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# The Quality of Housing in the Rural Space Adjacent to the Bucharest-Ploiești Axis

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## ABSTRACT

When I started studying Romania's rural areas I was happy to find out among others that “the village” has not lost ground but continues as a topic of interest for specialists. The Romanian village has regained importance due to a change in the mind-set of a population segment that has come to regard the rural environment as an attractive place to live in. Consequently, a new type of migration occurred, i.e. urban-rural migration, which co-existed with the rural exodus up to 1996 and gained momentum after 2002. The new rural residents seek the same extent of housing comfort they enjoyed before moving to permanently live in the country, plus the other advantages of living in less polluted environments, with larger dwelling areas. For a clearer picture of the quality of rural housing we aim to assess the public utility infrastructure quality and the population's access to utilities by determining the density of the sewerage, drinking water and natural gas networks and by inventorying the dwelling installations (for sewerage and the supply of drinking water, electric power, thermal energy). My second target is to identify the dwellings stock-related issues in terms of the number, structure and space of dwelling units, by analyzing the dwelling space indicators (the number of habitable rooms per house, the number of persons per habitable room/house, the habitable space per person) and by drawing up an inventory of the auxiliary rooms (bathrooms and kitchens).

## 1. INTRODUCTION

In a 2008 work, Cristina Alpopi defined the concept of “housing” as follows: „covers a very large spectrum of issues, namely the following: buildable land within locality borders, single-family or multi-family houses, public utility infrastructure, public services and amenities and production facilities that the population has access to, recreational facilities, relationship between population and environment, inter-community social relationships, an adequate, enjoyable and relaxing environment” [1]. In this study I will lay stress on the inventory of home installations and auxiliary rooms, and the condition of the public utility infrastructure.

The concerned area is located in northern Ilfov County and southern Prahova County and the capital influences differentially only limited areas.

Urbanization, development and modernization are intense only in certain spaces neighboring Bucharest. The “preferable” areas are those that are located along the main roads (National Road no. 1 in this case) and more exactly it is possible to relocate of some of Bucharest's urban functions –such as business, storage, processing activities and dwelling (especially secondary dwelling, possibly of higher comfort) – which, given the available space and the current environment, cannot be accommodated by the capital city.

In administrative terms, the 11 rural localities making up the region under analysis have been divided into two groups, depending on their level of development. The first group (A) includes the communes located closer to Bucharest (Balotești, Corbeanca, Ciolpani, Snagov) and to Ploiești city (Bărcănești). The urbanization trends are stronger there and the transport and public utility infrastructure

developed at a faster pace than was the case with the communes located outside the influence of the aforementioned cities, due to a new type of final migration – from urban to rural areas—which occurred there after 1996 and had its peak of intensity in 2002-2006. This phenomenon of “urban exodus”, as some call it, boosted the interest that investors from various domains (residential construction building in particular) take in these communes.

Urbanization impacts or should impact all levels, including the extent to which the dwelling units are provided with installations and auxiliary rooms. Furthermore, urbanization should on the whole generate a higher level of comfort in rural dwelling, which is more and more similar to urban dwelling.

The second group (group B) includes the communes of Nuci, Periș, Gorgota, Gruiu, Puchenii Mari, Moara Vlăsiei, which are at a disadvantage for being geographically located farther away from National Road 1 and from the two cities where the region's economic activities are concentrated. Unlike the dwellings of the first group communes, houses here have a lower level of comfort, while the condition of the public utility infrastructure is poor; besides, the population has limited access to such utilities, due to lower standards of living and economic development.

## 2. THEORY AND METHODOLOGY

In preparing this study we have consulted the works attached hereto as bibliography, we have analysed and processed a series of statistical data made available by the National Institute of Statistics (Bucharest), Ilfov County General Statistics Department (Bucharest) and Prahova County General Statistics Department (Ploiești), locality sheets for 1996-2000, the Census of the Population and Dwellings of March the 18th, 2002 and the Population Census of January the 7th, 1992, as well as the records kept by the Municipalities of the following rural settlements: Corbeanca (the General Development Plan 2003-2004-Ro. P.U.G.), Moara- Vlăsiei (1996), Snagov (the General Development Plan of 2004). Moreover, we have made on-site observations and taken pictures in the area under analysis. The cartographic materials obtained from the Ilfov County Office of Cadastre, Geodesy and Cartography of (Bucharest) and the Library of the Faculty of Geography of the University of Bucharest have been edited by the author in Corel Draw.

