BABEȘ-BOLYAI UNIVERSITY OF CLUJ-NAPOCA

FACULTY OF GEOGRAPHY

DOCTORAL THESIS

~ SUMMARY ~

IARA-HĂȘDATE BASIN.

TERRITORIAL PLANNING STUDY

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INTRODUCTION

This study represents territorial planning approach regarding Iara-Hăşdate Basin, Cluj County.

Starting from the idea that any inhabited space may be permanently perfected, in this study we tried to draw up a territorial planning project meant to eliminate the existing shortcomings and to provide a possibile "projection" about the manner in which "places" and "spaces" of Iara-Hăşdate Basin may receive a higher destination as to meet the efficiency, comfort and modernity standards imposed by the 21st century society.

PART I. THEORY AND METHODOLOGY

I.1. The concept of territorial planning

The present development of society is characterized by the explosive increase of population, economic progress and higher pressure on environment. This led to a bigger deterioration of the man-nature relations and to numerous conflicts of interest at territorial level. In these conditions, more and more scientific domains and specialists form various fields are getting involved in the extremely complex process of optimizing the relations between the natual and anthropogenic components in order to improve the degree of spatial organization, to increase the welfare and to achieve positive developments.

Rural planning is a part of local planning, having its own set of objectives, problems and strategies, according to the specificity of the geographical spatial category on which is based – the rural settlement. **Local development** refers to the necessary conceptions regarding the development of a given settlement and its immediate surroundings.

A "region" in terms of planning may be an administrative one or at least partially a functional one and is likely to include a network of similar settlements and areas. In most European countries, regional and national plans are "spatially" directed to the development of urban centers, in order to support and manage the region according to its specific needs, for instance in the shape of polycentrism (Pascariu, 2001).

I.1.1. The principles of territorial planning at regional level

The Directing Principles for the Sustainable Territorial Development according to the conclusions of the European Conference of the ministries responsible for Territorial Planning held in Hannover on September 7 and 8, 2000, are the following: the promotion of territorial cohesion by means of a balanced socio-economic development and competitiveness improvement; the promotion of development generated by urban functions and the improvement of relations between towns and villages; the promotion of more balanced accessibility conditions; the improvement of access to information and knowledge; the reduction of environmental degradation; the capitalization and protection of natural resources and heritage; the capitalization of the cultural heirtage as a development factor; the development of energetic resources for maintaining security; the promotion of a quality and sustainable tourism; the preventive limitation of the effects of natural hazards; the specific interventions and the proposed solutions by territorial planning policies entirely depend on the needs of every region and every state.

I.3. Territorial planning in Romania

In Romania, territorial development is coordinated by the Ministry of Regional Development and Public Administration, by means of the Territorial Development General Department. The performed activities aim at the sustainable, balanced development of the national territory, the strengthening of the economic, social and territorial cohesion, the balanced polycentric growth of human settlements, the protection and promotion of national heritage, as well as the increase of the living standards within human settlements (MDRAP, 2014).

PART II. THE ANALYSIS OF THE PRESENT STATE OF AFFAIRES

II.1. Physical-geographical characteristics

II.1.1. Territorial context, location and limits

The geographical space which makes the object of this investigation lies in the south-central part of Cluj County, including mainly Iara-Hăşdate Basin and Vlaha-Săvădisla-Luna de Sus Corridor, as well as the peripheral foothills and mountains. It entirely includes six administrative-territorial units (Băişoara, Ciurila, Iara, Petreştii de Jos, Săvădisla and Tureni) and is located at the contact between two major geographical regions that have a complex and complementary geographical and tourism potential: Apuseni Mountains and the Transylvanian Depression.

II.1.2. Geology

Within the basin there is a large variety of rocks which determine specific aspects of the morphology. *The crystalline basement* is partly at surface and partly covered by Mesozoic and Cenozoic

sedimentary formations. It is represented by metamorphic formations of Baia de Arieş series. Over this basement, there are *Mesozoic rock deposits*, due to the concurrent sinking of the basin and of the Transylvanian Depression during the Upper Cretaceous. The most important deposits found in the basin are the Paleogene and Neogene rocks which are present over extended areas. The Paleogene comprises the whole series of specific geological formations disposed in continental and maritime facies.

Generally, the less resistant rocks represent a favourable support for erosion processes. Their succession may determine slope processes, especially landslides and torrential phenomena. Riverbed deposits are predominant in the field of action of the fluvial erosion.

II.1.3. Morphology

The development of contact (subsequent) basins at the eastern edge of Apuseni Mountains is almost typical to the North of the two apophyses of Trascău Mountains, Sănduleşti Range (or Sândului Range, modeled on Mesozoic limestones and ophiolites) and Petreşti Range (mostly made of crystalline schists). Vlaha-Săvădisla Basin is often considered as a corridor due to its narrowness, as it is limited between the steep slopes of Gilău Mountains and Feleacu Hills, different in altitude. It is a passageway between Someşul Mic Corridor and Iara-Hăşdate Basin. Vlaha-Săvădisla Basin/Corridor presents an accelerated modeling due to the Lower Eocene stained clays in which it was created.

II.1.4. Climate

The basin has a transition climate (*Geografia României, 1983*) between the moderate continental mountain climate and the excessive continental one of the Depression. The mean annual temperature is 6-8°C, and the temperature amplitude is 22°C (-4°C in January and 18°C in July). This favours the increase in intensity of the disaggregation processes, especially along the southern slopes, characterized by higher amplitudes. The absolute temperature extremes have been recorded at Iara: -32.4°C on 5 January 1942 and 37.8°C on 30 August 1950.

II.1.5. The drainage network

The studied territory is drained by a well developed network of streams, represented by the left tributaries of Arieş: Iara (with an average discharge of 2.8 m^3/s), Hăşdate (under 1 m^3/s) and Racilor Creek as well as Feneş (right tributary of Someşul Mic). To these, one may add a series of smaller rivulets: Ierţa, Almăşani, Caprei, Făgetului, Cacovei, tributaries of Iara, Sălicei, Săliştei, Livezii, Ciurilei, Pruniş, Micuş, Negoteasa, Filea, Bogdăneşti and Hăşmaşului, tributaries of Hăşdate. Most of the tributaries of Iara and Hăşdate in the basin area have a semipermanent or intermittent character. The rivers are supplied mainly from rainfall and less from underground waters, which contribute to maintain the minimum discharge.

II.1.6. Vegetation

According to the existing landforms and climatic conditions, the characteristic vegetation of Iara-Hăşdate Basin is very diverse, as there are differences horizontally and vertically. The general aspect of the vegetation is a reflection of the present and past physical-geographical conditions, and the changes induced by anthropogenic factors due to different activities. Therefore, natural vegetation has been largely eliminated and replaced by crops in several areas, changing the natural balance of modeling processes. The natural vegetation appears zonally and is represented by the nemoral and boreo-nemoral (mixed) woodlands as well as by azonal ecosystems.

II.1.7. Fauna

The fauna of great interest for hunting is concentrated in the mountain units (bear, wild boar, deer, capercaillie etc) but also in the hills and the basin forests (roe deer).

In the coniferous forests, birds have typical representatives: the hazel grouse, the coal tit, the willow tit, the owl, the blackbird, the eagle-owl, the raven, the forest woodpecker, etc. In the beech forests, there are yellow-necked mice, badgers, dormice, wolves, foxes, weasels, brown bears, pine martens, deer, wild boars, rabbites and squirrels. The roe deer is more often found in the oak forests than in the beech forests.

II.1.8. Soils

Due to its position in the area of interference between the geospheres, the soil mediates the relations, interactions and changes between them and is a fundamental component of the geographical environment. Also, because of its features, it mirrors the geographical landscape and its evolution due to its receptive sensitivity for external (natural and anthropogenic) factors.

The large diversity of physical-geographical factors in Iara-Hăşdate Basin, especially of lithological and morphological conditions, in the context of general bioclimatic conditions, determined the creation of varied soils, both in terms of their typology and their spatial distribution.

II.1.9. State of the environment

This chapter analyzes the main sources of impact and the manner of its propagation to the receptors. The final purpose is to determine the quality/degree of change in natural components according to the activities performed within the analyzed territorial system.

Water quality

In Cluj County and therefore also in the analysed territorial system, the assessment of the surface water quality is performed according to the Law of Waters 107/1996 with its successive changes, using the methodologies regarding the global classification and evaluation systems of the state of surface waters as recommended by the EU Water Framework Directive (2000/60/CEE) and drawn up by INCDPM Bucharest.

Among the most important sources of impact on the water quality, one remarks that the mining and urbanized areas are most exposed to risks concerning water quality. In the mining areas, the greatest danger for water quality is heavy metal pollution. The water bodies which pass through areas with ancient pits and waste dumps take over mining waters with an acid pH and metal ions. The waste waters associated to mining industry also affect the quality of phreatic waters nearby. The domestic waste waters, in the absence of cleaning systems, also constitute a danger for water quality, just like the informal waste deposits, many times located in the riverbeds.

Air quality

The atmospheric pollution sources of the analysed territorial system may be associated with domestic activities specific for human settlements – residential heating, cooking; agricultural and animal husbandry activities in the households located both within or outside the residential areas; industrial activities and road traffic.

However, taking into account the low intensity of the activities performed in the analysed settlements, one may assess that the air is in natural state, as it is not significantly affected by human activities.

Noise and vibrations

In the inhabited areas, generally, the most frequent sources of noise and vibrations are road traffic, construction and demolition activities, mechanized agricultural activities and certain industrial activities.

The size of the administrative units studied, the present intensity of road traffic and industrial activities, may lead to the conclusion that the settlements of Iara-Hăşdate Basin do not have issues regarding noise and vibrations, so that these are not a source of discomfort for the local population.

Soil quality

In the reports regarding the state of environment in Cluj County there is no quantitative information concerning the degree in which the soil of Iara-Hăşdate Basin has been affected.

However, the performed analysis showed certain manners in which the soil has been affected, like: areas affected by slope processes due to the lithology dominated by flysch and clayish rocks; areas affected as a result of human activities, as in the area where mining waters have infiltrated and the natural quality of the soil has been significantly changed.

The quality of the biotic component

The analysed basin is part of the nemoral zone, mainly in the beech subzone, as well as in the subzone of mixed coniferous and beech forests at higher altitudes.

Due to the traditional agricultural and pastoral activities, at present most of the vegetation cover is made up by semi-natural mountain meadows, that are characteristic for these subzones, mainly grasslands and hay fields dominated generally by *Trisetum flavescens*.

Waste management

The situation of waste management improved considerably due to the implementation of the Integrated System of Waste Management in Cluj County.

According to SMID Cluj, the communes of the analysed basin are not part of the same zone operated by SMID, as Tureni, Săvădisla and Ciurila are included in zone 1 Feleacu while Băişoara, Iara and Petreştii de Jos are part of Zone 3 Mihai Viteazu.

II.1.10. Natural risks

Risks usually represent dangers that are difficult to assess and only partly predictible. They present two aspects: they express at the same time both the probability of losses and a series of human behaviours related to the risk triggering and prevention, as well as the management of the potential losses.

II.1.10.1. Geological – geophysical risks

In the case of geological and geophysical risks, the cause of earthquakes and volcanos is the drifting of tectonic plates and the accumulation of a very high amount of radioactive energy in the Earth crust, at different depths. However, it is not yet possible to predict with certainty when the phenomenon will trigger.

From the point of view of seismicity, according to the norm P100-92, Iara-Hăşdate Basin is included in the F danger zone, which corresponds to a small risk of losses in the event of an earthquake.

II.1.10.2. Climatic risks

The basin has a transition climate (*Geografia României, 1983*) between the moderate continental mountain climate and the excessive continental one of the Depression.

The most important influence of this type of climate is materialized by the generation of new risks, of hydrological nature, reflected in the increase of superficial levels and discharges of streams and lakes, which go beyomd their normal level, determining intense erosional processes on the slopes and along the riverbeds. In their turn, these are reflected in the increase of superficial flow and solid flow, the increase of the phreatic level up to and above the terrain, determing an excess of humidity, soil desalination processes, the emergence of wetlands, and sometimes catastrophic floods which take large areas out of the agricultural production.

II.1.10.3. Hydrological risks

A special influence on the hydrological risks is given the ever lower base level of Iara River, which therefore determines an intensive torrential erosion, facilitated by the presence of gravitational processes such as landslides and mud flows. Over time, these led to the enlargement of the torrential catchment areas, transforming them into suspended small basins. Together with their tributaries, Iara and Hăşdate ensure a good drainage of the surface waters, as they the same features as the mountain rivers, with narrow valleys and high flow slopes, especially in Băişoara area (for Iara). The rivers are supplied mainly from rainfall and less from underground waters, which contribute to maintain the minimum discharge.

II.1.10.4. Geomorphological risks

A. Surface erosional processes: erosion in the case of grasslands and hay fields – is manifested by splash and sheet erosion, rills and incipient gullies; *erosion in the case of orchards and arable lands* – occurs mainly on less steep slopes with a northern or north-eastern aspect.

