ANALYSIS OF THE PUBLIC UTILITIES EQUIPPING OF THE COMMUNES FROM ”HATEG COUNTRY”, HUNEDOARA COUNTY

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Abstract: *The rural area of the ”Haţeg Country” is composed of 11 communes and the city of Haţeg, having together a number of 88 villages and hamlets. According to the study, it was found that, if the situation of equipping with the kitchens is not so precarious, on the other hand, the share of rural houses that have a bathroom is quite low. Also, the water supply in the area is insufficient and inadequate, the quantity of water distributed through the network being insufficient, finding a worrying situation also regarding the coverage of localities and houses with sewerage system. Concerning the supply of natural gas (methane gas), although Romania is a major producer of methane gas, in the rural area it is almost non-existent, of the localities in the ”Haţeg Country” only three are connected to the natural gas network.*

Key words*: public utilities, communes, Haţeg Country*

INTRODUCTION

The rural area is an agricultural space in which the private-family property predominates, with his social, cultural and traditional life. From the point of view of its structure, the rural area has two major components:

- Inside, the built area, comprising heart of the village (built land, roads, utilities, etc.);

- Outside the built-up area, comprising farmland, forest, infrastructure elements and technical equipment of territory.

Rural development is a current, complex, long-term problem, which seeks to modernize and equip the territory through systematization and arrangement, but without producing urban expansion, and preserving as far as possible the traditional character of rural life and culture.

The methodology of diagnosing the infrastructure of the rural area of ”Haţeg Country” was designed to provide, as accurate as possible, a picture of the stage of infrastructure development, in order to identify the main problems that the rural communities in this area are facing. The criteria used in this analysis take into account the habitat and the technical equipment of the localities. The two criteria (housing and technical equipment of the localities) include several sub-criteria and indicators to express as clearly and objectively the infrastructure problems that the inhabitants of this area face [1].

MATERIALS AND METHODS

The data from the paper come from the Directorate for Agriculture and Rural Development of Hunedoara and from the agricultural departments of the town halls from the “Haţeg Country”, and presents the situation of some of the public utilities equipping.

The data taken from the town halls of the localities were confronted and supplemented with the data from the national statistics, in principle those of the National Institute of Statistics. Further, these data were sorted, cumulated and compared, to highlight the present situation, its evolution and the differences between localities.

RESEARCH RESULTS

In order to characterize the degree of comfort and hygiene of the population, first, we analyzed the technical equipment of the houses. In this sense, a special place is occupied by the houses equipping with kitchen and bathroom [2, 3].

At the national level, the houses provided with kitchen represent 82% in the rural area, compared to 96% in the urban area. In the "Hațeg Country" the proportion of the houses provided with kitchen is 87.4%, being slightly above the average of the Romanian rural. A better equipping of the houses with kitchen (table 1) is registered in the city of Hațeg, where 97.1% of the houses have a kitchen, followed by the localities of Sântămăria-Orlea (96.9%), Totești (93.8%), Baru (91.3%) and Sălașu de Sus (90.0%). At the opposite pole are the houses from the localities of Pui (68.5%), Bretea Română (73.9%) and Răchitova (78.0%).

Table 1.

Share of houses with kitchen in the localities from "Hațeg Country"

Localities	Number of houses	Number of houses with kitchen	Share of houses with kitchen, %	Top
Baru	1232	1126	91.3	IV
Bretea Română	1264	934	73.9	XI
Densuș	716	603	84.2	VII
General Berthelot	370	336	91.1	V
Hațeg	4285	4162	97.1	I
Pui	1722	1181	68.5	XII
Răchitova	574	448	78.0	X
Râu de Mori	1373	1145	83.4	VIII
Sarmisegetuza	515	419	81.5	IX
Sălașu de Sus	1040	936	90.0	VI
Sântămăria Orlea	1150	1115	96.9	II
Totești	605	568	93.8	III
"Hațeg Country"	**14846**	**12973**	**87.4**	-

Source: Information obtained from locality sheets, and processed by CCDRDR team members, 2019 [4-17]

If the situation of equipping with kitchens is not so precarious, on the other hand, the share of rural houses that have a bathroom is quite low (Table 2). In the studied area, 63.2% of the houses had a bathroom, but there are very large fluctuations from one locality to another. In Hațeg, for example, 92.2% of the households have a bathroom, a situation which can be explained by the extension of water supply network. In the localities of Baru, Totești, Sântămăria Orlea the percentage of houses with bathroom is slightly below 70%, followed by a drastic decrease in the hierarchy of localities where the bath is present in houses, culminating with Răchitova where only 32.9% of the households have a bathroom.

