suburban area, mainly due to the localisation of traffic facilities and traffic concentrations (part of it being the traffic of transit);*
- *the suburban area has a complex character: agro-alimentary production, workplaces for personnel employed in agriculture who have a double professional orientation (agricultural and non-agricultural), offer of lands for construction purposes, public utilities/endowments, non-agricultural investments (i.e. wholesale deposits, commercial establishments, sales exhibits etc.)*
- *the limits, the size, the structure and the importance of the suburban are in accordance with the size of the city, and its economic and geographical position and localization.*

The multiple relations between the city and the suburban area can be classified into three main categories which correspond to the three main groups of functions that define the city: the relationships between inhabitants, the settling around a centre with certain autonomy and the functional integration in a global economy. As we can notice, they emphasise the framing of a territory within an urban functionality or, in other words, the augmentation of the urban functions beyond the intraurban. The feedback given by the area of influence, which is predominantly suburban, depends on a series of factors related to the general level of urbanisation, be it regional or national, which mainly concern the natural and human potential of the area of influence, all these being directly connected to the overall level of economic and social development.

The city has the power to permanently or temporarily attract population from the adjacent area, as well as to periodically or permanently “relocate” its inhabitants in this neighbouring space. Attraction and “relocation” represent two demographical fluctuations the volume, the intensity, the distance or the time unit of which differs from one city to another, thus constituting a criterion of separating the periurban areas. By multiplying the workplaces outside the city as well as the ones within, the population flows and numbers grow, thus triggering the increase in density, which is more than the agricultural activities require.



The agricultural activities are specific to the suburban area, production being planned in accordance with the demands of the neighbouring city. The areas cultivated with vegetables and the intensive orcharding and gardening cultures are the most specific types of agricultural activities within the suburban area. The more extended they are, the bigger and more important the urban centre is. Subsequently, this agricultural dependence generates other relations that socially and economically, point out the complementary character of the two spaces, the urban and the adjacent one.

The complementariness of the relations established between city and adjacent areas is also reflected by the fact that, for ages, the city has not only been a consumer of products but also the factor that progressively imposed a specific lifestyle within the space it influenced.

The commercial function of the city has contributed to the particularization of the suburban area, to which other functions were continuously added along time: the defence function, the transportation function, the industrial function. The surrounding suburban area does not only satisfy or support the economic necessities of the city. Significant, in this case, are the changes in landscape, the alterations caused by using the suburban territory for leisure activities and tourism (mainly for the urban population), for water supply, for waste water systems, for care-and-health-related facilities or other public institutions generally serving social life. These numerous and diverse needs of the city give the suburban space a distinctive morphology, which is different from the rural or natural one.

The role of the suburban area in developing the city is multiple:

- it represents the territory destined to possible expansions of the intraurban;
- it contributes to supplying of the local economy with raw materials by using the soil and subsoil resources it benefits of;
- the agricultural land contributes to the supplying of the city's agrifood markets;
- the available forestry fund contributes to the improvement of urban environmental factors such as water, air etc. being a local resource itself
- the presence of elements optimally framed in the area and easily accessible can constitute the basis for the construction of secondary, holiday houses;
- the forestry fund, the ecologically degraded lands, the humid areas, the shrubs surfaces, etc, can form an ecological network meant to preserve the local biodiversity and to stabilize the ecological equilibrium.
- the suburban area can take over a series of urban economic functions (industrial, trade and services, etc) setting them along the main transport axes, which subsequently will improve the urban life.
- within the suburban area the new transit and relief roads can be planned so that they would release and improve the urban traffic;
- the chaotic and uncontrolled development of the suburban area represents a major risk factor for the development of the urban centre, due to the difficulty of future possible rearrangements within it. For this reason it is important that the suburban area should beforehand establish development strategies, so that the problems of the city be solved, all possible changes being located only in this area;
- specific establishments, such as agrotouristic farms (animal breeding, vineyards, orchards), which can be considered a new way of managing the agricultural potential, can be settled within the suburban area.

## 2. URBANISM PROPOSALS

The urbanism proposals at the suburban area level have been illustrated on the map below. We based the design of the map on a critical analysis of the territorial reality within it, and, simultaneously, on the concept of suburban area, by analysing the county context of development and the specific problems of Bistrița Municipality (fig. 2).

Urbanism and territorial planning proposals focused on all territorial units subjected to the concept of sustainable development (fig. 3). They were structured on three time categories: short (0-5 years); medium (5-10 years); long (10-25 years). Below you can find the most important urbanism and territorial planning proposals, which are conceptually original and which are present on the map of PROPOSALS as well (fig. 4).