B. Torrential and fluvial erosional processes: the torrential erosion – results in the wearing out of the soil cover or its change until it reaches the stage of erodisol (either typical, rendzina, pseudorendzina or lythical ones). The rocks are affected by the fast-growing torrential streams which may fragment fields or watersheds. *Regressive erosion (the fragmentation of terraces and watersheds)* affects in the first stage the terrace tread due to the ongoing development of slope gullies and ravines. It appears especially near Băişoara, where slope processes extend rapidly, and in the area of Făgetu Ierii quarry, where there are complex degradation processes. *The bank erosion and collapse* consists of the wearing away of the banks of a river, at the same time with the sedimentation of the riverbed by alluvia and it becomes more active as the downward erosion lessens.

C. Mass movement processes: Mud flows – are formed especially in spring, usually due to torrential rains. *Landslide processes* - Ciurila, Petreştii de Jos and Tureni communes are affected by landslides, while in Săvădisla, Iara and Băişoara there is a low potential for the triggering of landslides. *Solifluction* – represents the slow superficial shift of the wet soil layer, on unforested slopes of 5-15° with a northern, north-western and north-eastern aspect. *Subsidence processes* – mainly affect the western and south-western slopes in the eastern part of Iara-Hăşdate Basin, but also the quarries in the basin, usually leading to suffosion landforms with different degrees of intensity. *Collapses, stone falls, rock flows* correspond to the disaggregation, dislocation and collapse of rocks to the feet of the slope, where they accumulate in the shape of stone fans or platforms.

Ch. II.2. Population

Iara-Hăşdate Basin has been intensely populated since ancient times, as demonstrated by the archaeological findings which certify the existence of settlements even since the Neolihtic, the Bronze Age, the Iron Age (Hallstatt and Latene) as well as the Dacian and Roman antiquity. The presence of population is also attested by written sources in the Middle Ages, when the settlements are mentioned in various documents.

II.2.1. Dynamics of the population

In 1850, the population of the six communes within the studied area (according to the present administrative divisions) numbered 18,865 inhabitants. The largest communes were Iara and Săvădisla, which had more than 4,000 inhabitants, while Băişoara, Ciurila and Petreştii de Jos had less than 3,000 inhabitants, with a minimum at Băişoara, which had only 2,037 inhabitants. It comes out that the population at the level of the entire region registered a constant and continued growth, a tendency which probably

existed even before the census of 1850 and continued until 1956, with small periods of decline and a possible ”stagnation” in the inter-war period and immediately after the second world war, due to diverse causes.

In all comunes, the highest population decline was produced between 1977 and 1992, in the context of the constant degradation of living standards in the rural areas and the demand for workforce in the urban areas, especially in Cluj-Napoca and Turda.

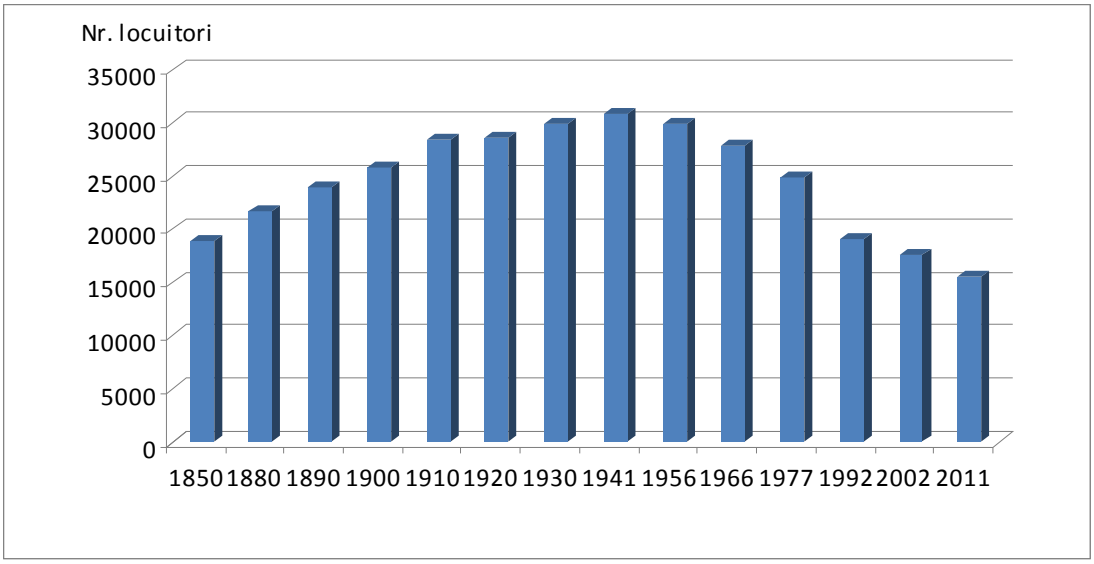

Fig. 10. The dynamics of the population of Iara-Hăşdate Basin between 1850 and 2011.
Sources: INS, RPL 2011 and www.kia.hu.

II.2.2. The natural balance of the population

II.2.2.1. The birth rate

Between 1990 and 2003, the birth rate decreased constantly and continuously in the communes of Iara-Hăşdate Basin. The year of reference is 1990, when there were still high birth rate values inherited from the communist period, as the regime encouraged a high value of the birth rate by all means. Even so, the 1990 birth rate at the level of the entire region, 13.2‰, is much lower than the one in previous years or the average national birth rate. At the level of communes, there were important differences, for instance between Ciurila (16.7‰) and Tureni (10.8‰).

II.2.2.2. The mortality rate

Unlike the birth rate, the mortality rate is less dependent on the temporary economic conditions, and it is generally determined by known causes. First of al, in this case, the constantly high values of the mortality rate are generated by a certain age structure of the population, with an increasing weight of older people.

II.2.2.3. Natural balance

Because the mortality rate was relatively constant or did not vary too much between 1990 and 2013, the natural balance was determined mainly by the variation of the birth rate. Even since 1990, at the level of the analyzed region (fig. 11), the natural balance registered a negative value, – 5.7‰. In the following years, its value dropped even more, reaching – 12.9‰ in 1995 and – 14.1‰ în 2002, when the absolute minimum was recorded. After 2002, the values varied between – 8.8‰ (in 2007) and – 13.3‰ in 2005.

In recent years, one notices a slight improvement of the natural balance values, which was – 10.5‰ in 2013.

Table 9. The evolution of the birth rate in the communes of Iara-Hășdate Basin between 1990 and 2013.
Source: INS, TEMPO-online database.

Commune/Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Băişoara	13.3	10.7	9.3	11.0	7.7	13.2	11.1	8.7	7.8	7.0	10.0	7.0	5.7	6.2	8.3	6.7	11.4	4.3	7.3	7.8	3.5	4.9	4.5	4.6
Ciurila	16.7	10.3	5.9	8.5	5.0	7.0	8.3	11.4	9.6	13.1	8.1	11.9	8.2	10.2	6.9	2.7	9.0	10.3	8.9	12.1	10.7	4.7	13.0	9.2
Iara	12.7	10.5	10.1	10.4	7.9	7.1	8.7	10.1	11.4	7.9	9.1	9.2	5.5	6.9	5.9	6.3	6.3	7.9	5.6	7.2	5.4	4.6	5.3	7.5
Petreştii de Jos	14.0	12.8	8.6	10.8	8.5	6.4	7.3	7.5	4.4	9.8	5.4	9.3	6.2	9.5	2.7	5.5	3.9	7.9	6.3	7.2	6.0	3.1	4.2	3.8
Săvădisla	13.6	8.2	10.2	7.4	9.9	7.1	5.9	5.1	7.2	7.5	7.3	7.8	3.8	6.8	7.9	7.5	7.5	6.8	5.4	9.6	7.9	6.1	7.9	8.6
Tureni	10.8	11.0	11.6	6.1	13.3	8.8	9.3	10.7	11.5	9.9	9.7	8.4	3.8	7.6	6.9	8.2	8.7	8.3	6.0	8.0	8.1	9.0	8.2	6.7
Total	**13.2**	**10.3**	**9.6**	**9.0**	**9.0**	**8.1**	**8.2**	**8.6**	**8.9**	**8.6**	**8.3**	**8.7**	**5.2**	**7.5**	**6.6**	**6.5**	**7.6**	**7.4**	**6.2**	**8.5**	**6.8**	**5.5**	**7.0**	**7.1**

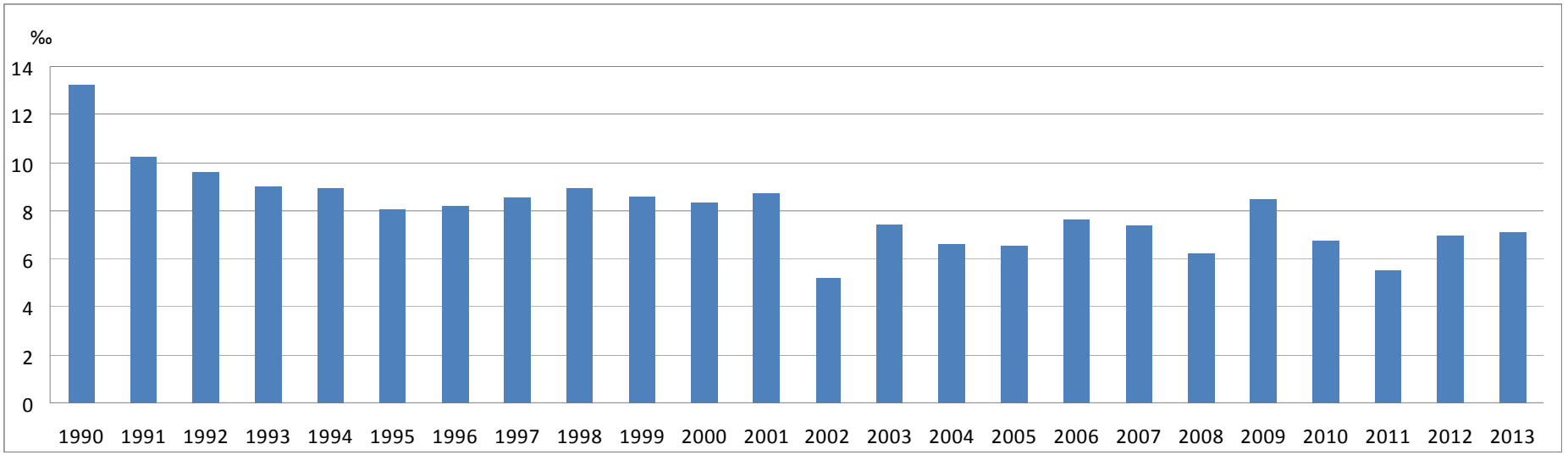

Fig. 11. The evolution of the birth rate in the communes of Iara-Hășdate Basin between 1990 and 2013.
Source: INS, TEMPO-online database.

Tabelul 10. The evolution of the mortality rate in the communes of Iara-Hăşdate Basin between 1990 and 2013.
Source: INS, TEMPO-online database.

Commune/Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
BAIŞOARA	15.9	10.7	19.3	10.6	14.6	19.4	16.2	15.6	18.1	13.6	18.6	14.9	16.0	15.7	11.6	13.9	19.8	10.3	12.0	13.0	17.2	13.8	18.6	16.0
CIURILA	28.2	20.6	29.9	24.8	25.1	27.4	28.9	32.1	21.3	27.5	29.9	29.4	20.7	22.3	22.5	33.6	25.5	24.1	19.0	20.2	22.7	19.9	19.2	20.4
IARA	12.7	14.6	15.1	18.9	15.9	16.8	16.1	16.0	15.1	16.9	12.6	17.6	18.3	16.0	12.7	21.1	19.1	15.8	13.1	15.7	17.0	14.5	14.6	12.5
PETREŞTII DE JOS	21.9	25.7	25.8	24.8	27.0	32.5	18.9	26.0	22.5	19.5	19.5	19.6	26.9	21.2	28.9	25.2	33.7	23.2	22.5	29.9	24.8	22.8	23.6	20.3
SĂVĂDISLA	19.7	16.8	17.6	18.6	18.9	22.1	18.8	18.4	22.4	24.2	17.8	18.8	18.8	19.6	18.0	14.3	18.7	13.2	15.7	17.1	16.8	17.1	19.0	18.5
TURENI	23.8	18.9	21.3	26.0	21.1	15.1	24.0	21.3	24.2	19.5	25.3	20.5	18.2	20.9	20.8	20.6	15.0	18.2	21.9	15.3	21.1	16.7	17.1	23.1
TOTAL	**19.0**	**17.0**	**19.8**	**19.9**	**19.3**	**21.0**	**19.3**	**19.8**	**20.0**	**19.8**	**18.8**	**19.2**	**19.2**	**18.7**	**17.7**	**19.8**	**20.5**	**16.2**	**16.4**	**17.4**	**18.9**	**16.7**	**18.0**	**17.6**

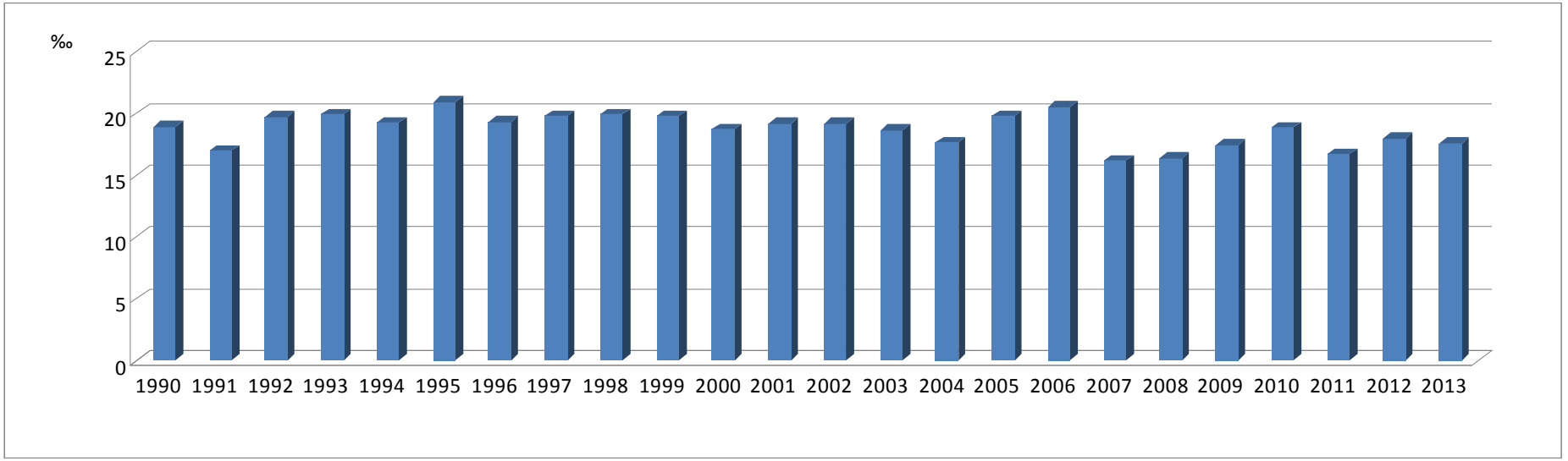

Fig. 12. The evolution of the mortality rate in the communes of Iara-Hăşdate Basin between 1990 and 2013.
Source: INS, TEMPO-online database.