### 3.1. The evolution of the dwelling units number in 1992-2009

Compared with 1992, the whole area under analysis saw an approximately 21% increase in the number of dwelling units (in 2009 there were 5,021

more dwelling units than in 1992). Such increase was due to the migration from urban to rural areas and it can be linked with the rise in the number of residents in 1991-2009. In 2009 the rural population in the area neighbouring the Bucharest-Ploiești axis amounted to 68,076 residents (the maximum value in 1991-2009). The analysis of the population evolution chart shows that between 1991 and 2002 the total population was on a downward trend, due to the rural exodus. After 2002 the total population reported a slight increase, given the final migration of an urban population segment driven by the will to return to their native places or to live away from the air and noise pollution of their cities.

According to the chart of the dwelling units number by commune, Corbeanca had the most spectacular increase in this respect (in 2009 107.34% up from 1992), with Snagov (38%) and Balotești (32.60%) coming next. As confirmed by the spectacular upsurge in their real estate prices before the economic crisis set, Snagov and Balotești ranked top among the preferred choices of those who decided to permanently settle down in the capital city's periurban or suburban areas located in Ilfov County. Puchenii Mari is outlying Ploiești city's sphere of influence and is located too far away from Bucharest, so due to the low number of former urban residents who decided to permanently move there Puchenii Mari's 2009 indicator grew by as little as 1.76% from the 1992 one (fig. 2).

### 3.2. The spatiality of dwellings

Our analysis of the spaces of dwelling relies on the interpretation of the following indicators: habitable space per person ( $m^2$  of habitable space/person), number of persons per habitable room, number of persons per dwelling unit and number of habitable rooms per dwelling unit.

In 1992, Snagov's average of habitable space per person was the highest (18.44 habitable  $m^2$ /person) whereas Moara-Vlăsiei's was the lowest (9.45 habitable  $m^2$ /person). The average indicator for the entire concerned area was 12.52 habitable  $m^2$ /person and it continued to increase over the following years: 17.74 habitable  $m^2$ /person in 2002 and 21.60 habitable  $m^2$ /person in 2009. The increase is attributed to an upsurge in the number of large dwellings owned by a segment of the population which is financially above average. The residential complexes that were built in group A communes measure up to the exigencies of those who have left urban areas; the occupants benefit from parking places, round-the-clock security guard services provided by specialised companies, playgrounds, common or private swimming-pools, barbeque places and other facilities, the quality of housing being very high (e.g. the residential complex of “Paradisul Verde” in Corbeanca).