### 2.1. Communication axes

a) *Belt road (urban highway), Southern route „Sărata – Unirea”.*

The implementation of the project mainly aims at separating the present urban traffic from the transit one on the East-West route. Apart from the already mentioned, we can add other major advantages to the development of Bistrița Municipality:



Fig. 2. Territorial position of Bistrița Municipality in Romania

- the increase of the economic and urban value growth of the Southern part of extraurban in Bistrița Municipality;
- determining an East-West development on axes of Bistrița Municipality;
- increasing the communication potential for new industrial areas, such as “Industrial Parks”, the location of which was suggested to be in the South-Western area of the Municipality. This represents one of the basic conditions for attracting investors in the industrial parks<sup>8</sup>;
- it contributes to the construction of a new industrial mixed type of transportation;
- it will support the traffic from within Bistrița Municipality towards A 14 Highway on a Western route;
- it will represent the major road infrastructure having the purpose of supporting a series of new urban roads that are to be built as a consequence of the urban development of the Municipality on the left side of Bistrița River. It will also help the unblocking of part of the urban traffic deviating it towards peripheral destinations (i.e. the connection with the future Bistrița airport);
- It will lead to the forming of a closed circuit of belt roads meant to serve not only the Municipality transit but also to create a more rapid access to its extremities and peripheries.

b) *Extending the belt road, Northern Route DN 17 C*

c) *Four lanes road 2.12 Năsăud – Bistrița.*

The putting into practice of the project will lead to another series of favourable consequences for the regional and local development of Bistrița Municipality:

- it will strengthen the potential of transportation connections on the North-South axis;
- it will create opportunities for creating the Bistrița – Năsăud development micro-region thus eliminating the centrifugal forces effect which presently does not allow a correct management of this socio-economic entity;
- on medium term, it will represent the support basis for the creation of a conurbation which would contain the two municipalities that are presently in a relative competition.

<sup>8</sup> For example, for the Industrial Park of Tetarom III in Jucu locality, its most important investor, Nokia International Company has recently signalled to local authorities the urgent need of an urban highway, connecting Cluj-Napoca Municipality and Transylvania Highway to the park establishment, in order to increase the communication potential.

## 2.2. „Poieni” Industrial Park

*The process of investing within the park presents two stages. In the first stage, investments can begin at once. It is the stage which deals with the building of new plane surfaces on the first terrace of Bistrița River and it presupposes minimum costs. These surfaces do not need stabilization works. The second stage, due to the advantages of location and to the investments it already benefited from, permits the further extension of the industrial park to the third terrace of Bistrița River:*

- a) The existence of an access road, which deviates from DJ 154 at Sărata locality, passing along the nursery garden, has real possibilities of modernization (first paving and subsequently asphaltting).*
- b) The proposals for the continuing the building of transport roads (express road - southern belt road) will consequently form better connections with the new industrial establishment and will bring out new opportunities for development both within the park and within the entire Southern area of Bistrița Municipality. As a consequence the costs for building the Southern belt road will be absorbed quicker. The construction of the Southern belt road can be sustained with governmental and European financial support, the accessing funds being motivated by the necessity of integrating the industrial park in a viable communication network.*
- c) Electricity can be provided by building a new energy-conversion plant transforming 110/20 kV, quite necessary for other purposes as well.*
- d) The arrangement of the establishment for the industrial park can constitute a further step in the works for flood control along Bistrița River and could bring forth the creation of a new urban green area meant to function as a green protection belt for the industrial park.*
- e) The possibility of arranging a residential area nearby the industrial park would reduce the internal migration.*
- f) The simultaneous development of a “high tech” core area (University campus) for research and development which will support the development of the industrial park.*
- g) The ecological impact of the park can be limited by developing a green belt (reforestation of degraded slopes, torrents).*
- h) The connection with the industrial park can be made through other roads, including the route crossing Viișoara, by building a bridge over Bistrița River assuring the connection with the national road DN 17 and with the European road E 58.*
- i) The industrial park appeals to the industrial branches with a low level of pollution.*

## 2.3. The ecological network

According to R. Noss, 1992, A. Tiškov, 1995, A. van Opstal, 1999, I. M. Bouwma, 2001, the ecological network, developed in a certain region and studied over an extended period of time, should not only insure the preservation of biologic and landscape diversity, the whole spectrum of biotypes, vegetation associations, fauna succession and population and landscape structures included, but also maintain their functional characteristics, which includes the return to the pre-existing/previous natural states and the elimination of perturbation spectres. In the case of Bistrița Municipality, this network consists of 3 nuclei of rank 3, which are protected areas of local interest and which are recommended due to the following considerations: the presence of an almost pure, ecologically well structured arboreta; their old age and the presence of some morphometrically majestic trees; a vigorous and valuable genotypic fund that can support the regeneration of other forest areas by retrieving and replanting their seeds; areas covered with forest vegetation, from a series of ecological corridors of a zone and county importance.

### 2.3.1. Green spaces

According to OUG (special governmental decision/ordinance) no.114/ 2007, art. 2 align. 1, by 2010, all administrations must assure a surface of minimum 20 sq m/inhabitant out of the intraurban, and by 2013 a minimum of 26 sq m/inhabitant.

