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## **THE SPATIAL DIVERSITY OF WATER SUPPLY AND SEWER SYSTEMS IN POLISH RURAL AREAS IN THE 1995-2010 PERIOD**

**Abstract:** Based on the data of the Local Databank in 1995-2010 the paper presents the diversity in the coverage of water supply and sewer systems in rural areas and considers the options for more uniform development thereof. The results of the study at hand suggest that spatial disparities in the analysed indicators rely primarily on the geographical location of the individual self-government units and their socio-economic condition. It is thus a strong argument for a more thorough focus of the EU cohesion policy on rural areas, in particular those less developed.

**Key words:** Rural areas, water and sewer system, cohesion policy, socio-economic development.

### **Introduction**

Since the 1990s the water supply and sewer systems in rural areas have underwent rapid changes. Their development does not progress at the same pace or in the same direction and is marked by temporal and spatial diversification. The spatial diversification in the development of the water supply and sewer systems generates numerous negative consequences hence it should be researched with the view to diagnose the mechanisms that foster these disproportions and find the possibilities for eliminating these disproportions.

In principle, the water supply and sewer systems are perceived as the main components of the utility infrastructure<sup>1</sup> in a given area that are closely linked to that area and condition the effective operation of production facilities and households. The issue

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<sup>1</sup> Utility infrastructure includes man-made systems related to water supply, sewage disposal, transport, energy, gas, and environmental protection.

of utility infrastructure influence on the development of local structures was widely documented in literature, including Kołodziejczyk [2009], Korbus, Strawiński [2006], Munnell [1992], Ratajczak [2000], Świątek [2010]. The works referred to above discuss primarily the significance of the utility infrastructure systems in the context of non-agricultural activities development, the improved standard of living of inhabitants and environmental protection. An analysis of those publications indicates, for instance, that due to significant gaps in the water supply and sewer systems, numerous *gminas* remain unattractive for investors.

In order to use those systems as a local development factor, an appropriate investment policy in this respect is needed, which constitutes a major challenge for the local policies formulated and implemented in *gminas*. Their effectiveness depends on the knowledge of needs and the available financial resources. Therefore, the operation and development of water supply and sewer systems constitute the basic task of a *gmina*<sup>2</sup>. Those systems are subject to technical and moral wear and the local authorities should strive to reach a balanced water and waste water management. This, in turn, forces *gminas* to undertake investment projects in this respect and, what is more, Poland's membership in the European Union has considerably expanded the possibilities of financing infrastructural systems.

This study aims at demonstrating the scale and territorial diversification of the water supply and sewer systems in rural areas, and indicating the possibilities for the elimination thereof. The following questions were examined:

What are the main problems of water supply and sewer systems development in rural areas?

Are the differences in the level of development of water supply and sewer systems greater in rural areas?

How to reinforce and boost the development of water supply and sewer systems in rural areas?

A discussion of these issues will enable to assess what are the rural areas chances to develop water supply and sewer systems taking into account their socio-economic potential. First of all, we should answer the fundamental question: how to control the distribution of such systems in order to contribute to local development and to effectively eliminate the existing disproportions in this respect?

The accessibility of water supply and sewer systems was assessed on the basis of an analysis of the length of water and sewer mains per 100 km<sup>2</sup>, as well as the percentage of inhabitants benefiting from services rendered by those systems.

The analysis covered the 1995-2010 period (with a special emphasis on 2007-2010) which is justified by the specific nature of the socio-economic processes in rural areas (both before and after accession to the EU). The quantification of the problems was based on the materials provided by the Local Databank of the Central Statistical

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<sup>2</sup> Act on territorial self-government of 8 March 1990, Dz.U. 1990 No. 16, item 95.

Office (CSO) which covered 2,143 gminas, of which 560 were urban-rural gminas and 1,583 were rural gminas. The analysis of the urban-rural gminas also included the towns where such gminas have their registered offices, which stemmed from the need to take into account both the permanent and spatial socio-economic links between individual gminas. The definition of rural areas was thus extended to include the urban-rural gminas.

### 1. Development conditions of the local water supply and sewer systems

The principal function of the gmina self-government is to conduct local policies and to provide public services on a local scale. Public services are the actions that public administration undertake in relation to adapting public goods – the water supply and sewer systems in this case – to the needs of inhabitants and entrepreneurs. The general accessibility and enhanced quality of the water supply and sewer systems were only made possible by making the right investments in this field. In practice it means that gminas are responsible for the disbursement of the budgetary resources for financing most of the water and sewer facilities and structures. Investments made into the utility infrastructure show thus a direct relation to the revenue that gminas generate, which is corroborated by a high correlation coefficient ( $r=0.84$ ) between their own revenue *per capita* and the capital expenditures *per capita* in the 2007-2010 period.

The authorities of the gminas situated in the northern and western parts of Poland, as well as the gminas in the Świętokrzyskie Voivodeship demonstrated a higher tendency to investments. On the other hand, the gminas situated in central Poland showed a low tendency towards investments and a low investment intensity. The analysis of the capital expenditures *per capita* in the individual types of gminas shows continuous differences in terms of investments depending on the specific type of gminas. In the 2007-2010 period, 73% of the rural gminas and 41.7% of the urban-rural gminas had capital expenditures *per capita* below the average for the areas under consideration, *i.e.* less than PLN 589.4.