Tabelul 11. The evolution of the natural balance rate in the communes of Iara-Hășdate Basin between 1990 and 2013.
Source: INS, TEMPO-online database.

Commune/Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Băișoara	-2.6	0.0	-10.0	0.4	-6.9	-6.2	-5.1	-6.9	-10.4	-6.6	-8.7	-7.9	-10.3	-9.5	-3.3	-7.2	-8.4	-6.0	-4.7	-5.2	-13.6	-8.9	-14.0	-11.5
Ciurila	-11.5	-10.3	-24.1	-16.3	-20.1	-20.4	-20.5	-20.7	-11.7	-14.4	-21.7	-17.5	-12.5	-12.1	-15.7	-30.9	-16.5	-13.8	-10.2	-8.1	-12.0	-15.3	-6.2	-11.2
Iara	0.0	-4.1	-5.0	-8.6	-7.9	-9.7	-7.5	-5.9	-3.7	-9.1	-3.5	-8.4	-12.7	-9.0	-6.8	-14.8	-12.8	-7.9	-7.6	-8.5	-11.6	-9.9	-9.2	-4.9
Petreștii de Jos	-7.9	-12.8	-17.2	-14.0	-18.5	-26.1	-11.6	-18.5	-18.1	-9.8	-14.1	-10.3	-20.7	-11.7	-26.2	-19.7	-29.8	-15.3	-16.1	-22.7	-18.7	-19.7	-19.4	-16.5
Săvădisla	-6.1	-8.6	-7.4	-11.3	-9.0	-14.9	-12.9	-13.3	-15.2	-16.8	-10.5	-10.9	-15.0	-12.7	-10.1	-6.8	-11.2	-6.4	-10.2	-7.5	-8.8	-11.0	-11.1	-9.9
Tureni	-13.0	-7.8	-9.7	-19.9	-7.8	-6.4	-14.6	-10.7	-12.7	-9.6	-15.6	-12.0	-14.4	-13.3	-13.8	-12.5	-6.3	-9.9	-15.9	-7.2	-13.0	-7.7	-9.0	-16.4
Total	**-5.7**	**-6.8**	**-10.1**	**-10.9**	**-10.3**	**-12.9**	**-11.1**	**-11.2**	**-11.0**	**-11.2**	**-10.4**	**-10.5**	**-14.1**	**-11.2**	**-11.1**	**-13.3**	**-12.9**	**-8.8**	**-10.2**	**-9.0**	**-12.1**	**-11.2**	**-11.0**	**-10.5**

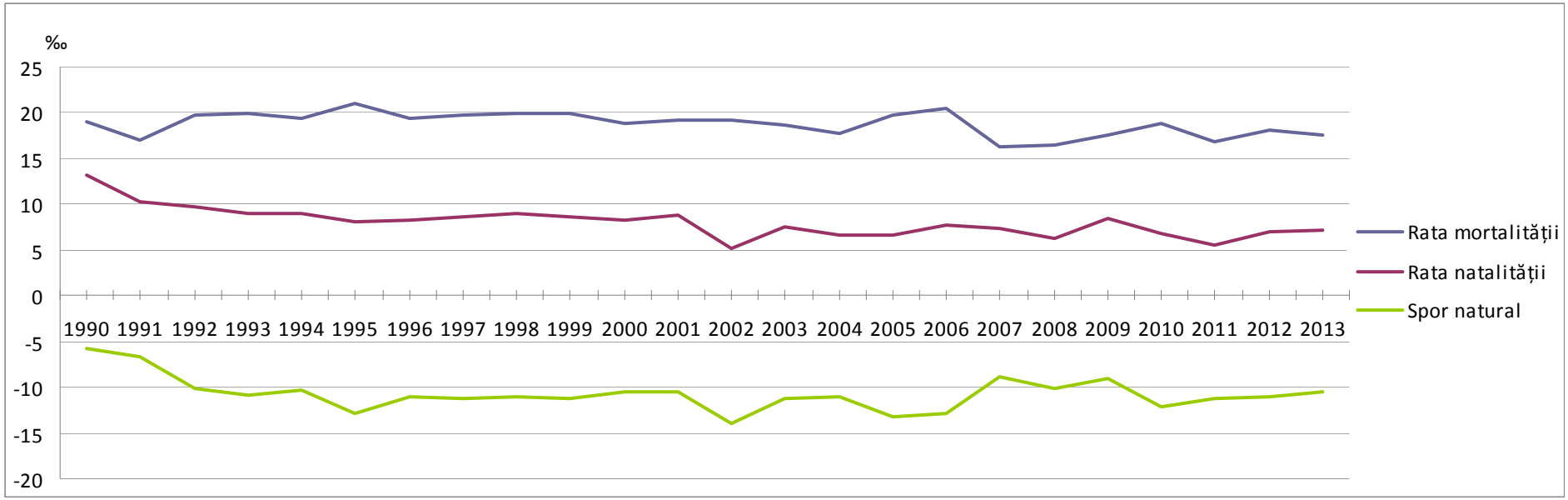

Fig. 13. The evolution of the natural balance rate in the communes of Iara-Hășdate Basin between 1990 and 2013.
Source: INS, TEMPO-online database.

II.2.3. Migratory balance of the population

II.2.3.1. Immigration

The immigration rate (fig. 14) in the analysed region was low at the beginning of the 1990s, when the general phenomenon was that of out-migration, either to other countries or to the large cities. In many cases the movement to the city only became "official" in this period but was effectively produced during the communist period, but documents could be made only after 1990.

II.2.3.2. Emigration

The emigration rate reached its maximum values in 1990 when many inhabitants of rural settlements moved officially to the cities due to the reasons mentioned above. Therefore, the emmigration rate reached a historical value, 80.4‰ at the level of the entire region, varying between 31.4‰ at Iara and 177.1‰ at Ciurila.

II.2.3.3. Migratory balance

Unlike the natural balance, which was constantly negative during the entire period of analysis (1990-2013), the migratory balance fluctuated from negative values at the beginning of the 1990s to generally positive values after 1995, except for the years 2001-2002.

The lowest value of the migratory balance was registered in 1990, - 74.6‰, due to the already mentioned reasons. Later on, the migratory balance was strongly negative in 1991 and 1992 (about -14‰ - -15‰), but since 1996 it became positive, except for the years mentioned (2001-2002). The maximal value, 6.6‰, was reached in 2004, in the context of an increase of the immigration rate over 26‰.

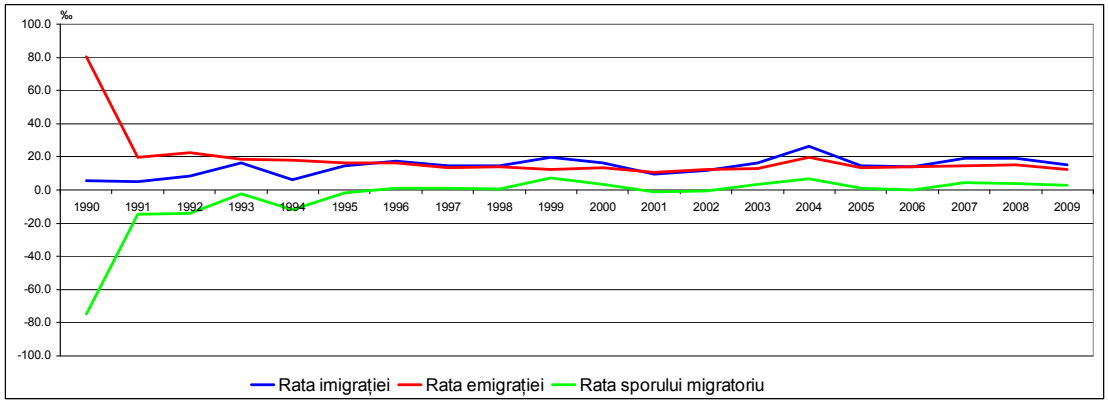

Fig. 16. The evolution of immigration, emigration and migratory balance rate in Iara-Hășdate Basin between 1990 and 2013.
Source: INS, TEMPO-online database.

II.2.4. Demographic structures

II.2.4.1. Population structure by sexes

The analysis of the population structure by sexes indicates a balanced situation in Iara-Hășdate Basin. At the 2011 census, there was a slight predominance of the feminine population (50.79%) compared to the masculine one, so the feminization phenomenon is less obvious.

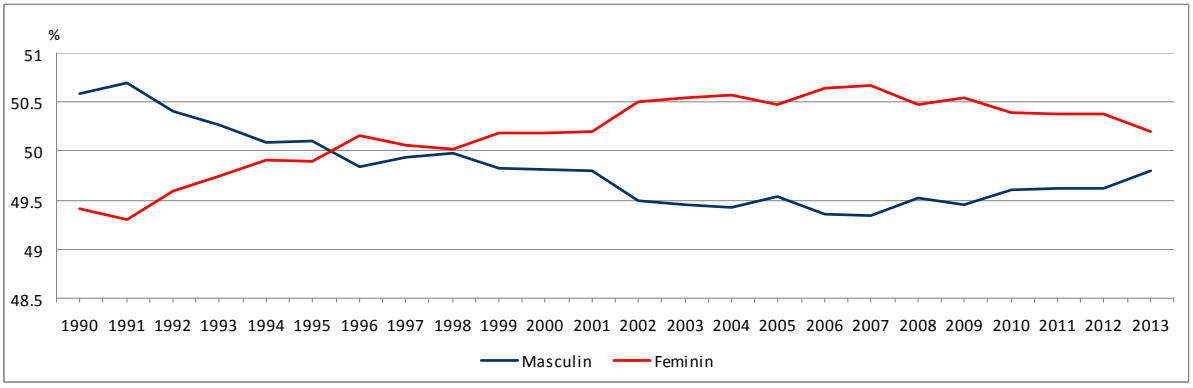

Fig. 18. The evolution of the population structure by sexes in Iara-Hășdate Basin between 1990 and 2013.
Source: INS, TEMPO-online database.

II.2.4.2. Population structure by age groups

The population structure by age groups is one of the elements of reference in estimating the workforce resources in a territory. For the agricultural space, it may explain the manner of its present and future capitalization. We considered that the representation of the population pyramids for the communes of Iara-Hăşdate Basin will highlight the present structural state of the population, but it may also provide a look into its perspective.

Table 17. Population structure by age groups in Iara-Hăşdate Basin at the 2011 census, at the level of basic administrative units.

Commune	Stable population (RPL 2011)	0-19 yrs.	20-39 yrs.	40-59 yrs.	60 yrs. and over	% 0-19 yrs.	% 20-39 yrs.	% 40-59 yrs.	% 60 yrs. and over
Băişoara	1940	376	436	545	583	19.4	22.5	28.1	30.0
Ciurila	1547	325	333	335	601	21.0	21.5	21.7	35.8
Iara	3889	718	934	1139	1179	18.5	24.0	29.3	28.2
Petreştii de Jos	1512	271	283	355	603	17.9	18.7	23.5	39.9
Săvădisla	4392	775	1130	1176	1311	17.6	25.7	26.8	29.9
Tureni	2278	417	489	593	779	18.3	21.5	26.0	34.2
TOTAL	**15605**	**2882**	**3605**	**4143**	**5056**	**18.5**	**23.1**	**26.5**	**32.4**

Source: INS, RPL 2011.

