

# TECHNICAL INFRASTRUCTURE IN THE DWELLINGS IN POLAND AND HUNGARY AT THE BEGINNING OF THE 21<sup>ST</sup> CENTURY

KONRAD CZAPIEWSKI

## Introduction

Availability of infrastructure on definite areas conditions in a significant manner the course of economic processes and shapes the living conditions of the inhabitants. Thus, for instance, Ostrowski (1998, 11) maintains that technical and social infrastructure “*exerts a strong influence not only on the improvement of the living conditions of the population, but also, indirectly, increases the attractiveness of the respective areas for the domestic and foreign investors*”. Similarly, Heffner (2001, 119) proposes that “*expansion of the local infrastructural installations leads to the decrease of costs borne by the investors locating their economic activity on the rural areas and to the improvement of living conditions, which is also conducive to new economic undertakings*”. Technical infrastructure has a particularly high significance in the development of rural areas, since it is on these areas that until now large interregional differences are observed, as well as along the line town-countryside. Zgliński (2001, 85) emphasises the necessity of “*catching up for the historical delays in the development of technical and social infrastructure in the countryside for creation of conditions for the economic and civilizational development of the rural areas*”. Pięcek and Tryfan (1999, 7) perceive the problem in the same manner, as they write that “*the necessary condition for the improvement of the living standard of the rural population is the development of infrastructure, understood as the system of installations and institutions forming the foundations for the functioning of the economy on a given area*”. Even though the quotations here provided refer mainly to Polish conditions, similar processes and statements remain valid for the situation in Hungary.

The paper compares the spatial differentiation of the equipment of dwellings with the basic elements of technical infrastructure in Poland and in Hungary. The analyses were conducted on the lowest administrative level – NUTS 5 (*gmina* in Poland and *település* in Hungary). All the data used in the study originate from the

main statistical offices, in case of Poland for the year 2003, and in case of Hungary – for 2001.<sup>1</sup>

Equipment of the dwellings with technical infrastructure was described using five features: water supply system, flush toilet, bathroom, central heating and gas supply network.

### **General information on technical infrastructure in Poland and in Hungary**

During the 1990s in both Poland and Hungary a significant improvement took place in the equipment of dwellings with basic elements of technical infrastructure. This change is particularly perceptible on the rural areas, which during more than 40 years of the socialist system were specially neglected with this respect (Czapiewski, 2004; Kovács, 2001). One of the basic reasons of the transformations having taken place is certainly the increase of the decision-related independence of the authorities of the lowest administrative units (Gorzelałak-Jałowiecki, 1998; Pálné Kovács, 2001; Swianiewicz, 2004).

The shares of the dwellings having access to water supply, and the water closet, are in Poland and in Hungary similar, around 93% and 86%, respectively. Bigger differences can be observed for the three other elements accounted for in the analysis (Table 1). In Hungary, a bigger share of dwellings is equipped with gas supply and a bathroom. On the other hand, in Poland  $\frac{3}{4}$  of dwellings have central heating, while in Hungary – only half of them.

All the five infrastructure elements accounted for in the analysis display high degree of correlation among themselves. Both in Poland and in Hungary the linear correlation coefficients between four of the respective variables (excluding gas supply) take values,  $r$  from the interval 0.7–0.9, while the correlation coefficients of access to gas supply network with the other four variables belong to the interval 0.4–0.5.

Table 1

*Percentage shares of dwellings equipped with the basic elements of infrastructure*

	Water supply	Flush toilet	Bathroom	Central heating	Gas supply
Poland	95.0	87.3	86.1	77.1	55.4
Hungary	90.6	84.9	95.4	52.9	68.3

Source: Central Statistical Office of Poland and Hungarian Central Statistical Office.

<sup>1</sup>The author would like to thank Bálint Koós for the Hungarian data.