The phenomenon of aggregating economic benefits is evident and it consists in the fact that the gminas with a higher level of development and good budgetary standing<sup>3</sup> have much larger investment capacities (Fig. 1). Due to the high costs of infrastructural projects, not every gmina can afford to finance such expenditures entirely with its own revenue. The downward trend of the own revenue observed in the recent years was the reason why the underinvestment in those systems was growing in proportion to the notified needs. State aid, the EU funding and non-budgetary resources are necessary to continue the investment activities in this field.

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<sup>3</sup> The budgetary standing of gminas was determined by relating own revenue *per capita* to the average for the areas under study. The own revenue *per capita* in rural areas was assumed as 100%.

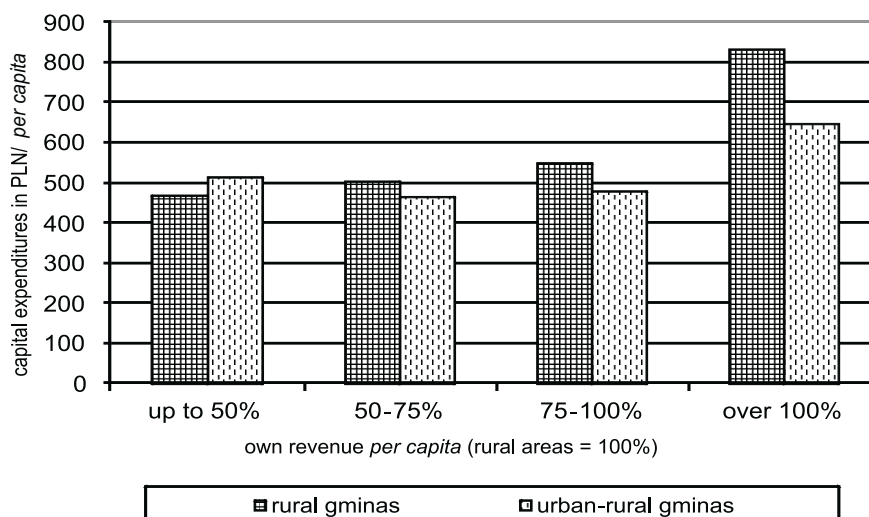


Figure 1. Concentration of local investment capacities in the 2007-2010 period

Source: The Local Databank of the Central Statistical Office (Figures 1-5).

In the 2007-2010 period, the EU resources accounted for over 3.5% of the gmina budgets and 90% of them were intended for infrastructural projects. It can be observed that not only the amount of such resources is growing fast, but also the number of gminas that use them is increasing. It has to be emphasized that the volume of the EU resources acquired by gminas varies significantly, depending on the type of gminas, their population, and the volume of own resources. The leading gminas in this respect are situated in the Dolnośląskie, Lubuskie, Podlaskie and Świętokrzyskie Voivodeships, while the gminas from Wielkopolskie and Pomorskie come last in this comparison. The obtained resources were to even out the disproportion in the level of socio-economic development between the regions. However, it turns out that – similarly to the targeted subsidies – larger amounts of such resources are transferred to the more affluent gminas. It is attested by a higher correlation coefficient between the volume of general revenues of the gminas per capita and the volume of the acquired EU funding per capita ( $r=0.41$ ). In effect, the EU resources promote the decrease of the differences between the regions, but they do not produce considerable positive effects on the level of gminas, and even increase the differences in their potential investment capacities.

The limited capacities of the self-financing of infrastructural projects force the gmina authorities to use repayable resources. They include loans, credits and municipal

bonds. However, numerous statutory limitations<sup>4</sup> – identical for all self-governments – apply to such resources. As of 2014, an individual absorption limit, depending on the financial standing of a given gmina, will become applicable to those resources. The role of repayable resources in the financing of projects is gaining significance in gminas. As was pointed out by Swianiewicz [2011, pp. 192 and 232] in 2009, loans and credits were used to finance about 20% of the projects in gminas, while about 80% of gminas used those resources. The data of the Ministry of Finance indicate that the increased share of repayable resources in the financing of projects does not translate into an increased number of gminas with a public debt exceeding the adopted limit of 60% of the general revenues. In 2009, only 7 rural and 5 urban-rural gminas went above that threshold. It shows that the share of gminas with a growing public debt is not as dangerous as could be suggested by the ratio of such resources to public revenues. On the other hand, the number of gminas having debt at a level of over 40% is increasing while the number of gminas with debt below 20% is decreasing. Most gminas fall in the range up to 40% of debt and the group of gminas with debt above 40% is mainly represented by the gminas from the Zachodniopomorskie and Dolnośląskie Voivodeships.

The analysis of the total liabilities ratio to the total revenues ratio, and the share of the total liabilities in the capital expenditures of gminas shows that in the former case, it ranges between 17.4% and 18.7%, while in the latter it falls between 96.1% and 86.2%. The latter observation demonstrates that the borrowing on the part of gminas results from increasing their investment activities and not from the current expenditure needs. In other words, it is the effect of implementing a development strategy by the gminas. It is further corroborated by the high correlation coefficient ( $r=0.38$ ) between the percentage of debt and the level of capital expenditures in gminas.