So as to accomplish this goal the following categories of land have been analysed and proposed for arrangement:

- **the existent forest areas** – aiming to form “park” type forests, which will need only minimal arrangements such as: *Șiferberg Forest – 52,7 ha, Schulerwald Forest – 35 ha, La Cocoș Area – 3,2 ha* of which 2 ha of forest;
- **public property degraded pastures** – aiming to arrange several urban parks with specific arrangements and endowments. Hence, the proposal was the *Lempeș Pasture – 7 ha*;

- **public and private property degraded lands** – aiming to arrange urban parks with specific arrangements and endowments. *Rujia forest and the fields in its proximity* - **38,9 ha**, and the *Subcetate* area - **3,3 ha**, etc;
- **areas with flood risk from the meadows and the inferior terraces of Bistrița River** – aiming to arrange a park for promenades in the areas proximal to the old location of Unirea locality, having a double role: of a promenade park and of an area for protecting and reducing the effects of the flood wave in case of calamities. The proposed surface of **14,61 ha (Pe Copalã)** would be included in the intraurban;
- **small green spaces, squares, green areas along water streams, humid areas, public gardens** – aiming to complete the surfaces with green spaces: *forestations* – it refers to areas that, due to their location, surface, morphology, relief dynamics, accessibility, can be used only for forestations and for constituting small biocenosis, where the urban flora and fauna can be preserved. These areas contribute both to the embellishment of the urban image and to the improvement of environmental factors. The surface proposed for forestation is of **8,18 ha**; *squares* - **23,09 ha**; *sanitary areas* – **12,43 ha**; *Urban alleys* – **55,77 ha**.

#### **2.4. The arrangement of degraded lands**

Since 1989 and up to the present days, works for terrain amelioration have been stopped due to the decomposition of the socialist state agriculture, and to the absence of another type of viable agriculture (private farms). Consequently, the terrains meant for agriculture, especially those situated on slopes, have suffered a continuous lack of attention. Over pasturing, the arrest of amelioration programs for natural pastures and for the terrains affected by linear and depth erosion, landslides, etc., have determined a continuous increase of the degraded agriculture terrain surfaces. Hence, a great number of such terrains have suffered major damage (total wash of soil horizon to the parietal rock, expansion of torrents on extended surfaces of several hectares, the emergence of landslide processes, etc), giving way to an only solution for viable economic reconstruction and amelioration, forestation.

Some surfaces have been proposed for forestation in view of other reasons such as:

- increasing the forestation surfaces and regenerating the existing forests in order to insure their integrity and their sustainable development;
- reconditioning the old and creating new ecological corridors for the local and county network;
- creating new forestation protection curtains along roads, in industrial areas, along water streams etc;
- framing of areas (ecological zones) of vegetation natural reconstruction in the purpose of rebuilding local ecosystems, others than the forest ones;
- creation of several “forest energetic plantations”<sup>9</sup>.

The surface recommended to forestation according to the above mentioned requirements has grown up to 1353,94 ha, which represents 11,11 % out of extraurban area. This should lead to an increase of the forest areas from the present percentage of 3283,10 ha (26,95 %) to 4637,04 ha (38,05 %) of the extraurban surface.

The increase of the forestation surfaces will bring forth several advantages for Bistrița Municipality and its suburban area:

- fortifying the ecosystems and framing the local ecological network;
- total and sustainable capitalization of the ecologically degraded areas or of erosion, landslide, inundation, etc. predisposed areas;
- benefiting from advantages generated by the protection function of forests;
- improving the quality of environmental factors;
- protection and preservation of the geo-fund;
- fortifying the regenerating function of forests;
- fortifying the economic function of forests;
- improving the suburban image.

### **3. CONCLUSIONS**

The present study represents a *scientific tool* created in order to help the local administration authorities establish a hierarchy of the *problems affecting the main processes and phenomena encountered in this area*.

It also frames the *optimum measures* to be taken in respect to the aspects of urban inhabiting, with impact upon the limitation of urban mobility, upon the exploitation and the lawful management of resources, upon

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<sup>9</sup> They are forests consisting of trees with a rapid growth, which are used to produce biomass; biomass is the resource used to produce thermal energy through specific means.

cutting out the risk factors, upon the harmonious and continuous development of the anthropic and natural environment, in the purpose of encouraging the powering up of *local autonomy* in coordinating and properly managing a *sustainable development* of Bistrița Municipality.

