„BABEŞ-BOLYAI”UNIVERSITY CLUJ-NAPOCA

FACULTY OF GEOGRAPHY

THE INDUSTRY OF THE LOWER ARIEŞ RIVER BASIN. ITS SOCIAL AND TERRITORIAL IMPACT

PhD thesis summary

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KEY WORDS: Lower Arieş River Basin, industry, impact

INTRODUCTION:

This paper represents a complex process toward the documentation and the analysis of the exploratory stages of industrial development in the Lower Basin of Aries, an elaborate analysis of the social and territorial effects (positive and negative) resulting from industry development. Our perspective on this development was based on the modifications of the social and territorial characteristics, without forgetting the political processes through which successive governments create rules that directly or indirectly affect the industrial organization.

The study the lower basin of Aries falls in a relatively limited series of economic and geographical works if we take into account papers that do not strictly refer to the economy and the development of the two urban centers- Turda and Câmpia Turzii- but to the entire geographical area, including urban and rural settlements. Therefore, this study represents the results of five years of personal interest and research of the area, the first complex geographic, economic, social and territorial approach of the lower basin of the Aries river.

In doing so, we started from the need for detailed knowledge of the realities of the area in order to analyze the evolution of the human settlements, urban and rural demographic phenomena and the geographic territory due to economic modifications as related to industry, their degree of complexity, their territorial manifestations and perspective directions of their evolution. The structure and the approach of this study meet some major objectives, namely: creating a historical outline of the industrial development of the area; a comparative analysis regarding the time evolution of space inhabiting and the study of its evolution; variable frequency and intensity of natural movements and migratory movements in order to determine the types of population dynamics; presenting the area in terms of economic development

activities, from simple craft occupations to its current structure and, last but not least, establishing which social indicators should be used in analyzing the quality of life of the population living in the area.

The study is aimed at understanding both the quantitative characteristics (human potential, density, structure, territorial mobility), quantitative and dynamic characteristics (labor resources, the degree of skill, professionalism) of urban and rural communities, as well as qualitative characteristics (social indicators of the level of "welfare").The evolution of the hearth of the village and the built-up urban areas were also analyzed, as well as the function and the evolution of the urban technical infrastructure, the intensity of living on these lands, and the way people have adapted to the new development environment.

The research has examined the level of involvement of each rural settlement in the development of the entire area, and has identified the economic and social activities that have supported and encouraged the exploitation of the local potential. Of course, special emphasis was placed on the industrial side of the integrated development of the area.

The end result is intended as a comprehensive analysis and synthesis, which, based on its content, structure, methods and procedures, might contribute to the clarifying of many aspects of human geography specific to this geographic area, as well as to bringing to the table a number of elements of innovations.

The interdisciplinary nature of the themes has required the use of interdisciplinary methods, from those purely geographical to sociological and statistical analysis, in order to obtain a more accurate and fundamental analysis of the investigated processes and phenomena. For the most part, the study is based on accumulation and interpretation of existent data obtained from the National Institute of Statistics Cluj-Napoca, Cluj Chamber of Commerce and Industry, National Archives Cluj-Napoca, as well as from other institutions, interviews with former employees of the factories and general discussions with locals.

The completion of this work couldn't have happened without special support from my scientific adviser, prof. Dr. Vasile Surd. His generosity, proven over the years of preparation and execution of this work, his willingness to share his own scientific experience, his pertinent and valuable observations have provided methodological support and encouragement during my hardest moments, representing an invaluable aid for which I manifest my deepest gratitude and consideration.

CHAPTER I : THE "INDUSTRY" CONCEPT WITHIN THE ECONOMIC, GEOGRAPHIC, AND SOCIAL CONTEXT

Branch of the material production (and of the national economy), in which the activities refer to the extraction of the natural resources from the natural environment and their processing, as well as the processing of other materials in goods production and consumer goods, the industry separated on the basis of the social division of work (Surdu V. et al., 1991).The Encyclopedic Dictionary divides it into three categories: extractive industries (which include activities such as separation of some useful materials from their natural environment, or some primary processing activities), manufacturing industry (including processing and transforming of raw materials from mining and agriculture into finished products), and domestic industry (domestic production). Professor Vasile Surd et al. have classified the industry according to its purpose or its economic nature of production into group 'A' and group 'B' (producing inputs, namely producing consumer goods) in the first case, or heavy industry , light industry, mining and manufacturing in the second case.

Basic activity of the contemporary world (although using reduced labor force as compared to agriculture or services), the industry is divided according to the international literature (P. Merlin, 1997 M. Derruau, 1998) in three main groups: *heavy industry / light industry*: traditional classification that refers to processing of raw materials (fuels and minerals) on the first case, and the use of semi-finished products or raw "light" materials, which can be more easily transported to greater distances in the second case ; *equipment industry / consumer goods industry* that refers to the provision of equipment, facilities, semi-manufactured products and transportation to other economic activities; and *industries differentiated by location* and based on the relationship between the mobilized resources.

Regarding the concentration of industrial activities, they can be developed horizontally or vertically. Horizontal concentration refers to grouping units with the same profile (producing similar goods) to achieve higher efficiency, of financial cooperation, but especially in order to weaken or even eliminate competition. Vertical concentration on the other hand, is limited to the needs of a specific type of industry, producing parts needed for furthering the production process within the horizontal markets.

In terms of geography, industry has developed mainly as a consequence of spatial factors as related to the location of industrial activities, namely: along or close to the axes of communication,

according to availability, price and quality of land or opportunities of integration within the local environment.

Industry location theories

Renner is one of the few "traditional" geographers that have tried to analyze factors influencing location choice for industrial sites from a theoretical standpoint. He had a clearer understanding of how the "industrial site" factors, namely raw materials, market output, labor (including management), power and energy, financial capital and transportation infrastructure combine to create an optimal point location, or as he calls it a "best access point to its components".

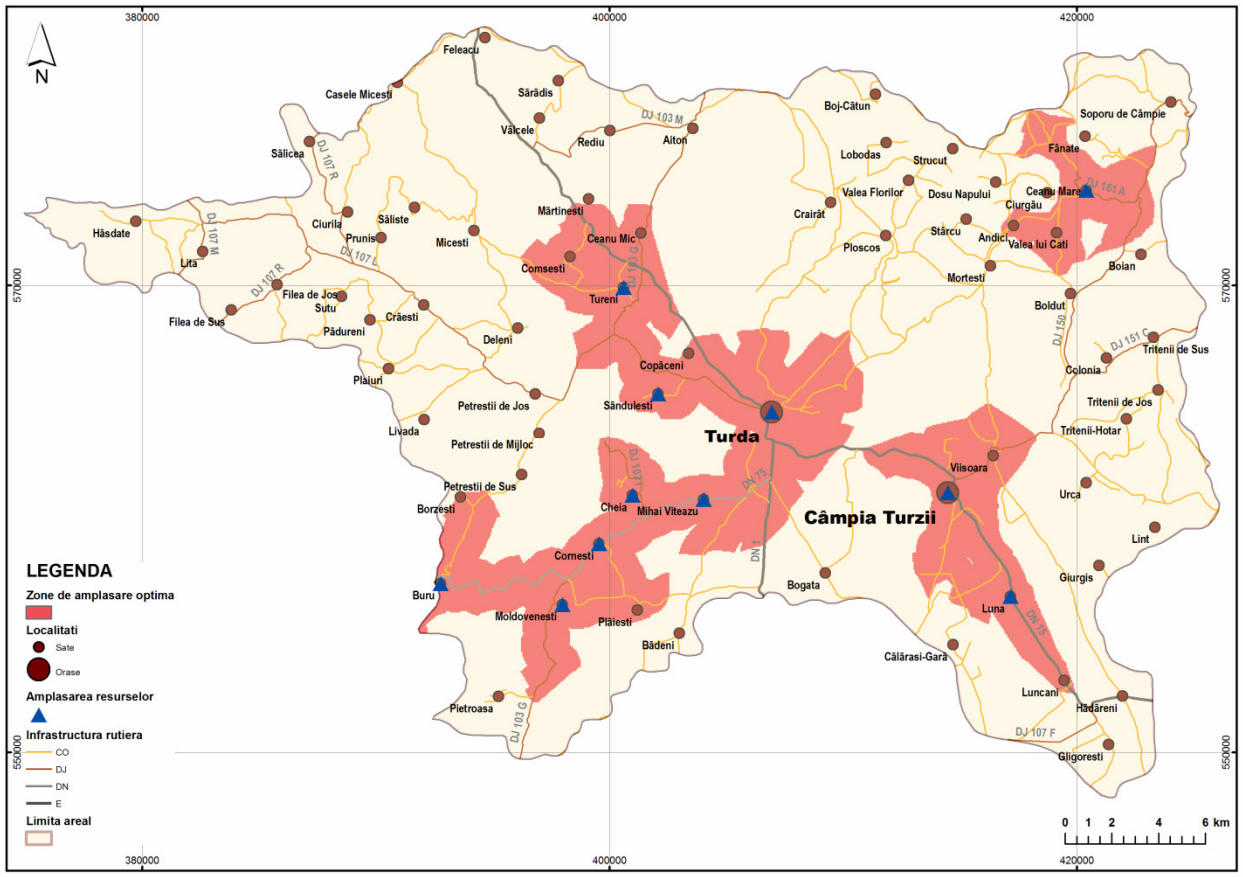
However, industrial location theory has emerged about 50 years before, Rawston Alfred Weber (1909) being among the first that brought into question "modern" theories of industrial location, differentiated from other contemporary economists through its simplicity and clarity of the stated premises: the existence of resource materials is limited to few localities; the size of markets is given under conditions of perfect competition; the existence of several fixed "points" that insures the industry with needed immobile and sufficient labor as long as it is paid at a predetermined salary.

Considering Weber's model we obtained three "optimal points" for the location of industrial units based on the use of three parameters: the distance from residential areas, distance to resources (raw materials) and transportation infrastructure:

- The optimally located area including the rural villages Buru, Moldoveneşti, Plăieşti, Corneşti, Chiea,

Mihai Viteazu, Sănduleşti, Copăceni, Tureni, Comşesti, Ceanu Mare and Mărtineşti, which includes Turda city as well. This area coincides with the actual location of the industrial platform;

- The optimal area 2, including the villages Luncani, Luna, Viişoara, as well as Câmpia Turzii;
- The optimal area 3, located in the north-eastern side of Turda, including the villages located near the resource material (stone quarries, salt, sulfur, natural gas, limestone, sand), with access to natural gas and the great communist infrastructure project development Ceanu Mare Cluj communist led by dr. Petru Groza, great source of employment for the adjacent rural areas.



Optimal points for industry location

The industrial phenomenon within the social context

Generally speaking, the process of industrialization has had a positive impact on the population if we consider the standard of living. In terms of health, the situation is quite the opposite, the population being deeply affected by the high levels of pollution, despite efforts to extend health facilities in the communist period. We must admit however that during the communist era several welfare measures have been taken of which may be mentioned: state pensions, unemployment benefits and support for people with disabilities, sickness benefits, maternity and child care programs professional qualification, subsidizing of all or part of the spa treatments, free healthcare services, allowances for children (later, the evidenced "heroine mothers"), pensions and gratuities to war veterans, the establishment of special institutions for elderly care (homes) or orphaned children (very poorly maintained), free food for workers and school children, social support for people with low incomes or no income, many of these facilities being sponsored by the plant management.

Weighing the positive and negative effects of industry on the population one cannot say that one weighs more than the other without a subjective interpretation. A more detailed social study would involve a representative number of the population surveyed on various perceptions related to this period.

CHAPTER II. SCIENTIFIC RESEARC METHODOLOGY OF THE SOCIAL AND TERITORIAL IMPACT

Social geography arose from questions related to social differences winit the geographical space. Thus, social geography becomes relevant in situations like: the contrast between life and occupations of people from cities, suburbs or rural areas, and how economic restructuring can affect workers, especially their families, personal relationships, parenting and the entire community. This type of geography shows how individual, family, community life and running economy are closely linked and mutually interconditioned. Therefore, social geography can be applied anywhere there is a variety of people related in different ways, acting to organize their lives in terms of physical and socio-cultural characteristics according to the spatial dimension (social differences changed depending on space and time).

