

## DISSIMILITUDES OF THE TECHNICAL-URBANISTIC ENDOWMENT BETWEEN THE CENTRE AND THE OUTSKIRTS OF THE URBAN OF CLUJ COUNTY

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**ABSTRACT** – Technical infrastructure (drinking and industrial water network, sewerage network, heating network, natural gas and electric power supply, telecommunication, access to modern transport routes) represents a basic condition for ensuring the quality standard of the population's life and economic development. Furthermore, it represents a premise for the connections between the centre and the periphery to take place in optimal conditions. However, when talking about the towns in Cluj County, the presence of important differences can be noticed between the towns proper and their outskirts, as well as within them. Disparity identification and localization is highly important in order to find solutions through investment - an essential step in ensuring the support for an optimal functioning of the urban areas.

**Key words:** urban area, centre, periphery, technical infrastructure

### 1. CENTRE AND PERIPHERY IN THE URBAN AREA OF CLUJ COUNTY

In order to facilitate territorial management, the urban and rural areas are set within well established administrative boundaries. In reality, the urban area is very dynamic, extending beyond its administrative boundaries. The intense functional connections the town establishes with the adjoining rural area determines the graduate infiltration within the space of the latter of a number of urban characteristics (demographic, social, economic, of habitation, of territorial endowment, etc.) and the extension of the real boundaries of the urban area depending on the existent conditions in one or another development stage.

Under these circumstances, the urban area stands out as a functional territorial system, made up of a centre (the town itself) that coordinates the dynamics of the neighbouring area, and a periphery that includes those villages situated in the immediate proximity of the town. These are connected to the town through indispensable ties and are characterized by a continuous adaptation to the habitat norms, to the urban facilities and functions, therefore being part of the town.

Therefore, within the real urban area of the county of Cluj, there is a peripheral area surrounding every town that functions as a transition space between the urban and the rural area. The periphery of Cluj-Napoca (317,953 inhabitants according to the census of 2002) took shape along the main communication axes: roads E60, E81, and E 576, as well as 300 and 401 main rail lines. The periphery includes 15 localities with a total population of 30,061 inhabitants. The periphery of the Turda-Câmpia Turzii urban micro-system (55,887 inhabitants and 26,823 inhabitants, respectively) includes 14 localities (22,224 inhabitants), situated along roads E 60 and E 81, as well as DN 75, DJ 150 and DJ 161B. Dej (34,999 inhabitants, without the component localities) is surrounded by a peripheral area containing: Ocna Dej, Pintic and Someșul Mic (3,438 inhabitants) and other 9 nearby settlements (8,491 inhabitants), situated along roads E 576, E58 and DJ 172F, while Gherla (23,108 inhabitants without the component localities) has a peripheral area including its suburbs, namely Băița, Hășdate and Silvaș (975 inhabitants) and 7 adjoining settlements with a population of 5,948 inhabitants, along road E 576, DJ 109C, DJ 109D and DJ 172 F. The only settlement indispensably connected with Huedin (9,033 inhabitants) is Bicălatu (406 inhabitants) that belongs to Huedin from the administrative point of view.

The purpose of the present paper is to analyse the situation of the technical infrastructure of these areas and underline the existent disparities. The identification and the localisation of these disparities represent an important premise for coordinating investment in infrastructure and an essential stage in the appropriate development of the urban area. This paper is the result of statistic data interpretation provided by the Cluj-Napoca Regional Statistics Office, of processing the information provided by Cluj County Council and by the mayoralties of the towns and villages concerned, of studying a series of specialized papers and of field investigations.

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## 2. PREMISES OF THE TECHNICAL INFRASTRUCTURE IN THE URBAN AREA OF CLUJ COUNTY

Representing an essential condition for the economic and social activities to take place and for raising the population's degree of comfort, interest in technical endowment appeared a long time ago. Despite this fact, more important investments started to take place only in the second half of the 19<sup>th</sup> century and the first half of the 20<sup>th</sup> century, all focusing on the main towns in the county (street lighting, building the Water Plant in 1887, edification of the water supply network, extension of the sewerage network and of the phone lines in Cluj-Napoca, connection of Turda to the Sărmășel-Turda gas pipeline, edification of the railroad, etc.), while the surrounding villages had a deep rural appearance.

During the socialist period, although the three planned desiderata, cooperativization-urbanization-industrialization, had as purpose "the general development of the population's level and conditions of life" (Cucu, 1974, p. 260) and "the harmonious development of different geographic areas and towns" (ibid., p. 346), the alert and intense rhythm imposed for their completion led to a powerful territorial unbalance, due to a more alert extension and development of towns compared to the rural area.

The wide investment program developed between 1950 and 1989 increased the territorial shaping force of the six present urban settlements of Cluj County and determined the implementation of some urban-like structures in the adjoining rural area. But the investments did not succeed in providing solutions for all the problems that occurred, mainly related to assuring the population's comfort and to meeting the needs of the social and economic units in the neighbouring area. Among the issues raised, there were those concerning the industrial and drinking water supply, sewerage, heating, natural gas and electric power supply, connection to telecommunication lines, access to modern means of transportation.