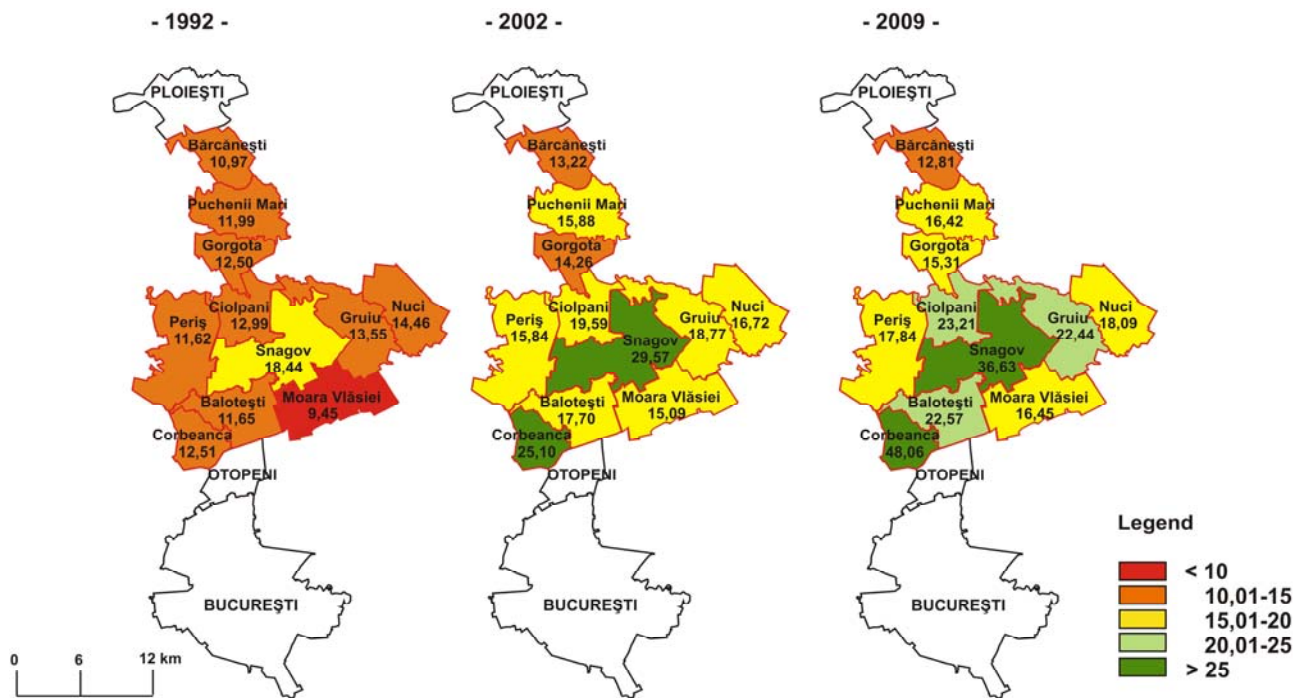


Fig. 1. Map of the habitable space per person (habitable m<sup>2</sup>/person) in 1992, 2002 and 2009.

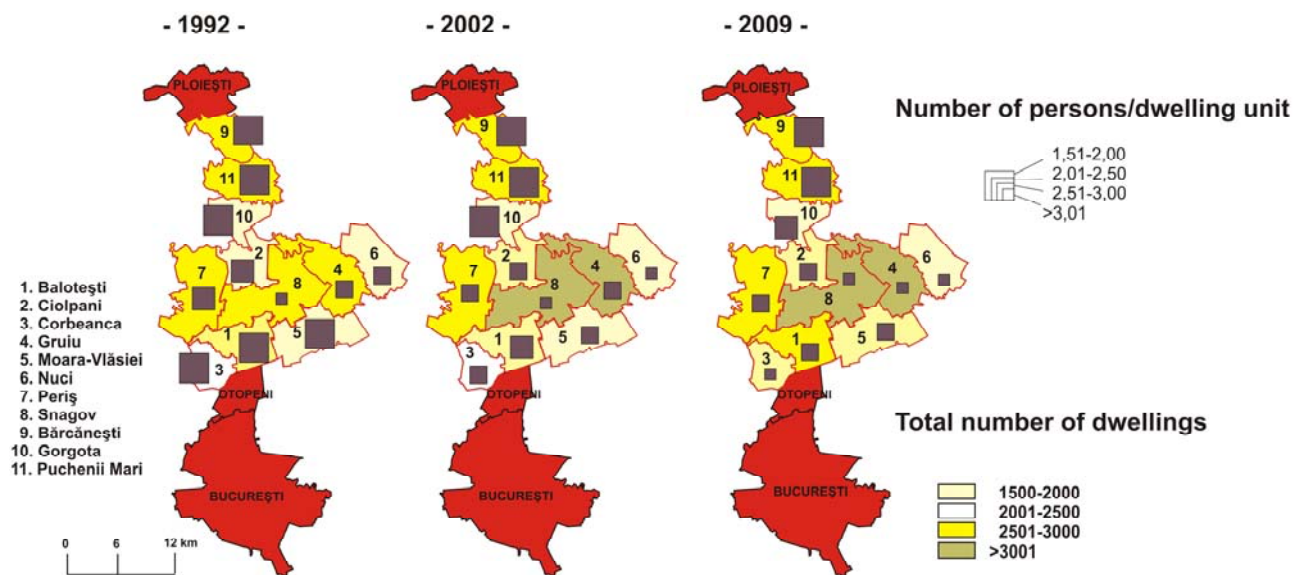


Fig. 2. Map of the dwellings stock and the spatiality of dwellings in 1992, 2002 and 2009.