On the other hand, the willingness of local communities to participate in the cost of the construction or extension of the water supply and sewer systems is limited. It results not only from the difficult financial standing of the population, but also from the disinclination towards self-organising and local solidarity. Private entrepreneurs are not willing to invest in such systems either, considering that the local authorities are responsible for their provision.

Investments made into the water supply and sewer systems are also conditioned by the population density, the shape, the concentration or the spatial dispersion of the settlement network. The bigger the population density and the more concentrated is the pattern of settlement, the lower are the costs of water supply and sewer systems.

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<sup>4</sup> Act on bonds, Dz.U. 2001, No. 120, item 1200. Debt limits in force until 2013 pursuant to the Public Finance Act of 30 June 2005, Dz.U. 2005, No. 249, item 2104, as amended, articles 169 and 170.

## 2. The development of water supply and sewer systems in rural areas in the 1995-2010 period

Water supply and sewer systems are very often indicated as priorities in the *gmina* development programmes despite their widespread availability. They are included among the fundamental factors that affect the improvement of living standards, the development of entrepreneurship, tourist attractiveness and environmental protection. A rapid growth of investment activities in this field has been observed since the early 1990s. It should be stressed, however, that significant differences in the saturation of the individual *gminas* with such systems continue to be a problem. They translate into the diversified accessibility of the systems to rural residents which indirectly affects the economic attractiveness of those areas.

Table 1

Changes in the density of water supply and sewer systems in rural areas by *gmina* types in 1995-2010

Population figures in <i>gmina</i> (thousand)	Water supply system				Sewer system			
	1995	2000	2005	2010	1995	2000	2005	2010
	in km per 100 km <sup>2</sup>							
Urban-rural <i>gminas</i> *	43.2	54.7	78.8	87.1	7.8	10.7	24.1	31.9
< 5	24.9	30.4	52.5	61.9	5.3	5.8	12.4	12.7
5 – 7.5	28.5	38.3	55.7	63.7	4.1	5.6	13.9	17.6
7.5 – 15	41.0	51.9	76.9	83.8	5.3	8.0	19.0	25.3
15 – 30	43.8	55.4	84.1	94.0	9.5	12.4	32.7	42.4
> 30	84.1	103.2	150.0	161.1	21.0	28.3	58.4	85.5
Rural <i>gminas</i> **	40.9	57.5	82.7	91.5	2.3	5.7	19.3	28.9
< 2.5	18.7	23.6	42.9	49.6	1.0	1.6	4.0	7.2
2.5 – 5	33.9	47.9	72.2	79.5	1.7	4.0	10.7	16.0
5 – 10	41.2	58.4	81.8	90.6	2.5	5.4	18.5	27.4
10 – 15	52.7	70.5	109.2	120.6	2.6	7.6	36.8	54.8
> 15	63.8	98.2	130.1	146.1	4.7	22.8	60.4	98.2
Rural areas	41.6	56.6	81.6	90.3	4.1	7.3	20.6	29.7

\*town and rural areas

\*\* rural areas

Source: Local Databank of the Central Statistical Office, own calculations (Tabs. 1-4).

In 1995, in the area under consideration, the average length of the water supply systems per 100 km<sup>2</sup> was 41.6 and the sewer system was 4.1, while in 2010 the corresponding indicators were 90.3 and 29.7, respectively. As can be inferred from those figures, the disproportion between the development of water supply systems and

sewer systems is still significant, but it has been continuously decreasing. That ratio is the result of a much greater growth rate of water supply systems than sewer systems. Unfortunately, there are still gminas with neither water supply nor sewer systems. In 1995, in the area under study, there were no water supply systems in 45 gminas and no sewer systems in 560 gminas. In 2010, the corresponding figures were 11 and 233. The persistence of the significant differences in the accessibility of water supply and sewer systems is also confirmed by the percentage of gminas where the length of water supply and sewer systems per 100 km<sup>2</sup> was found to be below the average for the area under consideration. As regards water supply systems, in 1995, there were 58.4% of such gminas and 57.1% in 2010. In respect of sewer systems, the corresponding indicators were 70.2% and 72%.

Table 2

Changes in the density of water supply and sewer systems  
in rural areas per voivodeship in 1995-2010

Voivodeship	Water supply system				Sewer system			
	1995	2000	2005	2010	1995	2000	2005	2010
	in km per 100 km <sup>2</sup>							
Dolnośląskie	35.7	44.4	55.4	62.0	6.7	11.9	22.3	30.9
Kujawsko-Pomorskie	70.8	91.5	114.4	123.8	4.3	7.1	18.7	25.0
Lubelskie	34.3	51.0	68.7	75.8	1.9	3.7	7.8	11.6
Lubuskie	22.3	27.7	38.2	43.3	3.9	5.1	10.2	14.2
Łódzkie	59.7	88.9	106.1	112.0	2.9	4.9	10.2	15.9
Małopolskie	60.8	82.4	105.8	119.8	7.8	15.2	36.5	55.4
Mazowieckie	30.1	54.8	89.7	108.6	2.7	4.1	12.0	21.2
Opolskie	49.4	60.8	69.3	71.8	6.3	8.5	20.1	30.3
Podkarpackie	38.3	54.6	75.6	78.6	3.5	13.3	59.9	81.5
Podlaskie	25.7	37.2	54.8	61.5	1.2	2.8	6.7	9.0
Pomorskie	36.2	44.2	61.2	69.8	4.4	8.2	20.1	31.1
Śląskie	84.8	97.1	129.8	138.0	5.8	13.7	38.5	60.7
Świętokrzyskie	44.2	68.4	95.8	105.4	3.8	6.6	18.0	23.0
Warmińsko-Mazurskie	22.1	31.4	49.2	56.7	3.3	5.6	11.5	14.6
Wielkopolskie	65.4	77.9	94.1	98.6	4.9	7.8	19.4	25.7
Zachodniopomorskie	22.5	25.9	34.0	41.7	6.3	7.7	18.4	24.1
Rural areas	41.6	56.5	81.6	90.3	4.1	7.3	20.6	29.7