## **Spatial differentiation of the availability of infrastructure in Poland and Hungary<sup>2</sup>**

### *Water supply*

In the western part of Poland one notices an almost complete saturation with access to water supply networks, which is largely due to the historical past of these areas (Fig. 1). Before the World War II this area belonged to Germany, and then, in the socialist period the state ownership dominated in agriculture. Both these elements were decisive for the more common access to water supply networks on these areas. Besides, this indicator attains higher values in the intensively urbanised areas of Upper Silesia and the capital city of Warsaw, together with its suburban zone. In case of Hungary the highest level of equipment of the dwellings with tap water is noted in the north-western part of the country – starting with the border region with Austria (Western Transdanubia), through the surroundings of the Lake Balaton (Central Transdanubia), and ending with Budapest and its suburban zone (Central Hungary). The presence of infrastructure is much worse in the poorer regions of the country – first of all in its south-eastern part. These areas feature high degree of rurality (Csatári, 2005) and high significance of farming in local economy and in the employment structure.

### *Flush toilets*

The spatial differentiation of the shares of dwellings equipped with flush toilet is a natural consequence of the spatial differentiation of the share of dwellings connected to the water supply networks. According to Kovács (2004) the coefficient of the presence of the flush toilet in the dwellings is a good measure for showing the increase of regional disparities in the settlement system and describes well, in qualitative terms, the state of housing. Very high value of this indicator in the north-eastern part of Hungary illustrates the highly intensive process of modernisation of the dwelling stock in these regions, while low values of the indicator in other regions of the country demonstrates large delays in this respect (Kovács, 2004). In the case of Poland modernisation of dwellings took place to a large extent on the eastern territories of the country, with, however, low rate of sewage system access remaining a significant problem there. The municipal self-governmental authorities invested during the 1990s first of all into the improvement of water supply network, but currently, an increase in investment into sewage systems is

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<sup>2</sup>When comparing the spatial differentiation of the availability of basic elements of technical infrastructure in the dwellings in Poland and Hungary, the same scale of differentiation was applied in constructing the choropleth map. The scale of the map itself for Hungary is 1.5 times bigger than for Poland.

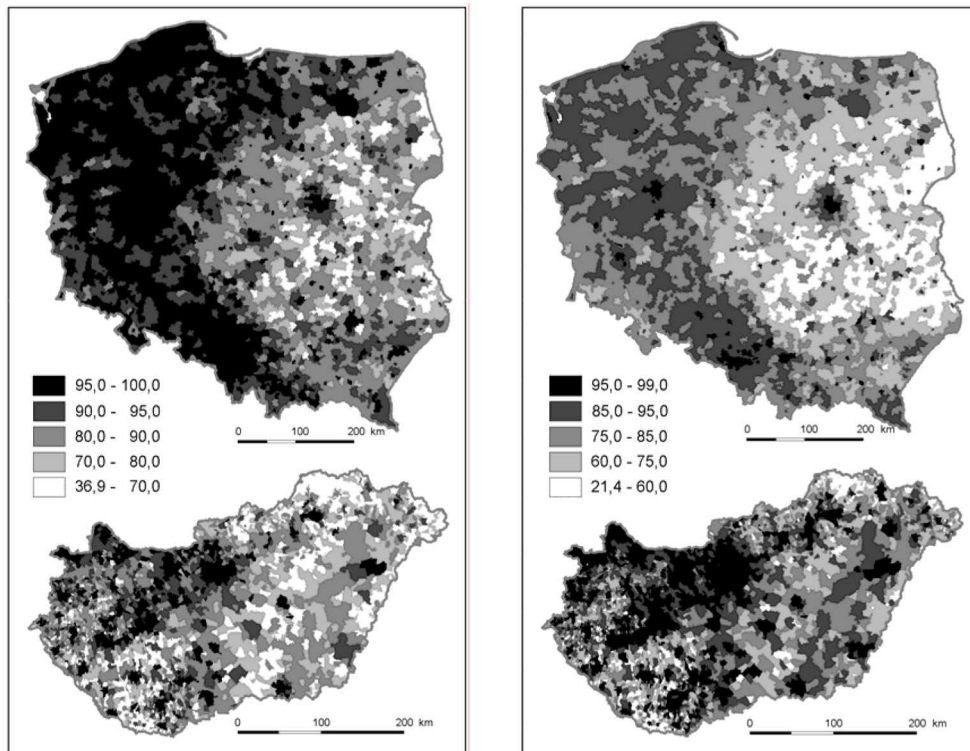
visible. In connection with this, a significant decrease of the interregional differences in the equipment of dwellings with flush toilet is expected in the near future.