Literature gives a major role to two elements: "welfare" and "accessibility", which in general are interrelated, the latter being actually a component of the first. However, even if "welfare" is generally provided through access to employment, various services, technical and management infrastructure, the means of enlightenment and recreation, etc. it does not mean that a remote community would implicitly be restricted in terms of access to "welfare." Our century created a prototype of "welfare" as conditioned by access, which translates into access to variety, medical and educational facilities, essential social services.

In the past (and I mean the period from 1950 to 1990), social indicators were presented slightly differently, many facilities lacking at that time (such as running water, electricity, gas, sewerage or septic tanks at the minimum, etc.), were only broad goals for a class, especially from the rural areas, while for us today are no longer a measure of welfare. Therefore, social indices change over time requiring periodic adjustments.

Utilized indicators

Social indicators used (after Smith, 1973) provide a relatively detailed description of the criteria that could be used. Out of Smith's seven criteria only five have been analyzed, namely: 1) income, wealth and employment, 2) living environment, housing, 3) health, 4) education, and 5) leisure and recreation, relaxation, all with the condition of accessibility.

Rural areas face two major types of indicators: poverty caused by low income from agricultural activities, and higher mobility due to low supply of jobs in rural areas. Shaw (1979) identifies three types of deprivation, characteristic of rural areas, that could be organized into subclasses of indicators of rural "welfare": household (income-housing – house size, aspect, and layout), opportunities (employment, education, health, recreation), and not least mobility (accessibility, costs of transportation).

The analyzed Territorial Development Indicators (TDI) were:

A. Indicators of welfare and social cohesion: informative indicators (objective): population growth (direct effect of the attraction caused by the industrial development of the area) population development in relation to altitude, occupational structure and population ("welfare" as a consequence of to employment), average life expectancy; access to education, access to utilities, transport infrastructure, as well as "partially subjective" indicators such as poverty (measured objectively by wage levels and housing development), the rate of female activity, culture and recreation, and leisure activities.

B. Economic performance indicators, described in Chap. IV, have been analyzed through the evolution of the industrial production, capital and income over three historical phases, as well as the changes suffered by the active population.

C. Indicators of territorial development. They are also divided into two categories, namely: informative indicators: density of settlements, the index of dispersion, the degree of population density according to distance from urban areas, the centers of polarization and the potential of the built area, territorial expansion, size of settlements, housing development, as well as subjective indicators: collectivization (the effect of the "liquidation" of wealthy peasants).

The mentioned indicators were organized on the basis of statistical data from 1875 to 2002/2009 period, in an effort to differentiate the level of rural and urban living conditions of the population of the lower Aries river basin.

The concept of territorial impact is linked to the influence or effect. This can be quantified as a direct result by eliminating other factors that could have appeared as alternatives. However, the term "impact" has a stronger connotation than "influence", as it can be quantified in precise lines and a short duration, while "the influence", a more subjective term, is a "unilateral action, slow but effective ", determined by internal or external forces.

From the geographical and social point of view, a series of conclusions have been presented based on the analysis of the potential impact of the industry generating the following scenarios:

Positive impact:

- Industry (since its inception) has provided employment for a significant population residing in urban areas (Turda, Câmpia Turzii, Cluj-Napoca) from the nearby villages and abroad (Hungary, Austria, Czechoslovakia, Poland, Moldavia, Russia, Italy, Yugoslavia), the latter being represented by the skilled workforce;
- Housing developments and apartments for industry workers, government subsidized, represented another factor of attraction;
- Collectivization of agriculture will lead to population migration, especially of the young, towards urban areas in search of jobs in industry offering higher salaries or being attracted by the " urban way of life".
- Development of transportation infrastructure due to increased commuting;
- Enrichment of the educational system by establishing schools for apprentices and other professional high schools;
- Encouragement and financial support of cultural and sports activities by the management of the factories;
- Almost nonexistent unemployment;
- Increased revenue and economic prosperity.

Negative impact:

- Negative environmental impact ;
- Serious threats to human health;
- Uncontrolled territorial expansion;
- Drastic reduction of the population of certain villages situated in the close proximity to the urban industrial areas, while others become overcrowded;

- Loss of rural identity.

Area of influence in turn includes the villages surrounding an urban area which are directly influenced by city developments and by the relations of cooperation developed within the economic activities, the supply of agricultural products, the access to social facilities and commercial elements of infrastructure, equipment and facilities for relaxation, recreation and tourism. The dimensions of the area of influence are usually in direct relation to the size and functions of the polarizing urban center. They are dynamic, suffering modifications from a historical period to another according to the evolution of settlements hierarchically polarized.

Defining the limits of a city area of influence is not an easy operation given the multitude and complexity of the established relations. Basically, the area of influence of two nearby urban centers will expand to an extent that the two cities recorded the same intensity of relations with the outside up to the limit where the influence of a city is close to zero. (I Ianoş, 1987). W. Christaller (1933), quoted by J. Benedek, 2004, has made a valuable contribution to the study area of influence of cities by developing a central place theory, based on the idea of the existence of a territory of two cities of equal importance and close to each other.

The theoretical areas of influence of Turda and Câmpia Turzii were initially determined based on the izocrones (Cap.VI). In such a case no rank is taken into account, considering that the population residing in rural areas and under the two cities area of influence have moved on the grounds of closeness. Therefore, in oder to calculate the zero point of attraction for Turda, Baia de Aries, Aiud Câmpia Turzii and Ludus (2002 data) we used the formula:

$$D_B = \frac{D_{AB}}{1+\sqrt{\frac{P_A}{P_B}}}$$, and DA = DAB – DB, obtaining the following results:

Db $_{(Cluj\text{-}Turda)}$ = 30/1+√317,953/59,525= **9.06 km**

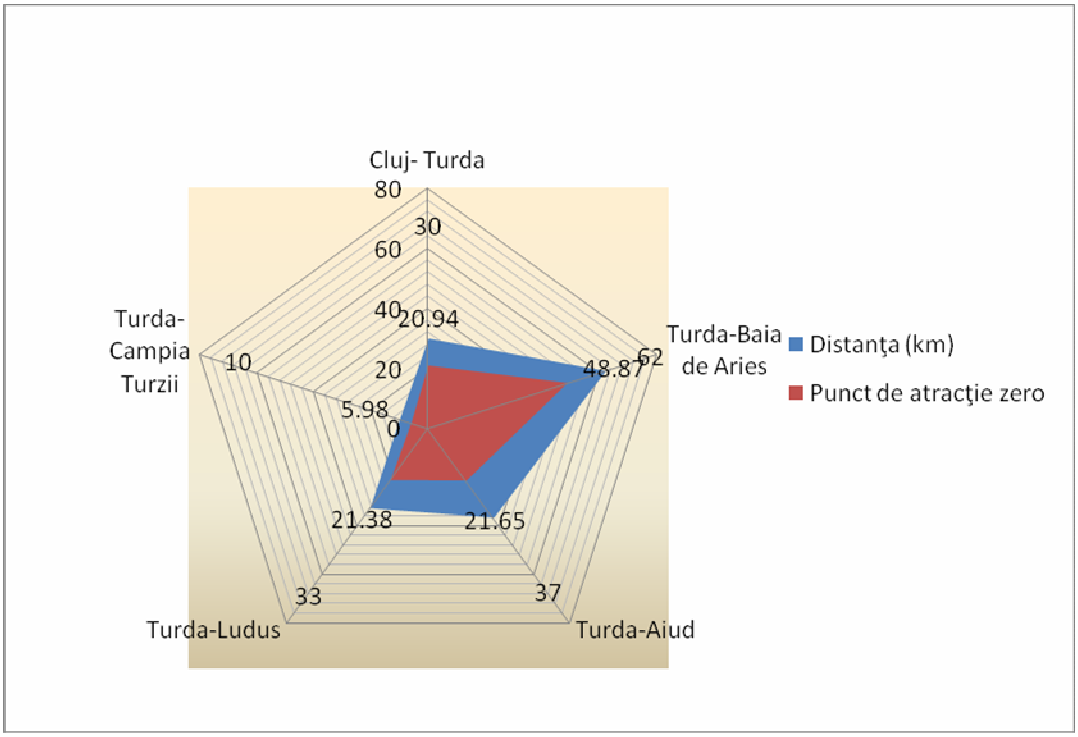
Db $_{(Turda\text{-}Baia\ de\ Arieş)}$ = 60/1+√59,525/4,668= **13.13 km**

Db $_{(Turda\text{-}Aiud)}$ = 37/1+ √59,525/29,934= **15.35 km**

Db $_{(Turda\text{-}Luduş)}$ = 33/1+√59,525/17,497 = **11.62 km**

Db $_{(Turda\text{-}Câmpia\ Turzii)}$ = 10/1+ √59,525/26,823= **4.02 km**

Therefore, the zero point of attraction is about 9.06 km from Turda and 20.94 km from Cluj-Napoca, 46.87 km from Turda and 13.13 km from Baia de Aries, 21.65 km from Turda and 15.35 km from Aiud, 21.38 km from Turda and 11.62 km from Ludus, and only 5.98 km from Turda and 4.02 km from Câmpia Turzii Turda, its central place proving Turda city's attraction toward the adjacent territories, as well as the intensity of relations between the respective cities.

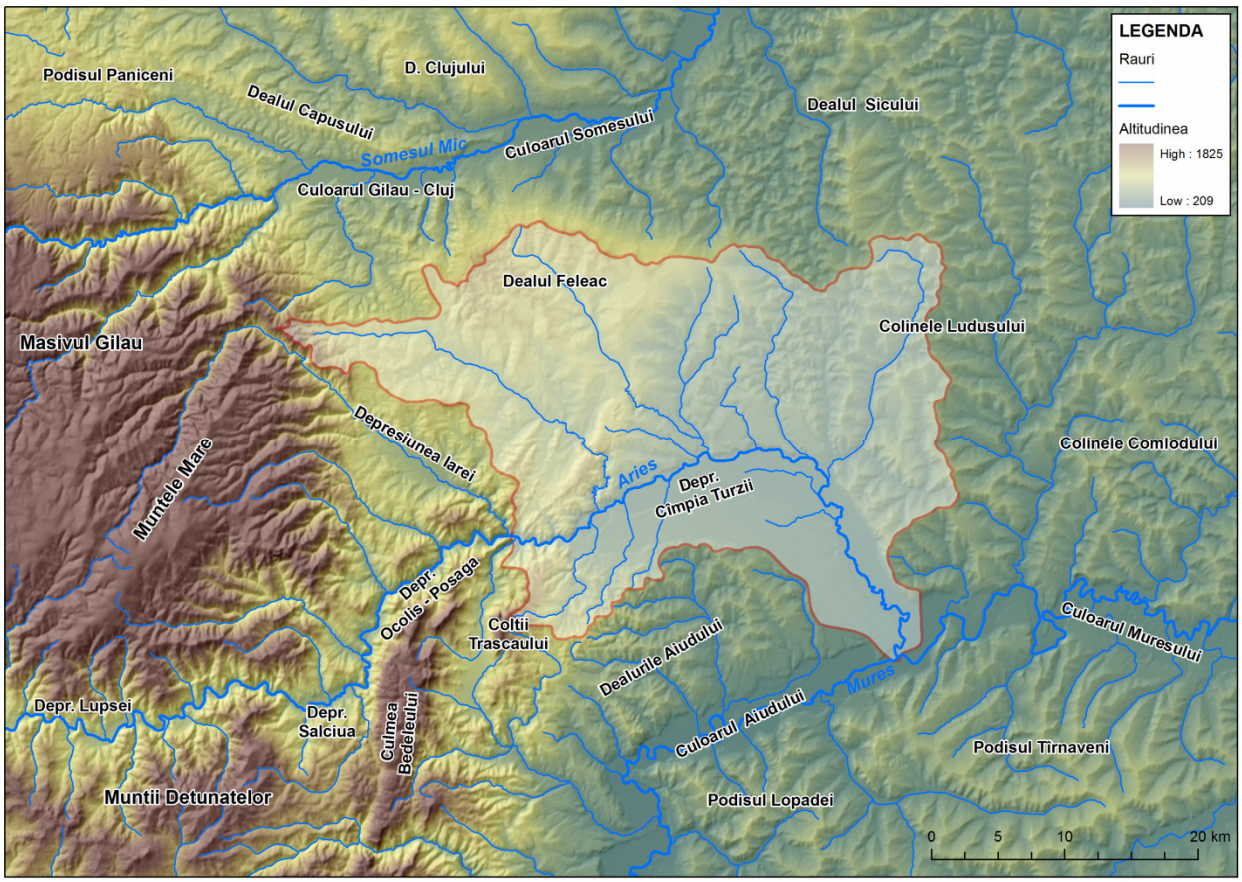


Zero points of attraction for Cluj-Napoca, Turda, Baia de Arieş, Aiud, Luduş şi Câmpia Turzii (population data 2002)

CHAPTER III. PHYSICAL-GEOGRAPHIC AND ADMINISTRATIVE DELINEATION OF THE LOWER ARIES REIVER BASIN

The object of the present study is represented by the lower sector of the Aries river basin that includes the area of the Rimetea valley upstream and Gura Arieşului downstream, the river mouth where the Aries river flows into the Mures river. The area is located in southwestern Transylvanian Plain, characterized by gentle hills and large terraces, favorable for the

development of human settlements and with great agricultural potential demonstrated by the large areas planted with various crops, agricultural, fruit, wine or feed. Physical-geographical delineation was perfomed by tracing its watershed (GIS) boundaries, using the contact with neighboring units as determined by Argeşel I. Popescu (1977).