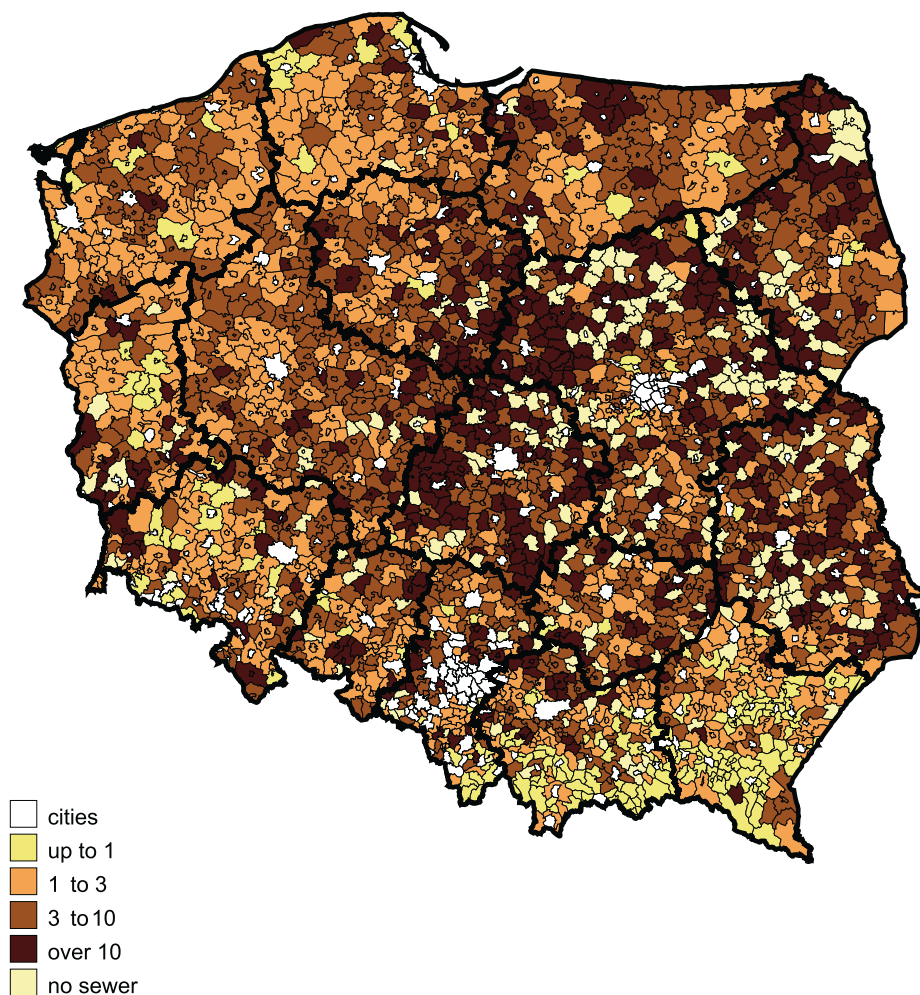


Figure 2. The ratio of water supply systems to sewer systems in 2010

The analysis of the accessibility and changes in the accessibility of water supply and sewer systems in 1995-2010 on the local scale shows that:

- gminas with more inhabitants continue to have significantly higher indicators of accessibility to water supply and sewer systems;
- changes in the water supply systems were greater in gminas with fewer inhabitants, and they were also more significant in the rural than the urban-rural gminas. On the other hand, in respect of sewer systems, the changes were greater in the gminas with more inhabitants and the rural gminas;
- changes that took place in that respect in 2000-2005 were by far more significant than the changes in the 1995-2000 or 2005-2010 period;



- since 2005, the general rate of changes has been decreasing and so have the differences in the pace of changes in accessibility between the urban-rural gminas and the rural gminas, as well as such differences related to the number of inhabitants.

In 2010, on a regional scale, the highest indicators of saturation with water supply systems – over 100 km per 100 km<sup>2</sup> – were noted in the Śląskie, Kujawsko-Pomorskie, Małopolskie, Łódzkie, Mazowieckie and Świętokrzyskie Voivodeships, while the lowest indicators were recorded in the Zachodniopomorskie and Lubuskie Voivodeships. The indicator of saturation with water supply systems in rural areas more than doubled in the Mazowieckie, Warmińsko-Mazurskie, Świętokrzyskie, Podlaskie and Lubelskie Voivodeships. As regards sewer systems, the highest indicators of saturation – above the average for the areas under study, i.e. 29.7 km/100 km<sup>2</sup> – were noted in the gminas situated in the Małopolskie, Podkarpackie, Pomorskie and Śląskie Voivodeships, while the lowest indicators were observed in the gminas from Lubelskie, Lubuskie, Podlaskie and Warmińsko-Mazurskie. Such significant disparities in the saturation between the water systems and sewer systems in the regions may have influenced the much greater growth rate of sewer systems than the water supply systems in recent years.