### *Bathroom*

The spatial differentiation of the shares of dwellings equipped with bathroom is influenced by the similar factors as those mentioned before (*Figure 1*). The fact of owning a bathroom is to a large extent linked with being connected to the water supply and sewage systems. In Poland, there is a distinct and important differentiation between the rural areas of the central and eastern parts of Poland, and the towns there situated. The reasons should be sought in the much higher costs of connecting the dispersed houses in the countryside than the compact housing estates of high-rise buildings in towns.

Figure 1

*Percentage shares of dwellings connected to water supply network and percentage shares of dwellings with bathroom in Poland and Hungary*



Source: Central Statistical Office of Poland and Hungarian Central Statistical Office

Thus, unit costs borne in the case of projects in the countryside are much higher than in towns and pay back in a much longer time period. In Hungary, a particularly high share of dwellings with a bathroom is observed within the metropolitan area of Budapest and in the area of very intensive tourist penetration around the Lake Balaton. On the other hand, in Ormánság – one of the poorest regions of Hungary, located to the South of Pécs – very low values of the indicator in question are noted.

#### *Central heating*

Dwellings in Poland are much more frequently connected to central heating systems than this is the case with Hungary (*Figure 2*). This results from several characteristics of the settlement network and the structure of housing in the two countries. The settlement network in Hungary is much sparser than in Poland and a very characteristic element of the Hungarian landscape is constituted by the single isolated farms (*tonyo*). In an obvious manner, this makes impossible connecting such buildings to the central heating network and causes that the farm owners construct, instead, individual heating systems. On the other hand, in Poland, due to collectivisation of farming, in the western and northern parts of the country the settlements of the State Farms appeared in the form of clusters of several two- and three-storey housing blocks heated by their own boiler houses. The domination of the private farming in eastern Poland was expressed by the much lower values of the indicator in question over these areas. Towns in both countries are characterised by the decidedly highest values of percentage shares of dwellings connected to the central heating networks.

#### *Gas supply*

Spatial differentiation of the percentage shares of dwellings equipped with gas supply installations shows the biggest distinction with respect to the remaining four, previously described, elements of technical infrastructure. Despite the fact that the number of customers of gas networks in Poland on the rural areas increased during the 1990s by almost the factor of two and a half, it still remains a very low level. Currently, only 5% of inhabitants of rural areas in Poland use gas supplied from the networks. Their highest percentage share is observed in south-eastern Poland (the region of Małopolska), and is associated with the important deposits of natural gas situated at the foothills of the Carpathians<sup>3</sup> (*Figure 2*). Besides, it is common that apartments in towns are connected to the gas supply networks, this fact being largely due to the previously mentioned issue of installation costs. In the case of Hungary one notices that the general level of access to the gas supply net-

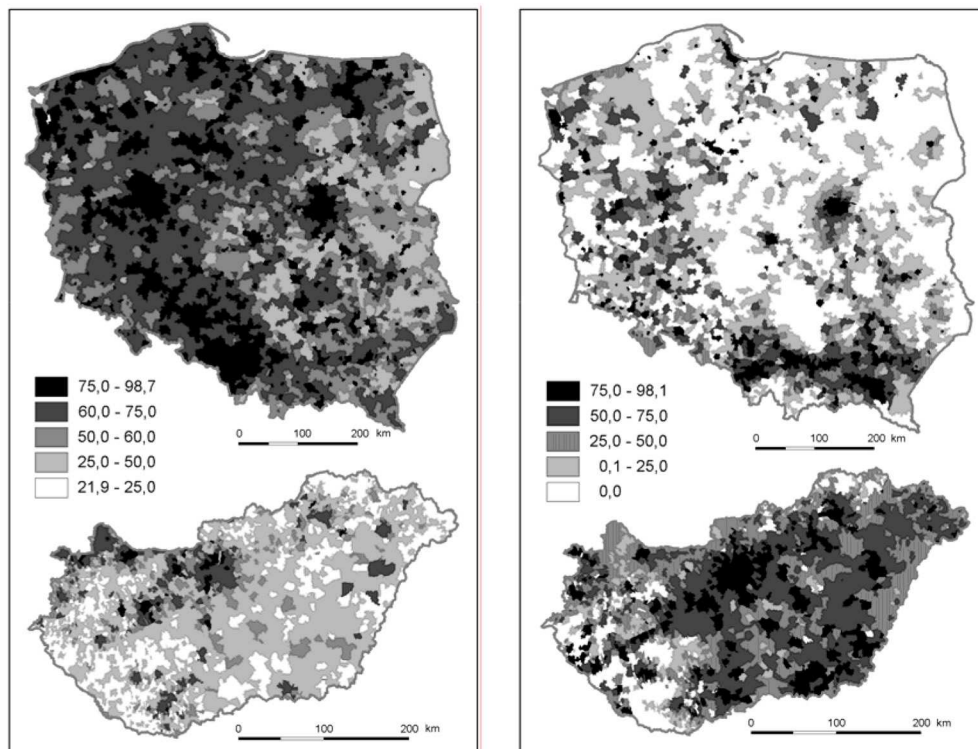
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<sup>3</sup>It is exactly in this area that in the middle of the 19<sup>th</sup> century Polish scholar Ignacy Łukasiewicz opened up the first oil rig in the world.