As to the space of dwellings in 2002, the concerned rural area reached values higher than or comparable with Romania's average, which was 14.20 habitable m<sup>2</sup>/ person. Snagov's value was the highest (29.57 habitable m<sup>2</sup>/person), with Corbeanca coming next (25.10 habitable m<sup>2</sup>/person). Bărcănești reached the minimum value (13.22 habitable m<sup>2</sup>/person), being followed by Gorgota (14.26 habitable m<sup>2</sup>/person).

In 2009 the very same communes in group A reached high values: Corbeanca (48.06 habitable m<sup>2</sup>/person) and Snagov (36.63 habitable m<sup>2</sup>/person). These values are very high compared with those of the other localities, probably owing to the failure to record most population movements, the number of new

dwellings being indicative of the actual high rate of settlements in Snagov and Corbeanca. In 2002, 0.56 and 1.04 individuals inhabited on average a habitable room in Snagov and Bărcănești, respectively. These values were close to Romania's average, which was 1.05 persons/habitable room. In 2002 the average number of habitable rooms/dwelling unit was 2.98 in Snagov and 3.21 in Bărcănești, respectively.

In Snagov, the average surface area of a land plot pertaining to a house is roughly 1,500 m<sup>2</sup>.

The analysis of the map below (fig. 2) reveals that the number of persons occupying a dwelling unit continuously decreased between 1992 and 2009 in all localities concerned, except Bărcănești commune.

Across the whole concerned area, this indicator dropped from 2.8 persons/dwelling unit to 2.3 persons/dwelling unit, but due to dwellings being larger and not due to a decline in the number of residents.

### 3.3. Public utility infrastructure and the population's access to utilities

*"The concept of housing requires that the houses be connected to public utility installations as well as to social and cultural facilities, envisaging only the meeting of the community members' preferences and aspirations"* [1]. We deemed this definition relevant because the public utility infrastructure quality and the population's access thereto are key to a proper analysis of the quality of housing, so we analysed the density of the sewerage, natural gas supply and drinking water supply networks, but also the extent to which the dwellings are provided with the relevant installations. Besides, for an accurate and comprehensive picture of the quality of housing we should consider some other aspects of the public utility infrastructure- such as sanitation, public lighting and the condition of arterial highways and pedestrian roads - which are pivotal to the proper operation of the rural community and highly impact the residents' lives. We did not take into account the electric power network because the concerned area is not faced with any problems in that respect.

The public utility installations and equipment strongly impact the quality of life as they ensure the residents' comfort and hygiene but also the proper development of all social and economic activities of a human settlement in particular, and of the whole nationwide network of human settlements in general.

Moreover, it is highly important to analyse the drinking water supply level and the number of consumers connected to the relevant network and that because there is a causal connection between the quality and quantity of drinking water available to the population, on the one hand, and the population's health on the other hand [2, 4, 5]. The density of the drinking water supply network in the analysed rural area varied during the concerned 19 years between 0.03 km/km<sup>2</sup> (1991) and 0.28 km/km<sup>2</sup> (2009). At an administrative unit level, the largest values of the simple total length of network of drinking water installations were reached in Bărcănești up to 2004: between 11.1 km in 1991 and 24 km in 2004. Starting with 2005 this value is higher in Periș where the simple total length of network of drinking water installations is between 38.9 km in 2005 and 40 km in 2009. In 2009 high values are also reached in Snagov (36 km), Bărcănești (35 km), Corbeanca (22.7 km) and Balotești (22.6 km) but in Gruiu, Moara-Vlăsiei and Nuci there is no drinking water network since 2006 because the existing installation deteriorated and was

decommissioned. Between 1991-2005 the length of the drinking water installations in these localities was approximately 0.1 km.