II.2.4.3. National structure

At the 2011 census, most of the inhabitants (78.6%) of the studied area declared themselves to be Romanians, followed by Hungarians (13.5%) and Gypsies (4.2%). The other national minorities had a very low weight (less than 1%). For about 3% of the population, the information regarding their ethnicity was not available, as they were not present. Five communes have a majority of Romanian population while Săvădisla is the only one that has a Hungarian majority. Compared to the county average, one notices a higher weight of the Romanian (78.6% compared to 75,4%) and Gypsy population (4.2% compared to 3.3%), and a lower weight of the Hungarian population (13.5% compared to 15%).

II.2.5.4. Religious structure

At the 2011 census, most of the inhabitants of the analysed area declared themselves to be Orthodox (72.3% of the total), followed by Protestants (9.5%), Pentecostals (4.3%), Jehova's Witnesses (5.6%), Greek-Catholics (2.5%), Unitarians (1.8%) etc. The Orthodox population has the majority in 5 out of 6 communes, except for Săvădisla, where the population is predominantly Hungarian Protestant. One may also remark the important community of Pentecostals in Ciurila (12.6%), that of Greek-Catholics in Petreştii de Jos (7.5%) and the Protestants in Tureni (9.8%).

Table 19. Religious structure in the communes of Iara-Hăşdate Basin at the 2011 census.

Commune	Orthodox	Roman-Catholic	Protestant	Pentecostal	Greek-Catholic	Baptist	Unitarian	Jehova's Witnesses	Other or unavailable
Băişoara	92.8	0.1	0.5	0.9	1.0	1.2	0.0	0.4	3.0
Ciurila	73.5	0.3	0.5	12.6	2.6	0.5	0.0	3.2	6.2
Iara	81.4	1.1	0.9	3.0	1.5	0.1	0.8	4.9	7.1
Petreştii de Jos	83.9	0.3	0.0	2.2	7.5	0.1	0.0	2.0	4.0
Săvădisla	41.7	3.9	45.3	2.3	1.4	0.5	0.4	1.1	3.4
Tureni	60.4	4.7	9.8	4.9	0.7	0.4	9.7	5.6	3.8
TOTAL	**72.3**	**1.7**	**9.5**	**4.3**	**2.5**	**0.5**	**1.8**	**2.9**	**4.6**

Source: INS, RPL 2011.

II.2.4.5. Socio-economic structure

The analysis of the socio-economic structure of the population indicates the dominant economic profile of a settlement according to the number of people employed in a specific branch, for instance agriculture, industry or services.

At the 2002 census, most of the inhabitants of the studies area were retired (34.8%), a situation that is explained by the high weight of the elderly (32.4%) but also by the large number of people who retired in advance. The second group was formed by the people employed (25.9%), then the housewives (12%), pupils and students (11.5%) and finally the people who are in the care of others, usually children under the school age (9.3%). The unemployed represented 4.6% of the total population in the same year.

Table 21. Structure of the employed population by main branches in the communes of Iara-Hășdate Basin at the 2002 census (%).

Commune	Agriculture, forestry and fishing	Industry	Construction	Private services	Public services
Băișoara	45.9	19.7	9.8	4.9	19.7
Ciurila	71.4	9.5	0.0	14.3	4.8
Iara	27.6	30.7	7.1	22.0	12.6
Petreștii de Jos	50.0	18.4	7.9	15.8	7.9
Săvădisla	34.2	21.7	10.9	20.7	12.5
Tureni	48.1	22.2	13.6	13.6	2.5
TOTAL	**38.9**	**23.4**	**9.6**	**17.0**	**11.1**

Source: INS, RPL 2002.

II.2.5. Population density

The population density highlights the existing differences in the distribution of population in a certain territory, showing its degree of concentration or dispersion. The density is the quantitative ratio between the population number and the area where it lives. Among the density ratios, we considered that the general population density is the most important one for this study, as it is result of the influence over time of physical-geographical and socio-economic factors. It also reveals accurately the role and the intensity of human pressure on the territory.

Table 23. General population density in the communes of Iara-Hășdate Basin at the 2011 census.

Commune	Area (km^2)	Stable population (2011 census)	Population density (inh./km^2)
Băișoara	111.04	1,940	17.5
Ciurila	72.22	1,594	22.1
Iara	143.87	3,889	27.0
Petreștii de Jos	72.61	1,512	20.8
Săvădisla	52.11	4,392	84.3
Tureni	74.04	2,278	30.8
TOTAL	**525.89**	**15,605**	**29.7**

Sources: INS, 2011 census and TEMPO-online database.

II.2.6. Demographic risks

II.2.6.1. Demographic ageing

In the communes of Iara-Hășdate Basin, the demographic ageing ratio (the ratio between the population of over 65 and the population under 15, multiplied by 100) has very high values, of over 160, reaching the maximum value of 257 in Petreștii de Jos commune, where the number of inhabitants aged 65 and over is 2.5 times higher than the children and teenagers under 15. The situation is very alarming because even the communes that are closer to Cluj-Napoca, like Săvădisla and Ciurila, have values close to 200, despite the development of dormitory settlements as showed by the analysis of the demographic ageing ratio by villages. The lowest values are registered at Iara (163.74) and Băișoara (168.95), communes that are more developed economically. They also have several urban-like functions, which limited the emigration.

II.2.6.2. Infant mortality

Between 1990 and 2013, the infant mortality rate at the level of the entire region has generally declined from 19.63‰ in 1990-1994 to 9.71‰ in 2005-2009, and then increased a little to 11.44‰ in 2010-2013.

Table 24. Infant mortality rate in Iara-Hăşdate Basin (1990-2013)

Commune/Period	1990-1994	1995-1999	2000-2004	2005-2009	2010-2013
Băişoara	22.06	17.86	11.36	0	25.64
Ciurila	12.66	13.51	14.49	15.63	0
Iara	27.24	18.02	11.36	13.25	20.20
Petreştii de Jos	33.61	13.89	30.77	18.52	0
Săvădisla	4.26	0	0	0	14.81
Tureni	21.13	40.32	31.91	20.20	0
Total	**19.63**	**17.40**	**14.11**	**9.71**	**11.44**

Source: own calculations based on the data from INS, TEMPO-online database.

II.2.6.3. Dependency ratio

At the level of Iara-Hăşdate Basin, the demographic ageing process is in full progress, as already shown. Consequently, the weight of the elderly population is very high, determining high dependency ratios. The value of the ratio varies between 0.37 (Iara) and 0.62 (Petreştii de Jos). One remarks that the communes with lower values of the demographic ageing ratio also have the lowest values of the dependency ratio (Iara, Săvădisla, Băişoara). At Săvădisla, the low value is also due to the higher weight of adult population.

At the other end one finds the communes of Ciurila and Petreştii de Jos, with values of 0.60-0.62, the highest in the region, as they comprise several villages where demographic ageing is at its height. Tureni commune has an intermediate value (0.47).

Ch. II.3. Economy

II.3.1. Mineral resources

Industrial activities are mostly included in the field of mining of useful mineral resources. Their diversity is due to the variation of lithofacies, as igneous, metamorphic and sedimentary rocks are all present, as well as the mineralization processes developed throughout the geological times.

In relation to metamorphic formations, metalic mineralizations have been identified: pyrrhotite and gold. Certain metapetites contain orthite and mgnesio-orthite, which are of interest for rare earth. On Indol Valley, the chalcopyrite mineralization has been strongly affected by alteration, resulting malachite and azurite.

II.3.2. Agriculture

According to the final results of the General Agricultural Census (RGA) of 2010, in the studied region there were 5,709 farms, of which 77 have juridical personality (20 economic agents, 1 autonomous administration, 6 local councils and 50 other) while 5,632 are individual farms. Out of these, 247 (most of them located in Iara) benefited from agricultural and environmental payments. 10,911 people worked in the farms, predominantly belonging to the group of the elderly.

Table 25. Active population in agriculture and in the farms of Iara-Hăşdate Basin at RGA 2010.

Commune	Number of farms	People working in agriculture	Total area of farms (ha)	Used agricultural area (ha)	Unused agricultural area (ha)	Average used agricultural area (ha)/ farm
Băişoara	899	1,472	5,956	3,869	481	4.30
Ciurila	246	549	4,714	2,774	1,563	11.27
Iara	1,652	3,318	9,470	6,989	1,297	4.23
Petreştii de Jos	1,225	1,824	6,043	5,695	81	4.64
Săvădisla	1,003	2,373	5,442	3,981	1,183	3.96
Tureni	684	1375	4,091	3,182	508	4.65
TOTAL	**5,709**	**10,911**	**35,716**	**26,490**	**5,113**	**4.64**

Source: INS, RGA 2010.

Table 26. Structure of agricultural lands in Iara-Hăşdate Basin at RGA 2010.

Commune	Arable (ha)	Grasslands and hay fields (ha)	Orchards (ha)	Vegetable gardens (ha)
Băişoara	183	801	6	666
Ciurila	507	249	15	222
Iara	1,544	1,412	109	1,135
Petreştii de Jos	2,878	706	6	762
Săvădisla	562	1,032	1	1,125
Tureni	1,204	478	20	463
TOTAL	**6,878**	**4,678**	**157**	**4,373**

Source: INS, RGA 2010.

The largest areas of arable lands are in Petreştii de Jos and Tureni communes, located in the hilly and basin area, while grasslands and hay fields cover larger areas in Iara, Săvădisla and Băişoara communes, especially in the mountain areas of these communes. Orchards cover large areas only in Iara commune (109 ha). The crops that are found mostly are: maize, barley and oats, wheat and rye, fodder and potatoes (between 600 and 1400 ha each).

Table 27. The structure of arable lands by types of crops (ha) in Iara-Hăşdate Basin according to RGA 2010.

Comuna	Fodder (ha)	Potatoes (ha)	Sugar beet (ha)	Vegetables (ha)	Wheat and rye (ha)	Barley and oats (ha)	Maize (ha)	Sunflower (ha)	Rape (ha)
Băişoara	22	47	0	0	26	37	34	0	0
Ciurila	30	32	31	4	94	114	121	2	20
Iara	91	130	0	4	206	189	218	0	0
Petreştii de Jos	82	47	20	8	258	229	520	50	0
Săvădisla	131	82	0	11	18	42	145	0	0
Tureni	250	263	36	24	103	191	337	1	0
TOTAL	**606**	**601**	**87**	**51**	**705**	**802**	**1375**	**53**	**20**

Source: INS, RGA 2010.

Tabelul 28. The number of birds and animals in Iara-Hăşdate Basin at RGA 2010.

Commune	Birds	Goats	Sheep	Swine	Cattle
Băişoara	5,165	8	639	438	628
Ciurila	2,921	1,201	4,049	499	259
Iara	11,604	561	7,909	3,195	927
Petreştii de Jos	12,940	482	5,173	1,448	485
Săvădisla	8,084	324	8,191	811	450
Tureni	8,453	19	7,594	1,197	659
TOTAL	**49,167**	**2,595**	**33,555**	**7,588**	**3,408**

Source: INS, RGA 2010.

II.3.3. Land use

According to the data set of the year 2000, there are 16 land use categories at the level of the studied area, of which only 9 have a weight higher than 1% of the total area.

The analysis at the level of the basic administrative units highlights the main changes occurred in the land use structure between 2000 and 2006. In Băişoara commune, the main change is represented by the decline of forests by 2%, down to 6,000 ha (about 58% of the total area of the commune). Another types of land use which suffered changes in the mentioned period are the natural grasslands, which diminished, and the secondary pastures, which expanded their area by more than 10%. In the same context and the same commune, one remarks the increase in weight of the non-irrigated arable lands by 6.5% (700 ha) and the presence of a 50 ha area covered by Băişoara resort and leisure zone.

II.3.4. Industry

Industry is weakly developed at the level of the 6 composing communes. After the disappearance of the mining industry (for complex ores) in Băişoara-Iara area, which employed about 350 people until 2005, the industrial activities are limited to the small processing industry: millimg and breadmaking: Săvădisla, panel production, PVC and thermopane insulated glazing: Săvădisla, wood processing and furniture: Săvădisla, Tureni; coffee packaging: Tureni; processing of natural rocks (marble, granite): Tureni; production of sporting and travel equipments: Tureni; primary wood processing: Iara.

II.3.5. Services

The sector of services developed continuously in recent years, by the setting up of new commercial units, car services, restaurants and pubs, accommodation units, sporting and leisure facilities, services for the population (cleaning, hair cutting, beauty salons etc), transport of merchandise and people, medical services, consulting services etc.

II.3.6. Tourism

The set of natural factors, together with the richness and variety of the anthropogenic components generated by the existence and manifestation of a range of specific social-historical and economic conditions led in time to the individualization of a complex regional geographical unit. It is an original one and has a powerful resonance on multiple plans, coagulated over time, which has in different degrees a direct and/or an indirect reflection and materialization in the relatively diverse tourism supply and the features of tourism phenomenon at local and regional scale.

As a consequence of this situation, one notices a certain concentration and ”specialization” of the categories of tourism attractions on three major components, with the predominance of the natural or the anthropogenic ones, or a combination between the two.

In Iara-Hăşdate Basin, there is a **relatively complex tourism potential – both natural and anthropogenic –** which constitutes as a *premise, a fundamental factor for tourism development and a primary tourism supply* (which highlights the studied area as a referential one within Cluj County), without which the tourism phenomenon could not even exist because of the lack of its object of activity.