Physical-geographic delineation of the lower Aries river basin

While the natural distinction allows a unified delineation, the administratively reviewed space is fragmented, being superposed on two distinct counties: Cluj and Mures. The analyzed administrative units extend outside the area bounded by the hydrographic delineation of the lower basin of Aries, the common element being represented by the presence of settlements at low altitude, along the Aries rive or its tributaries. Therefore, the physical-geographical unit boundaries do not fully correspond with the administrative unit.

Administrative delineation of the territory

As for its territorial-administrative delineation, along the Aries river and its main tributary valleys (Valley Rimetea, Hasdate Valley, Racilor Valley, Larga Valley) rural settlements with predominantly agricultural features were initially developed. The territory comprises two urban settlements (Turda and Campia Turzii) and 19 communes.

CHAPTER IV. ECONOMIC ACTIVITIES EVOLUTION WITHIN THE LOWER ARIES RIVER BASIN WITH INDUSTRY EMPHASIS

The development of the two cities, Turda and Campia Turzii, was stimulated by a range of geographical and historical factors such as its geographic position as a contact area between the Apuseni Mountains and the Transylvanian Plain, its condition as an old crossroad for the

commercial exchanges in Transylvania or as a starting point for access to the gold regions, the presence of the natural resources, as well as the historical evolution of the area.

The presence of salt, considered since the Roman occupation period, the geological structure, favorable position with access to methane gas methane brought from Sarmas as an effective replacement for coal, have determined the direction and the millenary existence of Turda city as well as for its neighboring villages. Surprisingly, most of the materials utilized by Turda industry is located in the neighboring rural villages. Thus, resources of raw materials for the city industry were provided by quarries of Cheia, Sănduleşti, Tureni, Podeni, Buru, Făgetu Ierii, Ocolişel, Surduc Ceanu Mare, and the gravel pits of Corneşti, Mihai Viteazu, Moldoveneşti,, Gura Arieşului, Câmpia Turzii, Luna. Gypsum and alabaster operated from Cheia industrial quarry, but also Cornesti Sănduleşti, were used in the manufacture of cement and plaster, while the alabaster was utilized in the manufacture of art objects. From the quarries of Tureni, Sănduleşti, Buru were extracted limestones and dolomites, used in the manufacture of binders (lime, cement). From the Turda mine the salt was exploited until 1932, while from the clay quarry situated on the northern side of the Aries river were exploited deposits of clay, sandstones and Dacian tuffs. In Turda was also exploited the deposit of yellow plain clay from the Turda quarry, connected by a narrow rail to the cement factory or carried by horse and carriage to the Ceramics plant to produce porcelains and fire-resistant plates, as well as ballast from the Aries meadow, only temporarily operated in Poiana quarry (until 1998). Clay (refractory white clay) is also present in Sănduleşti, being used in the ceramics industry. In Ceanu Mare the exploited deposits were marls, clays and Sarmatian sands, in Sănduleşti the limestone used in the manufacture of cement, of lime, for the chemical industry, the steel industry and for various other purposes, including roads, while from Făgetu Ierii and Cornesti Făgetu was brought quartz sand (in a lesser amount in Făgetu Ierii).

The nationalization process of 1948 following the Soviet model (abolition of private property and its replacement with the state property of "the whole people") represents a critical factor of the economic development of the area, the goals of the Communist Party being is the economic potential development of existing industries and creation of new industries. The Five-Year Plan was closely focusing on industrialization, thus becoming a dominant factor in the emergence and expansion of cities, population migration, and urbanization of Romania.

If the capitalist and socialist stage aimed to jointly develop and encourage the industrial development, the the regime transition from communism to democracy and capitalism was strongly and negatively felt after 1989, especially by the heavy industry and the big industrial giants. Transition to the free market did not occur as successful in the industrial field, in particular due to social factors (more factories were partially destroyed or abandoned during and after the 1989 revolution), due to very old existing technology, lack of immediate capital inflow, as well as political corruption. In the "happiest" scenarios, small units were received capital to upgrad their technology, having as an immediate effect higher unemployment and fewer active sections being left.

Main stages of industrial development. The process of industrialization, cause and effect of the economic development of the lower Aries river basin area

The lower basin of the Aries river will pass through several successive stages closely following the developments from the man-made production towards the industrialization phase. Chapter IV presents the stages of industrial development during the early capitalism and the in between the two wars period, the industrial development immediately After the World War II, followed by the socialist and the postsocialist stages by describing and analyzing the evolution of the main industrial units in Turda and Campia Turzii.

Therefore, the first factories appear in Turda in the late nineteenth century, a brick factory that operated between 1895 and 1996, the Turdeana brewery, built in 1880, the lime factory as "The United Lime Factories", built in 1890, followed by the gypsum factory founded in 1901.

The period in between the two wars - 1918-1938 - Romania has undergone several stages, the 1934-1938 period representing the high peak moment due to Romania's economic recovery as a consequence of protectionist policies and state intervention in the economy. In 1938 Romania has reached its peak of evolution. Despite the hardships caused by war and economic crisis in the interwar period, Turda experienced a strong industrial development. It is noted that industrial development was focused on processing of raw materials exploited in Turda and the nearby salt, limestone, clay quarries.

The real industrial beginnings of the area could be marked by the year 1900 with the emergence of the industrial plant cellulose in Turda, followed by the establishment of the

“Societăţii pe Acţiuni a Fabricii dejene maghiare de sodă amoniacală Turda” (the later Chemical plant) at the end of 1911, the first factory in the country with such a profile and the second core chemical industry in the country. Besides ammonia soda plant and salt extraction, before World War I there was also in Turda a brewery and a plaster plant, the "Cement SA” being established on the 20th of May, 1913. The brewery was built in between 1756-1814 by the rich Jew Simon Lazarus Mendel, known in the area for the large owned lands and his fortune. Expanded and renovated in 1880, the main building was only completed in 1911, the factory beginning wearing the name "Mendel Beer Factory”, renowned for good quality beer, its name changing to" Turdeana Beer Factory "in the 20th century.

The new laws of 1912 aimed to encouraging the domestic industry and local investments has succeeded in stimulating investors’ willingness to bring capital in various sectors in Romania, the cement industry being at that time a promising investment. Since 1927, the cement produced in Turda represented 23% of the total value of the Romanian cement.

In 1935 it is founded the National Manufacture of Porcelain Coral SAR Turda (today’s Electroceramica) that included the ceramics factory Fărcaş and Tompa. The factory is located between the main road artery linking the old town district to Oprişani and the Aries curve, initially producing electrical insulators, tableware popular household items and handicrafts, as then to specialize in ceramic insulators and electrical apparatus.

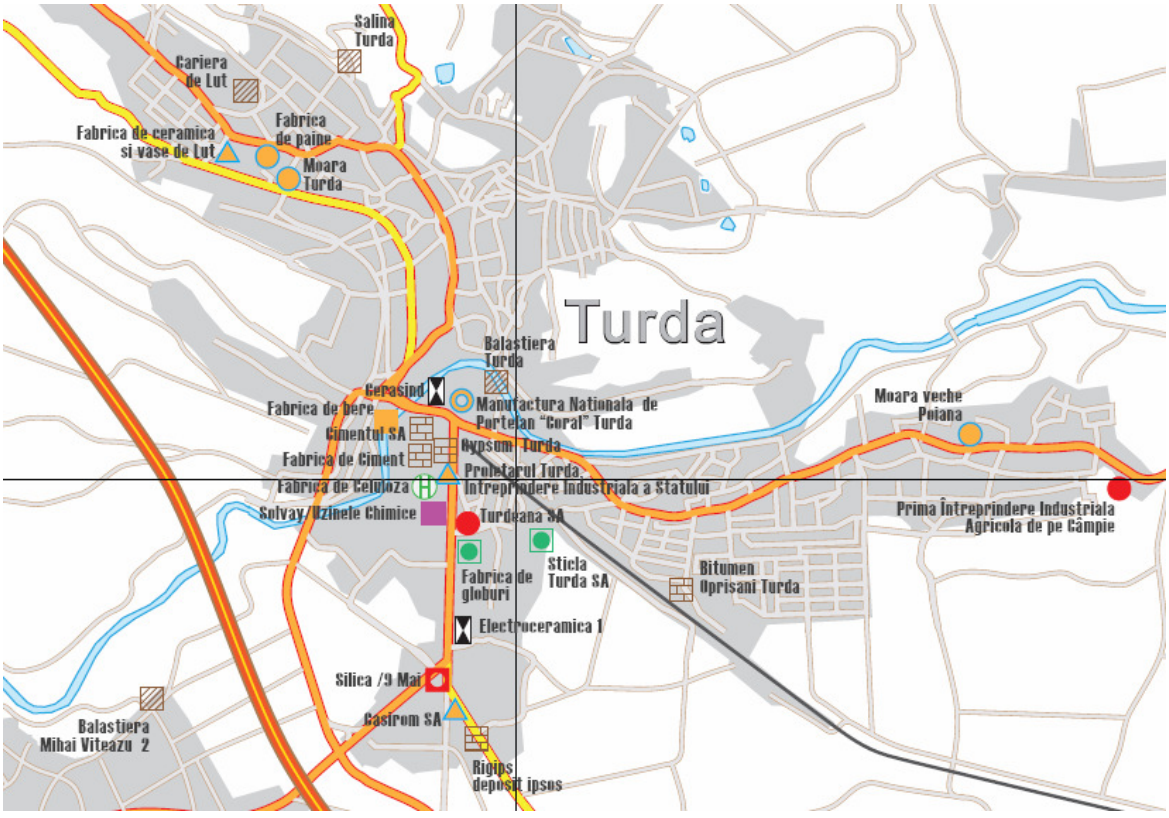
With a mono-industrial character (Fărcaş I., 1976), Campia Turzii is an atypical example of an urban settlement, its development being influenced by its dominant function: the syderurgy, represented by the"Wire Industry SA (now Mechel Steel Group).

The mentioned period was an important step in the transition to industrial capitalism both from the national and local perspective. Even if it was often performed by through intensification of work and excessive exploitation of workers, disruptions caused by the first world war, strikes and demonstrations and amid the great economic crisis of 1929-1933 period, some important steps were taken Turda in particular, but also Campia Turzii becoming major players in the national and world economic market. Both localities will not only polarize the Transylvanian and European commerce, but evolve toward fast becoming powerful industrial cities through the development of the chemical industry, metallurgy, and building materials sectors.

Later on, the capstones of the socialist period are represented by the 1948 nationalization, collectivization of agriculture (1949-1962) and industrial development policies with emphasis on

heavy industry. Thus, the state becames the most important factor influencing the settlement system (Benedek, 2005) and their economic development. Socialism was based on a program of rapid modernization of society, focused on industrial development and urbanization (PNAinc 2002-2004), processes that have encouraged a massive shift of population from agriculture to industry, from village to city. Major changes occur in the organization of production, state requirement dictating production and concentrating investments in the heavy industry in particular.

Since 1944 Turda and Campia Turzii will witness an intensive expansion of its territory as a consequence of the industry development. Turda city extends mainly towards the S and E embedding the Poiana village in the inner village (1968) and building new neighborhood blocks overnight on the lands of the former Oprisani village. The industrial platform will develop in the Southern part of Turda and the northwestern part of Campia Turzii. That same year, the local industry included nine Republican companies namely: Cement Plant, Chemical Plants, Prefabricated enterprises, Silica, the Glass Factory Turdeana, Electroceramica, Wire Plant, Lime, Plaster).