works is much higher than in Poland. Only in the south-western part of the country lower values of this indicator are observed. In Poland, there are 40% of the administrative units considered, in which there is no access to gas supply networks, while in Hungary this concerns only 20% of municipalities.

Figure 2

*Percentage shares of dwellings with central heating and percentage shares of dwellings connected to gas supply network in Poland and Hungary*



Source: Central Statistical Office of Poland and Hungarian Central Statistical Office.

### Summary and conclusions

The spatial differentiation of the equipment with infrastructure in Poland and in Hungary displays a high degree of correlation with the level of economic development in these countries. In Poland, the highest level of economic development is observed in large cities and their respective agglomerations (Warsaw, Poznań, Cra-

cow, Lodz, Tri-city, towns of Upper Silesia). The areas, featuring the highest development indicator values are usually surrounded by a ring of slightly less developed municipalities, and farther away the areas characterised by the lowest level of economic development are situated (Bański, 2005). Towns concentrate nowadays the biggest development potential and fulfil, or rather should fulfil, the exogenous functions for the surrounding areas. Such a situation, though, does not always take place. In the case of large urban agglomerations one can indicate the suburban zones, generated by them, displaying high potential. Yet, smaller units, and first of all towns located in the eastern part of the country, are not strong enough to stimulate growth within the neighbouring areas. The areas with well developed tourist function feature a high development potential, as well, like the seacoast belt, the lake districts, and some of the mountain areas in the South of the country (Czapiewski–Janc, 2006). In the case of Hungary the level of development in the eastern and southern parts of the country remains significantly below the national average. Except for a couple of areas, which are more urbanised, poor transport-wise accessibility, long-term unemployment and domination of farming in local economy bring about serious social and economic conflicts. The most developed areas, which, in addition, strengthened their position during the 1990s, are, in general, those in the north-western Hungary, and in particular – the suburban zone of Budapest and the surroundings of the Lake Balaton (Csatári, 2005; Nagy, 2005). The inhabitants of the north-western Hungary gain also highest incomes from their work. This situation is associated with the qualitative aspects of employment – in the North the inhabitants hold largely posts in the highly specialised companies, while in the South they find employment in farming and in trade (Kovács, 2004).

Strong interdependence between the values of the indicator of equipment of dwellings with the basic elements of technical infrastructure and the indicators determining the level of socio-economic development, is linked with the functional structure of the territories of Poland and Hungary. Eastern regions of both countries have agricultural character, which finds a reflection in the lower incomes of the inhabitants and the incapacity of making the necessary infrastructure investments in own dwellings, as well as in the lower revenues of the self-governmental bodies, which, in turn, entails the shortage of means for the expansion of the municipal infrastructural installations. Besides, the results obtained are simultaneously associated with the settlement structures of the two countries, the age structure, and the high percentage share of the Roma minority in eastern Hungary. On the other hand, the contemporary processes, which change in a significant manner the image of spatial differentiation with respect to the equipment in infrastructure at the beginning of the 21<sup>st</sup> century, include the programmes of the European Union. They allow for the reduction of the own contribution of the self-governmental bodies in the construction of infrastructural installations. Yet, in the nearest future, the level of socio-economic development will continue to influence in a significant degree

the level of equipment with infrastructural installations. This will remain particularly true for these elements of infrastructure, which have not been very common on the rural areas of Poland and Hungary until now, such as central heating and gas supply networks.

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