II.3.7. Anthropogenic risks

II.3.7.1. Technological risks

Industrial activities are mostly included in the field of mining of useful mineral resources. Their diversity is due to the variation of lithofacies, as igneous, metamorphic and sedimentary rocks are all present, as well as the mineralization processes developed throughout the geological times.

The need for action to prevent and fight against soil pollution is very obvious, especially in the most affected areas. However, even in the case of depolluting actions, the soil presents certain specificities. Thus, the elimination of the pollutant is usually very difficult and takes a long time, sometimes practically impossible. Therefore, even if the pollutant is stopped from entering and the disruptive factor is eliminated, it does not implicitly mean that the soil is depolluted or it will return to its initial features, to an immediate recovery of fertility.

II.3.7.2. Risks generated by transport activities

The setting out of forestry or local roads on the slopes often does not sufficiently consider the aspects related to their specific lithology and morphology, as the slope category is the one which most affects them. The effects of the changing of slope angles are materialized in the acceleration of splash and rill processes, sometimes even gullying phenomena, to which one may add the emergence and development of gravitational processes – landfalls and landslides.

The heavy transport activities generated by the building of the A3 Motorway, Câmpia Turzii-Turda Gilău sector, led to the overloading of the road network, especially the county roads of Iara-Hăşdate Basin. Their state changed from predominantly good (before the start of the motorway building) to average and even bad after the motorway was finished. The heavy traffic generated in the area produced damages (breaks, cracks) to the households located on the sides of these roads.

II.3.7.3. Risks generated by residential activities

The activities in the built-up space determine a continuous change of the built-up area. Many times this is a direct consequence of building up without a scientific basis, materialized in territorial planning works. On the other hand, the overstressing of the built-up area by the oveloading with buildings and the emergence of agricultural lands in the built-up area led to the increase in the meteoric waters capacity to infiltrate, therefore changing the slope behaviour to external demands.

The domestic waste dumps block relatively large land areas which become unusable and therefore out of the agricultural use. Such practices are performed at the level of the riverbeds, but also near the built-up areas within the basin. The worst problems emerge in the case of the main valleys: Iara, Hăşdate, Feneş,

Racilor Valley and Micuş, on which the main settlements are located: Băişoara, Iara, Făgetu Ierii, Surduc, Hăşdate, Crăeşti, Petreştii de Jos, Săvădisla, Vlaha, Tureni, Miceşti etc.

Cap. II.4. Settlements

II.4.1. Typology of settlements

II.4.1.1. Typology of settlements according to their demographic size

In the analyzed territory, the number of (entirely rural) settlements is 50, summing up a population of 16,350 inhabitants in 2013, 15% lower than the values recorded in 1990. The average size of a settlement in 2013 is 327 inhabitants, a value much below the national average which is 454 inhabitants/village.

II.4.1.2. Typology of settlements according to their structure

In the analyzed space, one may practically find all types of villages. However, the dispersed type of structure, specific for hilly areas, is the dominant one. Also, there are frequent situations when villages have a central compact area, where households are close to each other, and there are tentacular ramifications at the periphery, on valleys and even on slopes, where the structure is rather scattered.

II.4.1.3. Typology of settlements according to their texture

The texture (the manner in which streets are disposed) does not have usually a geometric regularity. This fact may be explained first due to the ancient times when most of these settlements were formed and shaped, inheriting today the street network from the Middle Ages when there was no thorough planning of the village texture. A second reason is the predominantly hilly morphology of the sites, which did not allow the geometrization of the street network.

However, in certain situations, one may speak of a geometrical texture, more precisely a linear one, which occurs mainly in the villages developed along a valley: Mărtineşti, Făgetu Ierii, Miceşti (double linear), Moara de Pădure, Frăsinet, Ocolişel, Crăeşti, Şutu, Stolna.

II.4.1.4. Typology of settlements according to altitude

Most of the settlements within the analyzed region are located in Iara-Hăşdate Basin, in the neighbouring corridors (Săvădisla-Luna de Sus) or in the small basins at the contact between Iara-Hăşdate Basin and the neighbouring units. In terms of altitude, only four settlements are located at a height lower than 450 m: the two villages on Arieş Valley (Lungeşti and Buru), one on the lower part of Iara River (Surduc) and one in the lower part of Săăvădisla – Luna de Sus Corridor (Vlaha).

II.4.2. Polarizing institutions and facilities

The polarizing institutions and facilities represent a set of institutions, buildings, specially planned spaces which provide certain commodities and services to the population.

II.4.2.1. Administrative institutions and facilities

At the level of each of the six communes included in Iara-Hăşdate Basin, there is a town hall, with a local council and a police station. The mayor's office comprises on the average between 10 and 20 clerks and police stations usually have 1 or 2 employees. All these are located in the commune centres.

II.4.2.2. Educational institutions and facilities

The school represents the oldest cultural building specific to amost all settlements.

In the analysed region there is no high school. However, there is a vocational and arts school at Băişoara. There are general elementary schools (first eight years) in all commune centres, as well as in Finişel and Hăşdate villages. In all other villages, there are primary schools (first four years) except for Borzeşti, Măgura Ierii, Valea Vadului, Lungeşti, Vălişoara, Valea Agrişului, where schools have been dissolved due to the lack of schooling population.

II.4.2.3. Health and medical institutions and facilities

According to the Cluj Health Insurance County House, at present, in the analysed area there are 11 medical consulting rooms: 3 in Iara and Săvădisla communes, 2 in Tureni and 1 in Băişoara, Ciurila and Petreştii de Jos. There are two dental offices in Săvădisla, while in all other communes there is only one. There are pharmacies in every commune: two in Iara and Săvădisla and one in every other commune. It is worth mentioning the case of Ciurila commune, where the pharmacy is located in Sălicea village. In Iara there is also a health centre which functions as an external department of Turda City Hospital. In Săvădisla there is a sanatorium for TB, located in a former baroque castle which belonged to Count Szechen Miklos, the last ambassador of the Austrian-Hungarian Empire in Paris. The sanatorium is under the jurisdiction of "Leon Daniello" Pulmonology and Phtisiology Clinical Hospital of Cluj-Napoca and has a capacity of 105 beds. Veterinary doctors have offices in each of the commune centres, as well as in some of the other, larger, villages. Veterinary pharmacies exist in every commune centre.

II.4.2.4. Cultural institutions and facilities

At present, the community centres that have not become derelict with the passing of time are used by villagers especially on occasions and events like weddings, baptism celebrations, and in certain situations they transformed in cinemas (Iara) or in disco-bars.

II.4.2.5. Religious institutions and facilities

In the village community, the church has always been the spiritual centre, a place for prayer and to connect with God.

Tabelul 37. The churches in Iara-Hășdate Basin in 2013.

Commune	Churches
Băişoara	- 7 Orthodox churches - 1 Baptist church
Ciurila	- 9 Orthodox churches
Iara	- 12 Orthodox churches - 1 Unitarian church - 2 Protestant churches - 2 Baptist churches - 1 Greek-Catholic church
Petreştii de Jos	- 10 Orthodox churches - 2 Greek-Catholic churches - 1 Baptist church
Săvădisla	- 7 Orthodox churches - 3 Protestant churches - 1 Roman-Catholic Church - 1 Baptist church - 1 Pentecostal church
Tureni	- 6 Orthodox churches - 1 Protestant church - 2 Unitarian churches - 1 Jehova's Witnesses - 2 Baptist churches

Source: Files of the communes Băişoara, Ciurila, Iara, Petreştii de Jos, Săvădisla and Tureni.

II.4.2.6. Financial, banking and insurance institutions and facilities

In the studied area, financial, banking and insurance institutions and facilities are found only in Iara (CEC BANK – bank branch and Banca Transilvania – working unit). They also have ATMs. In the other communes there are no such units.

In the settlements of the analysed region there is no branch or working unit of any of the insurance companies, but there are many insurance agents who work for them and successfully cover the whole territory of Iara-Hășdate Basin

II.4.2.7. Transport facilities

The main facilities are directly related to the road transport because the only existing railway – the narrow gauge line on Arieș Valley having railway stations at Buru and Lungeşti – was dismantled at the end of the 1990s, despite its popularity and usefullness. In the future, the opening of Ciurila exit on the Transylvania Motorway which crosses the analysed region on the route Gilău – Vlaha – Săvădisla – Vălişoara – Crăeşti – Deleni – Tureni (sud) – Turda – Câmpia Turzii might determine a higher specialization of this region as a transit space with complex functions directly related to the motorway, even if for the moment there is no possibility to enter or exit the motorway between Gilău and Turda.

II.4.2.8. Telecommunication facilities

In the investigated space, there are three post offices at Iara, Săvădisla and Tureni, while in the other commune centres (Băişoara, Ciurila, Petreştii de Jos) there are post working units. Postal working units also function in several villages, like Muntele Băişorii, Filea de Jos, Şutu, Ocolişel, Crăeşti, Hăşdate and Miceşti.

II.4.2.9. Commercial facilities

The analysed rural space is relatively close to important urban centres – Turda and especially Cluj-Napoca, and therefore there are no higher-ranked commercial units. The existing companies are looking to

ensure the necessary commodities for the rural population, usually the daily used commodities and sometimes the occasional use commodities.

In every commune there are between 10 and 50 economic operators that have activities in the branch of retail trade involving food, textiles, chemical and agricultural goods etc. The highest number of such agents is in Săvădisla commune.

II.4.2.10. Agricultural and forestry facilities

These facilities are directly related to the agricultural and forestry activities developed in the studied region. They were not included in other types of facilities, as they represent a special category, specific for rural regions.

Among them, one may remark the milk collecting points, directly related to the animal breeding activity, which is very significant in the region. Practically, in almost every village there is such a point, planned and managed by the two nearer large companies in the milk industry, Napolact and Albalact.

II.4.3. Rank of settlements

The settlement system represents a dynamic entity with a variable geometry, which takes into account the level of the coordinating centre. In order to individualize and to evolve, it is based on a number of important principles. In Iara-Hășdate Basin, the settlement system is polarized by urban centres outside the investigated space – Cluj-Napoca, the regional metropolis, and Turda City, which has a polarizing role in the space centered on the lower valley of Arieș River and partly on its tributaries (including therefore Iara and Hășdate valleys). The rural settlements of Iara-Hășdate Basin have been ranked according to a more detailed system (R. Rusu, 2007). Thus, we took into consideration the following settlement raning levels: rank 7 – supracommunal centres; rank 8 – commune centres; rank 9 – rural settlements that aren't (no longer) commune centres but have several facilities similar to them; rank 10 – villages that have elementary facilities; rank 11 – villages that do not have even elementary facilities.

II.4.4. Accessibility of settlements

Regarding the present accessibility of settlements in Iara-Hășdate Basin (fig. 41), one notices that the highest values of the connectivity index (Rusu et al, 2013) are recorded in the settlements located on the national and European road DN 1 / E 60 or near this road: Tureni (18.2), Ceanu Mic (14.4), Mărtinești (13.9), Comșești (10.9).

The introduction of the motorway node at Ciurila (fig. 42) will make the values of the connectivity index to change for the better in the case of most settlements. The biggest changes will register, of course, for the settlements located near this motorway exit.

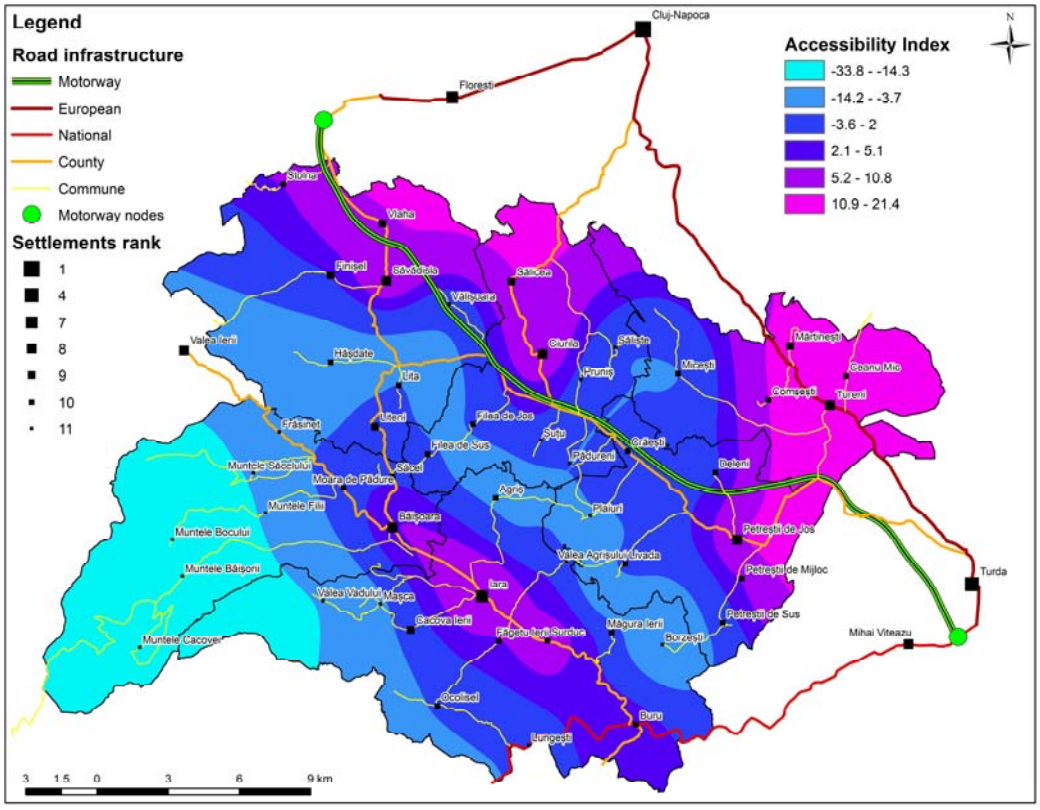

Fig. 41. The present connectivity of the settlements in Iara-Hășdate Basin.