The disappearance of the central decision-making, starting with 1989, led to a significant decrease of the investment volume in the technical infrastructure. The following period was characterized by the absence of a proper investment volume which allowed neither the proper modernization of the existing infrastructure, highly overused and undersized, nor its significant extension.

Another issue is represented by the nowadays "building fever" (Kovács, 2006, p. 121), especially of the individual residences located at the periphery of Cluj-Napoca (Făget, Becaș, Borhanci, Florești, Apahida), in the conditions of a legislative framework that allows the free circulation of land and some digressions from the local planning regulations, with negative consequences. Although "experience proved that infrastructure, water and gas pipelines, sewage pipelines must precede construction" (Beaujeu-Garnier, Chabot, 1971, p.231), most of these constructions were made mostly ignoring this town planning rule because of low local budgets and low private interest in financing and supporting infrastructure development. Hence a series of dysfunctions that must be taken into consideration when elaborating the future development plans and when putting into practice investment programs.

At present, the awareness of the importance of high-quality infrastructure, both quantitatively and qualitatively, has mobilized the urban and rural communities, which were offered the possibility of coordinating their activities, either alone or in association. In this sense, a series of projects have been proposed, approved or are ongoing, financed mainly by European funds, which have in view the modernization of the technical infrastructure both in the urban and rural area.

## 3. TECHNICAL INFRASTRUCTURE IN THE URBAN AREA OF CLUJ COUNTY

The development of the technical infrastructure must be a priority as it represents a major problem in the proper extension of residential areas and of commercial and economic units. As seen in the following, peripheral settlements have a poor technical infrastructure, in the conditions in which, at present, a trend to capitalize the potential of the periphery can be noticed.

### 3.1. Water supply network

One of the most important needs of a settlement is sufficient and good-quality water. Because the intense rhythm of industrialization and urbanization after 1965 led to important increase in water consumption in the all the six towns of Cluj County, their own water sources could not cover anymore the existing needs. Therefore, central systems for water catchment and supply were gradually introduced.

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Generally, the situation when the water supply sources of the town are located on the territory of its peripheral settlements is noticed. In exchange, the periphery benefits by the town's water supply.

S.C. "Someș S.A. Water Company" (S.C.A.C.S.S.A.), residing in Cluj-Napoca, captures, treats and produces drinking water on the territory of Gilău and Florești. Water comes from two surface sources and from an underground one.

Currently, the surface sources are currently represented by the Gilău and the Someșul Cald reservoirs, located about 16 km upstream of Cluj-Napoca. The *Gilău water source* consists of a water intake located in the Gilău reservoir dam, which takes water from the reservoir and provides a maximum flow of 2,650 l/s. The treatment plant is located downstream, at about 300 m, having a capacity of 2,650 l/s, endowed with fast sand filters. *The Someșul Cald water source* was designed for a flow equal to 3,000 l/s. According to the data provided by S.C.A.C.S.S.A., an ISPA program is currently ongoing. By the time this is over in 2007, *Lake Tarnița* will become the main water source, all the other sources remaining as reserve.

*The Florești underground water source*, located about 3 km upstream Cluj-Napoca, is located in the terrace of the Someșul Mic river. The water is captured from the phreatic layer in the floodplain, enriched by riverside infiltrations, through drilled and dug wells with a depth of 8-12 m and through shallow drains (P.U.G. Municipiul Cluj-Napoca, 1998, p. 252). The source provides a maximum flow of 890 l/s.

The main pipelines that leave from the Gilău Treatment Plant and from the Florești underground source sum up 101.2 km in length, having a diameter of 600 to 1400 mm.

This regional system currently provides water to Cluj-Napoca, Gherla and 22 rural settlements, located mainly in the Someșul Mic Corridor. Only eight of the 15 of settlements situated in the immediate proximity of Cluj-Napoca are connected to the water supply network (Gilău, Someșul Rece, Luna de Sus, Florești, Baci, Apahida, Dezmir and Sânnicoară), representing 53% of the total. The only settlements situated near Gherla that are connected to the water system are Livada, Hășdate and Băița, the last two being component localities of the town. It must be noticed that Silivaș, also town component locality, does not have water supplied from the centralized system.

Turda has two water supply systems: a system for drinking water and one for industrial water (P.A.T.I.O. Turda-Câmpia Turzii, 1997, p. 40). Drinking water is supplied by a central system and is provided from four underground water sources, captured from dug wells. Three of the four sources are located on the territory of the peripheral settlements: *Cornești source* (Q=318 l/s), *Mihai Viteazu source* (Q=132 l/s), *Mihai Viteazu-alternative source* (Q=25 l/s) and *Turda Veche source* (Q=25 l/s). Industrial water is provided from the surface water source of Moldovenești (Q=500l/s), on the Arieș river. The water is treated at the treatment plant in the area. It is provided to the economic units in Turda and Câmpia Turzii. The drinking water is supplied through 600mm diameter pipelines and the industrial water through 800mm diameter pipelines. Besides Turda, only the rural settlement of Mihai Viteazu is connected to this system. Making the water from the surface water source of Moldovenești drinkable, could facilitate the achievement of a regional water supply system to ensure a central water system for the other peripheral settlements as well, with possibilities for extension, in cooperation with the sources and the networks that supply water to Câmpia Turzii (P.A.T.I.O. Turda-Câmpia Turzii, 1997, p.56).