The assessment of the regional variation of the density of water supply and sewer systems shows that greater differences can be found in sewer systems than water supply systems which is reflected in the coefficients of variation in 2010 (Fig. 3). The largest variation in terms of water supply systems can be observed in the rural gminas from the Podkarpackie Voivodeship (77.5%) and the urban-rural gminas from the Małopolskie Voivodeship. On the other hand, the smallest variation is noted in the rural gminas from the Kujawsko-Pomorskie Voivodeship (36.6%) and the urban-rural gminas from the Świętokrzyskie Voivodeship. As regards sewer systems, the largest variation can be seen in the rural gminas from the Mazowieckie Voivodeship (245.3%) and the urban-rural gminas from the Mazowieckie Voivodeship (131.6%), while the smallest variation is noted in the rural gminas from the Kujawsko-Pomorskie Voivodeship (79.7%) and the urban-rural gminas from the Warmińsko-Mazurskie Voivodeship (47.45%).

By comparing the values of the variation coefficient of the density of those systems in 2000, 2005 and 2010, it can be concluded that the disparities increased in nearly all voivodeships in the 2000-2005 period with a significant decrease occurring in the period 2005-2010. In the 2005-2010 period, the growth of disparities between the rural gminas in respect of the water supply systems (from 9.6% to 1.8%) occurred in the Dolnośląskie, Lubuskie, Łódzkie, Podkarpackie, Wielkopolskie and Zachodniopomorskie voivodeships, while in respect of the sewer systems (from 16.6% to 2.6%) it was noted in the Lubuskie, Mazowieckie, Podlaskie and Śląskie voivodeships. As regards the urban-rural gminas, the growth of disparities between the gminas in respect of water supply systems (from 23.6% to 2.7%) occurred in the Łódzkie, Opolskie, Pomorskie and Zachodniopomorskie voivodeships, while in respect of the sewer systems

(from 16.5% to 4.4%) it was observed in Kujawsko-Pomorskie, Łódzkie, Małopolskie, Mazowieckie, Opolskie, Warmińsko-Mazurskie and Zachodniopomorskie.

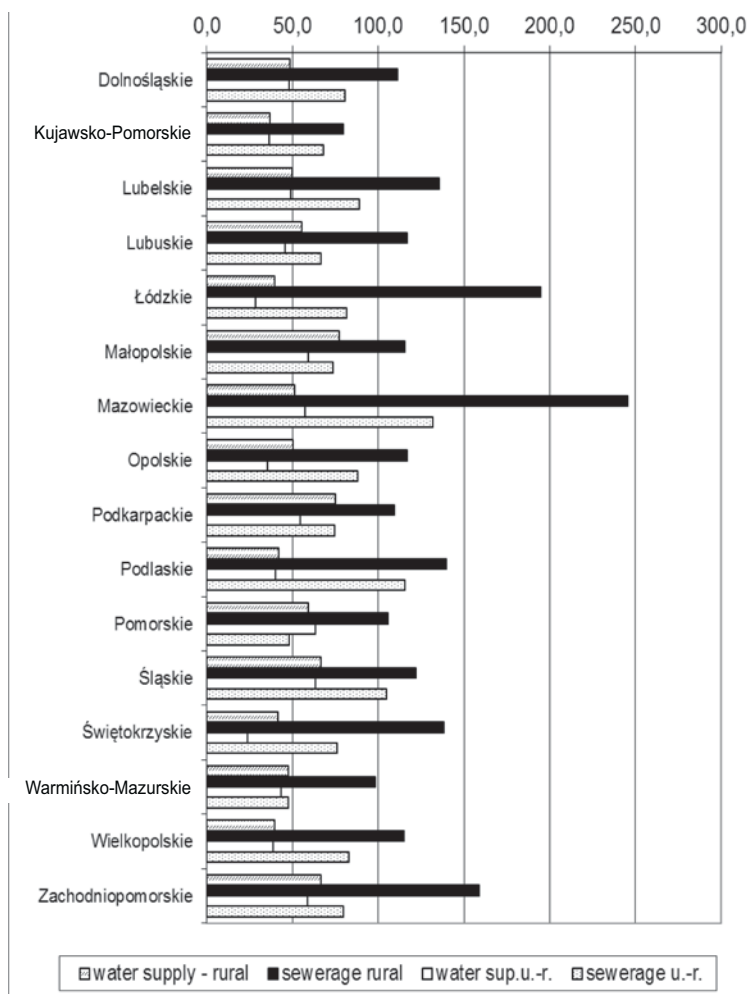


Figure 3. The coefficient of variation in the density of water supply and sewer systems per gmina type in 2010

The above-presented coefficients of variation related to the water supply and sewer systems justify the conclusion that a distinct polarity of the examined phenomena has been forming. That polarisation applies, in particular, to the Pomorskie and Kujawsko-Pomorskie voivodeships. It may mean that the growth of the disparity index results from different growth rates of specific areas.