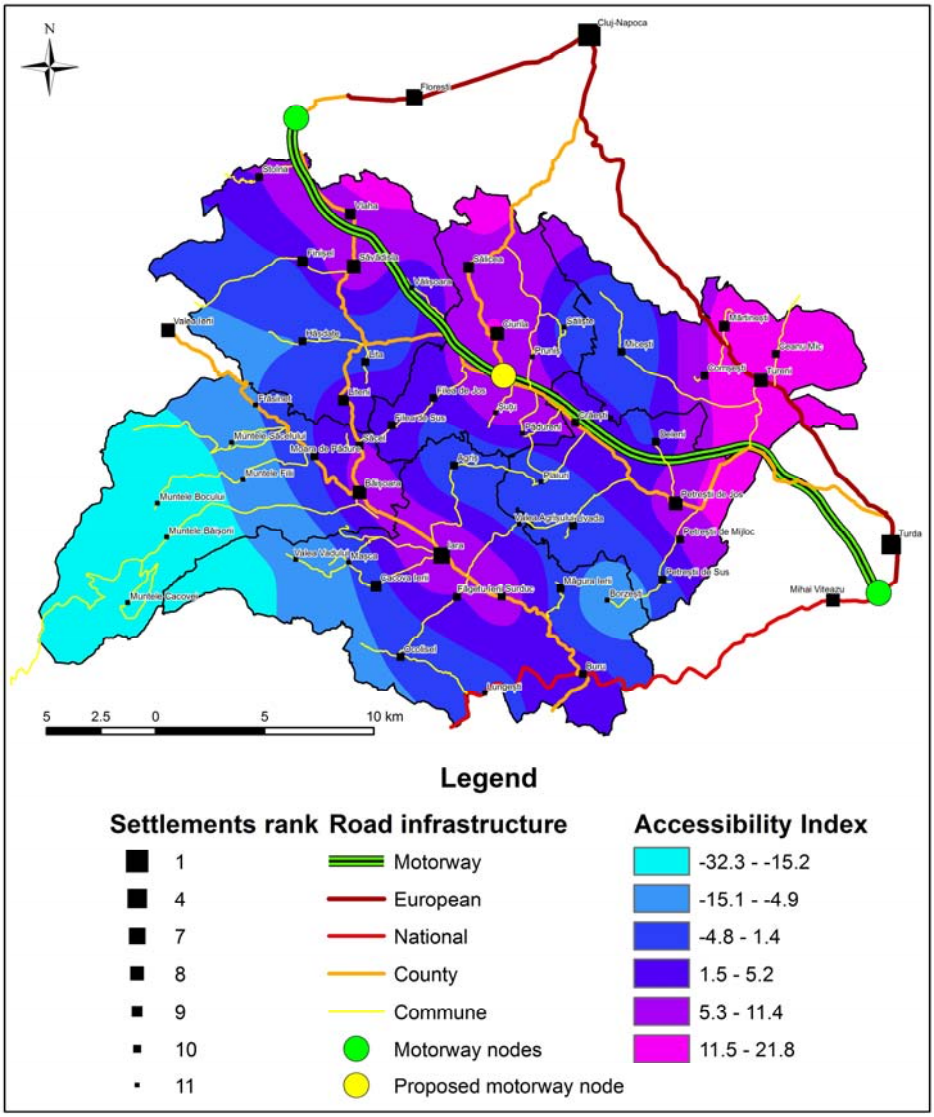

Fig. 42. The connectivity of the settlements in Iara-Hăşdate Basin in the case of the building of the motrway node at Ciurila.

Ch. II.5. Infrastructure and technical networks

The direction of the majority of the transport axes in Iara-Hăşdate Basin was and is strongly influenced by the direction of the major morhological and hydrological axes. Therefore, the main orientation of the communication lines (roads, in this case) is almost cross-cutting, from North-West to South-East.

II.5.1. Road infrastructure

Apart from the communication network density, its state of viability is also a vital element in the territorial organization and planning and its socio-economic dynamics. The national roads which pass through the studied area are DN 1 (E 60-E 81) Turda – Cluj-Napoca, which crosses the eastern part of the region and DN 75 on the route Turda – Buru – Lungeşti, continuing towards the inner part of Apuseni Mountains. Concerning the qualitative parameters of the roadway of the above-mentioned national roads, one remarks a positive situation on most of their length. The motorway routes have a major importance for the road network, in the context of the national territory inclusion in the large European transport corridors. Transylvania Motorway (Braşov – Oradea – Borş) crosses the North-West Region of Romania and has part of its route on the studied territory. The motorway rounds Feleacu Hills to the South, approximately along the line of Hăşdate Valley (Luna de Sus – Vlaha – Ciurila – Crăeşti – Petreştii de Jos sector), then it cuts through Sănduleşti Range near Sănduleşti village. The motorway opened in 2009 (Turda – Gilău sector, 42 km) and 2010 (Turda – Câmpia Turzii sector, 10 km).

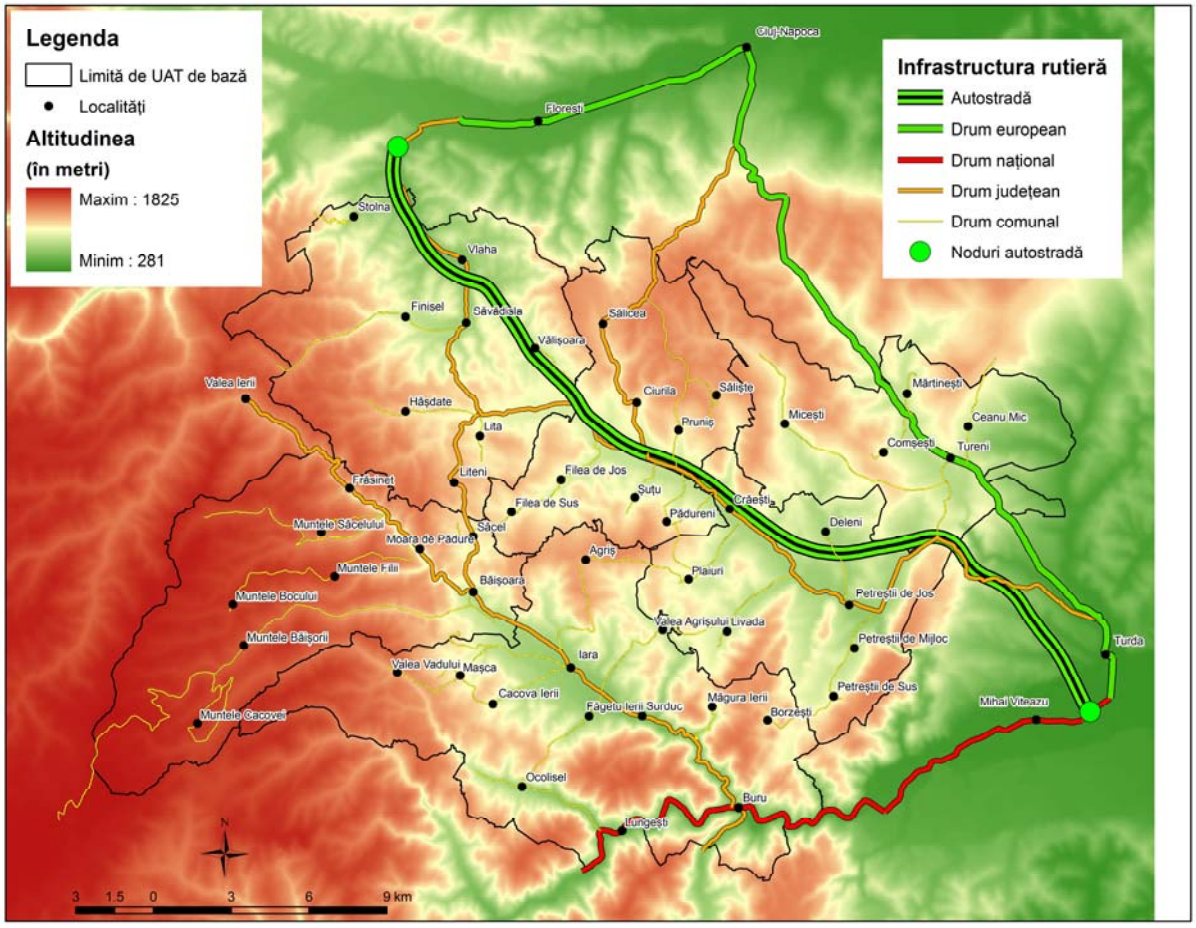

Fig. 44. Road infrastructure in Iara-Hășdate Basin.

II.5.2. Technical networks

II.5.2.1. Water supply infrastructure

In Săvădisla commune, water is supplied by Someș Water Company, as the local networks were taken over by this company in 2003. The pipes have a diameter between 63 and 110 mm and are made of polyethylene. In Muntele Băișorii village, the water supply network has been managed by Someș Water Company even since 1997. The pipes have a 90 mm diameter and are made of PVC.

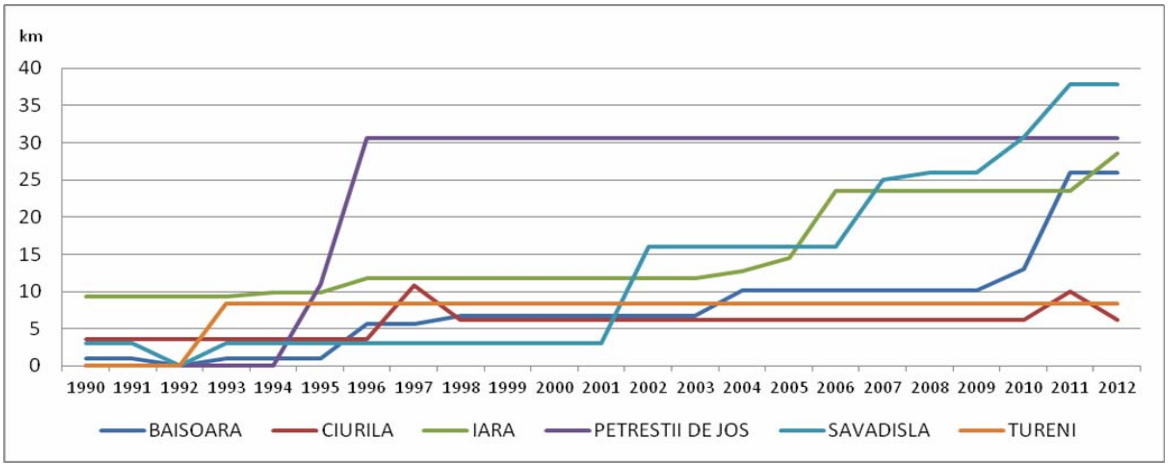

Figure 45. The evolution of the water network length in Iara-Hășdate Basin between 1990 and 2012.
Source: INS, TEMPO-online database.

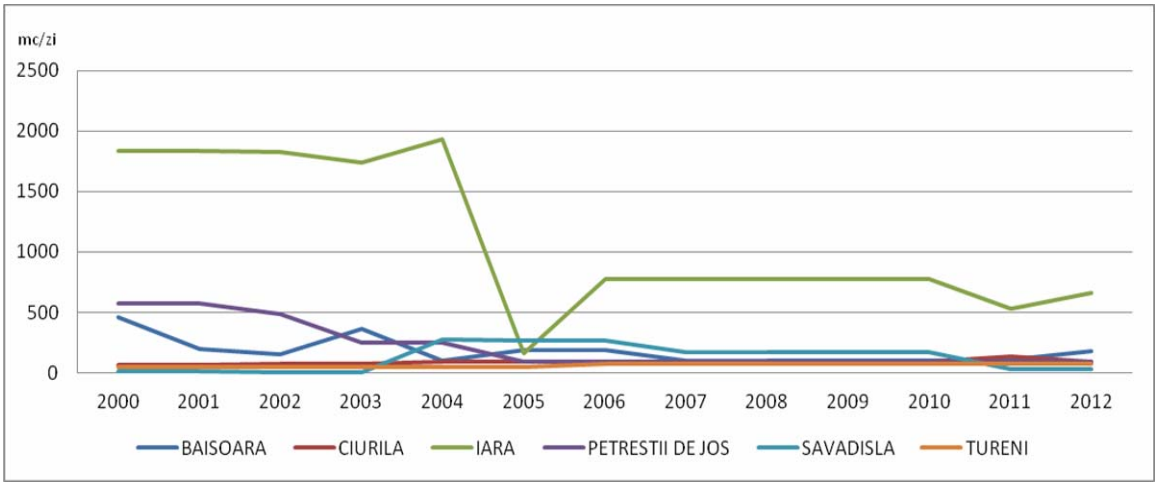

Fig. 46. The evolution of the capacity of water production equipments in Iara-Hăşdate Basin between 2000 and 2012.
Source: INS, TEMPO-online database.