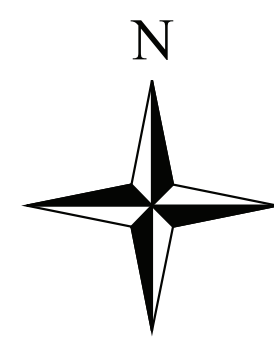
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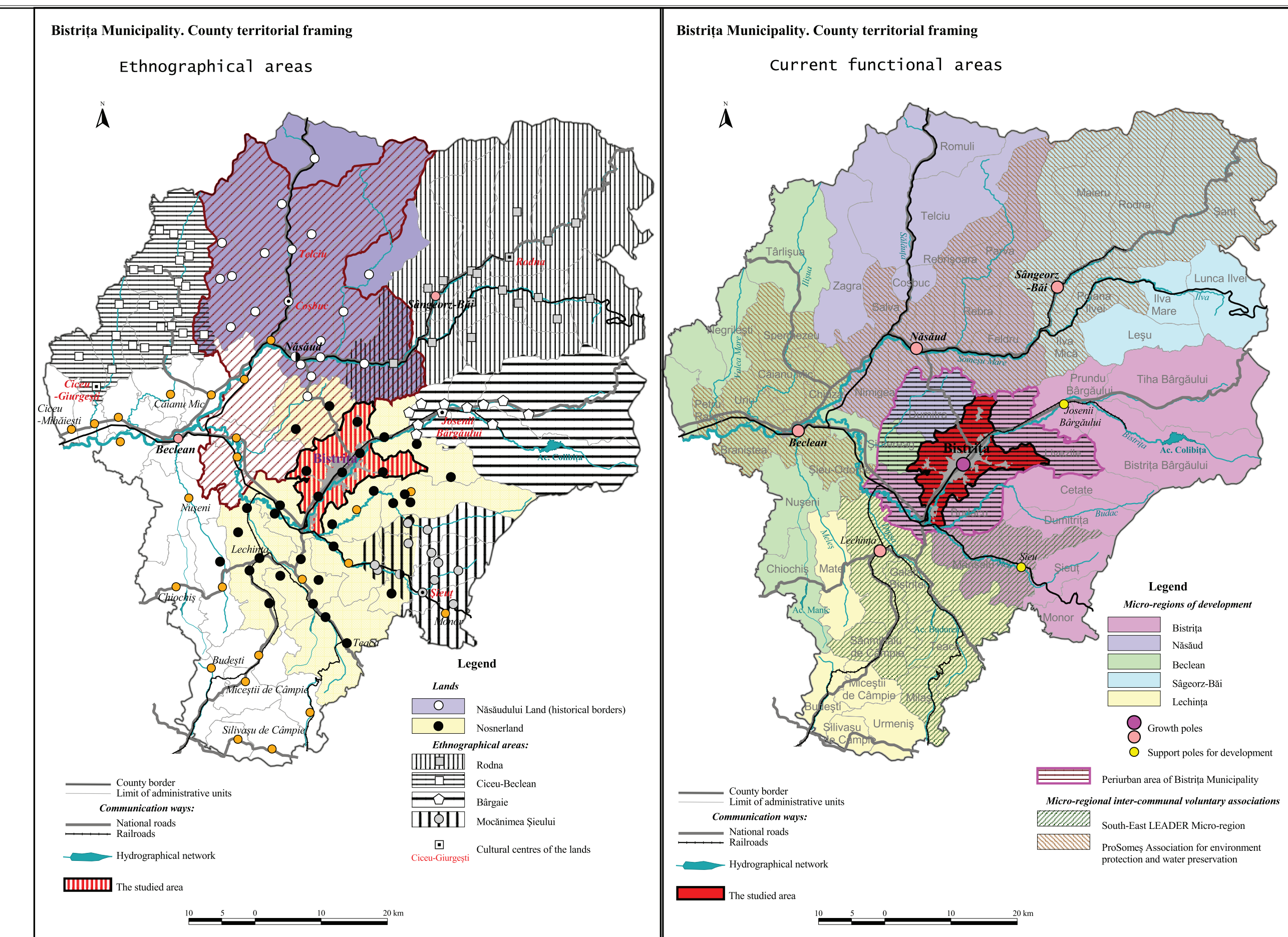
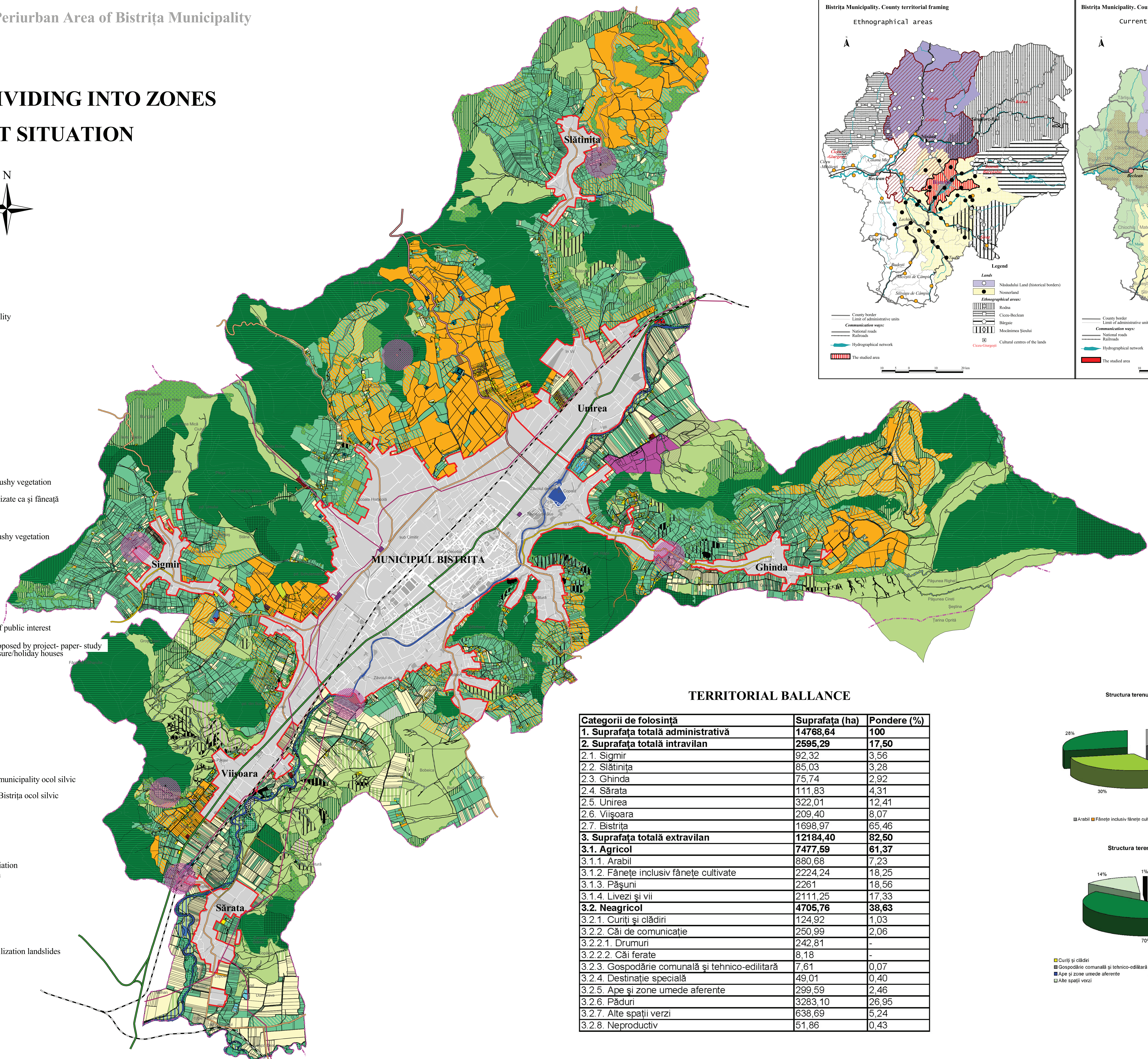