The percentage of inhabitants who benefit from utility services is the indicator that shows the actual accessibility of households to the water supply and sewer systems. The use of the utility services involves the payment of specific fees which not all users can always afford. It happens, therefore, that a low supply of such services in relation to the demand fosters the need for regulating the market of public services which depends on the ownership and the organisational structure of the municipal utilities. According to some researchers [e.g. Grzymała 2010; Savas 1992], the privatisation of the utilities may help to decrease the price of the utility services, but it also promotes short-term activities in this respect. In general, the utility systems in rural areas are the property of the gmina self-governments or gmina associations. The market mechanism is not effective in shaping the supply and demand sides of the general interest services as the susceptibility to privatisation of the related systems varies considerably. However, a cooperation between the private and public sectors can be observed in relation to the development of the local utility infrastructure and it has taken the form of public-private partnerships or participation in the privatisation of the existing systems [Najniger 1992].

Table 3

The percentage of the population using water supply and sewer systems per gmina type in 2002-2010

Population figures in gmina (thousand)	Percentage of population using					
	water supply systems			sewer systems		
	2002	2005	2010	2002	2005	2010
Urban-rural gminas	79.9	81.4	83.1	38.9	42.7	46.0
< 5	82.4	82.6	84.2	38.2	42.1	43.9
5 – 7.5	77.6	79.2	81.2	29.2	33.7	36.7
7.5 – 15	78.3	80.1	81.7	34.1	38.2	41.5
15 – 30	81.2	82.6	84.3	48.2	51.3	54.7
> 30	88.8	89.8	91.1	57.1	59.6	64.2
Rural gminas	69.9	72.5	75.6	14.5	19.1	24.4
< 2.5	60.9	63.8	68.0	11.8	15.8	18.0
2.5 – 5	72.4	74.9	77.8	12.9	16.6	20.8
5 – 10	68.1	70.7	74.0	14.5	19.0	24.4
10 – 15	71.5	74.2	77.2	16.4	23.3	30.8
> 15	70.4	72.5	75.1	24.7	31.1	39.4
Rural areas	72.7	74.9	77.6	21.2	25.6	30.3

Table 4

The percentage of the population using water supply and sewer systems per voivodeship in 2002-2010

Voivodeship	Percentage of population using					
	water supply systems			sewer systems		
	2002	2005	2010	2002	2005	2010
Dolnośląskie	80.2	81.7	83.1	31.8	34.5	38.9
Kujawsko-Pomorskie	80.6	82.0	84.2	24.9	30.0	34.1
Lubelskie	65.8	68.3	71.7	11.1	13.6	17.0
Lubuskie	76.7	79.6	82.3	28.9	32.6	36.4
Łódzkie	78.5	80.2	82.3	11.4	14.8	18.8
Małopolskie	51.3	54.2	58.6	16.0	21.2	27.1
Mazowieckie	59.3	64.6	70.5	10.8	14.2	19.1
Opolskie	92.7	92.9	93.2	27.7	32.6	40.6
Podkarpackie	60.8	62.8	65.1	22.3	30.5	39.3
Podlaskie	72.2	74.6	77.1	15.7	19.3	21.9
Pomorskie	79.4	80.8	82.7	33.1	37.9	44.3
Śląskie	77.0	78.1	80.1	18.1	23.6	28.9
Świętokrzyskie	69.8	72.6	76.1	13.4	17.2	21.5
Warmińsko-Mazurskie	75.8	78.3	80.3	30.4	34.4	37.0
Wielkopolskie	87.1	88.0	89.0	26.5	32.5	37.1
Zachodniopomorskie	88.0	88.5	89.3	48.7	51.4	54.2
Rural areas	72.7	74.9	77.6	21.2	25.6	30.3

As follows from the data presented in the Tables 1-4, the development of the water supply and sewer systems is, in principle, reflected in the percentage of people benefitting from those systems. This kind of discrepancy can be observed in, for example, the Łódzkie and Zachodniopomorskie Voivodeships where poorly developed sewer systems – below the average for the areas under study (*i.e.* 29.7km/100km<sup>2</sup>) – provide services to a considerable percentage of the inhabitants – above the average for the areas under study (*i.e.* 36.5%). It means that the system index calculated on the basis of the ratio of the systems length to the surface area of the gminas defines the potential accessibility to a given system in a specific area and not the actual access to the use of such services. It is confirmed in the far greater growth rate of the water supply and sewer systems than the number of users of such systems. Therefore, the water supply and sewer coverage indices in the gminas under consideration are significantly influenced by the size of the gminas, the layout of their settlement networks,

and the number of inhabitants. Due to the fact that utility systems are capital-intensive and have a long payback period, are technically indivisible and immobile, their concentration in a given unit is the necessary condition for satisfying the needs of the inhabitants.

