

# **Communal Infrastructure in 2005**

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## INTRODUCTION

The publication refers to installations and municipal services in the scope of water-line and sewerage systems, heating management, distribution of electricity and gas from gas-line network as well as collection and treatment of municipal waste. The statistical data have been compiled according to the location of facilities or to the place of rendering municipal services and presented by voivodships and in the division urban areas- rural areas.

## GLOSSARY OF KEY TERMS

**Municipal management** - a branch of national economy, which aim is to satisfy material and living needs of the population. In Poland municipal management includes enterprises conducting an economic activity in the scope of water-line and sewerage systems, heating management as well as distribution of fuels and electricity to households and cleaning of towns.

**Municipal infrastructure** - basic installations and service institutions, which are essential to functioning of the economy and population.

### Water-line and sewerage system

**Water-line system\*** - a set of technical installations which co-operate with each other and ensure water supply to consumers:

- in the required quantity,
- with the appropriate quality,
- at the appropriate pressure,
- in a certain area of activity,
- in a certain period of time.

Water line-system consists of: intakes of surface and underground water, installations used to store and treat water, water-line networks and street outlets as well as water pressure control devices.

Water-line transmission network - conduits leading water from distant water intakes to distribution line.

Water-line distribution network - street conduits used for distribution of water to consumers by the connections to buildings and other objects.

Water-line connections – a system of water-line connections - segments of conduits connecting the water-line network with internal water-line installation in a property of consumer together with a valve past the main water-meter.

Street outlets – publicly available facilities directly connected to street water mains, serving the community for drawing water directly from the mains.

Daily production capacity of water-line facilities - the amount of water which can be produced during 24 hours, considering the capabilities of all production facilities existing at the end of year, without disturbing the equilibrium of the water intakes and with preservation of technical conditions and requirements.

Water delivered to households - the quantity of water collected from water-line network using facilities installed in a building.

Water delivered for production purposes - water delivered to industrial, construction, transport enterprises (plants) etc., i.e. production plants in all divisions of national economy

regardless of whether delivered water is used for technological purposes or for social and living needs of staff ( in the lavatories, bathrooms, dining-rooms, canteens, day-rooms and office buildings which are located within the plant ).

**Sewerage system\*** - the complete sewage collection - sewage networks, serving discharging of waste, including:

- sewerage network;
- the outlets of devices used to emit sludge into the waters or the ground,
- sewage pretreatment facilities and sewage treatment plants,
- sewage pumping stations.

Active sewerage network – a system of covered (underground) conduits which drain off sewage from buildings and other objects, to collectors or sewage treatment facilities .

Sewerage connections – a system of sewerage connections - segments of conduits connecting internal sewerage installations in a property of the services consumer with the sewerage network after the first inspection chamber from the side of building, and in case of its lack - from a boundary of property.

Waste water discharged – household waste water or a mixture of household waste water with rainfall waste water or a mixture of household waste water with industrial waste water and rainfall waste water.

## **Electricity**

Information on the number of consumers and consumption of electricity concerns households and collective accommodation places that pay bills for consumption of electricity according to rates that households are due to pay.

The data concern consumers of electricity in households that are not involved in agriculture and households using agricultural plots of land and farms with an area up to 1 ha.

Data regarding the consumption of electricity are presented basing on the available information on advance payments, made by consumers .

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## **Gas-line network\*\***

**Gas-line network** is a system of conduits providing gas, supplied by enterprises, which scope of economic activity includes transmission and distribution of gas to consumers. The system of conduits consists of:

- transmission and distribution network (with high-methane gas and nitrogenised gas)- street conduits used for distribution of gas to buildings or other objects by means of connections ;

connection - a system of conduits joining distribution gas-line system with buildings and other objects.

Data regarding the number of consumers of gas from gas line- network were provided by entities which were granted concessions to sale gas and are based on the information concerning the number of agreements concluded by these entities with consumers of gas from gas line-network.

## Heating management

Information referring to heating includes residential as well as office and institutional buildings with central heating provided by transmission thermal-line.