Câmpia Turzii also has two central water supply systems: one for drinking water and one for industrial water. Drinking water is provided from three independent sources: *Hășdate source*, located west of Cheia, which takes water from the Hășdate Valley (Q=150 l/s, with a maximum capacity of 2,000 l/s), subsequently made drinkable at the treatment plant in Turda; *Poiana underground source*, located in the built-up area of Turda, which captures water from the phreatic layer (Q=13.8 l/s) and the *Călărași underground source*, the former main water source (Q=33 l/s). Water is provided through two pipelines, a 400mm, and a 600mm diameter pipeline. Besides Câmpia Turzii, only Viișoara is partially connected to this system.

In the case of Dej, the water supply source is the Someșul Mic river, both for drinking and for industrial water. The water is captured through a lateral water intake dam. The water catchment and treatment equipment is designed for a flow of 2,400 l/s, of which 2,100 l/s is industrial water and 300 l/s drinking water. The drinking water from the urban water treatment plant is transported by two 600mm diameter pipelines and one 400mm diameter pipeline. Only Dej and Ocna Dej are connected to this system.

The works at the Gilău-Cluj regional system will facilitate the extension of the water supply system up to Dej, through the Cluj-Gherla pipeline.

Huedin is supplied with water captured from an *underground source* (58 l/s) located upstream of the village of Bologa, on the Săcuieu valley. The water distribution system consists of 50mm and 400mm diameter pipelines (P.U.G. Huedin, 1997, p. 36).

All the other peripheral settlements are supplied with water from local sources (wells or springs) even nowadays. Some of them have rich water sources, due to their location on terraces (Bogata, Călărași, Luna, Luncani), others do not have such sources, so that connection to a central system is highly required (Mintiu Gherlii, Petrești, Salatiu, Mănăstirea, Mica).

Currently, there is series of proposed or ongoing projects to connect some of the settlements to the existent water supply systems (Urișor, Cuzdrioara, Mica, Mănăstirea, Salatiu, Nima, Petrești, Bunești, Mintiu Gherlii, as well as Sândulești, Vișoara and Tureni).

As concerns the share of dwellings connected to water supply, in 2002, a high percentage can be noticed in all the six towns: 97.8% in the case of Cluj-Napoca, 93.7% in Câmpia Turzii, 93.4% in Gherla, 92.1% in Turda, 88.3% in Dej and 81.9% in Huedin. In the case of towns with component settlements, the presence of disparities can be noticed even within the administrative boundaries. Thus, in Dej, 93.6% of the dwellings have inner water facilities, but in the component settlements, the situation is different: only 45.2% in Ocna Dej, 25.4% in Șomcutu Mic, while in Pintic, none of the 181 dwellings has such facilities. The same situation occurs in the case of Gherla: 96.2% in Gherla, 65.5% in Hășdate, 26.6% in Băița, and only 6.2% in Silivaș; as well as in the case of Huedin: 85.5% in Huedin and merely 35.2% in Bicălatu.

Among the peripheral settlements those that surround Cluj-Napoca clearly stand out: Baciú 86.2%, Rădaia 80.9 %, Sănnicoară 76.9 %, Florești 76.1 %, Gilău 73.0 %, Suceagu 71.1 %, and Apahida 61.5 %. They are followed by Luna 55.3 %, Mihai Viteazu 50.5 %, Bogata 47.8 %, Luncani 43.4 %, and Copăceni 41.4 %, located in the immediate proximity of the Turda-Câmpia Turzii urban micro-system.

On the other side there are settlements less privileged by relief conditions: Dezmír 20.2 %, Feleacu 22.5 %, Someșu Rece and Sub Coastă 23.7 % at the periphery of Cluj-Napoca, and Tureni 10.5 %, Urca 16.9 % and Cheia 19.2 %, in the case of the rural settlements surrounding Turda and Câmpia Turzii (Figures 1-3).

The differences are lower in the case of Dej. The settlements with most dwellings endowed with water facilities are Cuzdrioara 42.8 %, Urișor 28.4 %, and Cășeu 20.2 %, and those with least are Mănașturel 8.1 %, Mănaștirea 11.0 %, and Coplean 11.2 %. The same situation occurs in the case of Gherla: Livada 24.7%, Petrești 24.3 %, and Mintiu Gherlii 22.2 %, at the opposite side being Nima 4.8 %, Salatiu 5.0% and Nicula 7.3 % (Figures 4-5).

### 3.2. Sewerage system

As regards sewage and waste water treatment, the situation is almost the same. There is a certain correlation between the number of dwellings with inner water facilities and those with sewage facilities (Figures 1-6). Problems occur when making the difference between the dwellings connected to the public sewerage network and those with private sewerage system.

Besides towns, there are few peripheral settlements connected to the sewerage network. Except for Cluj-Napoca, only Baciú, Florești and Gilău are connected to the mixed sewerage system and to the city's treatment plant, which has been designed for a flow of 1,600 l/s. However, because of the clogging of spillways and domestic sewage canals, a part of the domestic waste water is discharged directly into the surface waters polluting them (P.U.G. Municipiul Cluj-Napoca, 1998, p. 256). It is estimated that the sewerage network is mostly overused and undersized for the present needs. In addition, Apahida is building its own treatment plant.