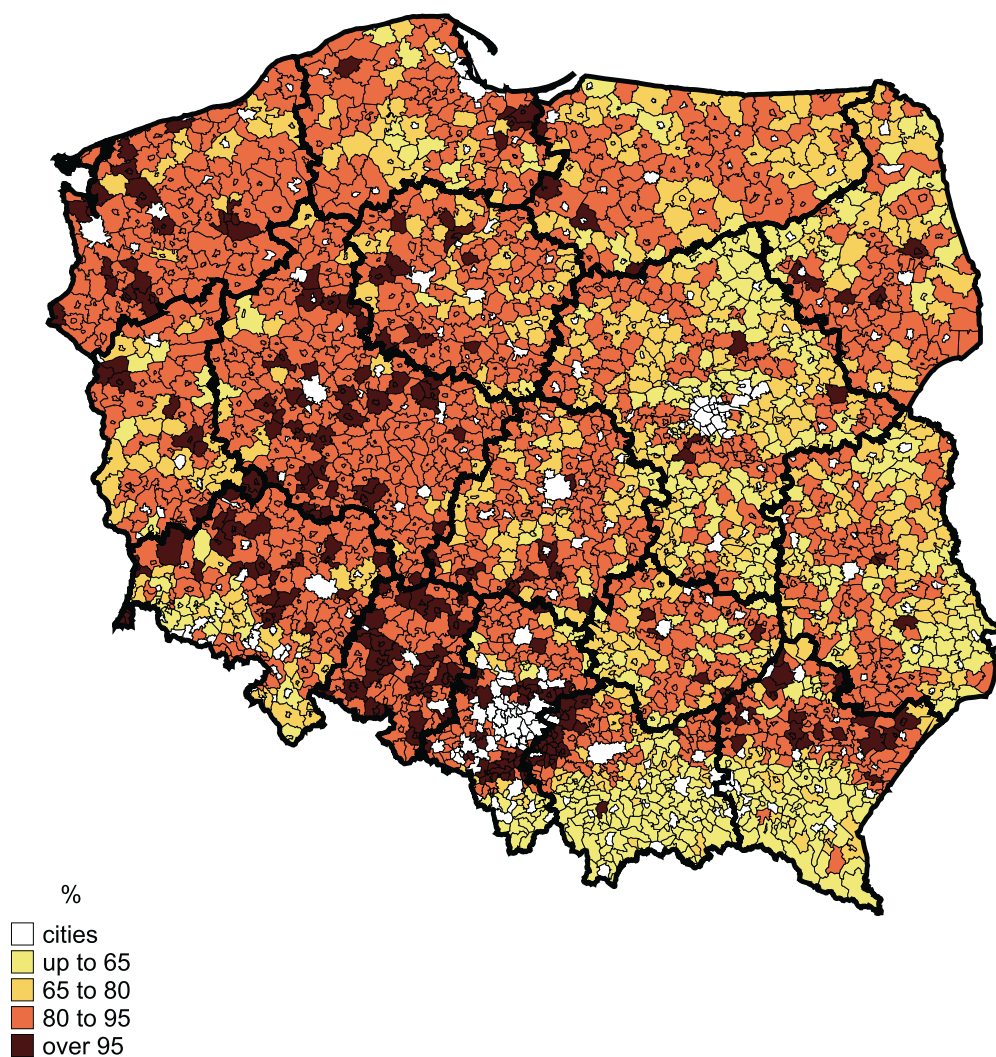


Figure 4. The percentage of the population using water supply systems in 2010

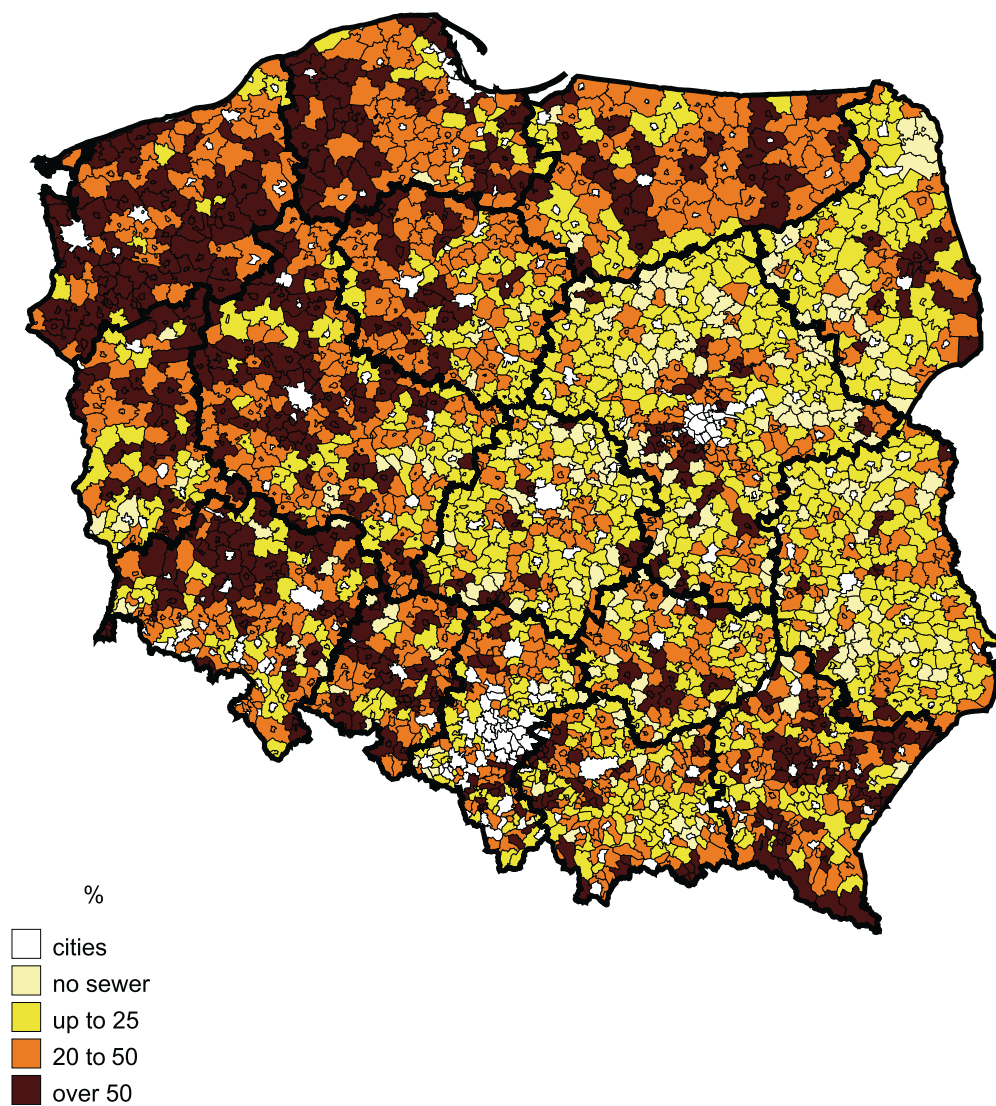


Figure 5. The percentage of the population using sewer systems in 2010

As can be understood from Tables 1-4, the percentage of the residents using sewer systems increases much faster than those using water supply systems. The largest deficits in terms of water supply and the use of sewer systems by the inhabitants are encountered in the rural gminas with the smallest population. As regards regions, in the Lubelskie, Małopolskie, Mazowieckie, Podkarpackie Voivodeships, the percentage of water supply users falls significantly below the average for the studied areas (*i.e.* 79.5%). In the Lubelskie, Lubuskie, Mazowieckie, Podlaskie, Świętokrzyskie voivo-



deships, the percentage of sewer systems users is far below the average for the studied areas (*i.e.* 36.5%) – Figs 4 and 5.

To sum up, it should be concluded that despite the continuing significant differences in the access of the rural residents to basic utilities, great changes have occurred in the last 20 years. According to the data from the Regional Data Bank of the Central Statistical Office, the length of the water supply systems in the rural areas increased more than two-fold and the sewer systems almost five-fold in the 1995-2010 period. However, due to the low population density in the rural areas, that significant growth in the length of those systems failed to translate into a radical increase of the share of inhabitants who use those systems.

### **Summary and conclusions**

Recapitulating the above considerations, it has to be concluded that the spatial disparities in the development of the water supply and sewer systems result primarily from the differences in the geographical situation of the individual self-government units, as well as from their historically conditioned socio-economic phenomena. Socio-economic phenomena affect the supply and demand side of the public services provided by those systems. In the mid-1990s, the majority of rural areas were affected by the underdevelopment of the water supply and sewer systems which constituted an important factor in the aggravation of socio-economic problems and in the degradation of the natural environment. The results of the analysis indicate that the systematic and consistent implementation of projects in the field of water supply and sewer systems is necessary to achieve positive effects of their development.