The range of sewerage network density in the concerned area was between 0.01 km/km<sup>2</sup> in 1991 and 0.07 km/km<sup>2</sup> in 2009. The highest values per administrative unit were reached in Snagov commune in all 19 years, except between 2002-2004 when the value was equal to that corresponding to Balotești, the total simple length of public sewerage pipes of both communes being 10 km. The range of simple length in Snagov commune was between 13.3 km in 1991 and 26 km in 2009. After 2005 the simple length of the sewerage network in the analysed area is reduced to 6 km in 2006 and then to 5 km in 2007-2009, but in Snagov it reaches higher values, namely 11.2 km in 2005-2006, and then 16.2 km in 2007-2008. During the reference period there was no sewerage network in Ciolpani and Nuci. The values of sewerage network length are also very low in Corbeanca and Gruiu, namely 0.1-0.2 km until 1999. After 1999 the sewerage network in these localities degraded and was subsequently decommissioned since it was not reconditioned. The authorities must have constantly in view the extension and modernisation of the existing sewerage network because the wastewater disposal and purification infrastructure is essential for raising the standard of housing and living. Thus the disposal of the wastewater polluting the environment (surface and ground water, soil) and adversely affecting human health is controlled and stopped.

The natural gas distribution network density in the concerned rural area had an upward trend between 1999-2009 (0.02-0.69 km/km<sup>2</sup>). Until 1999 none of the 11 localities in the area adjacent to the axis Bucharest-Ploiești was supplied with natural gas, Bărcănești was the first locality supplied with gas (13.6 km). Until 2009 the total simple length of distribution pipes of natural gas in this locality is tripled (37.6 km). In 2004 Snagov became the second commune connected to the national natural gas distribution network (18.8 km). Unlike the previous case and the other communes, in 2009 Snagov's natural gas distribution network density increased almost eightfold, this being the most "explosive" evolution. Subsequently in 2005 Moara-Vlăsiei (10 km), in 2006 Corbeanca and Gruiu (54.8 km and respectively 31 km), in 2007 Balotești (35 km) and in 2009 Ciolpani (41.5 km) were also supplied with gas. In 2009 Nuci, Periș, Gorgota and Puchenii Mari still had no natural gas supply network and this is indicative of the much lower level of the public utility infrastructure in the rural settlements of group B compared to the other rural settlements in group A. The residents of these communes must procure gas cylinders and heat their homes using solid fuels (especially wood, since the area is in a plain region).