Industrial units before 1989 (Turda)

CHAPTER V. SOCIAL AND TERITORIAL IMPACT OF THE INDUSTRU DEVELOPMENT ON THE URBAN SETTLEMENTS OF THE LOWER ARIES RIVER BASIN

In terms of social, cultural and educational development the industry had a significant impact on the evolution, respectively the involution of the two cities.

Diversification of industries will result in special emphasis on creating and developing a database of educational development designed to prepare qualified personnel necessary for the smooth functioning of industry areas. Therefore, there are being built and initiated in between 1945-1989 boarding homes, cafeterias, gyms, labs, offices, workshops for binding theory to practice. In Turda are established industrial schools profiled on the construction materials industry, machine building, technical professional industry profiles for glass, mechanical design, etc.. These high schools and vocational centers are true polls of attraction for rural students, many of them featuring boarding homes and affordable dining.

Regarding culture, it is gaining momentum as the '60s, a period marked by the renunciation of "Soviet culture" and the promoting of the Romanian culture. I it a high peak moment for sports, especially because of the efforts toward encouraging urban workers through sporting associations. Thus, after the two world wars sports associations are founded by the Glass factories, Solvay, Cement, and Porcelain, the S.S. Arieşul stadium being first opened in 1934. More particularly, sports events attracted young employees, who came from villages and participated in various activities. Sports clubs and associations are established within the affiliated factories (Progress Club Factory Glassware, Cement, “Electroceramics”), football teams (ARIES-Glass), Boxing (supported by Cement), etc.

Likewise, in the Campia Turzii, the Wire Industry Plant SA distinguishes itself by a close link between cultural, educational and economic sectors, the latter financialy supporting the first two in most situations. The emergence and development of industry was a "vital element that led this rural settlement to its access to a higher level of progress, pulling it from the quasi-anonymous" (Nemes, M. et al., 1998, p.66), which has briefly led to major urban developments, cultural and educational advances, but mostly to the enrichment of the cultural and artistic life

and the educational level of the population. This happened largely because of moral support, especially financial assistance from the factories.

The role of education in community development has been fully understood in the years before '89, booming industry taking place in parallel with public education and training of practical skills through it.

As far as the relations established between industry and health infrastructure it should be noted that the upward trend of rural and urban population since 1930 due to economic and industrial growth of the area has had a clear impact on its health status, with good or disastrous successive periods. Lack of technical supply, unemployment still quite high, rising food prices and clothing, heavy work conditions,use of children for work in the factories, lack of land or high taxes, lack of proper sanitary facilities in between 1934-1944 have affected the population, especially that from rural areas, but mostly the displaced"moţi", strongly affected by diseases causing deaths as pellagra, tuberculosis, syphilis. War and drought in the years 1945-1946 will also ravage the population, worsening its health status.

Industrial development will have on the one hand positive effects, on the other hand negative consequences due to the high level of pollution generated by them. After 1944 several measures are taken for ensuring food needs and treating people, however, the periods of economic recovery will result in increased pollution in the two cities with immediate or latent affects on the urban and rural population. The urban population would be the most affected, as well as the rural people directly employed in industrial activities, regardless of provenience. Effects of industrial pollution in both cities were felt through the health of the population, as witnessed by alarming statistics about the high incidence of respiratory diseases among the population.

			Total	**Salariaţi**	**Nesalariaţi**	**Copii 0-15 ani**
Bolnavi în evidenţa Spitalul unificat Turda		Total	773	241	367	165
		Urban	479	179	183	117
		Rural	294	62	184	48
După stadiul afecţiunii	*Incipient*	Total	374			56
		Urban	183			44

		Rural	31			12
	Avansat	Urban	73			
		Rural	25			
	Depăşit	Urban	52			
		Rural	10			

Activity Report of the tuberculosis sanatorium, the unified TB hospital, ununified TB dispensary and TB unified network of 1952

Source: National School of Public Health and Health Management, Research and Evaluation Center Health Services, Municipality of Turda (08/18/2009)

Regarding the distribution of patients according to the factory where they were employed one can notice a higher incidence of sick employees at the Glass factory, followed by "Electroceramics" and Silica. Compared, although in 1962 it has been recorded a low incidence of tuberculosis patients, there has been a significant increase in the number of patients with acute upper respiratory tract infections (8757) which again clearly distinguishes urban areas with 7811 patients, especially children (2124 adults and 5687 children) compared to 527 in rural areas (104 adults and 423 children), and the number suffering from acute bronchitis (3463) and chronic (725), again especially among children (in 2406, and 300 in urbans areas.

Fabrica de Ciment	Total	**418**
	Pulmonary tuberculosis	30
	Acute upper respiratory tract diseases	357
	Pneumonia	31
Uzinele Chimica	Total	**94**
	Pulmonary tuberculosis	8

	Acute upper respiratory tract diseases	
		59
	Pneumonia	27
Şilica	Total	**169**
	Pulmonary tuberculosis	33
	Acute upper respiratory tract diseases	124
	Pneumonia	12
Electroceramica	Total	**399**
	Pulmonary tuberculosis	30
	Acute upper respiratory tract diseases	357
	Pneumonia	12
Fabrica de Sticla	Total	**1054**
	Pulmonary tuberculosis	100
	Acute upper respiratory tract diseases	902
	Pneumonia	52

The incidence of respiratory diseases according to factory employment

Source: National School of Public Health and Health Management, Research and Evaluation Center Health Services, Municipality of Turda (08/18/2009)

Meanwhile, Turda country becomes known as "gray city" due to deposition of cement which gave the city the appearance of gray rooftops and blocks.

Urban technical infrastructure development occured in parallel with the industrial development of the area, both being critical factors in developing the other. Thus, one of the reasons that led to the decision to develop industries in Turda and the Turzii was the presence of methane gas from Sarmasel-Turda (1914), which ensured the needs of industrial enterprises of both cities. If at first natural gas only covered the needs of mills and factories, in the meantime it was extended for domestic consumption, in the urban areas at first, then to rural areas found in close proximity to cities or having an industrial role. Surprinsingly, metane gas utilization in Transylvania is dating from the early twentieth century, the remarkable results of drilling carried out during 1909-1910 leading the Transylvanian Hungarian government to declare the operation and use of natural gas a matter of state and leading to the establishment in Cluj of the Service state for mining, the first organization in Europe which was engaged in operating gas in order to be utilized. This again shows the advantages of the location of industrial activities in the area.

Another important role in the industrial development was attributed to railways, the narrow railway passing through some villages (Mihai Viteazu, Cornesti), being placed in service since 1912, Turda being disadvantaged in terms public rail transportation in favor of Campia Turzii.

In terms of water and electricity facilities urban areas were evidently advantaged, followed by suburban municipalities and the hearth of the communes over the more remote villages, which will result in population leaving these hamlets and villages for urban centers municipalities clearly advantaged in this regard.

Analyzing the situation in 1989 one can note a relatively good endowment of those cities, while some remained behin in terms of minimum facilities for providing a decent living. More remote villages or hamlets are generally forgotten, their people living in very primitive conditions. Mihai Viteazu village seems to be most advantaged by proximity to Turda and its importance as a supplier of raw material in industry. The situation does not seem to have

improved much by 2008, proving once again the deprived area status and lack of funds for modernization and restructuring.

Demographic potential

Population growth of the lower Aries river basin is presented differently from one stage to another depending on political factors and the economic development.

Population growth Turda and Câmpia Turzii

Nr crt	Localitate	Număr populaţie						Creştere totală %				
		1857	1910	1966	1977	2002	2009	1857/1910	1910/1966	1966/1977	1977/2002	2002/2009
1	Turda	8885	15167	44980	55294	61200	57340	70.7	196.6	22.9	10.7	-6.3
2	Câmpia Turzii	1555	2519	17457	22409	29307	26386	62	593	28.3	30.8	-10

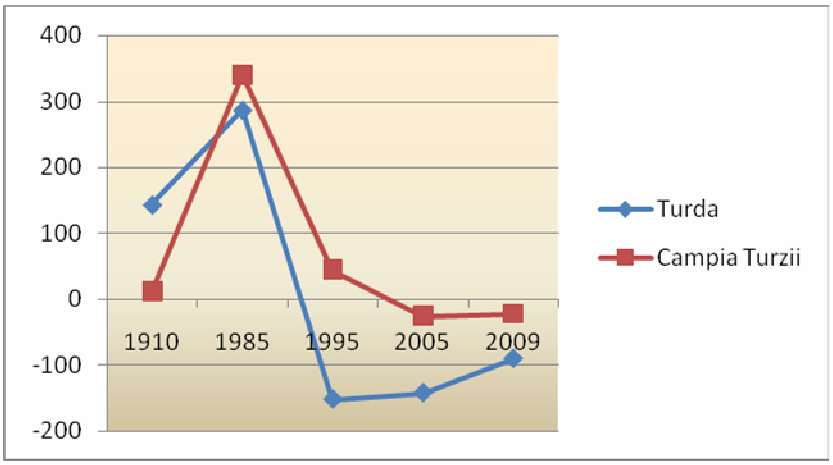
Therefore, analyzing the demographic evolution of Turda and Campia Turzii cities one can shed a number of conclusions:

- In between 1857-1966 there was a significant population growth, Turda witnessing record growth of 71% and 197% as a direct consequence of the development of industries during these years and of the changes in the political, administrative and legal domains, especially after 1910, regarding the Romanian population in the area. But the most important transition is recorded in between 1910-1966 by Campia Turzii, with an impressive growth of 593%, being elevated to the rank of city in 1952.In between 1966 - 1977 the population of two cities continues to increase at a steady but slower pace. Population growth was largely on the account of the rural population of the surrounding area, but represents an average annual rate much lower than other municipalities in the county.
- In the period 1977 – 1992, the average rate of population growth in the city of Turda was much slower compared to previous stages and to the growth of Campia Turzii, of only 11% per year. During this period, population growth rate for Turda city halved from the average rate of county municipalities.

- In between 1992 and 2009 Turda significantly loses attraction as a result of regime change, political and economic decay of the area, registering a slight decrease in population (6.3 and 10%). The uncertain economic situation and reduced industrial activity in that period resulted in the relocation of population to western countries.

Population natural movement

Population natural movement was analyzed for the period of 1910-2005. Following its development, its demographic growth is evident in the years 1988-1989 in both cities, followed by a significant decrease in 1990 (from 351 recorded positive growth at Turda, respectively in the Campia Turzii 343 in 1988 to a positive growth of 237. 17 respectively in 1990). 1992 Turda will record all negative growth, while the Campia Turzii will suffer from higher mortality since 1999 (except 2007 with a slight increase to + 12). The phenomenon is explained by stronger industrial decline suffered by Turda, while at the Campia Turzii plant "Wires Industry" will be maintained at a fairly high level of production, the redundancies being smaller in number compared with those in Turda.



Natural increase of population and the Turzii Turda (1910-2009)

Therefore, since1992 there has been a general demographic natural decline very noticeable in urban areas, especially at Turda, demonstrating again that the main source of attraction of the city was the industrial character and offered labor market. Based on these findings, two major demographic types can be revealed, namely: urban-industrial demographic type, moderated in

Turda city, and urban-industrial demographic type, dynamic in Câmpia Turzii. Moderate urban-industrial subtype is characterized by low values of birth (except in 1910, when both birth and mortality were very high), less than 15 ‰ and mortality between 9.33 ‰ and 12.14 ‰.

	1910	1985	1990	1995	2001	2005	2009
Births	538	875	828	506	468	559	504
Deaths	395	588	591	658	676	701	594
Total population	15167	61000	63292	61776	60426	57726	57340
Birth rate‰	35.47175	14.34426	13.08222	8.190883	7.74501	9.683678	8.789676
Death rate‰	26.04338	9.639344	9.337673	10.65139	11.18724	12.14357	10.35926

Turda - rates of births and deaths

Dynamic urban-industrial subtype appears more favorable, recording higher birth rates, at least one percent every year (except in 1985 when there has been a greater population growth), while mortality is much lower, with frequency between 6.36 ‰ and 11.22 ‰.