# TERRITORIAL DIVIDING INTO ZONES

## CURRENT SITUATION

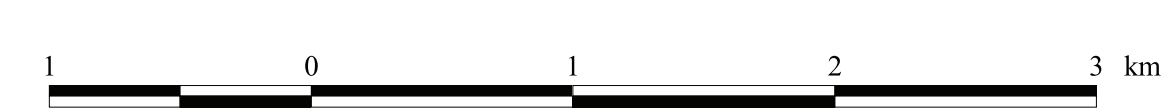
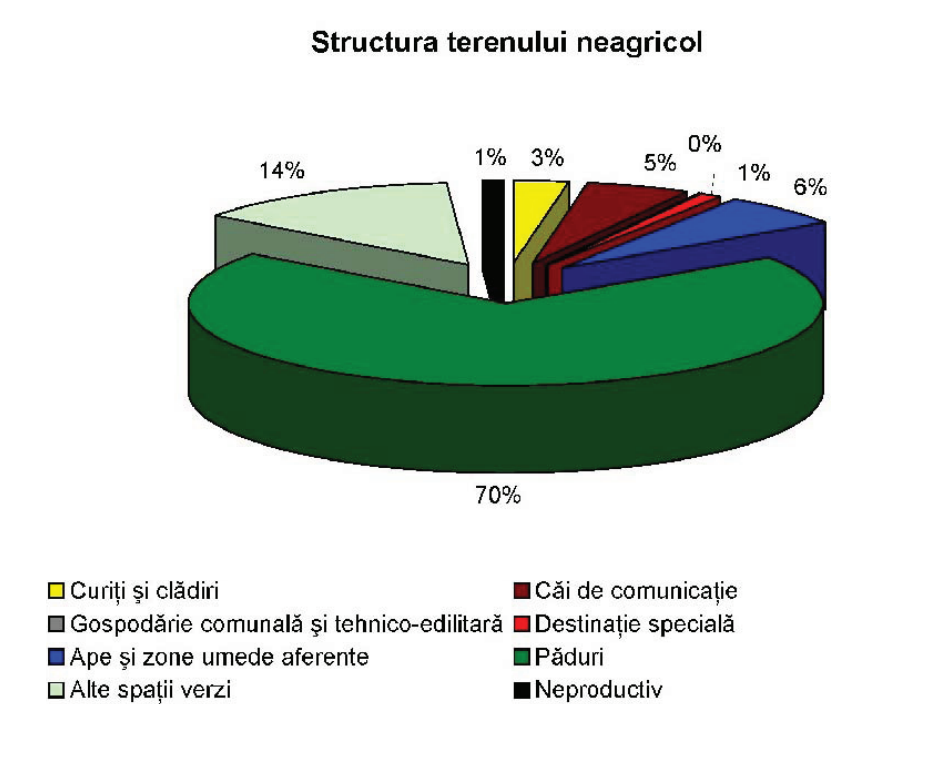
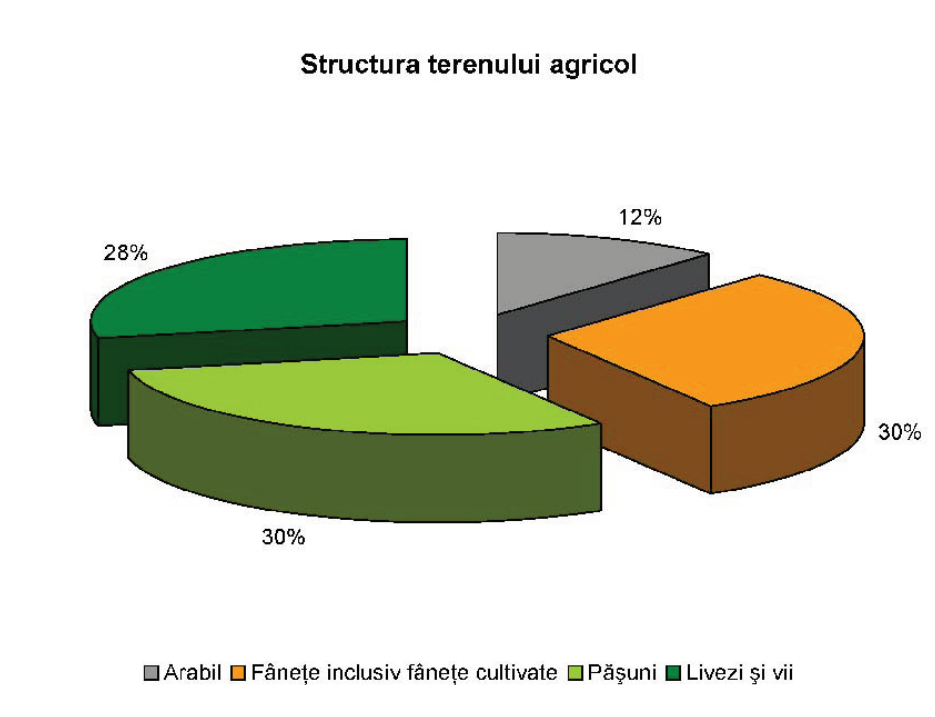