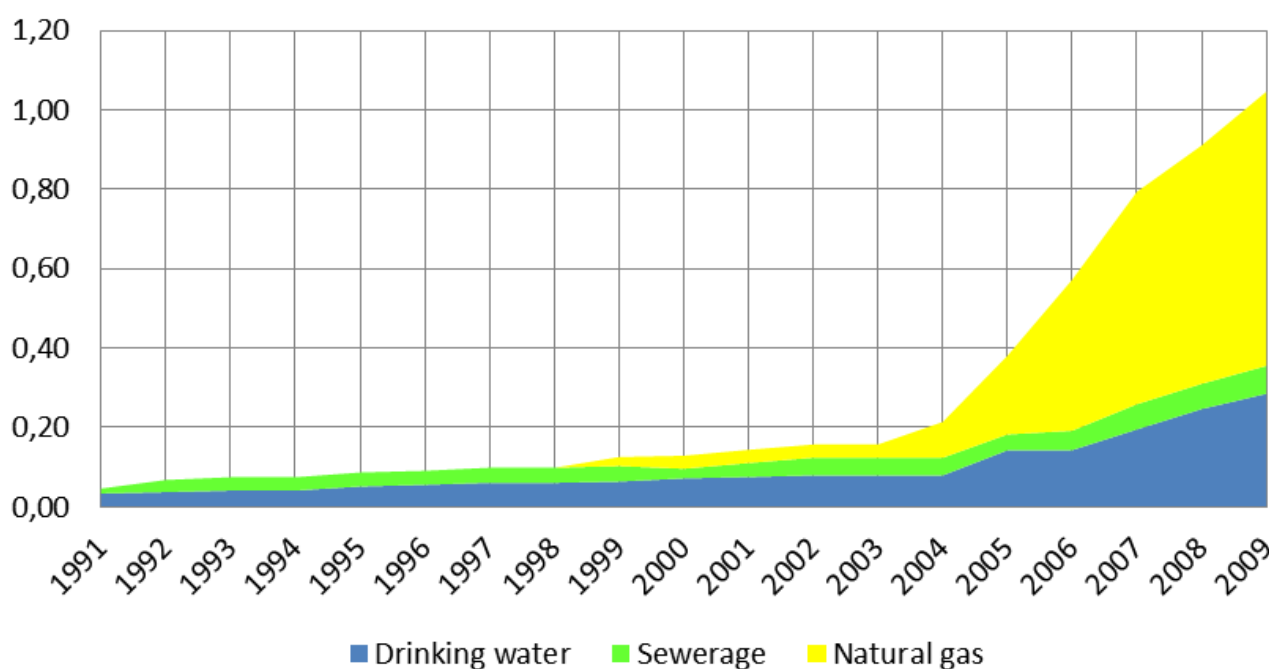


Fig. 3. Evolution of the drinking water, sewerage and natural gas distribution networks between 1991-2009.

Table 1. Density of the drinking water, sewerage and natural gas distribution networks (km/km<sup>2</sup>) in the rural settlements in the space adjacent to the axis Bucharest-Ploiești in 1992, 2002 and 2009.

Commune	Density of the drinking water distribution network (km/km <sup>2</sup> )			Density of the sewerage network (km/km <sup>2</sup> )			Density of the natural gas distribution network (km/km <sup>2</sup> )		
	1992	2002	2009	1992	2002	2009	1992	2002	2009
Balotești	0.06	0.11	0.43	0.06	0.19	0.1	0	0	0.86
Ciolpani	0.01	0	0.26	0	0	0	0	0	0.99
Corbeanca	0	0	0.77	0.01	0	0	0	0	0.23
Gruiu	0	0	0	0	0	0	0	0	0.81
Moara-Vlăsiei	0	0	0	0.01	0.01	0.07	0	0	0.48
Nuci	0	0	0	0	0	0	0	0	0
Periș	0	0.03	0.51	0	0.01	0.01	0	0	0
Snagov	0.03	0.14	0.41	0.13	0.11	0.29	0	0	1.58
Bărcănești	0.35	0.64	0.94	0	0.04	0.04	0	0.53	1.01
Gorgota	0.03	0.03	0.03	0.06	0.09	0.09	0	0	0
Puchenii Mari	0.03	0.03	0.03	0.01	0.01	0.01	0	0	0
TOTAL	0.04	0.08	0.28	0.03	0.04	0.07	0	0.03	0.69

The analysis of Table 1 indicates an increase in the length and density of the drinking water, sewerage and natural gas distribution networks, except for a few cases.

Nevertheless, the density of these public utility systems is relatively low and the works for the extension and rehabilitation of the existing systems must be continued so as to increase the level of comfort in dwellings.

A significant issue is connecting dwellings to these utilities systems. The mere existence of these systems is not enough as long as the residents' access to utilities is limited by their financial resources.

The extent to which dwellings are provided with installations and auxiliary rooms has been analysed comparatively between two communes I considered to be representative due to their geographical position (Snagov located in the sphere of

influence of the capital and Bărcănești in the sphere of influence of Ploiești), the number of residents and dwellings.

- 2009 -

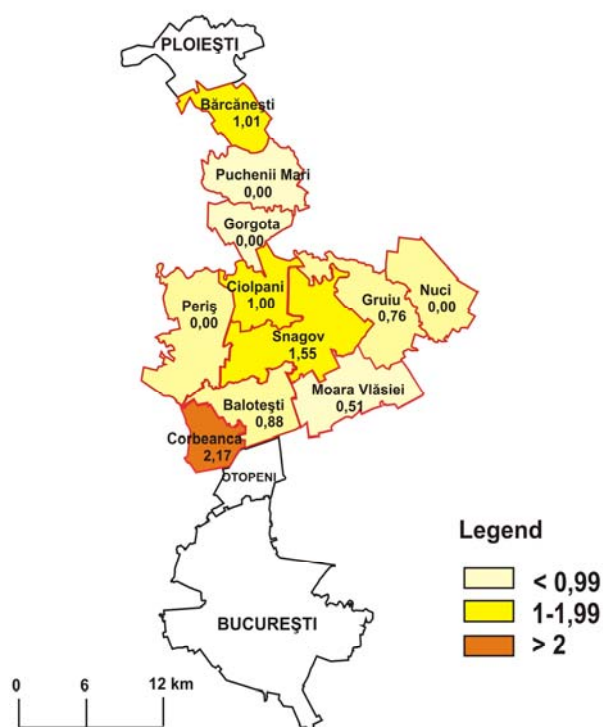


Fig. 4. Natural gas distribution network density (km/km<sup>2</sup>) in the rural settlements in the space adjacent to the axis Bucharest-Ploiești.