In the case of Turda and Câmpia Turzii, they have a central sewerage system that solves partially the collection and discharge of domestic waste water and the rain water. They are transferred to the joint treatment plant, located downstream of Câmpia Turzii, with a total capacity of 1,000 l/s. Only the rural settlement of Mihai Viteazu is connected to this system, while Vișoara has a feasibility study.

In Dej, the sewerage system is 80% combined and 20% separate. The waste water is transported to the mechanical treatment plant with a capacity of 240 l/s, located on the right bank of the Someș river, near Urișor, and to the biological treatment plant of S.C. Someș S.A., with a capacity of 1,200 l/s. Neither the component settlements nor the peripheral rural settlements have solved their sewage issue. In Cășeu, the sewerage system only drains the waste water from the collective dwellings (P.A.T.I.C. 1997, p. 15-16).

The same situation occurs in Gherla. The separate sewerage system collects the town's waste water and takes them to the treatment plant which has a capacity of 150 l/s for the mechanical stage and of 300 l/s

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for the biological stage. None of the neighbouring settlements is connected to this system. However, the village of Livada has a feasibility study, while Fizeșu Gherlii has a local sewerage system.

The domestic waste water of Huedin is collected and transported to the treatment plant located on the left bank of the Crișul Repede river, but its capacity of 60 l/s is undersized.

In all the other settlements, domestic waste water is discharged into the street gutters or directly into surface waters, raising the problem of soil and groundwater pollution. In this respect, proposals have been made to create local sewerage systems and to build common or individual treatment plants.

### **3.3 Natural gas network**

The main source of methane gas is represented by the exploitations in the Transylvanian Plain, but the networks are also connected to the national network, making possible the use of imported gas.

On April 3<sup>rd</sup>, 1914, Turda was connected to the Sărmășel-Turda gas pipeline, becoming the first national and European town connected to the gas system; initially for industrial needs, and afterwards, on October 14<sup>th</sup>, 1917, also for domestic use (Gergely, 2001, p. 63). The gradual extension of the network followed, so that Câmpia Turzii, Luna, Mihai Viteazu, Săndulești and Viișoara are also connected.

Cluj-Napoca and its adjoining rural area (Baciu, Apahida, Dezmir, Pata, Sânnicoară, Feleac and Gilău) are supplied from two independent sources, Ceanu Mare and Turda, through main high pressure gas pipelines, while Dej and Gherla, and another two rural settlements in the immediate proximity of Dej (Urișor and Cuzdrioara) are connected to an independent main gas pipeline that supplies gas in Northern Transylvania. Therefore, only 25% of the total settlements situated at the periphery of the urban areas, component settlements included, are connected to methane gas supply networks.

In this case also, there is a series of projects and works to extend the gas supply network to other settlements (Cășeu, Coplean, Fizeșu Gherlii, Mintiu Gherlii, etc.), including the achievement of the main pipeline between Gherla-Cluj-Napoca-Huedin.

### **3.4. Central heating system**

Central heating system based on methane gas sources is underdeveloped even in towns. Because of losses in the system due to a high overuse of the regional heating stations and of the heating distribution pipelines, as well as to the high costs for supplying these services, a trend to disconnect the households from the public central heating system can be noticed recently. District heating stations have been replaced by lower capacity heating plants such as building or apartment heating plants. Although such process has reduced gas consumption, their unauthorized implementation raises important aesthetic and safety problems.

In the settlements that are not connected to the natural gas network, but also in those already connected, the fuel used for heating is wood.

As regards the number of dwellings that have public or individual central heating, lower values can be noticed even in towns: 80.5% in Cluj-Napoca, 61.3% in Dej, 59.8% in Turda, 58.0% in Câmpia Turzii, 39.1% in Gherla and merely 9.1% in Huedin. In many of the component settlements, lower values are registered: Ocna Dej 18.2%, Șomcutu Mic 3.0%, Pintic 0.0%, Băița 5.8%, Hășdate 5.3%, Silivaș 4.9% and Bicălatu 1.7%, showing great differences even within the urban administrative boundaries.

The share in the neighbouring settlements ranges between 29.6% in Baciu, 18.7% in Sânnicoară, 18.4% in Florești, 14.2% in Apahida and 0.0% in Sub Coastă, Chinteni and Tăuți, in the case of the peripheral area of Cluj-Napoca; between 11.4% in Mihai Viteazu and 0.4% in Săndulești and Cheia, in the case of Turda-Câmpia Turzii; between 8.2% in Cuzdrioara, 4.1% in Cășeu and 0.0% in Codor and Nima; between 1.4% in Bunești and 0.0% in Petrești, Salatiu and Nicula, in the case of the peripheral area of Gherla (Figures 1-6).

### **3.5. Electric power supply network**

As the connection to the electric power supply system is concerned, a much better state is noticed.

Cluj-Napoca and its peripheral area is supplied with electric power from Mintia and Iernut power stations, as well as from the hydroelectric power stations of Târnița, Mărișel and Someșul Cald, transmitted by means of high aerial voltage lines. In addition, there are two power transformer stations, namely Cluj Est (400/110 KV) and Cluj Vest-Florești (220/110 KV).