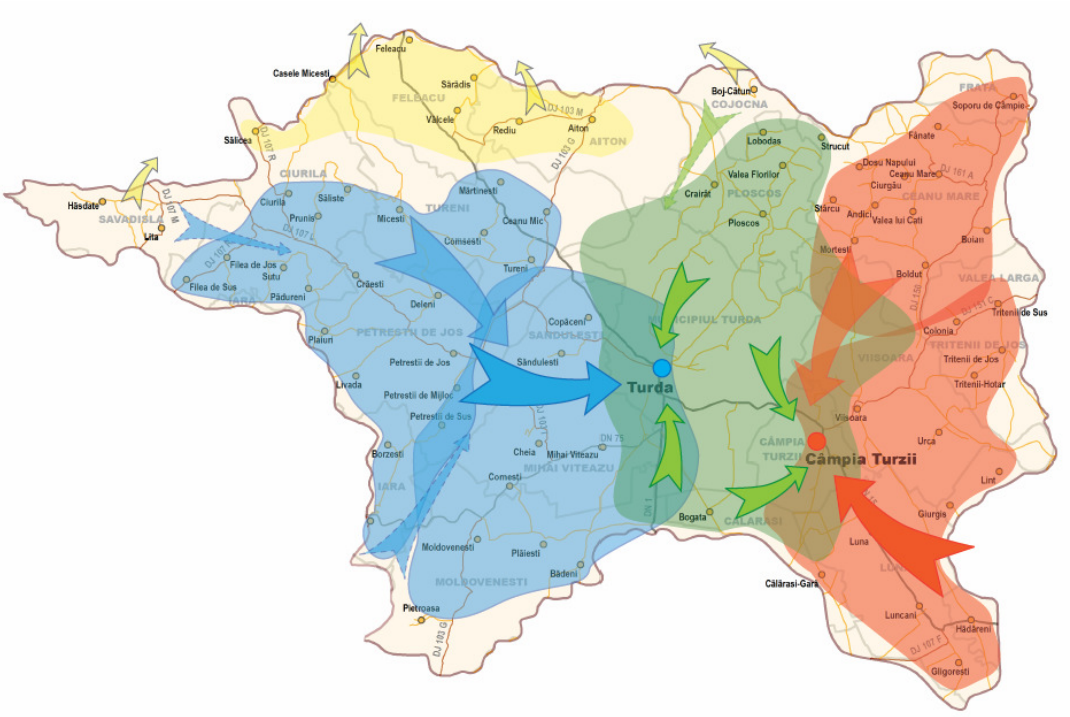
	1910	1985	1990	1995	2001	2005	2009
Births	91	517	421	317	252	276	243
Deaths	80	177	250	273	286	302	266
Total population	2519	27814	29817	29929	29754	26900	26386
Birth rate‰	36.12545	18.58776	14.11946	10.59173	8.469449	10.26022	9.209429
Death rate‰	31.75863	6.363702	8.384479	9.121588	9.612153	11.22677	10.0811

Câmpia Turzii - Rates of birth and death

Territorial mobility of population

In determining areas of industrial influence between two cities and their corresponding territories we took into account the intensity of professional, social and educational relations developed in time. We developed a chorematic model based on information gathered during our

research on the mobility of population in the lower basin of Aries, mainly taking into account the propagation length of these relationships Given the existing transportation infrastructure, transportation costs, and a number of measures that favored the inhabitants of villages that were near towns (some industrial establishments settled employee travel expenses), the intensity of these relationships is inversely proportional to the distance to be traveled.



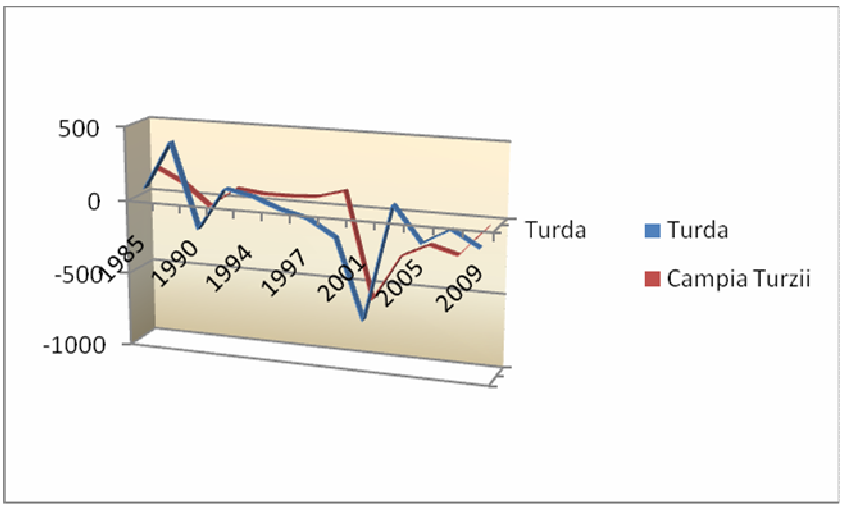
Chorema of urban influence on rural areas

Depopulation of villages can be considered a direct consequence of the decrease of living standards, therefore the decline of economic activities often associated with remoteness from the more developed city that can offer jobs or the decay of the economic sector that couldn't support workforce . Conversely, populating the area is largely due to economic advantage and job market increased offer, higher income expectation and thus a better material situation. In Turda and Câmpia Turzii migration situation after 1919 has evolved in parallel with economic development of the region, putting his mark on the degree of population or depopulation of all studied urban and rural areas.

Without being able to follow a consistent analysis of population departures and arrivals to and from Turda, Câmpia Turzii respectively, due mainly to the small number of statistics, however, the following conclusions can be drawn concerning the period 1857-2009, namely:

- In 1857, the eve of the industrial development is little dynamic, the „left" percentage going very low, ie 3.95% of total population at that time inTurda (7867 inhabitants, excluding Oprişani and Poiana that were not yet fused). However, the attraction of Turda is obvious in terms of " alien "entrants in Turda, their number being obviously higher than the number of „left" (11.45% vs. 3.95%) and compared with" foreigners "coming to Câmpia Turzii (at that time Ghiriş and Sâncraiu), 3.67% respectively. We notice a significant percentage of exits from men at Turda, while at Câmpia Turzii the percentage between men and women is balanced.
- The period 1910-1966 is noted by an influx of people coming from all over the county, but also from the rest of the country or abroad. Many of the factories hire in the first part of this period qualified personnel from abroad, which is why a large number of foreigners is recorded in Turda between 1912-1922, especially coming from Hungary, Czechoslovakia, Moldova, Russia, Poland, Germany Austria, Yugoslavia, Italy. Counties generating most employees are Cluj, Alba, Mures, Tarnava Mare and Tarnava Mica, Somes, but they generally come from all over the country
- Most intensive period in terms of final migration is recorded between 1966 and 1984, when ins and outs in most cases exceeded the values of 750 and 400 at Turda and Câmpia Turzii.

After 1985 the development of ins and outs is fluctuating in both cities, domicile changes are negative in most years in both cities (especially in Turda), since the departures have been the highest in 2001 (balance -685 to Turda and -596 for Câmpia Turzii).



Population migration (1985-2009)

In terms of commuting, farming, vineyards and livestock industry supplementing the income and to ensure livelihood from their products without standing in endless lines of the communist period, were "saving" the rural the lower basin of Aries, given the increased urbanization policies promoted between 1960 and 1989 by Ceausescu in Romania. Although the industry continued to grow and expand, Turda and Câmpia Turzii recorded an increased influx of population, there has been an increase in parallel of the phenomenon of commuting, which is very high on account of the rural population nearby.

The three main poles of attraction are Cluj-Napoca, Turda and Câmpia Turzii, cities with high attraction potential due to industrial activities and supply of labor in different economic sectors. With a much lower intensity, commuting is manifested not only from the village the city, but also from town to village, an example being Mihai Viteazu village, towards which traveled daily up to 431 people mainly from Turda, most of whom are employed in industrial units (1985 data), or Sănduleşti career.

In terms of *professional development and occupational structure of population* statistical data analysis confirms the prevailing characteristic of industry Aries lower basin due to the presence and evolution of the two cities. This situation was caused in particular by the high percentage of people active in the secondary sector compared with the other two sectors.

Staff working in industry								
No.	**City**	**1965**	**1970**	**1975**	**1980**	**1985**	**1990**	**1995**
1	Turda	10627	11565	14056	16396	17454	19340	16780
2	Câmpia Turzii	7010	8749	9235	10512	11171	11149	10485

There is an increasing share of secondary sector at Turda during 1975-1990, while Câmpia Turzii records a gradual decrease, which is probably attributable to the begining of a process of diversification of the economy until then almost exclusively based on Metallurgy.

Staff working in the industry as a percentage of total active population

	1965	**1970**	**1975**	**1980**	**1985**	**1990**
Turda	55.96398	53.51937	56.77586	60.51524	61.72071	64.29521
Câmpia Turzii	79.08394	75.47447	75.09962	70.91682	73.65333	72.25535

After this period jobs aren't available, at least in the great industry because most of the productive units have decreased activity in the period 1991 - 1995 (employed population in the city of Turda represents 24,558 people, respectively 40.12 % of the overall city population and 84% of the population in 1995).

Expansion of Turda and Câmpia Turzii

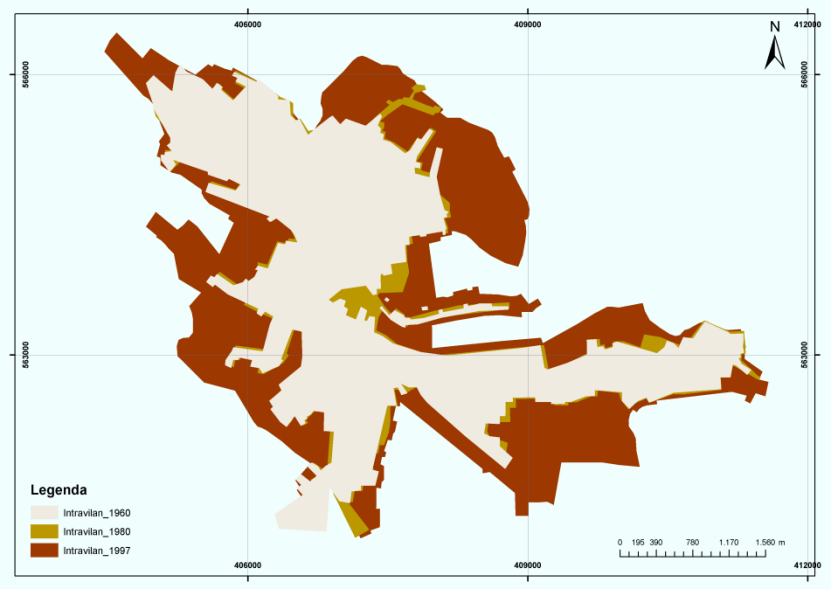
Historical and geographical formation and evolution of a network of settlements reveal successive stages that led to group over several generations, and a change in their administrative status. In this respect, the present Turda and Câmpia Turzii municipalities have suffered themselves major changes, the increase of the degree of urbanization being obvious, without taking into account the future consequences of what will be recorded in the average environment of the both population.

Following this approach, urbanization began quickly, with greater intensity since 1950, primarily by increasing the number of people in larger urban centers, adding to them a number of other cities that have entered an emphasized process of industrialization, especially those operating in areas of the various resources of the subsoil and the development of heavy industry.

From about 1965 the action of urbanization has increased further as a result of extensive development of the Romanian industry and a gradual degradation process of agricultural relations, with particular consequences in terms of registration a very active rural exodus, especially between 1965-1985.