In 2002, Snagov had a total population of 5721 and Bărcănești had a total population of 9024. At first sight it is surprising that the number of dwellings in Snagov is higher than in Bărcănești, despite a lower total population. I have mentioned in a previous sub-chapter that the explanation for this phenomenon is that the immigrants who maintain their domicile in the city of origin are not registered in Snagov, although they settled in the commune.

The analysis of the percentages in Table 2 indicates that the level of comfort in dwellings is higher in Snagov, but the differences between the two communes are not significant. As indicated by the density of the drinking water, sewerage and natural gas distribution networks, home drinking water supply and sewerage are to a certain extent insufficient.

The low thermal energy supply proves that most dwellings are heated by solid fuels although central heating is at present the most effective solution for heating dwellings.

The low percentages of dwellings using central heating or heating power station indicates a still low standard of living since the population cannot afford the high costs of thermal power. This is why most owners of flats in multi-family houses disconnected from the national heating system (for example the multi-family houses in Saftica village and Balotești village from Balotești commune and Ghermănești village and Snagov village from Snagov commune).

Table 2. The extent to which the dwellings in Snagov and Bărcănești were provided with installations and auxiliary rooms in 2002.

Dwellings	Snagov		Bărcănești	
	No.	(%)	No.	(%)
Total dwellings:	3,424	100	2,776	100
Water supply inside the dwelling	1,900	55	941	34
Public or own sewerage system	1,898	55	930	34
Electrical installations	3,286	96	2,709	98
Central heating or heating power station	262	8	178	6
Kitchen (inside or outside the dwelling)	3,234	94	2,643	95
Bathroom (inside or outside the dwelling)	1,890	55	845	30

#### 4. CONCLUSION

At present there are no serious problems as concerns the number, structure and space of dwellings. Nevertheless there are problems concerning the lack of amenities or inadequacy of dwelling equipping. In this respect the existing public utility (especially hydro) systems should be refurbished and extended and the consumers should be connected to these systems so that they enjoy higher standards of living [6, 7].

The lack of sewerage causes the pollution of the surface and ground water and implicitly

environmental degradation by infiltration into soil of the wastewater from septic tanks, rural cesspools and household wastewater discharge to land surface.

At present there is no problem in the supply of gas cylinders and solid fuel, but the wood and coal combustion has a negative environmental impact. The inadequate thermal insulation of multi-family houses causes thermal discomfort, high power consumption and building deterioration.

During the last years, due to the emergence of new energy consumers (new single-family houses) the level of power grid load in the analyzed communes is

very high. Since the power grids were sized to a lower power requirement, the energy losses in the conductors are rather high. Public lighting is dysfunctional, the level of lighting being low especially on the secondary arteries and in the areas where new single-family houses have been recently built. The transformer stations are overloaded, and sometimes there are power outages at peak load times.

The general trend is to increase the level of comfort in dwellings but the public utility infrastructure and the multi-family housing stock must be further modernised. The concerned rural area may be named a „space of contrasts”, the architectural landscape combining traditional dwellings, specific to the plain region where the economy of the settlements relied on agriculture (the main activity was plant cultivation and the secondary activities were animal husbandry, fish farming and forestry), built of clay bricks and having thatched or tile roof and modern dwellings, built of resistant materials (double pane glass, autoclaved aerated concrete or brick, metal tiles), having a high level of comfort, equipped with heating power station and water-heating electric or gas installations. Most single-family houses recently built are located on the outskirts of the villages, areas which approximately 10 years ago were outside the locality borders, but new dwellings are also near the centre of villages and are surrounded by dwellings of a very poor quality built decades ago.

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