Transmission thermal-line is considered as a system of joint installations, co-operating with each other, serving for transmitting and distribution of heat by conduits transferring heating medium to connections to buildings.

Boiler-- house or boiler-room is a building or a premise with boilers and installations used for production of heat energy for heating purposes or for simultaneous heating and supplying of warm water.

Information regarding the boiler-houses or boiler-rooms include types of boilers, their power (i.e. maximum quantity of heat energy which can be produced by boilers in a defined unit of time) , annual production, installed facilities protecting atmosphere (limiting emission of pollutants to atmosphere) .

## Collection and treatment of municipal waste

**Municipal waste\*\*\*** is waste generated in households and by other producers of waste (excluding hazardous waste) which because of its character or composition is similar to waste from households.

Information regarding waste include: total quantity of collected waste during the year , including waste from: households, commerce, small business, offices and institutions as well as municipal services .This information is extended by data concerning selection of waste for recycling, waste deposited on controlled landfills and waste subject to biological and thermal treatment.

Neutralization of waste consists in the processes of biological, physical or chemical treatment as a result of which the nature of waste does not pose risks to human life and health or the environment.

###

Results of the statistical surveys carried out on the basis of the following reports: M-06, M-09 and SG-01 part 3 as well as on the secondary use of data from the survey of balance of energy carriers and heating infrastructure and on data coming from internal information systems , owned by the Energy Market Agency S.A. are the sources of information about municipal infrastructure in 2005.

Data on energetics cover all the units which were granted concessions to transmit and distribute fuels and electricity , including those units for which the aforementioned objects constitute secondary economic activity

## Technical note

Due to the method of automatic rounding employed in the publication, small differences at a higher level of aggregation may occur. In some tables the amount in the position "Total" may slightly differ from the sum of components. .

\* The Act on Collective Water Supplying and Collective Discharging of Waste Water of 7 June, 2001 (Journal of Laws of 2002 No. 72, item 747)

\*\* The Energy Act of 10 April, 1997 (Journal of Laws of 1997 No. 54, item 348 with further amendments)

\*\*\* The Waste Act of 27 April, 2001 ( Journal of Laws of 2001 No. 62, item 628)

## OBJAŚNIENIA ZNAKÓW UMOWNYCH SYMBOLS

Kreska /-/	-	zjawisko nie występuje <i>magnitude zero</i>
Zero /0/	-	zjawisko istniało, jednakże w ilościach mniejszych od 0,5 <i>magnitude not zero, but less than 0,5 of unit</i>
Kropka /./	-	zupełny brak informacji albo brak informacji wiarygodnych <i>data not available or not reliable</i>
Znak /x/	-	wypełnienie pozycji jest niemożliwe lub niecelowe <i>not applicable</i>
"W tym" of which	-	oznacza, że nie podaje się wszystkich składników sumy <i>indicates that not all elements of the sum are given</i>