Generally, a close correlation is maintained between the extension of the water supply network of the localities, the extension of the sewerage network and the endowment of houses with a bathroom.

The more than inadequate equipment of the houses with bathroom shows, also, the low level of hygiene of the inhabitants and of the houses. This low level of hygiene, together with the inadequate nutrition, largely demonstrates the still high mortality rate in general and infant mortality in particular.

Regarding the degree of electrification of the dwellings in the investigated area, this is between 92-100%, reflecting the presence of electrical installations in almost all the houses. The problems that have been found are related to the frequent voltage drops and the high fluctuation of frequency in the network, with negative effects on the electrical installations.

Table 2.

Share of houses with bathroom in the localities from "Hațeg Country"

Localities	Number of houses	Number of houses with bathroom	Share of houses with bathroom, %	Top
Baru	1232	851	69.0	II
Bretea Română	1264	550	43.5	IX
Densuș	716	338	47.2	VIII
General Berthelot	370	157	42.5	X
Hațeg	4285	3886	92.2	I
Pui	1722	636	36.9	XI
Răchitova	574	189	32.9	XII
Râu de Mori	1373	816	59.4	V
Sarmisegetuza	515	248	48.2	VII
Sălașu de Sus	1040	540	51.9	VI
Sântămăria Orlea	1150	772	67.1	IV
Totești	605	410	67.7	III
"Hațeg Country"	**14846**	**9393**	**63.2**	

Source: Information obtained from locality sheets, and processed by CCDRDR team members, 2019 [4-17]

Equipping houses and settlements with drinking water facilities for humans and animals, is, at this time, a standard that is no longer discussed in order to have civilized housing conditions. However, in Romania, only 37.2% of rural houses and localities have drinking water from the local network, and in most counties from Oltenia, Muntenia and Moldova the situation is more than precarious.

Table 3.

The total length of the water distribution network (km), year 2018, compared to 2007

Localities	2007	2018
Baru	22.4	25.4
Bretea Română	13.3	74.8
Densuș	-	23.6
General Berthelot	-	10.9
Hațeg	32.6	49.7
Pui	16.9	23.4
Răchitova	-	19.8
Râu de Mori	5.0	29.3
Sarmisegetuza	-	12.3
Sălașu de Sus	-	12.1
Sântămăria Orlea	13.1	13.7
Totești	-	10.8
"Hațeg Country"	**103.3**	**305.8**

Source: Information obtained from locality sheets, and processed by CCDRDR team members, 2019 and INS – Tempo online [4-17]

In the "Hațeg Contry", 68.5% of the households have water installations from the local network. Regarding the extension of this water supply network, it was observed that, after the accession of Romania to the European Union, the accessed funds and the projects carried out by the local authorities, led to the fact that the length of the water distribution network in "Hațeg Contry" has tripled (from 103.3 km in 2007 to 305.8 km in 2018). Localities such as Densuș, General Berthelot, Răchitova, Sarmisegetuza, Sălașu de Sus and Totești, which were not connected to the drinking water distribution network before 2017, have accessed and won projects financed through the National Program for Rural Development (PNDR) 2007- 2013 and PNDR 2014-2020, building or increasing the public drinking water network in the area (Table 3). Although in many localities, the public water network covers only a significant part of the area, so not all rural households are connected

to it due to the high connection costs.

Even so, the water supply in the area is inadequate, the amount of water distributed through the network being usually insufficient. The water consumption from the network in the Hațeg area is 25.9 cubic meter/ inhabitant / year, below the national average, of 38.5 cubic meter/ inhabitant / year, but above the rural level in many other areas of the country (Table 4). The low water consumption from the public network is explained both by some factors regarding the infrastructure, and also by the high price of drinking water. Because of this price, many inhabitants of the rural area are using the water from fountains for household consumption, irrigation of gardens and for animals.

Table 4.