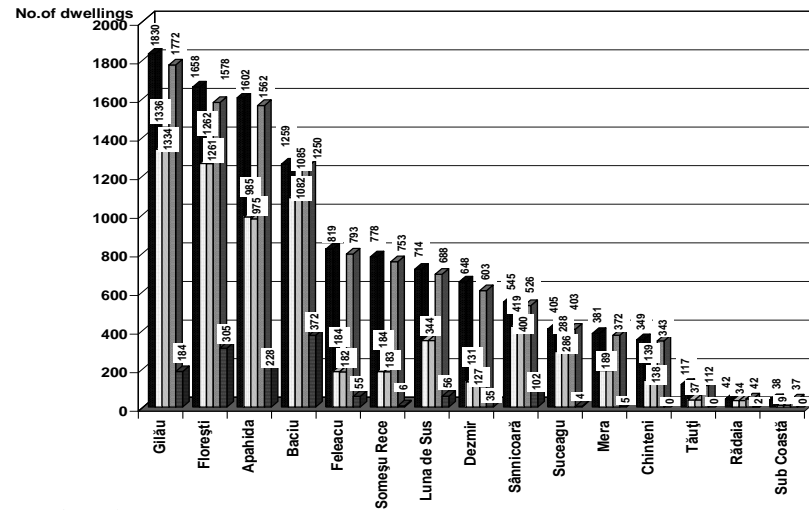
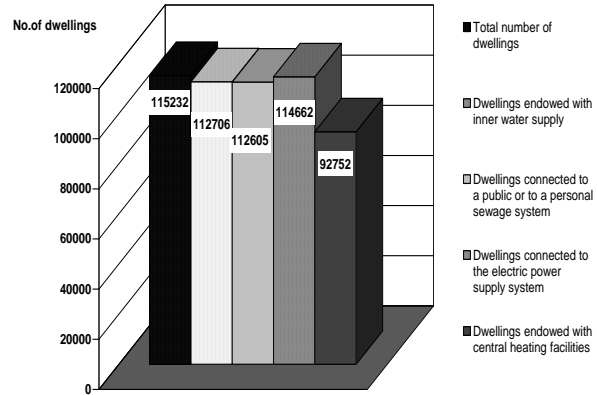


Figure 1. Technical equipment of the dwellings in Cluj-Napoca and its peripheral area (2002)

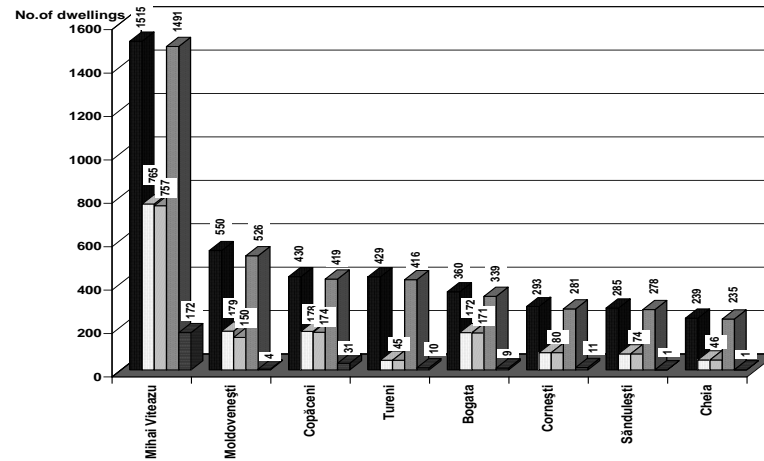
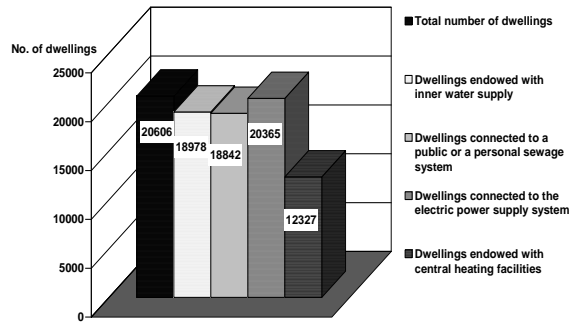


Figure 2. Technical equipment of dwellings in Turda and its peripheral area (2002)