- Legend**
- The administrative limit of Bistrița Municipality
  - The limit of intraurban
  - Classified public roads**
    - European roads - B category
    - National roads of secondary importance
    - County roads
    - Communal roads
    - Forestry roads
    - Railroads
    - Electric energy line - 110 kv
  - Terenuri agricole Agricultural lands**
    - Arable
    - Unexploited arable
    - Meadows
    - Meadows - Pastures
    - Meadows infested with arboreal / shrubberies / bushy vegetation
    - Orchards
    - Ex-orchards used as meadows Livezi bătrâne utilizate ca și fâneață
    - Ex-orchards used as pastures
    - Meadows on ex-orchards
    - Pastures on ex-orchards
    - Nursery gardens Pepiniere
    - Orchards infested with arboreal / shrubberies / bushy vegetation
    - Vineyards
    - Pastures on ex-vineyards
    - Pastures
    - Humid pastures
    - Pastures - Meadows
    - Pastures infested with arboreal / shrubberies / bushy vegetation
  - Non - agricultural lands**
    - Courtyards and buildings Curți și construcții
    - Public interest endowments / Endowments / of public interest
    - Residential area and supplementary functions
    - Residential area and supplementary functions proposed by project-paper-study
    - Agriculture-related accessories / annexes and leisure/holiday houses
    - Industrial units/establishments and storehouses
    - Agroindustrial establishments
    - Sport fields
    - Communal household area
    - Public technical endowments
    - Lands with special destination
    - Communication (ways) infrastructure**
      - Public roads
      - Public roads side lands
      - Railroads
  - Forests**
    - Forests and forestry areas under the authority of municipality ocol silvic
    - Forests and forestry areas under the authority of Bistrița ocol silvic
    - Retrocedate forests
    - Forests under litigation / unajudged forests
    - Other green areas**
      - Shrubs
      - Riverside vegetation
      - Mezohydrofile herbacious agglomeration / association
      - Hydrofile herbacious agglomeration / association
    - Waters**
      - Water areas
      - Polders (arrangements)
    - Unproductive lands Terenuri neproductive**
      - Lands affected by erosion
      - Lands affected by active landslides
      - Lands affected by stabilized of /in course of stabilization landslides
      - River flood-plains
      - Archaeological sites



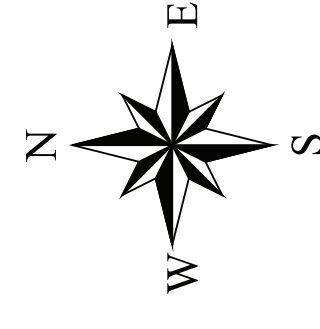
### TERRITORIAL BALANCE

Categoriile de folosință	Suprafața (ha)	Pondere (%)
<b>1. Suprafața totală administrativă</b>	<b>14768,64</b>	<b>100</b>
<b>2. Suprafața totală intravilan</b>	<b>2595,29</b>	<b>17,50</b>
2.1. Sigmir	92,32	3,56
2.2. Slatinița	85,03	3,28
2.3. Ghinda	75,74	2,92
2.4. Săratea	111,83	4,31
2.5. Unirea	322,01	12,41
2.6. Vișoara	209,40	8,07
2.7. Bistrița	1698,97	65,46
<b>3. Suprafața totală extravilan</b>	<b>12184,40</b>	<b>82,50</b>
<b>3.1. Agricol</b>	<b>7477,59</b>	<b>61,37</b>
3.1.1. Arabil	880,68	7,23
3.1.2. Fânețe inclusiv fânețe cultivate	2224,24	18,25
3.1.3. Pășuni	2261	18,56
3.1.4. Livezi și vii	2111,25	17,33
<b>3.2. Neagricol</b>	<b>4705,76</b>	<b>38,63</b>
3.2.1. Curți și clădiri	124,92	1,03
3.2.2. Căi de comunicație	250,99	2,06
3.2.2.1. Drumuri	242,81	-
3.2.2.2. Căi ferate	8,18	-
3.2.3. Gospodărie comunală și tehnico-edilitară	7,61	0,07
3.2.4. Destinație specială	49,01	0,40
3.2.5. Ape și zone umede aferente	299,59	2,46
3.2.6. Păduri	3283,10	26,95
3.2.7. Alte spații verzi	638,69	5,24
3.2.8. Neproductiv	51,86	0,43