Drinking water supplied to consumers (cm/inh./year)

Locality	Population (number of persons)	Amount of drinking water distributed to consumers (thousands cubic meters)		Drinking water distributed to consumers (cubic meter/ inhabitant / year), 2018	Top
		2007	2018		
Baru	2789	54	100	35.8	II
Bretea Română	2868	42	89	31.0	III
Densuș	1466	-	35	23.8	V
General Berthelot	919	-	19	20.7	VII
Hațeg	10793	688	397	36.7	I
Pui	4239	73	93	21.9	VI
Răchitova	1310	-	6	4.5	XII
Râu de Mori	3216	11	85	26.4	IV
Sarmisegetuza	1172	-	13	11.1	X
Sălașu de Sus	2283	-	22	9.6	XI
Sântămăria Orlea	3179	164	54	17.0	VIII
Totești	1912	-	23	12.0	IX
"Hațeg Country"	**36146**	**1032**	**936**	**25.9**	-

Source: Information obtained from locality sheets, and processed by CCDRDR team members, 2019 and INS – Tempo online [4-17]

Table 5.

Total length of sewage pipes (km) in the localities from "Hațeg Country" year 2018, compared to 2007

Localities	2007	2018
Baru	3.0	19.3
Bretea Română	-	3.8
Densuș	-	-
General Berthelot	-	12.8
Hațeg	13.9	31.0
Pui	0.8	0.8
Răchitova	-	18.0
Râu de Mori	-	13.5
Sarmisegetuza	-	-
Sălașu de Sus	-	13.5
Sântămăria Orlea	9,.2	9.2
Totești	-	10.9
"Hațeg Country"	**26.9**	**120.0**

Source: Information obtained from locality sheets, and processed by CCDRDR team members, 2019 and INS – Tempo online [4-17]

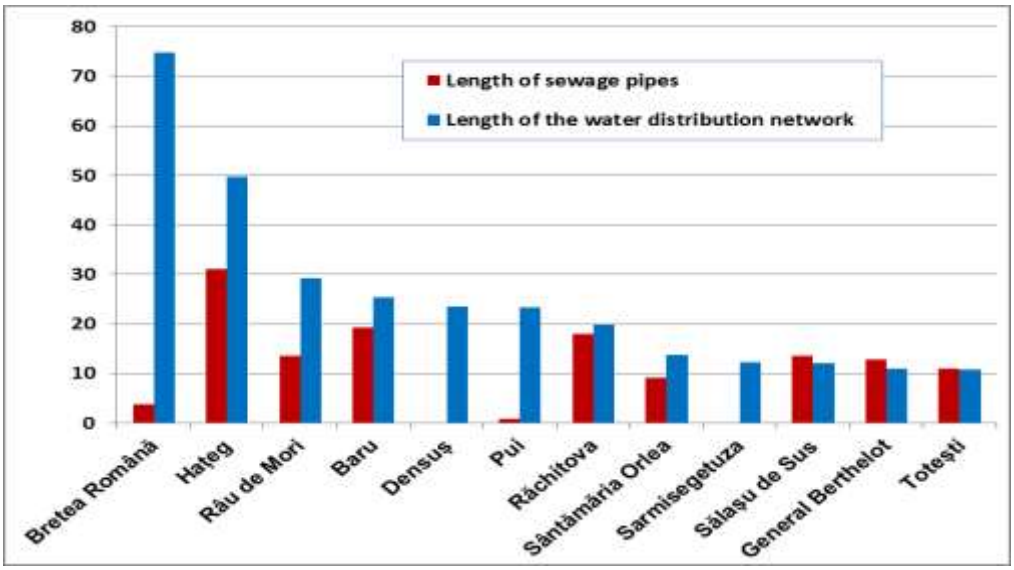

Figure 1. The overlap of the water distribution network and the sewerage network (km) in the localities from "Hațeg Country", year 2018

Localities and households equipped with water supply systems, by default, should have wastewater discharge systems (sewerage networks). At the country level, not all of the homes and localities provided with water supply facilities also have wastewater discharge networks. Also in the "Hațeg Country" we find a worrying situation regarding the coverage of the localities and the dwellings with sewage system. In 2018, three of the localities (Densuș, General Berthelot and Sarmisegetuza) had no sewerage networks (Table 5). In the other localities the works started, or in a few cases, continued, financed either from PNDR projects or with budget support through the National Program for Local Development and the local budget. But, even if we have localities with sewage pipes, this is well below the size of the water network (Figure 1). Thus, wastewater is not taken over by the sewerage system, but is discharged to the surface of the land or into drainage channels (ditches), which denotes a poor hygiene status of households and localities and represents an important problem in the area and also a source of major pollution.

Although Romania is a major producer of methane gas, through the wells of Transylvania and the extra-Carpathian oil areas and with large reserves of methane gas in the Black Sea, the methane gas installations in our country are very few and in the rural area almost non-existent.