One remarks a correlation between the evolution of the capacity of water production equipments and the amount of water distributed to consumers. Sometimes, there is also a contradictory evolution in relation to the constant growth of the water network. This may suggest a lower water consumption, on one hand, but also a better network efficiency by eliminating or reducing the losses in the system, on the other hand.

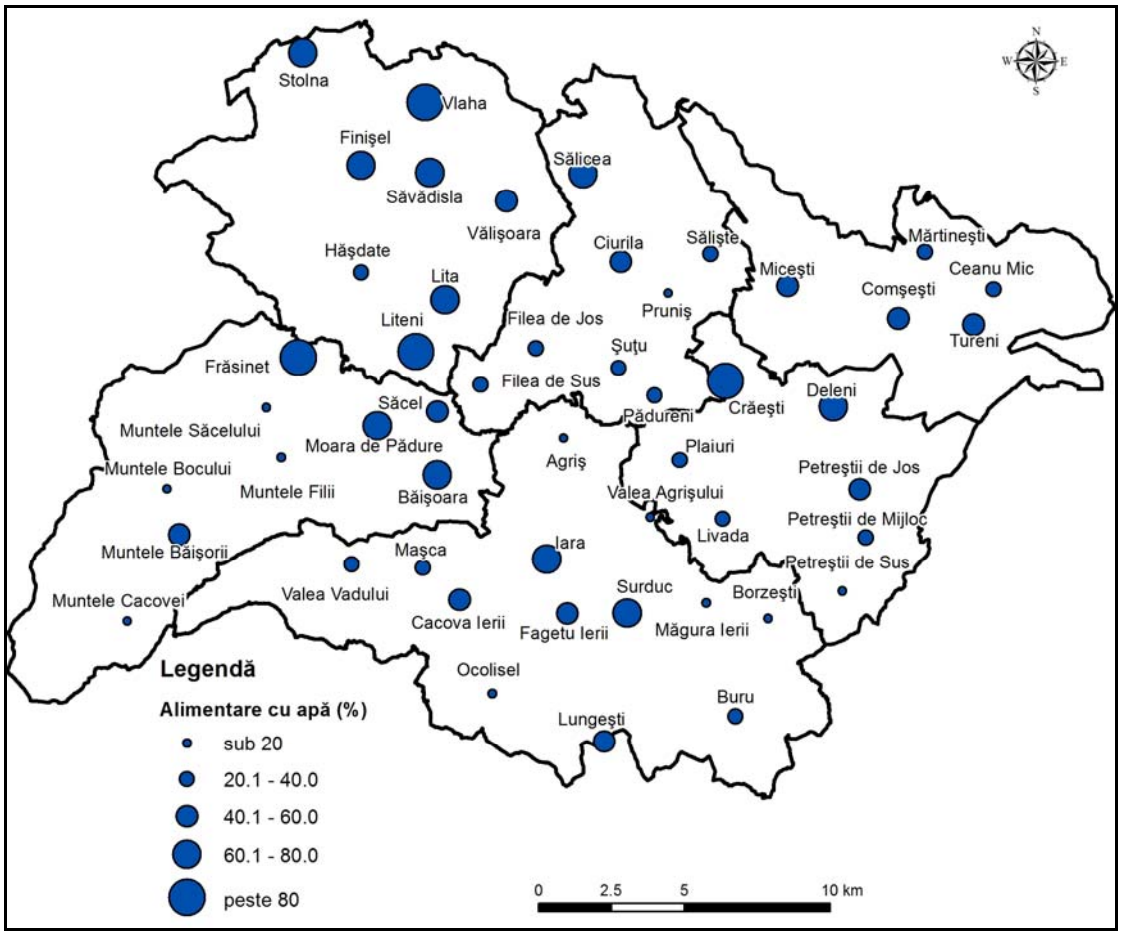

Fig. 49. The weight of households that have water supply equipments in the settlements of Iara-Hăşdate Basin in 2011.
Source: INS, RPL 2011.

II.5.2.2. Sewerage infrastructure

In 1990, the centralized sewerage infrastructure was developed only in Băişoara commune, where the network was only 0.5 km long. The situation remained unchanged until 1995, when the centralized sewerage system was introduced in Iara commune. Initially, the network was only 0.7 km long. For 10 years, the networks did not suffer changes. Extensions of the networks started in 2007 (in Băişoara commune).

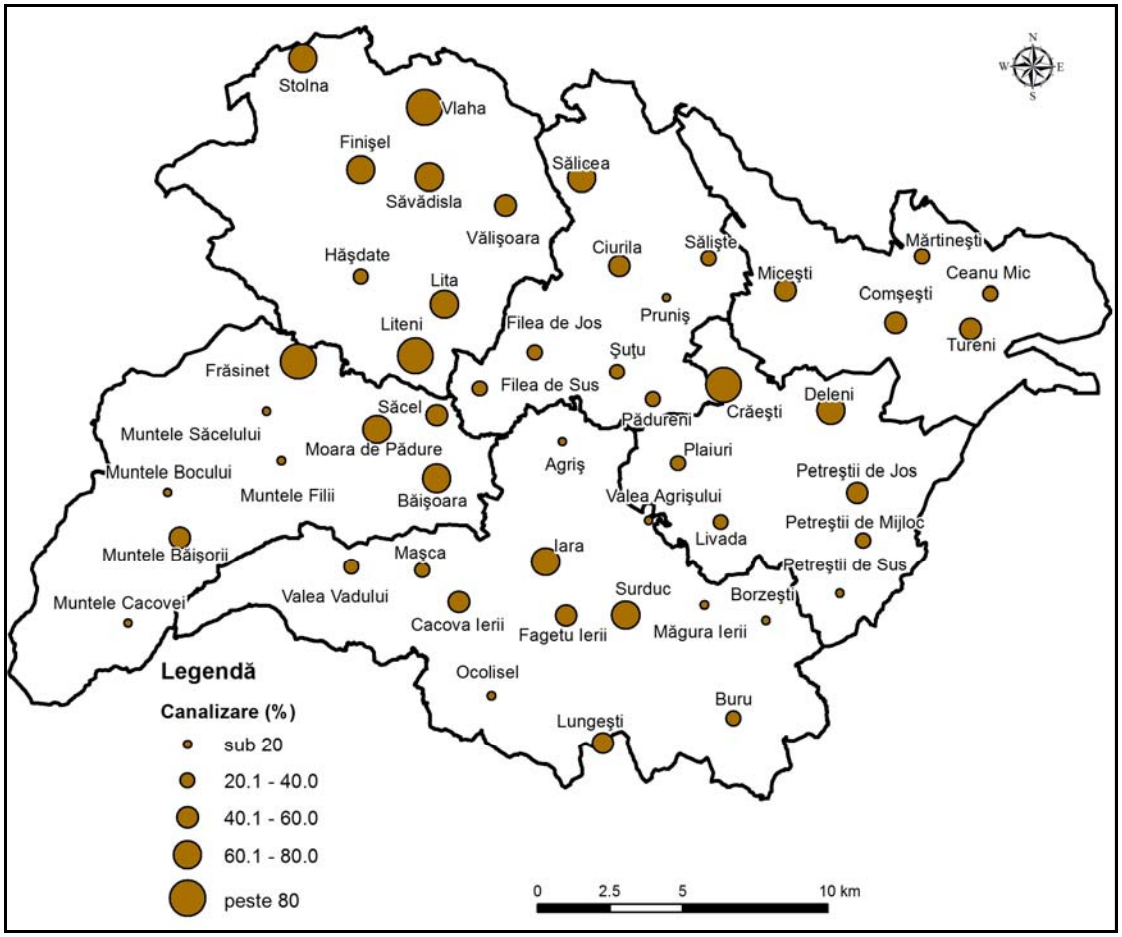

Fig. 51. The weight of household that have sewerage equipments in the settlements of Iara-Hăşdate Basin in 2011.
Source: INS, RPL 2011.

II.5.2.3. Power supply infrastructure

The communes of Iara-Hăşdate Basin are supplied from the National Power System, by means of local transformer stations.

II.5.2.4. Gas and heating infrastructure

Only two communes of Iara-Hăşdate Basin are connected to the natural gas distribution network: Tureni commune, since 1997, when the network was 7 km long, and Săvădisla commune, since 2009, with a network measuring 31.8 km in length.

In the meantime, the network extended in both communes. In 2012, the last year for which data is available, the total length of the network was 58.6 km, out of which 34.1 km in Săvădisla commune and 24.5 km in Tureni commune.

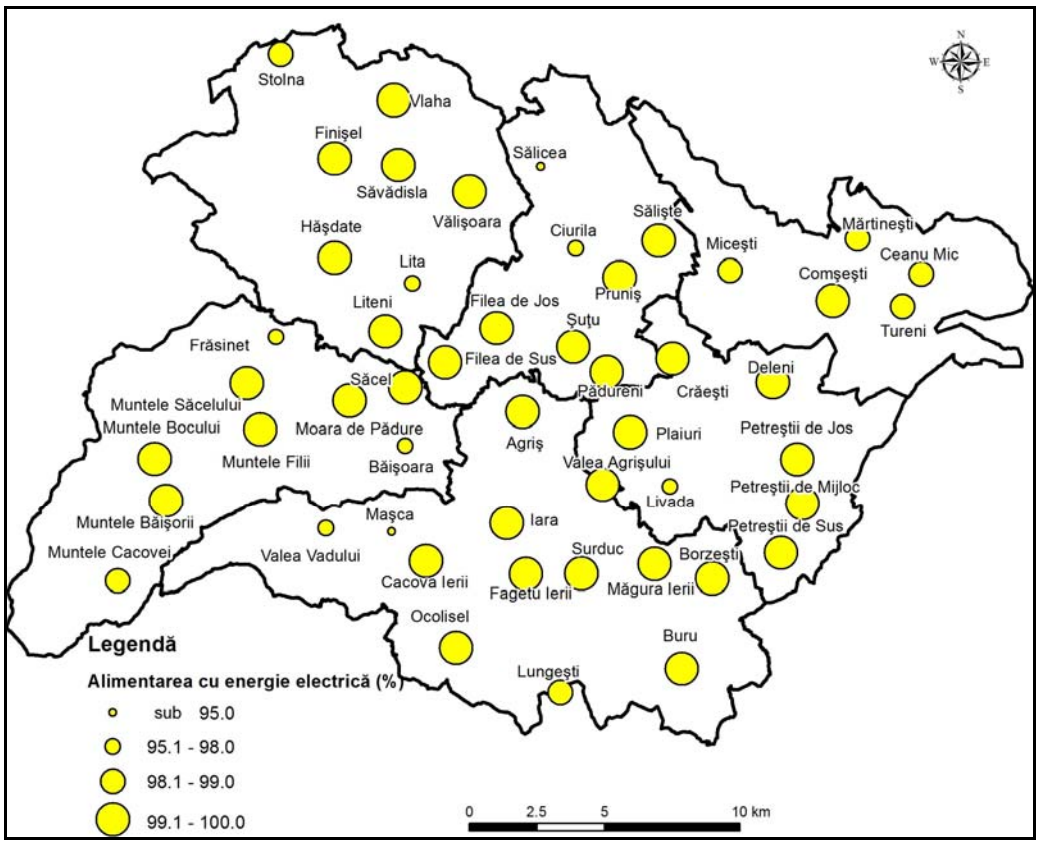

Fig. 52. The weight of households that have power supply equipments in the settlements of Iara-Hăşdate Basin in 2011. Source: INS, RPL 2011.

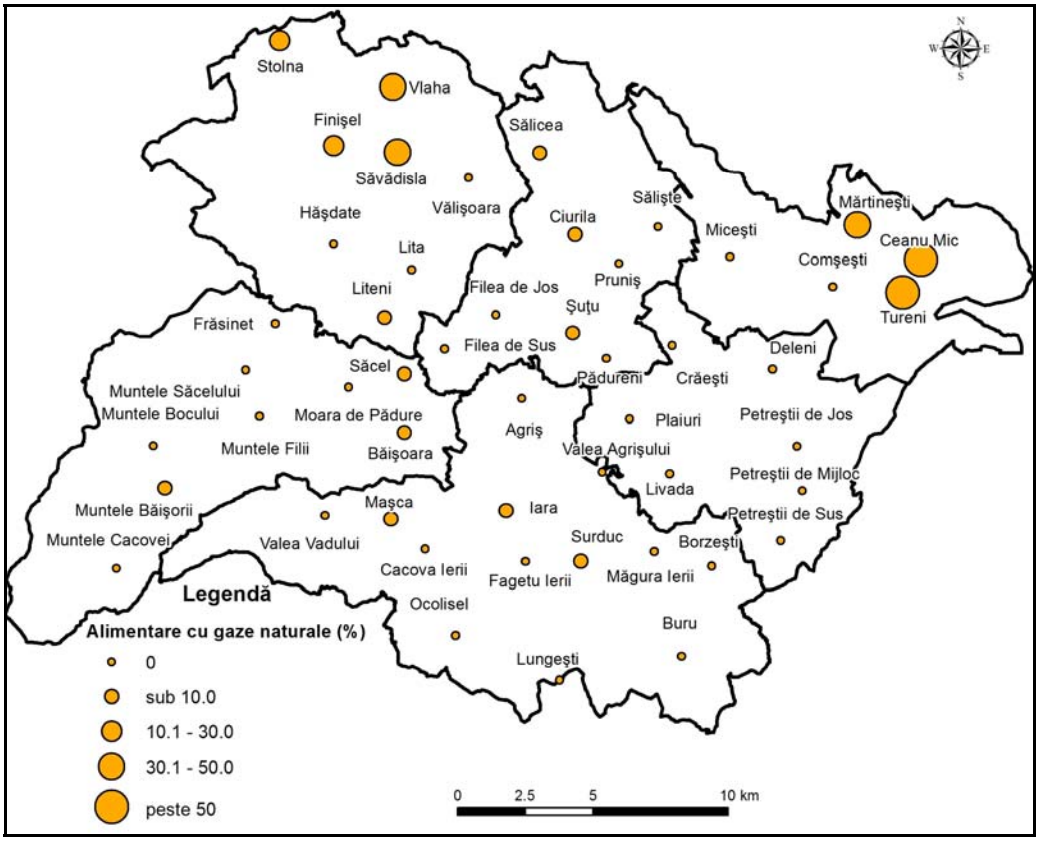

Fig. 56. The weight of households that have natural gas supply equipments in the settlements of Iara-Hăşdate Basin in 2011. Source: INS, RPL 2011.