Local authorities responsible for the development of the water supply and sewer systems made efforts – within their financial capacities – to supply utility systems and services to the widest possible group of inhabitants. Local development plans listed those systems as priorities. Due to the poor financial standing of numerous gminas, the cost of such projects had to be covered from a variety of sources. The development of the water supply and sewer systems shows a very close dependence on the financial situation of the gminas. Many gminas implementing projects in this sphere failed to take into account the future costs of maintenance and one of the fundamental criteria was the number of inhabitants in a given gmina.

At the onset of the transformation period, water supply systems showed a much greater rate of development which stemmed primarily from the lower implementation costs and from the fact that they satisfied one of the basic needs of the inhabitants. On average, in 2010, 79.5% of the inhabitants in the rural areas used water supply systems, ranging from 0.2% in the Koszarowa gmina (Śląskie Voivodeship) to 99.9% in the Lubrza gmina (Lubuskie Voivodeship), while 36.5% used sewer systems, ranging between 0.1% in the Adamów gmina (Lubelskie Voivodeship) and 99.4% in the



Warta Bolesławiecka gminia (Dolnośląskie Voiv.). The rather poor supply of the sewer systems in the rural areas resulted from the fact that it constituted the next stage of improving the provision of utility services. This is confirmed by the concentration of project activities on sewer systems after 2005.

Generally speaking, it can be concluded that a rather optimistic picture of the development of utility projects emerged in numerous gminas by 2010. It is, however, alarming that those processes are not evenly distributed in spatial terms and that there is a distinct trend towards their concentration in the larger settlement centres. Because of that, a more significant activity of the public sector has to be forced with the use of relevant instruments in order to ensure greater territorial cohesion. The public sector, by means of measures supported with the EU resources, can play a distributive role and take care of the territorial cohesion by directing public resources to the appropriate localities. It would create an opportunity for a more even distribution of capital expenditures and, therefore, for establishing a permanent investment potential in the areas that have been neglected so far. The cohesion policy currently under implementation in Poland offers only a limited support to the rural areas underinvested in respect of the utility infrastructure. It means that attempts should be made to include rural areas more thoroughly in the cohesion policy and to focus that policy on the less developed rural areas. In compliance with the tenets of the theory of endogenous economic growth [Blakely, Bradshaw 2002] – which advocates development based primarily on the internal potential of a given spatial unit – the important task of local policies is to overcome internal limitations, including by means of stimulating infrastructural projects.

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