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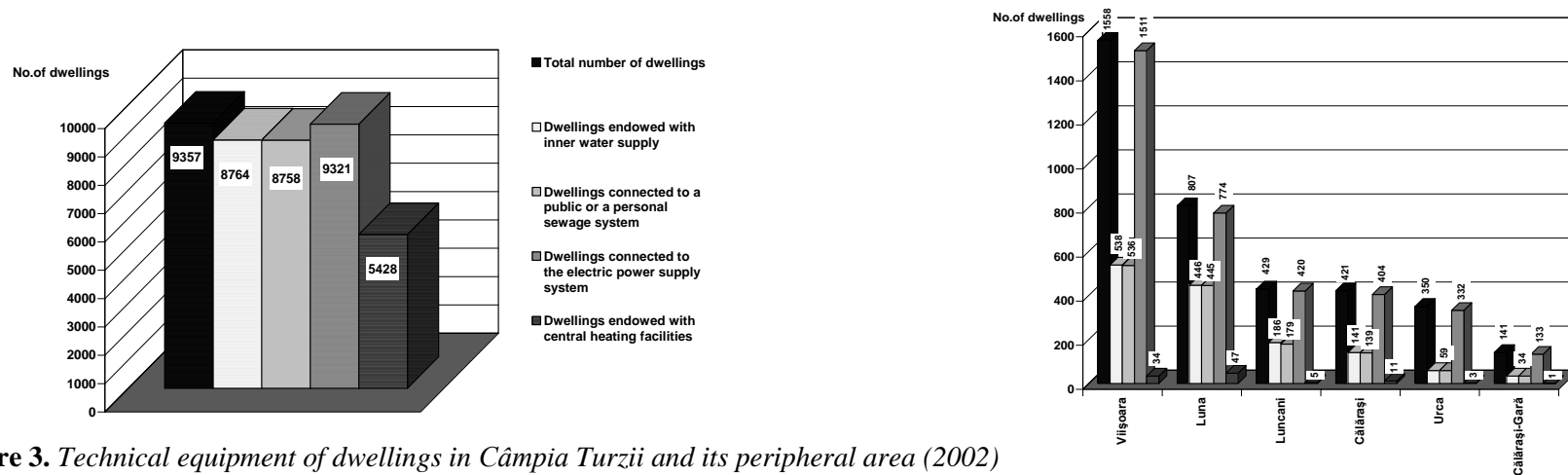


Figure 3. Technical equipment of dwellings in Câmpia Turzii and its peripheral area (2002)

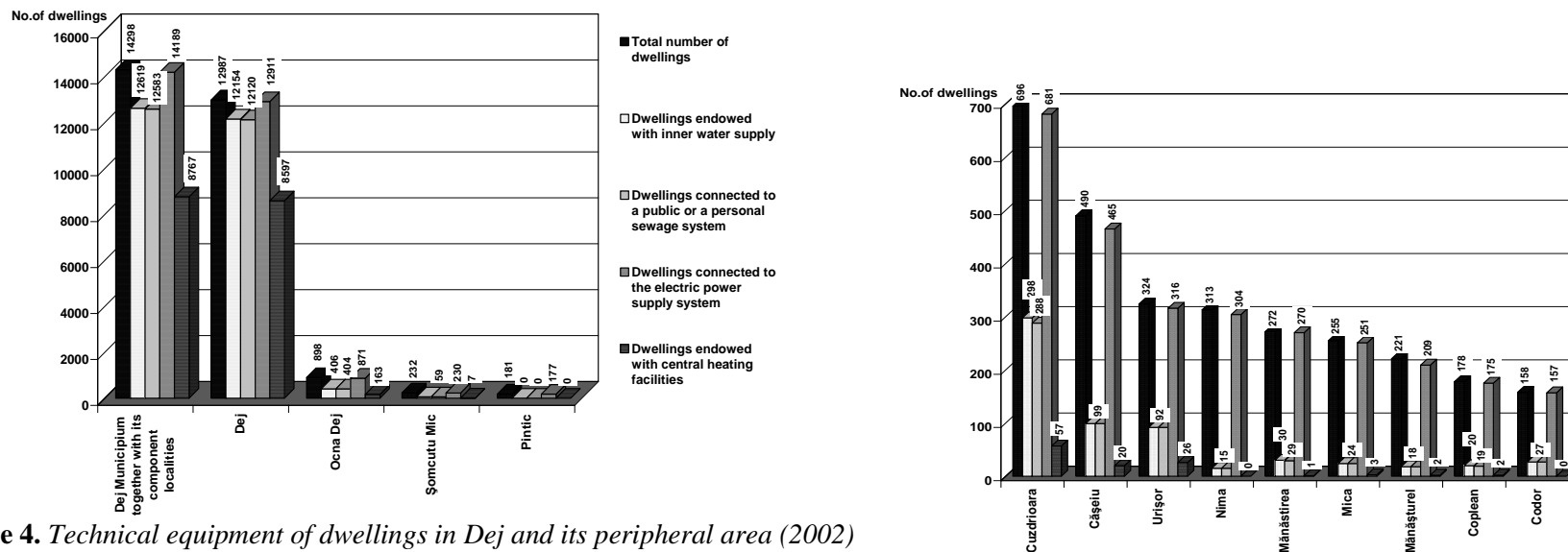


Figure 4. Technical equipment of dwellings in Dej and its peripheral area (2002)