## WAŻNIEJSZE SKRÓTY

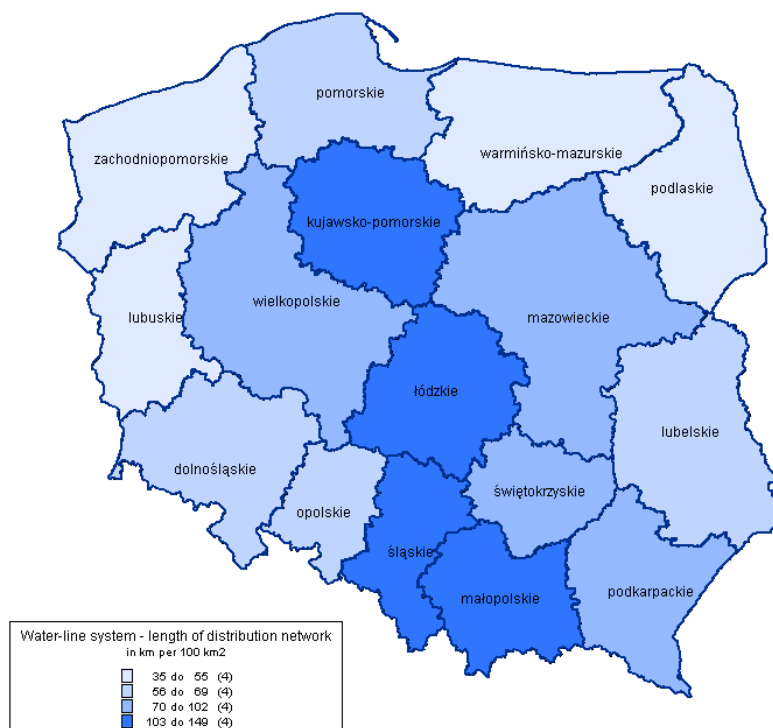
### ABBREVIATIONS

tys. <i>thous.</i>	=	tysiąc <i>thousand</i>
mln	=	milion <i>million</i>
m	=	metr <i>metre</i>
m <sup>2</sup>	=	metr kwadratowy <i>square metre</i>
m <sup>3</sup>	=	metr sześcienny <i>cubic metre</i>
km	=	kilometr <i>kilometre</i>
ha	=	hektar <i>hectare</i>
dam <sup>3</sup>	=	dekametr sześcienny <i>cubic decametre</i>
hm <sup>3</sup>	=	hektometr sześcienny <i>cubic hectametre</i>
kW.h	=	kilowatogodzina <i>kilowatt * hour</i>
MW.h	=	megawatogodzina <i>megawatt * hour</i>
GW.h	=	gigawatogodzina <i>gigawatt * hour</i>
J	=	dżul <i>joule</i>
kJ	=	kilodżul <i>kilojoule</i>
GJ	=	gigadżul <i>gigajoule</i>
TJ	=	teradżul <i>terajoule</i>
r.	=	rok <i>year</i>
cd.	=	ciąg dalszy <i>continued</i>
dok. <i>cont.</i>	=	dokończenie <i>continued</i>
szt. <i>pcs</i>	=	sztuka <i>piece</i>

## Municipal Infrastructure in 2005

The length of **water-line distribution network** amounted to about 246 thous. km and rose by about 2,7% (by about 6 thous. km) in comparison to the previous year. The largest congestion of network according to territorial division [in km per 100 km<sup>2</sup>] is still observed in : Śląskie (148,8), Łódzkie (112,7), Kujawsko-pomorskie (110,8) and Małopolskie (103,5) voivodships.

Water-line distribution installations by voivodships in 2005



The prevailing share in the territorial distribution of the network exists in the rural areas and includes about 78% of the total network in Poland. In these areas about 5 thous. km of new network were built. The highest increase [in km] concerned Mazowieckie (1421,3); Warmińsko-Mazurskie (914,1); Podlaskie (363,8) and Łódzkie (303,3) voivodships. In Lubuskie, Małopolskie, Opolskie and Zachodniopomorskie voivodships the increase was below 135 km. An increased rate of infrastructural development still takes place in rural areas (102,9% by 101,9% in urban areas). The distribution of the water line network increase by voivodship (in division into rural areas and urban areas) was presented on the graph<sup>1</sup>.

The biggest share in water consumption [in m<sup>3</sup>] by households for communal and living purposes was recorded in: Mazowieckie (191,6) and Śląskie (147,3) voivodships, whereas the lowest in Lubelskie voivodship (30,5).