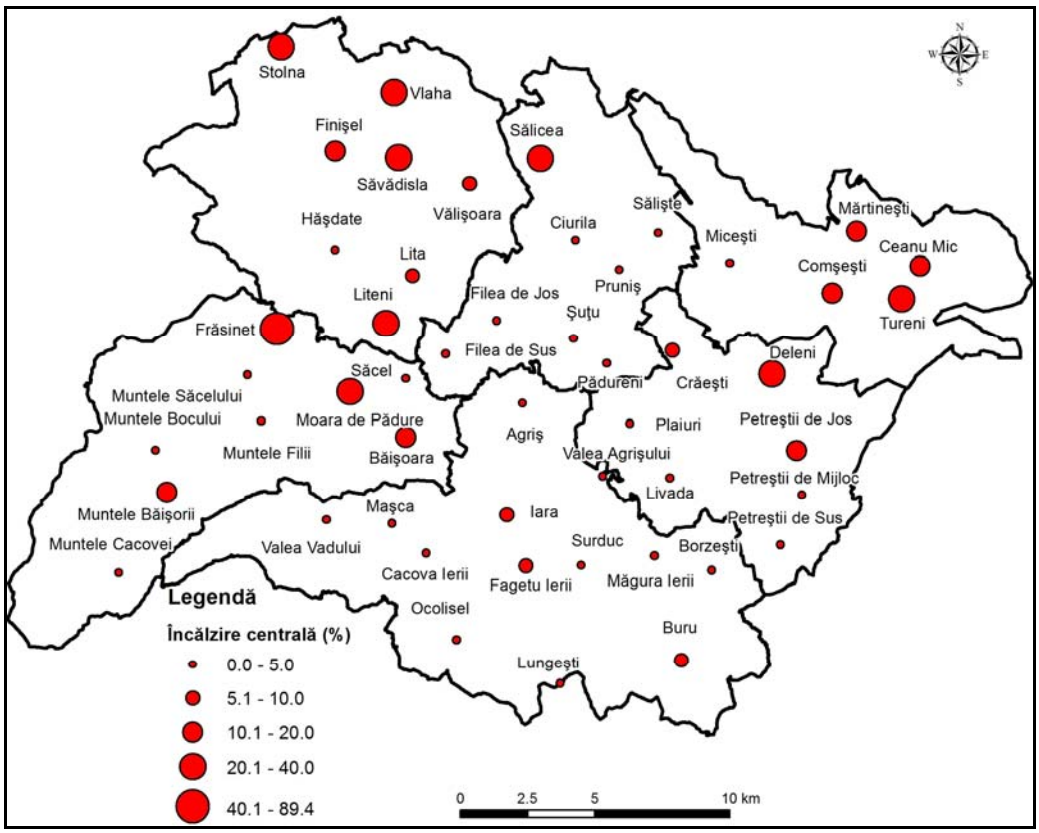

Figura 57. The weight of households that have central heating equipments in the settlements of Iara-Hășdate Basin in 2011. Source: INS, RPL 2011.

Ch. II.6. SWOT analysis

STRENGTHS	WEAKNESSES
Proximity to Cluj-Napoca City, ranked I, of European importance	The polarizing power of the nearby urban centres - Cluj-Napoca, Turda, Câmpia Turzii
Diversity of landforms (mountains, plateaus, hills)	The risk of landslides and floods, especially in the higher areas
The rich and diverse flora and fauna	Less favourable soil and climatic conditions for intensive agriculture
The existence of protected natural areas	The cutting of forest areas and the presence of unproductive badlands
The presence of several national and religious minorities	The frequent occurrence of extreme meteo phenomena
The suburbanization that develops around Cluj-Napoca City (Ciurila, Săvădisla, etc.)	The accelerated and continuous population decline during the last 5-6 decades
The development of the tourism and leisure activities in Băişoara and Ciurila areas	Negative natural balance of the population
The emergence of small production and service units in certain rural settlements	The increase of the external migration and the migration towards urban areas of the young and skilled workforce
The existence of skilled labour workforce resources in agriculture, mining, forestry etc.	The accelerated population ageing and the high degree of dependency
The existence of important soil and mineral resources in the area (metalic ores, building materials, grasslands and hay fields, waters, etc.)	The low weight of the population with a university degree
The high potential for the development of leisure and commercial fishing (in the reservoirs)	The high weight of the population employed in the non-formal system (their own households)

The area has an average-high potential for the production of wind energy, forest biomass and solar energy etc.	The local workforce depends on the jobs in urban areas
The existence of a medical department with beds at Iara and of medical offices in all communes (except for Ciurila)	The absence of large farms and the large-scale predominance of rudimentary subsistence agriculture, for self-consumption
The development of a network of private pharmacies	The lack of processing units for agricultural raw materials
The existence of community centres and commune libraries in all communes	The weak development of associative structures in agriculture
The accession of governmental and European funds for rural development projects during the 2007-2013 period	The insufficient capitalization of the natural and built-up heritage for tourism purposes
The development and modernization of infrastructure and telecommunication services	The lack of integrated tourism trails that might attract a larger number of tourists for a longer stay
The development of private commercial networks at local levels (stores, deposits, etc)	The lack of permanent medical centres
Satisfactory (metropolitan) public and private transport services to Cluj-Napoca and Turda cities	The advanced state of degradation in the case of a number of commune medical offices
Easy access to Cluj-Napoca International Airport	The insufficient number of medical staff
Good technical state of the national road DN 1	The low cultural supply at local level
The development of modern sporting grounds and spa facilities	The physical degradation of cultural buildings and their inadequate instrumentation
Modernization and instrumentation of educational institutions	The lack of personnel in the local public administration sector
Public financing of local sporting clubs	The reduced administrative and financial capacity of the local public administration
	The lack of access to the railway network
	The bad/average technical state of several national, county and local roads in the region
	The high traffic values on DN 1 which have a negative impact on the environment and population safety
	The lack of road nodes to ensure the access of the population to the A3 motorway
	The lack of bycicle routes and of the footways /pedestrian areas in the built-up areas
	The deficient tourism information and signposting infrastructure
	The lack of modern public transport stations
	Deficient school sporting infrastructure (multifunctional gymnasia and atheltic fields)
	The advanced state of degradation of the stadiums and local sporting grounds and the lack of adequate equipments
	The absence of high schools and industrial schools
	The low energetic efficiency of public buildings (educational, health and administrative units)
	The existence of a large number of people exposed to the risk of social exclusion (elderly people, Gypsies, disabled people, children whose parents live abroad, homeless people or

	people who live in improper conditions etc.)

OPPORTUNITIES	THREATS
The building of the A3 motorway to the border with Hungary, the building of the Ciurila node and of the A 10 motorway Turda – Sebeş, which will connect the area to the TEN-T priority axes	The acceleration of climatic changes and the increase in number of extreme meteorological phenomena
The capitalization of the green energy production potential in the area	The low degree of absorbtion of European funds for agriculture and rural development
The status of European Cultural Capital for Cluj-Napoca in 2021, which will have a positive impact on local tourism	The decline of the investors' interest for the capitalization of renewable energy
The development of agritourism and the increase in interest for this niche market	The uncontrolled expanison of the built-up areas at the cost of the natural areas and the biodiversity
The existence of European funds for road infrastructure projects, agriculture and fishing projects, rural development, green energy and energetic efficiency, environmental protection, human resources, social inclusion etc.	The continuous outmigration of the workforce in foreign countries
There are resources granted from the state budget for local infrastructure development projects	The higher unemployment rates among young people in the context of economic stagnation at national and international level
The growth of the global market for bio / ecological products	The increase of school abandonment in the context of school network restructuring and the economic difficulties of the population
The setting up and promotion of integrated tourism routes at the level of Cluj County and of the region	The decline in state budget grants for investment projects of the local public authorities
The development of the suburbanization phenomena around Cluj-Napoca City due to the population and companies migration to the neighbouring rural area	The low administrative and financial capacity of Cluj-Napoca Metropolitan Area Association

PART III. LOCAL DEVELOPMENT STRATEGY. OBJECTIVES, PROPOSALS, PROJECTS

Development vision:

At the level of the year 2027, Iara-Hăşdate Basin area will be an accessible, sustainable and inclusive rural space, functionally integrated with Cluj-Napoca-Turda Urban System and Cluj-Napoca Metropolitan Area, which will become again attractive for inhabitants, tourists and investors by providing average living standards in the European context.

S.D. 1. The increase of accessibility and the support for mobility:

Measure 1.1. The increase of mobility within the studied area

S.D. 2. The endorsement of economic development of the studied area

Measure 2.1. The creation of an attractive, competitive and innovative business environment in the studied area

Measure 2.2. The development of the supporting infrastructure for the business environment in the studied area

Measure 2.3. The capitalization of multiculturalism and of the cultural heritage and the promotion of tourism in the studied area

Measure 2.4. Investments in people and in competencies in the studied area

Actions:

S.D. 3. The improvement of the environmental quality in the studied area

Measure 3.1. The protection of biodiversity, of the landscape and the provision of the quality of environmental factors in the studied area
Measure 3.2. The implementation of the risk management in the studied area
Measure 3.3. The implementation of the integrated waste management in the studied area
Measure 3.4. The increase of the energetic efficiency of the buildings in the studied area
Measure 3.5. The stimulation of the production and use of the renewable energies in the studied area
Measure 3.6. The extension and modernization of the leisure and sporting infrastructure in the studied area
S.D. 4. The development of the technical infrastructure in the studied area
Measure 4.1. The provision of access to water and sewerage networks for the inhabitants of the studied area
Measure 4.2. The provision of access to power and heating networks for the inhabitants of the studied area
Measure 4.3. The provision of access to natural gas networks for the inhabitants of the studied area
Measure 4.4. The provision of citizens' safety and the prevention of delinquency and crime in public spaces in the studied area
S.D. 5. Asigurarea accesului cetăţenilor din zona studiată la servicii educaţionale, medicale şi sociale de calitate
Measure 5.1. The provision of access to quality educational infrastructure and services for all the inhabitants of the studied area
Measure 5.2. The provision of access to quality medical infrastructure and services for all the inhabitants of the studied area
Measure 5.3. The provision of access to quality social infrastructure and services for all the inhabitants of the studied area and poverty control
S.D. 6. Local development by means of integrated investments
Measure 6.1. The provision of quality public spaces and opportunities for spending the spare time
Measure 6.2. The endorsement of integrated projects for sustainable rural development
S.D. 7. The provision of good governance and the increase of administrative capacity at local level
Measure 7.1. The strengthening of the cooperation between public administrations and citizens and the increase of transparency in the studied area

PART IV. CONCLUSIONS

This paper was intended to be an integrative and inclusive study of territorial planning, highlighting the physical-geographical and socio-economic situation, problems and shortcomings of a rural territory having some particular caracteristics, at the contact of Western Carpathians with Transylvania Basin, Iara-Hăşdate Basin. Also, the paper tried to identify and rank the solutions and sustainable development directions for this basin.

The application of this approach on a microregion – type territory needed a working methodology which was mostly inspired from the one used in the seeting up of zonal masterplans, especially the inter-communal ones, which are best suited for the study area.

Therefore, the structure of the paper included those chapters which are usually comprised in these masterplans: the natural framework, the environment, the population and settlement network and the technical networks. The multicriterial analysis of the elements which make up the basis of local development allowed the highlighting of specific aspects for this region, but also the main issues and shortcomings that need to be solved. All these have been graphically and cartographically represented by means of specialized GIS and digital mapping software, ArcGIS mainly, but also Global Mapper and Google Earth. Maps and detailed analyses have been drawn up for each chapter. In the end, all the specific maps needed for the inter-communal masterplan have been drawn up.

In this sense, the SWOT analysis and the development strategy open the horizon for the future. They synthesize the main lines and growing aspirations of Iara- Hăşdate Basin for 2027 in the conditions in which the measures and projects proposed in the strategy will be implemented.

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