As regards the supply of natural gas (methane gas) to the localities in the "Hațeg Country", only three of them, respectively Hațeg, Baru and Sântămăria Orlea, are connected to the natural gas network. And, of these three localities, in only two, Hațeg and Baru, we find households that are connected and use methane gas for domestic use, in the other localities, existing only feasibility studies regarding the connection to the natural gas network. Moreover, considering the high average cost of connecting households to the gas network, many of them refuse to connect for financial reasons.

Hațeg locality was connected to the natural gas network during the communist period, registering in 1990 a length of 7.5 km. Over the years the network was extended, with funding from the state and the local budget, currently registering 34 km lengths of methane gas distribution pipes. In Baru, methane gas was introduced in 1997, on a length of 14.9 km. This level of the network has not expanded since then, and is currently recording the same length of pipes. In Sântămăria-Orlea methane gas was introduced in 2004, on a 1.3 km network length, which remains also in the same state at the moment (Table 6).

Table 6.

Length of natural gas distribution pipes (km), 1990-2018

Localities	1990	1997	2004	2014	2018
Hațeg	7.5	19.0	29.0	34.5	34.5
Baru	-	14.9	14.9	14.9	14.9
Sântămăria-Orlea	-	-	1.3	1.3	1.3
"Hațeg Country"	**7.5**	**33.9**	**34.2**	**50.7**	**50.7**

Source: Information obtained from locality sheets, and processed by CCDRDR team members, 2019 and INS – Tempo online [4-17]

It should be noted that, out of the total amount of natural gas distributed, only a part (70.3% in Hațeg and 53.9% in Baru) is for household consumption, the rest being used at the level of local authorities and institutions. Also, there is a severe decrease in the distribution of gas to local institutions, which is also due to the fact that many consuming methane gas institutions (hospitals, schools, kindergartens, etc.) were closed (Table 7).

Table 7.

Natural gas distribution (thousand cubic meters)

Localities	2007		2018	
	Total	Household use	Total	Household use
Hațeg	7397	2600	3747	2633
Baru	2027	177	326	176
Sântămăria Orlea	15	-	20	-
"Hațeg Country"	**9439**	**2777**	**4073**	**2803**

Source: Information obtained from locality sheets, and processed by CCDRDR team members, 2019 and INS – Tempo online [4-17]

CONCLUSIONS

The researches carried out in the field in the area of "Hațeg Country", together with the studied bibliography, have allowed us to formulate several conclusions regarding the infrastructure of the rural area in this area of Romania.

Thus it is found that the average share of rural housing provided with kitchen in the area, of 87.4%, is slightly above the average of the Romanian rural, however, there are three localities where this value is below this national average.

The average share of homes with bathroom in the house in "Hațeg Country" is 63.2%, above the national average of 61.9%, but far behind the European average of about 95%. Also, this average is above the one of that from the rural area of Hunedoara County, which is 44.9%. Even eliminating the city of Hațeg, this share remains at a value of about 51%, over that of the county. However, we have 4 localities where the endowment of houses with a bathroom is below this average (for example Răchitova with 32.9%) and two others that do not exceed that much value.

The deficiencies in the area of water supply, which is largely insufficient and inadequate, however, diminish the importance of both the kitchen and the bathroom facilities, from the point of view of ensuring personal comfort. In this category, of drinking water supply, it was found that, in the localities of the "Hațeg Country", all values are below the national average, of 38.7 mc / person, and there are cases where this is almost 10 times lower, as is Răchitova, with only 4.5 cubic meters / person. Even in Hațeg, which is a city, it does not exceed the national average, with an amount of 36.7 cubic meters of drinking water per person.

In addition, if we refer to the coverage of localities and dwellings with sewerage system, it was found that the length of this system, 120 km, is less than half that of the water supply system, 305 km, the wastewater discharged to the surface of the land or in

canals (ditches), leading, as has been shown, to a poor state of household hygiene and being a major source of pollution.

Finally, unlike other systems of technical equipments of the localities, in the case of the methane gas supply networks, both a national design (the quantity of methane gas from own production and of import destined for domestic needs) and regional (distributions by areas, basins, counties) are required, as well as an optimal programming of the connection of rural localities to the network, according to clear economic and technical criteria. The connection priorities of the localities must be based on the average cost of connection per household, as well as the budgetary capacity of the locality can support financially the connection project.

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