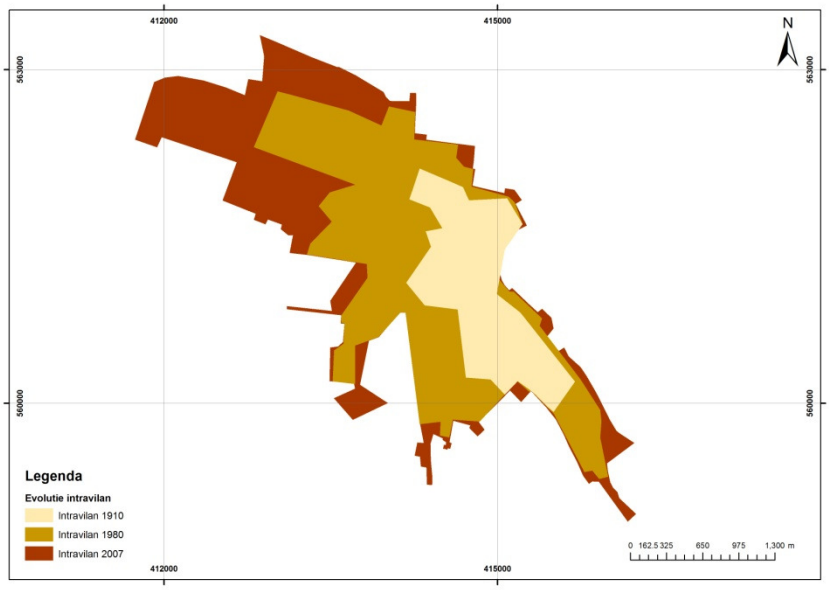
Turda city is at present the outcome of a repeated integration of smaller settlements. Cetatea Fortress Turda documented in 1075, will join over time with the village Sânmiclăuş (Szent Miklós, 1176), the village Bisericii (Egyhazfalva, 1203), Old city of Turda (1203), village Oprişan (1278) and village Cruciatilor (1247), to encompass in the end villages Poiana andSf. Ioan. Continued expansion of urban territory was done by a sharp population dynamics.

Built since 1960, the district Oprisani, Micro I, II and III, "workers' quarters" will replace the former village Oprisani, a large surface of the colony Sticla and "bercul" (reg) or grove, that existed on the current site Micro area.



Evolution of Turda localities between 1960-1997

In terms of urban expansion of the urban perimeter as a result of the industrial development, a new district is built from in 1952, Şarât, and South district, or Workers'city as it was called at

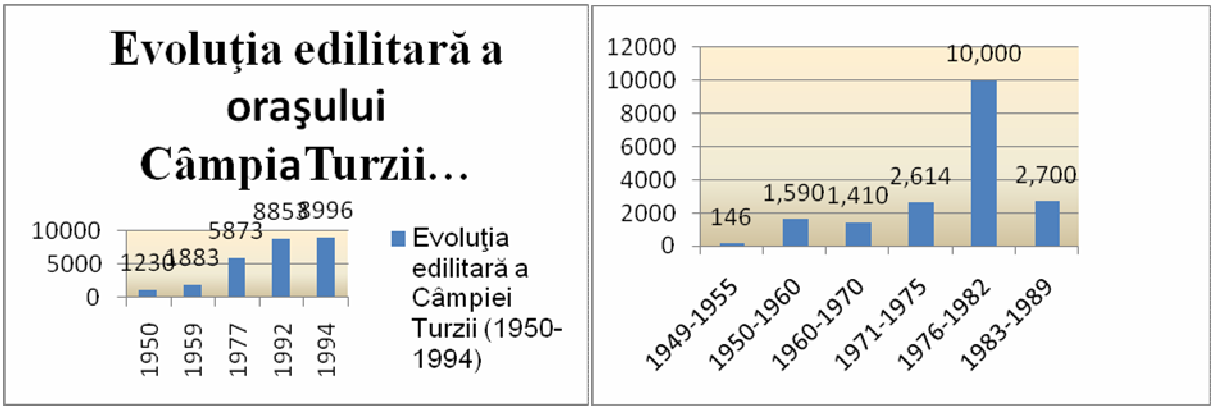


the establishment in 1951, and changes occur in the city center, in Northwest Quarter (industrial area) and Aries neighborhood.

Câmpia Turzii - Built-town developments between 1910-2007

Concerning the edilitary development, the strong industrial growth of Turda during the interwar period has had strong social and territorial repercussions. Thus, population growth is paralleled by a similar growing number of homes - 1678 to 1857 houses, 1869 houses in 1882, their number coming to 4054 in 1930. In the factories, workers' colonies appear as well (1922).

The industrial function conferred to Turda and considerably increased in the period after 1949 until 1989, will lead to significant movements of population and thereby further changes in the city's municipal structure. Both cities will face an unprecedented development of urban structure:



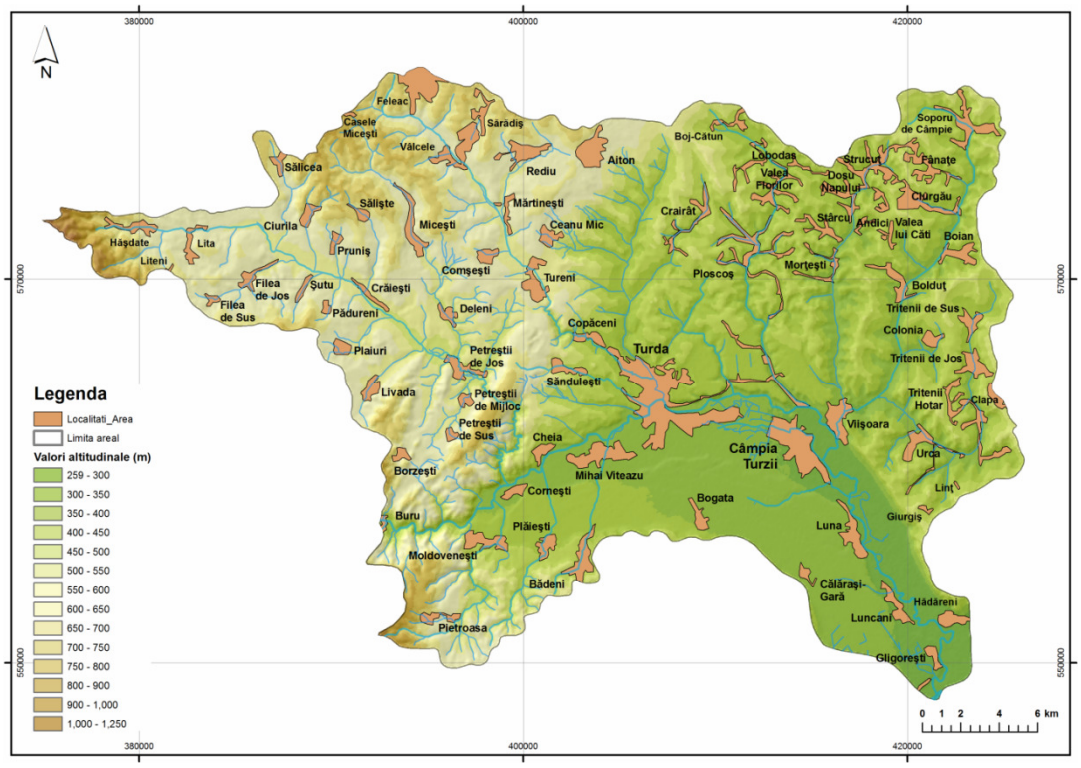
Evolution of Municipal Câmpia Turzii (1950-1994) and Turda (1949-1989)

CHAPTER VI. RURAL HABITAT COMPONENTS

Based on the elements that define rural settlements (hearth, population and land), different types of settlements can be identified based on certain criteria. The typology of rural settlements in the lower basin of the Aries was based on predetermined criteria, namely: shape, texture and structure of hearths, their position in relation to topography, population size and functions of rural settlements.

In the lower basin, there is a *gathered* village, *compact,* from the contact area with the mountains, with a high density of households (Moldoveneşti, Petreştii de Jos, Petreştii de Mijloc, Petreştii de Sus, Livada, Iara), in the depression lanes wide area (Mihai Viteazu, Viişoara, Luna, Luncani, Gligoreşti) and the Transylvanian Plain (Aiton, Rediu, Ciurila, Miceşti, Urca, Tritenii de Jos, Tritenii de Sus). The *scattered village,* as stated before, is less common, currently found only in the contact areas (Cacova Ierii) or the Transylvania Plain (Valcele) the built space representing only about 10-20% of the precincts, with layout undersown of agricultural areas. A special feature is that the lower Aries basin rural settlements are usually larger as compared to those of its upper section, more compact, with higher accessibility and a larger number of people (in descending order: Viişoara, Mihai Viteazu, Luna, Aiton, Ceanu Mare, Tritenii de Jos, Sânduleşti, Copăceni, Tureni, Petreştii de Jos, Miceşti, Bădeni). Villages in the area of contact have a modest and poorly maintained road network (Podeni).

Analyzing *landforms* where rural settlements in the lower basin of Aries have developed, it is noted that most of them were shaped and expanded in the depressions, valley corridors and morphological contact, using the main river terraces (Buru, Moldoveneşti, Corneşti, Mihai Viteazu, Viişoara, Luncani) and secondary valleys (Miceşti, Ceanu Mare, Valea Ierii, Ocoliş). Several grew at the the mountains and hills contact areas (Cheia, Sânduleşti, Petreştii de Jos, Petreştii de Mijloc, Tureni, Copăceni), or inside depressions (Petreştii de Jos, Crăieşti), while Buru was formed at the junction of Aries with Iara and Trascau (Popescu Argeşel, 1984).

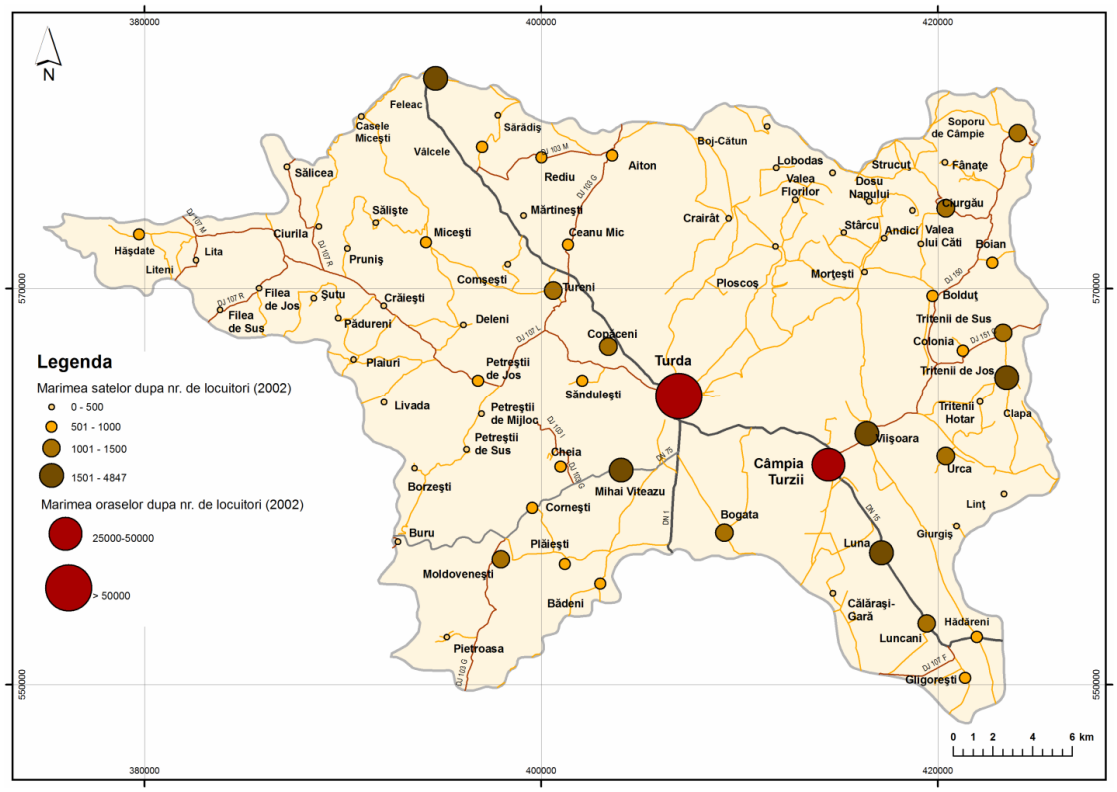


Distribution of rural settlements in relation to altitude

In terms of population movement in relation to altitude one may identify again a shift towards the population altimetric groups of 301-350 and 351-400 in between 1910 and 1965 and at a rate of 41.36% and 48.86%, against the altimetric group of over 400 m (except for the Sănduleşti village) which recorded significant decreases, with an average of only +2.97%, causing significant increase in the Sănduleşti village population between these same years. This effect is a consequence of emptying the mountain villages through the process of movement toward the low lands, near the city and new jobs created in industry, as well as a consequence of but much better quality of land in the Aries meadow, favorable for conducting agricultural activities.

The period between 1965-2002 registers a decrease in the population at all altitudes. However, same movement toward the lower areas is continued, the largest reduction in population being recorded in group 3 (-36.29%) and lowest in group 1 (-22.27).