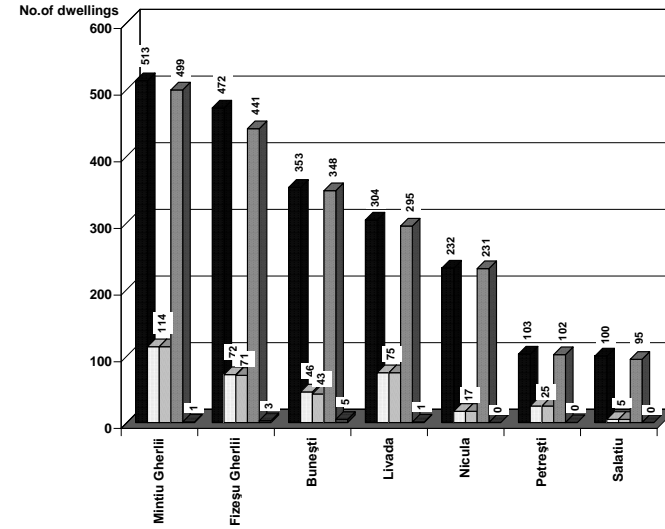
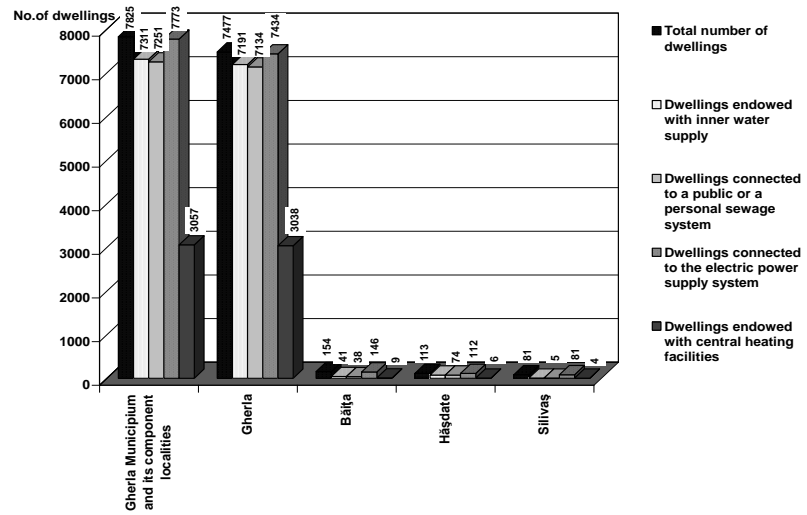


Figure 5. Technical equipment of dwellings in Gherla and its peripheral area (2002)

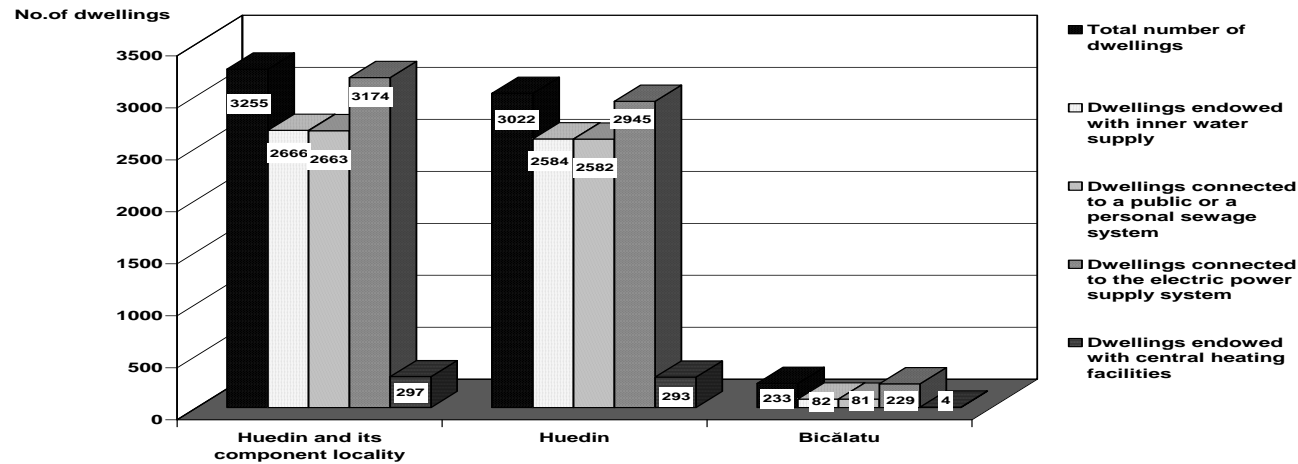


Figure 6. Technical equipment of dwellings in Huedin and its peripheral area



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The Turda-Câmpia Turzii urban micro-system and its peripheral area is supplied with electric power through electric networks connected to three 110 KV stations: Turda, Câmpia Turzii and Mihai Viteazu, while the towns of Dej and Gherla, together with their peripheral area are supplied through electric networks connected to other three 110 KV power stations located in Dej, Gherla and Bunești.

The electric power source of Huedin is represented by the national energy system through the power transformer station located in Huedin (110 KV).

The share of dwellings supplied with electric power is extremely high, from 100% in the case of Rădaia and Silivaș to 93.1 % in Dezmir and 93.4 % in Fizeșu Gherlii.

The total share of localities with over 95% of dwellings supplied with electric power is 84.4%.

### 3.6. Telecommunication network

A continuous trend in the development of the telecommunication network is noticed, being the most dynamic component of the infrastructure, as result both of the technological development and of the increasing need for communication and information fluxes.

All the urban areas under consideration benefit by a modern telephone network, due to the presence of a large number of telephone service providers: Romtelecom, Orange, Connex, Zapp, etc. which offer a various range of services meant to attract as many users as possible. Both on the Cluj-Napoca – Gherla – Dej – Baia Mare axis and on the Cluj-Napoca – Turda – Mureș axis, the telephone networks are modernized through the usage of optical wires and digital telephone exchanges. However, in the localities situated outside these axes, the telephone networks are generally wired and undersized.