# TERRITORIAL DIVIDING INTO ZONES - PROPOSALS



- The administrative limit of Bistrița Municipality
- The intraurban border of Bistrița Municipality and its affiliated localities
- Border of the proposed intraurban

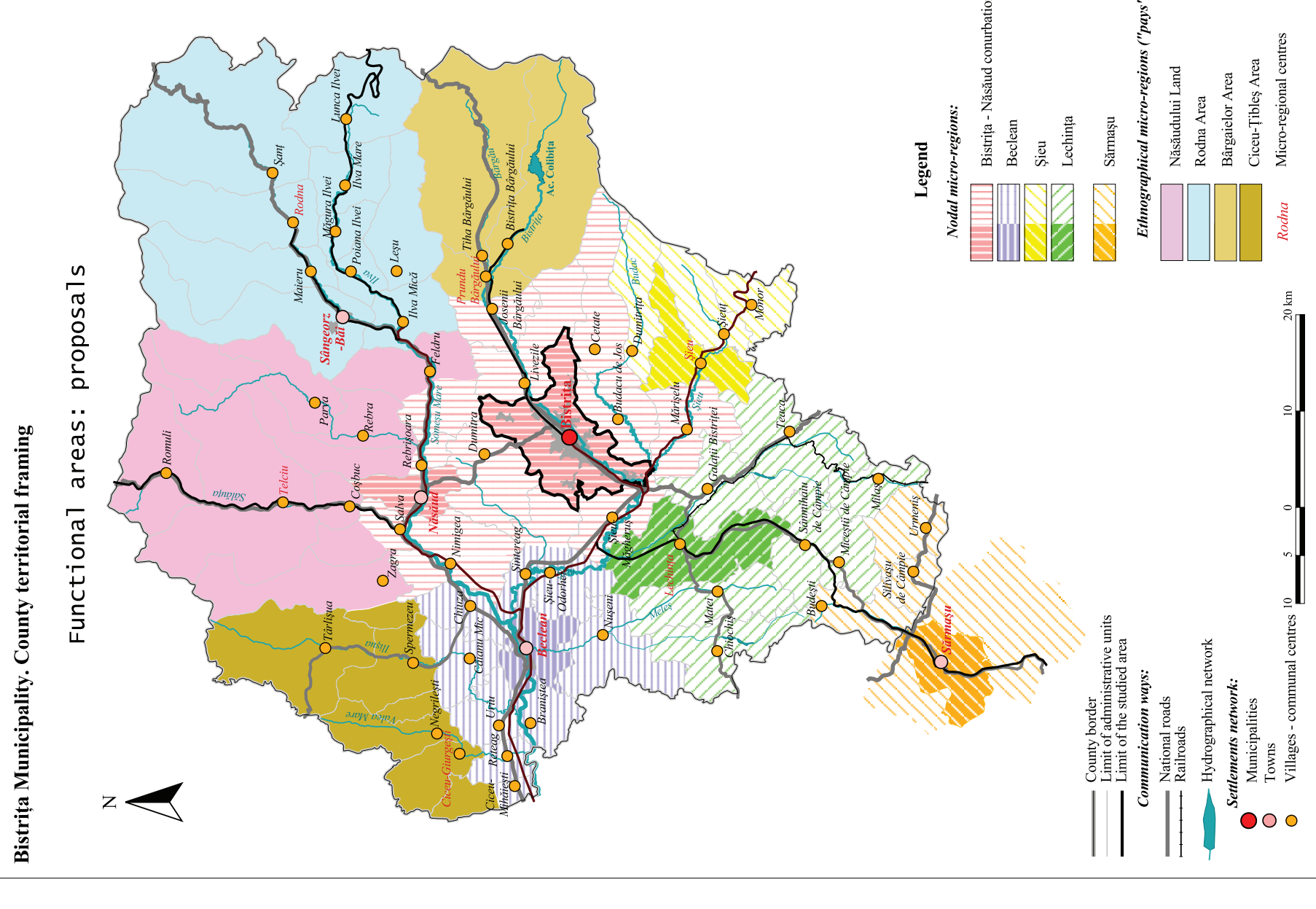
- Classified public roads
- Railways
- Water areas
- Hydrographical network

- Extraurban buildings
- The existent/current buildings
- Buildings proposed on urbanism studies