The size of settlements is a key role in demographic and economic analysis of rural areas, representing a true indicator of the evolution, respectively of the involution of the area in parallel with housing developments. Given the two indicators there is a clear focus on medium rural settlements (501-1500 inhabitants), especially those from upper middle category (1001 - 1500 inhabitants) in the vicinity of the three labor polarizing urban centers: Feleac near Cluj-Napoca, Mihai Viteazu, Copăceni, Tureni near Turda şi Viişoara, Luna şi Tritenii de Jos near Câmpia Turzii , while small and very small settlements (> 250-500 people) are found in more remote areas of the city, except Moldoveneşti, Ciurgău, Soporu de Câmpie and Tritenii de Sus, explanation for the last three standing in residents' access to rail and gas.. Of course, the areas of influence of the three cities municipalities overlap, employment focusing to each of them in varying degrees depending on the period of economic development and job offer, but their size is an obvious criterion in the evaluation of their development.



The size of settlements

Large rural areas also have the role of polarization for other villages, especially for their component villages (which are usually community centers), facilitating the transition to urban

areas, but often taking some of the city transfered facilities and transfering them further on to other villages.

The Density of Settlements

The maximum concentration of settlements in the past was directly influenced by a number of natural, social and historical factors. The evolution of density settlements in the last two, even three centuries falls increasingly under the influence of their economic development, randomly generating a number of facilities needed for a decent standard of living from one locality to another, creating easier to maintain relations and exchanges between them. In this sense, we can say that the greatest concentration of settlement will be found within maximum one hour away from the main road, transport infrastructure being the key factor driving the concentration of settlements. You can see a positive correlation between accessibility and the potential number of settlements in a territorial unit, the density of settlements decreasing in proportion to the reduction of the cosine or of the accessibility potential. We start here from two assumptions, namely:

1. Rural settlements of the lower basin of Aries river have "gathered" near the means of transportation (main road and railway);

2. The small distance of the two cities have led to more intensive commuting.

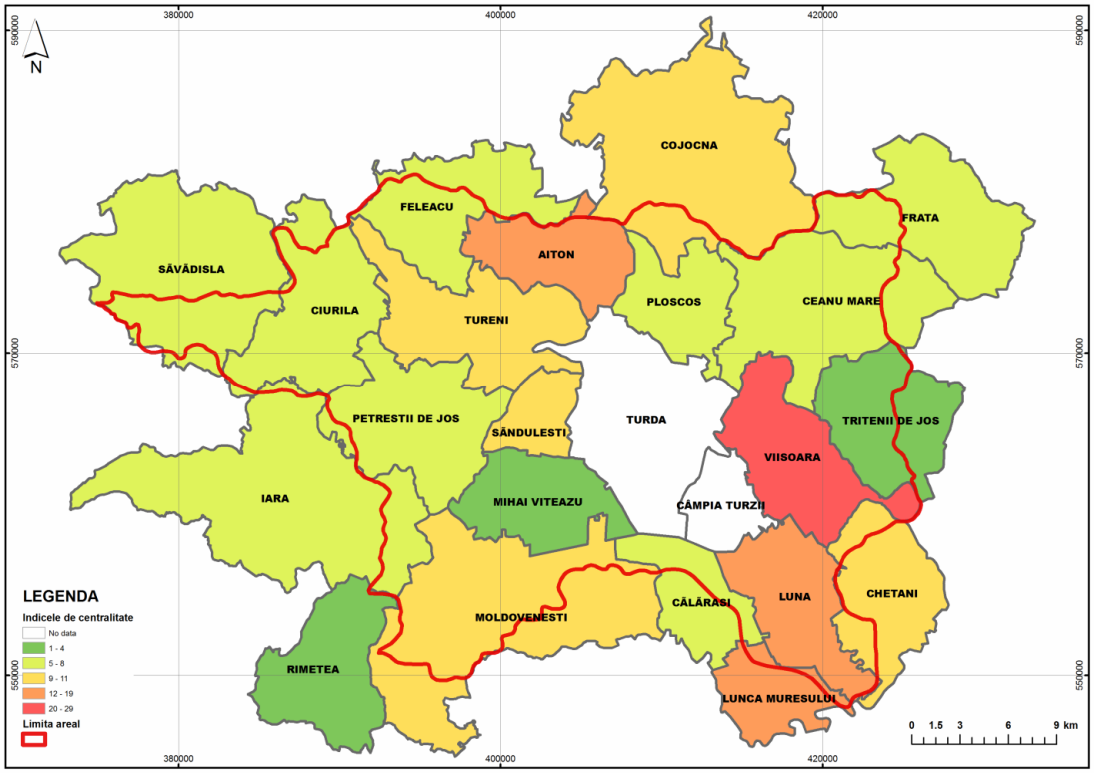
Therefore, one may delineate a regionalization of areas within the demarcation potential values according to the degree of accessibility through the use of the isochronous lines. Thus, we analyzed the accessibility of rural settlements in the lower basin of Aries to the two poles of attraction, Turda and Campia Turzii, according to the distance in km taking into account that closeness to the city coincides with access to transportation infrastructure. In the lower basin of Aries there have been recorded a high average density of settlements (7031 settlements/100 km $^{2)}$.

Other indicators of the spatial structure of settlements in the lower ***coefficient*** of Aries, represented by the ratio of surface ***area*** (km $^{2)}$ and the number of villages being part of the commune. In this case, higher the density of settlements, lower the value obtained and vice

versa. Following the calculation made for the study area, the average ratio is 14.22 km2/settlement, below the national average (18.1 km2/settlement), showing a higher density than other areas. Lower values are found in villages Ciurila, Frata, Tritenii de Jos şi Ploscoş, demonstrated also by the density of the above settlements.

In relation to the density and areality coeficient we obtained a low value of the average distance between settlements, hence close to the national average (4.998 as compared to 5.1 km), areas with low densities also registering low values of other indicators (Ceanu Mare, Tritenii de Jos, Ploscoş, Iara, Ciurila, Frata şi Petreştii de Jos).

Adiministrative centers centrality index, calculated using the formula $I = d_1 + d_2 + ... b_n / n$, where d_1, d_2 ,.... d_n representing the distances between the administrative center and villages and n being equals to the number of distances, gives us the average distance between villages and their administrative center.

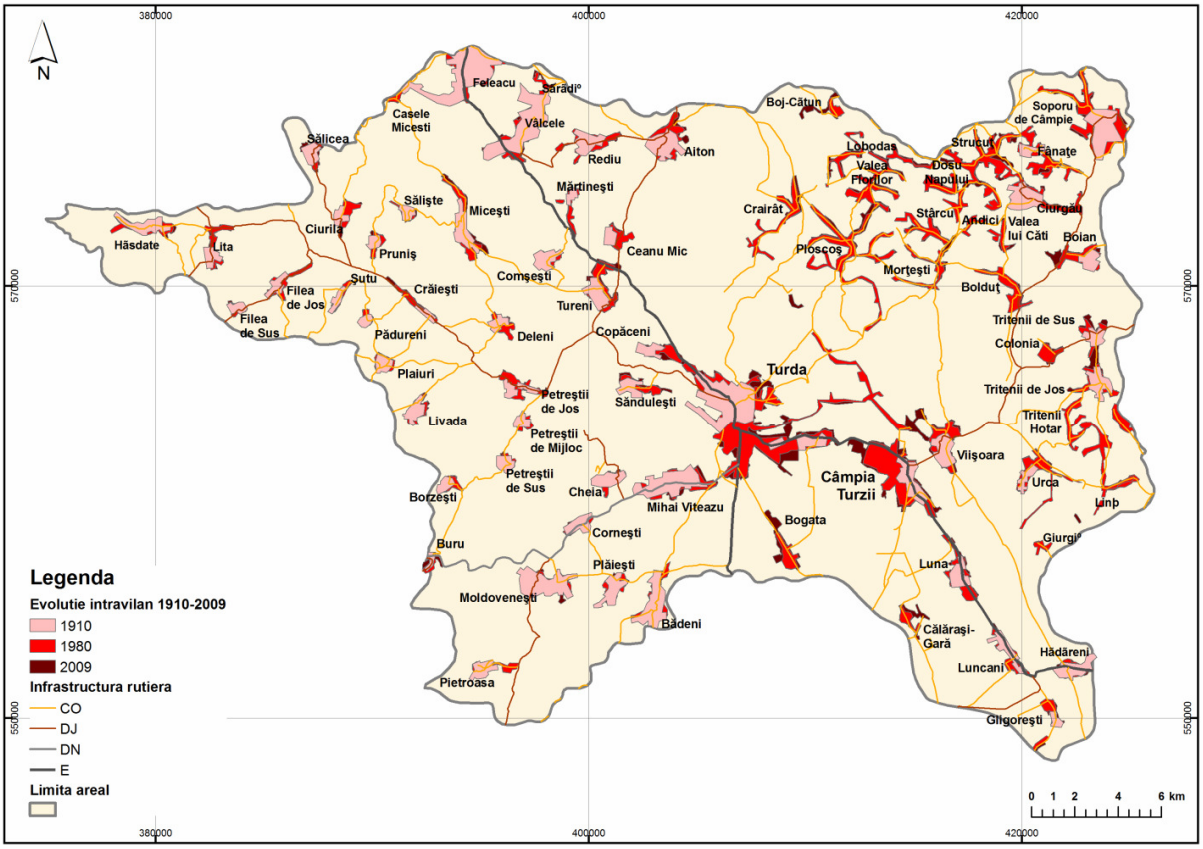


Centrality index of administrative centers

Given the fact that centrality increases with decreasing distance from villages, the lower Aries river basin is characterized by high index values (average 10) demonstrating once again the high degree of concentration of rural areas.

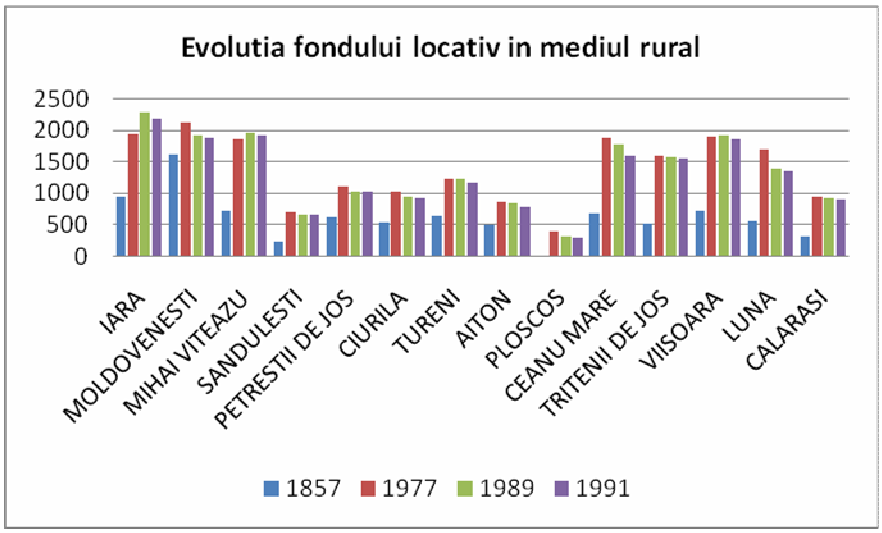
Time evolution of the hearth of rural settlements

As we have shown throughout this chapter, the village is under the influence of various natural factors, social, demographic, economic, political, which coordinates and directs its development over time. The literature identifies the three defining elements of the rural settlements namely: hearth (municipal reality), estate (economic reality) and people (social reality). Regarding developments in the hearth (the construction) of rural settlements in the lower basin of Aries, they are characterized by strong dynamics and a high degree of "elasticity" of the countryside that consists of"its ability to respond flexibly to requests internal and external "(Surd, V., 1993).