If the number of mobile phone users is difficult to define, according to the data supplied by the Cluj-Napoca Regional Statistics Office, the number of fixed telephony users is relatively small, especially in the peripheral settlements. However, the great expansion of the mobile phone network mainly covers this shortcoming.

In 2004, the share of persons connected to the fixed telephone network was 39.3% in Cluj-Napoca, 23.5% in Huedin, 20.9 % in Turda, 17.8% in Dej, 13.2% in Câmpia Turzii and 12.2% in Gherla.

There is also a series of cable television and internet suppliers, which, although in continuous expansion, have not managed yet to cover the needs, especially in the peripheral areas of the towns. In this context, the city of Cluj-Napoca plays a major role as a regional centre for the territorial diffusion of the new information technologies (Kovács, 2006, p. 123).

### 3.7. Transport network

The creation, development and diversification of the transport networks were favoured by the presence of the main river corridors of the county, such as the Someșul Mic, the Someșul Mare, the Someș, the Crișul Repede and the Arieș corridors so that the main communication axes have extended along them.

The density of transport networks, their quality and accessibility are important indicators of the functionality of a territory; their optimization is “an essential precondition for the economic development of a territory” (PATR, 2004, p. 68). This fact explains the effort undertaken at present by authorities in attracting funds for the extension and the modernization of the transport infrastructure.

Given the situation in which the main communication axes (road and railway) have favoured the diffusion of certain urban characteristics in the neighbouring rural area and, therefore, have brought their contribution to the development of the peripheral area, all peripheral settlements have direct access to one or even to both communication networks.

The quality of the road network depends on the road type and category. The national and the European roads are qualitatively superior to the county and local roads. Being developed at ancient road crossings, the six towns of Cluj County have kept the quality of road junctions until today, being crossed by important national roads, which are European roads as well: DN 1 (E 60), DN 1C (E 58), DN 1F (E 81), DN 16 in the case of Cluj-Napoca; DN 1 (E 81), DN 15 (E 60), DN 75 in the case of Turda-Câmpia Turzii urban micro-system; DN 1C (E 58), DN 17 (E 576) in the case of Dej; DN 1C (E 576) in the case of Gherla and DN 1 (E 60) in the case of Huedin. A part of the peripheral settlements fully benefit by this infrastructure. Thus, a higher development can be noticed in the case of settlements with direct access to national roads (Gilău, Florești, Baciou, Sănnicoară, Apahida, Copăceni, Mihai Viteazu, Luna, Cuzdrioara, Urișor, Cășeu) compared to the ones with direct access to county roads (Chinteni, Călărași, Cheia, Săndulești, Fizeșu Gherlii, Nicula, Mintiu Gherlii, Petrești, Salatiu, Mica) or local roads (Tăuți, Sub Coastă, Urca, Bunești, Nima).

The present-day projects related to the construction of the Transylvania highway, which will cross the territory of Cluj County between Topa Mică and Luncani, and of the ring roads of the major towns, with the purpose of making the traffic more fluent within their territory, have direct impact upon the peripheral areas of the towns. The villages located in the proximity of the future modernized roads, will have, in exchange for the land required for road construction, an increased flow of road traffic, but also will benefit by all the subsequent advantages related to their position.

The access to the railway network is lower at the level of peripheral villages, only 12 settlements having railway stations or halts: Călărași Gară, Apahida, Dezmir, Baci, Suceagu, Rădaia and Mera, with direct access to the 300 main rail line: București Nord – Brașov – Sighișoara – Teiuș – Războieni - Cluj-Napoca – Oradea – Episcopia Bihor, as well as Apahida, Livada, Bunești, Nima, Cășeu and Coplean, with direct access to the 401 rail line: Ilva Mică – Salva – Dej – Apahida – Cluj-Napoca. Apahida stands out as a railway junction on the connection segment of two main rail lines (300 and 400).

Although the investments in the railway infrastructure are at present clearly below the ones in the road infrastructure, the electrification and modernization of the Episcopia Bihor – Cluj-Napoca – Teiuș and Cluj-Napoca – Dej – Satu Mare railway segments are taken into consideration. The reconstruction of the former narrow gauge railway line between Turda and Abrud (93 km) is also taken into account for tourism purposes, with impact on the neighbouring rural settlements as well.

The two airports of Cluj County were established at the periphery of the two large cities: Cluj-Napoca (in Someșeni, former peripheral village, today a district of the city) and Turda (in Luna). Cluj County Council has already started an extensive development program for the development of the airport in Cluj-Napoca, which by interoperability with the other nearby modes of transport (road and railway) can become the basis for a multimodal transport network, a genuine engine for the development of the city and its neighbouring area.

## CONCLUSIONS

In the conditions in which there is a continuously increasing interest in the capitalization of the potential of peripheral settlements, a proper development of their technical infrastructure is highly required. The analysis has revealed that there are certain disparities between the centre and periphery of the urban areas of Cluj County, as well as within them, such as the disparities between Dej and Gherla and their component settlements. Thus, the necessity of starting and finalizing the projects for the modernization and the extension of the technical networks is imposed as a first step in the optimization of the territorial functionality. It also must be considered that investments in infrastructure may prove profitable not only by increasing land and real estate prices, but mostly by encouraging and supporting the economic investments. For this reason, the involvement of private initiative alongside local authorities is welcome.

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