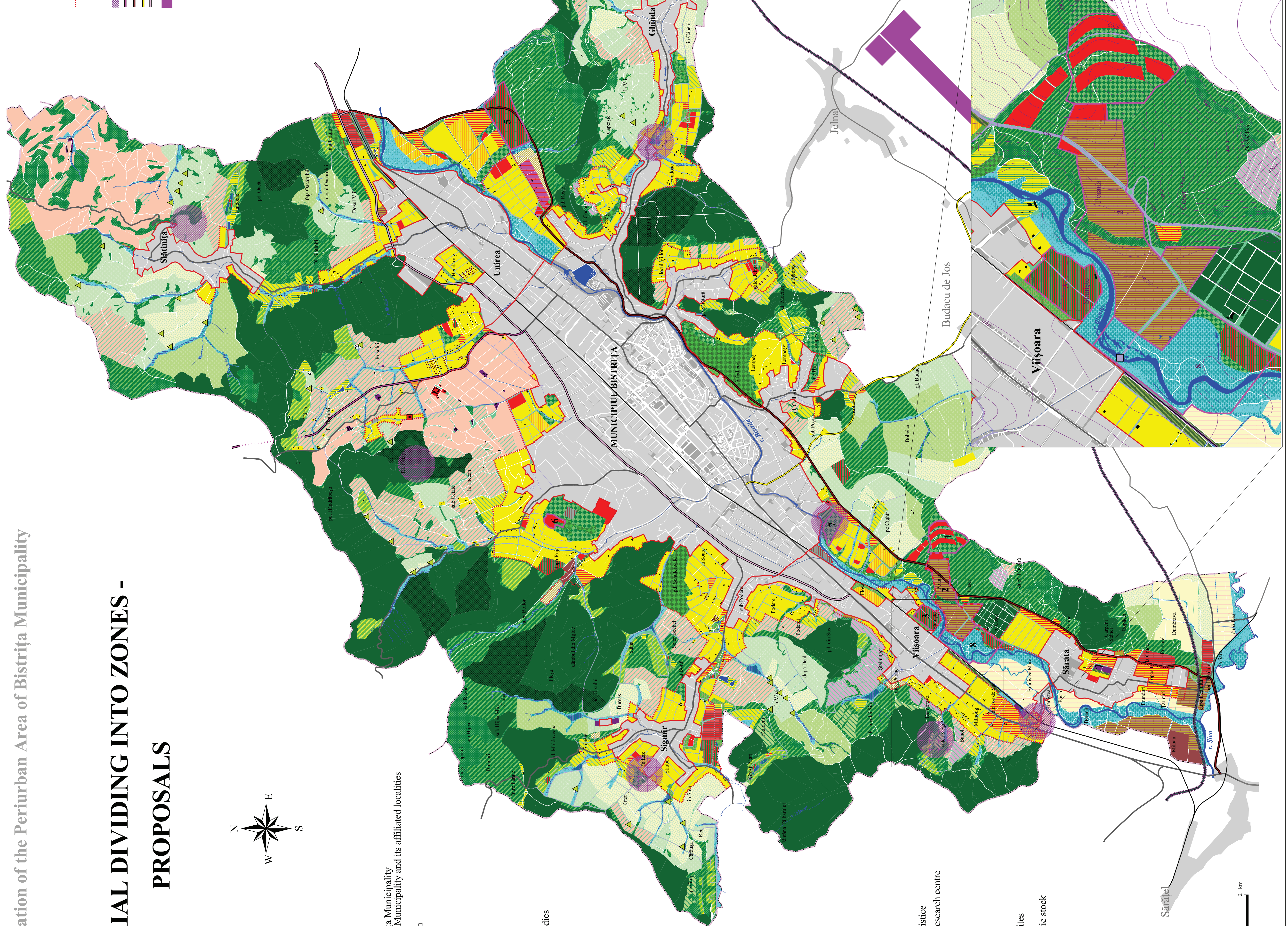
- Urbanism Proposals Propunerii urbanistice
- 1. University campus and advanced research centre
- 2. Industrial park Parc industrial
- 3. "Gloria" Sport centre
- 4. Winter sports centre
- 5. "Belvedere" Hotel
- 6. Cultural-historical thematic park
- 7. Hydro-park

- Protection area of archaeological sites
- Areas for preserving forestry genetic stock

0 1 2 km



- Border of the proposed intraurban
- Communication roads (guideline routes)**
  - The 14 Highway, Guideline route
  - "South" belt road, Guideline route
  - Express road Bistrița - Nisăd, Guideline route
  - Express road Bistrița - Ciuc, Guideline route
  - Rehabilitation and extension of "North" belt road
  - Regional airport
- Territorial dividing into zones**
  - Buildings and affiliated spaces**
    - Residential area with small size buildings and supplementary functions
    - Residential area with medium size buildings and supplementary functions
    - Secondary residence area
    - Public interest complex endowments area
    - Mixed areas (commerce, storage and services)
    - Commerce area
  - Industrial and storage area:**
    - a) current or approved location;
    - b) proposed locations
  - Agroindustrial area**
    - Building area affiliated to the public technical endowments
    - Communal household area
  - Communication ways and affiliated areas**
    - Roads and affiliated areas
    - Railroads and affiliated areas



- Areas for practicing sport and outdoor recreation activities
- Area with sport infrastructure
- Area with infrastructure for outdoor recreation activities
- Areas for holiday houses and affiliated endowments
- Proposed areas for agri-tourism boarding houses

- Green areas**
  - Parks and public gardens
  - Squares
  - Green areas for protection
  - Other green areas
  - Areas with special destination
- Agricultural fields**
  - Intensive cereal cultures
  - Vegetable cultures supported by irrigation systems
  - Agricultural fields with mixed usage (meadows and green crops)
  - Productive orchards
  - Rehabilitation of productive orchards
  - Meadows
  - Maintained natural pastures
- The Ecological Network**
  - Areas with industrial forestry exploitation
  - Other fields with forestry vegetation
  - Extension of forestry areas
  - Forestry areas proposed for conservation/preservation
  - Ecological network of humid areas
  - Preserved lands for future development