Evolution of villages and built areas of Turda municipality and Câmpia Turzii city

Thus, the situation of the rural settlements of the lower Aries river basin situation looks like this in between1857 and 1991 concerning housing developments:



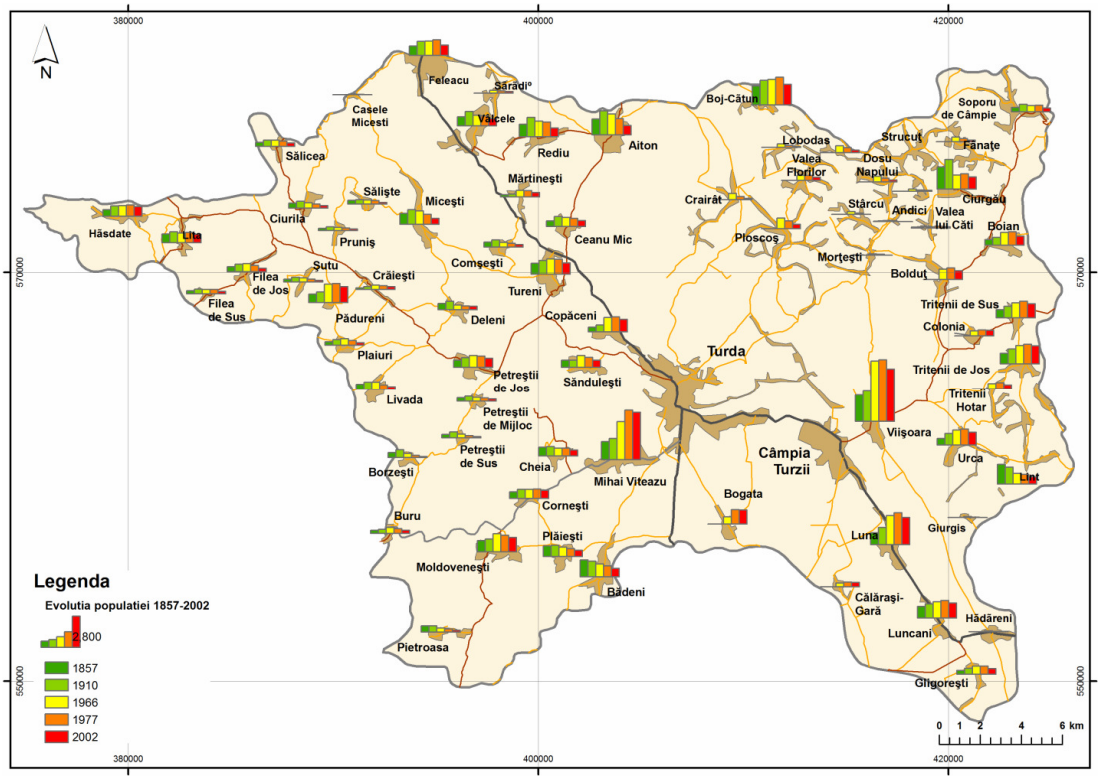
Rural housing development

The 1857-1977 phase is noted by a boom in the number of dwellings in rural villages, in many villages the number of houses dubling or even tripling during this period, after which the number of houses falling in most of the settlements, except for municipalities of Iara, Mihai Viteazu şi Viişoara where they register further increases.

Between 1989 and 1991 we see a downward trend in the number of housing in all municipalities (except Petreştii de Jos that registers a 0.69% increase), the migration flow not being directed to this time to Turda or Câmpia, but outside the country.

Demographic component in relation to the socio-economic component: features of the rural population in relation to economic development

The numerical evolution of the rural population



Evolution of the rural population (1857 – 2002)

Numerical evolution and population displacement in the lower basin area of Aries cannot be removed from the socio-historical and economic context, prsenting major changes over the studied period(1850-2010).

Aspects of population mobility in rural territory

From the analysis of population mobility in the lower area of Aries two stages appear:

- The stage characterized by intense migration of the rural population from rural to urban areas as a consequence of the later fast economic development;

- Center-periphery stage migration, a phenomenon manifested in a significant number of industrial centers (including Turda, Campia Turzii), characterized by a high concentration of population , and beginning to shift toward an economic downturn resulting in a population movement to peripheral areas, the opposite process of urbanization, which essentially involves a movement of population from urban to rural.

During the first stage a sharp increase in output has been noticed, situation which differs according to the period analyzed. Almost all municipalities, Moldoveneştiul, Mihai Viteazu, Ceanu Mare , Tritenii de Jos, Viişoara şi Sânduleşti, recorded output in the period in between 1966-1991.

Between 1977-1989 migration flow is maintained at about the same level, with massive movements of population toward the villages Ceanu Mare, Tritenii de Jos, Viişoara şi Petreşti, a direct result of the establishment of agricultural cooperatives and state farms in the center of the commune, which led to the contraction of certain villages and expansion of others.Rural population migration was prompted by a need for economic development, and secondly the socio-historical phenomenon that led to leaving other areas with less economic potential.

Evolution of the rural population working in industry

	Changes in the number of industrial workers coming from rural areas (%)					
	1965/1970	1970/1975	1975/1980	1980/1985	1985/1990	1990/1995
Luna	30	30.77	647.06	-51.97	-55.74	-48.15
Ciurila	-62.5	-33.33	150	-40	-66.67	-
Feleacu	-44.44	320	-64.29	226.67	-42.86	-
Frata	-23.53	-7.69	50	-16.67	-6.67	-
Viişoara	316.67	-12	81.82	5	-7.14	-84.62
Iara	80	134.34	127.80	7.85	-7.28	-21.48
Moldoveneşti	70	5.88	-98.15	2600	-29.63	-
Petreştii de Jos	33.33	-87.5	-100	0	-	-

Calaraşi	-91.67	200	-33.33	50	-33.33	-
Cojocna	52.63	-44.83	-6.25	0	-20	-75
Ploscos	-100	-	-	-	-	-
Săvadisla	52.63	68.97	26.53	58.06	1.02	-100
Tritenii de Jos	-42.86	-50	50	266.67	0	-27.27
Tureni	55	-16.13	-11.54	8.70	-80	30
Mihai Viteazu	63.93	252	26.42	21.12	3.71	-50.27
Sânduleşti	-25.38	11.17	57.53	-45.51	-38.83	
Aiton	-42.86	25	-20	-75	100	150
Ceanu Mare	-3.57	-59.26	0	-9.09	30	-

Correlating these data with those of employees of the main industrial units in Turda and Campia Turzii it has been noted that periods of great economic boom coincide with large number of employees, while the stage after the 1989-1992 economic downturn experienced a significant reduction in the number of employees in industry (in almost all the industrial units present in the area studied). Therefore, the period between 1930 and 1985 is evidenced by continual growth, followed by "free fall" since 1989.

The impact of economic development of the area on the population of rural origin

The demographic factors influence

The natural movement of population might be considered up to a certain extent, as an indicator of economic development of the area. Natural growth can be used as a social indicator to the extent that it considered in the economic context of the area surveyed. In our case, the evolution of natural growth in urban versus rural areas was analyzed over a three years period coresponding to a certain economic level of the settlements reached by the lower basin of Aries settlements, more precisely the years 1910 (the beginning of industrialization), 1985 (the year when the industry was still in full swing upward trend after 75of growth) and 2009 (regress industry).

Other indicators are analyzed such as *population sex structure,* emphasizing the predominance of males and of the aging population as a consequence of industrialization.

Influence of living standards

Following the diversification of occupations and the relative improvement in economic circumstances of the village after the agrarian reforms, changes in the nature and ownership, claims of the peasant world have increased as well. The level of welfare of the rural population was therefore calculated on the basis of several criteria identified by Smith and Knox (Chapter II): income, wealth and employment, living environment, health, education, recreation and rest, relaxation.

CHAPTER VII. INDUSTRIAL DEVELOPMENT TRENDS IN THE AREA

Turda local economy could be described in brief, but enlightening, through Zwass Adam's assertion (Zwass, A., 1995) "from failed communism to underdeveloped capitalism", changes that took place after the '89 being but good or not quite well-intentioned plans to come to the rescue of what could still be of interest to obtain without much effort and planning a quick profit.

Current strategies for economic growth continuously developed by the EU are associated with the complex process of EU enlargement and elimination of gaps between countries development levels . However, the fact that there are still differences and disparities between countries should convince local authorities into moving towards adopting long-term regional strategies designed to allocate resources to mitigate and then remove regional disparities. Out of the EU regional policy objectives are highlighted those relevant in our area analysis, namely: development and structural adjustment of underdeveloped regions, conversion of areas seriously affected by industrial decline, tackling long-term employability of youth and promoting equality between men and women, adapting workforce to industrial change and changes in production systems, and development and structural adjustment of regions that have an extremely low population density (less than 8 inhabitants / km $^{2)}$, having that in the study area there is a certain tendency in this regard.

Based on these objectives, strategies can be developed to maintain the population in the area by providing reliable alternatives to those made redundant in the industry or those who have no monetary means to modernize agriculture through mechanization.

As far as Turda and Campia Turzii, it's hard to talk about economic restructuring with emphasis on the industry, being aware that today's diagnosis in terms of its "health" it is almost of a "cardiac arrest". Restructuring could be based on existing raw material for construction materials, glass and porcelain, their placement however should be achieved this time in rural areas, outside towns, very close to the resource, by creating smaller units. This would contribute to a more equitable distribution of economic activities in rural areas as compared to the urban areas. Turda could instead make a major change to its economic "profile" by shifting it to the tourism industry.

Fortunately, in the lower basin of Aries, in both urban and rural areas, there are many projects that take into account the principles of sustainability and that are emerging from the local community, the only way to know the particular space which is financially supported by EU funds.

Current SWOT analysis of human settlements in Aries lower basin

Analyzing the current situation one cannot say that the "heavy", industry which led to the development of this region, will ever be returned to what was in 50-100 years ago. We are aware that such a project would mean a huge financial effort and our country cannot afford such an approach now. Therefore we would not have any sense to channel our attention to the former business restructuring plans, their condition being now deplorable.

Problems and solutions for a sustainable development of settlements have been analyzed through SWOT analysis, according to seven criteria, which in fact were discussed throughout the study: the physical – geographical environment, population, economy, housing, technical facilities, social and environmental considerations as they occur today, while trying to find the best direction for the development of settlements in the lower Aries river basin.

CONCLUSIONS

Industry in the lower basin of Aries had a decisive role on the genesis and evolution of settlements, particularly on the two urban centers, Turda and Câmpia Turzii, which rapidly constituted themselves polls of command for the entire lower Aries basin area. Turda has been

noted mainly for the construction materials industry while Câmpia Turzii developed as a monoindustrial city based on its steel industry.

The industrial character of the basin area was highlighted by the high percentage of sector two in the population occupational structure as well as through the typical landscape, specific to the "chimney" economy, with an energophagous and energy-intensive industry which resulted in excessive pollution (dust and powder cement, silica, chemical pollutants, etc.).

At the height of industrial development (the period of 1965-1985), the entire Câmpia Turzii Turda-urban complex is present as a "man-made disaster type of settlement." Industry evolution has been closely paralleled by the unprecedented extension of industrial and residential areas. An territorial osmosis occurred in between two rural settlements which were actually agglutinated (former countryside Oprişani (Cristis) and Poiana), being transformed in urban neighborhoods . Also, the impact of industrial development was crucial for all rural settlements located within the isochronous of 45 minutes, but especially for those located within the 30 minutes isochronous, translated into over 50% of male working age population being driven by the urban industry, the commuting phenomenon being developped on all its sides. Basically, villages like Mihai Viteazu, Corneşti, Cheia, Sănduleşti, Viişoara, Luna, Bogata and Călăraşi turned into " dormitory" habitats (using the Romanian meaning of the word), in each family at least one person having the professional status of worker-peasant (urban industry workers also worked in the former-CAP). This translated into an accelerated pace of housing expansion r up to or even over 95% in the mentioned villages. This effort, combined with city industry and cooperative agriculture resulted in short time in a lift of morbidity and mortality indices among the male population. In parallel, the roads infrastructure of the two urban centers has been modernized, being crossed by two main axes t of national interest. It should be noted that commuting to Câmpia Turzii was largely supported by the widespread use of bicycles as a means of locomotion, no natural obstacles impeding the use of this type of personal transportation.

Rural centers situated at the 45 minutes isochronous limit remained in the shade as compared to the ones found in urban proximity, differences in terms of habitat conditions and technical utilities being obvious, villages such as Miceşti, Comşeşti, Plăieşti, Petreştii de Jos, Deleni, being "ruralized" while compared to other localities (Mihai Viteazu, Bogata, Sănduleşti,

Viişoara). There was a corresponding linear propagation of socio-economic indicators and technical infrastructure in terms of distance and time to the two urban centers.

In conclusion, the lower basin of Aries is undoubtedly an area of maximum demographical focus and of great structural complexity as a result of its past and present industrial heritage.

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