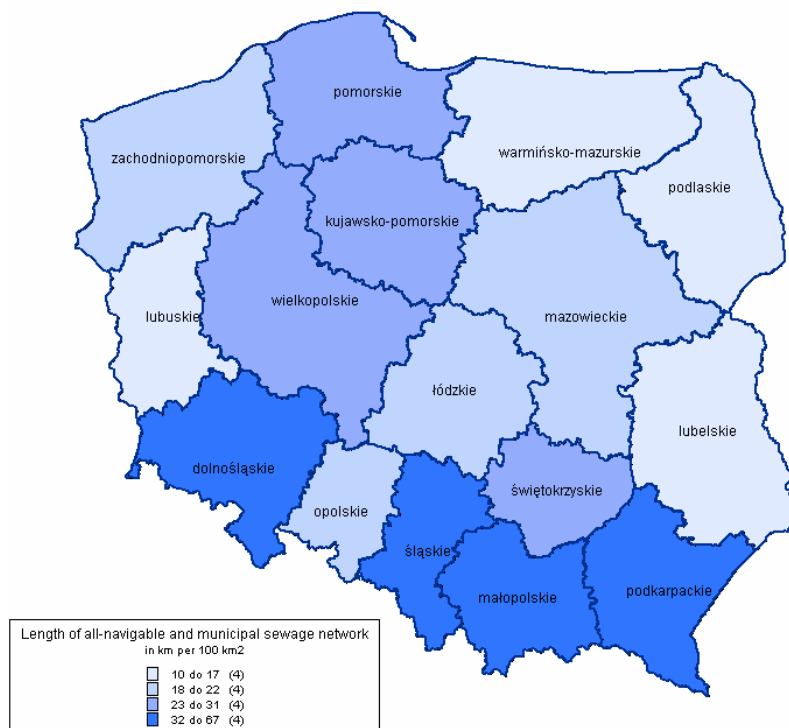
The way of using water is illustrated by the indicator of water consumption per one inhabitant<sup>2</sup>. The value of this indicator in urban areas ranged from 44,3 m<sup>3</sup> in Mazowieckie to 30,5 m<sup>3</sup> in Podlaskie voivodship, whereas in rural areas from 33,3 m<sup>3</sup> in Zachodniopomorskie to 14,9 m<sup>3</sup> in Małopolskie voivodship.

<sup>1</sup> See graph 1 „Dynamics of increase of the water-line by voivodships in 2005”

<sup>2</sup> See TABLE 6 “Consumption of water from water-line system in households”

The length of **sewerage system** amounted to about 80 thous. km and rose by about 8% in relation to the previous year (i.e. by about 6 thous. km). The largest congestion of sewerage network [in km per 100 km<sup>2</sup>] according to territorial division occurs in: Śląskie (66,8), Podkarpackie (49,2) Małopolskie (47,1) and Dolnośląskie (32,8) voivodships. This is caused by the level of urbanization and increased investment outlays on environmental protection in these regions

Sewerage system installations by voivodships in 2005



In rural areas<sup>3</sup> about 4 thous. km of the new network were built- this is an increase by 13,6% (by 2 thous. km , i.e. a 4,5% increase in urban areas). The biggest share in the newly-built sewerage system [in km] occurred in Podkarpackie (633,0), Małopolskie (547,7) and Wielkopolskie (509,8) voivodships. As for the remaining voivodships, their share ranged below 363 km.

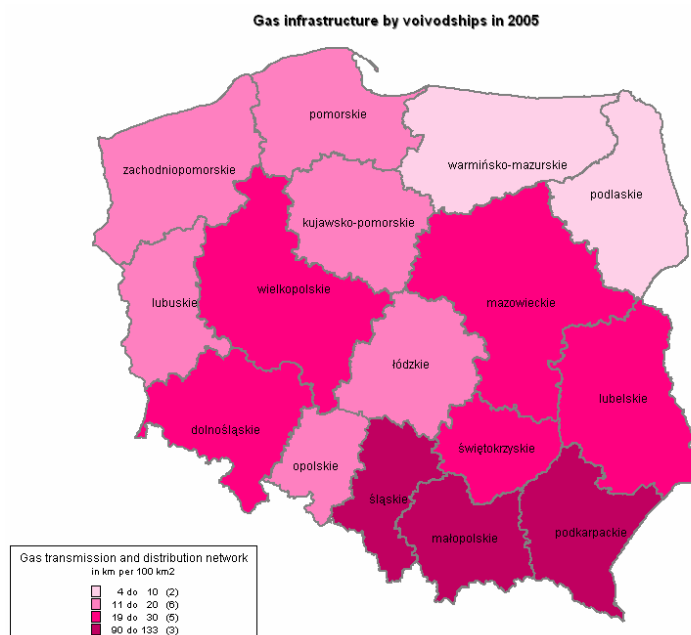
There are significant differences in the total amount of waste water discharged when it comes to particular voivodships<sup>4</sup>. These quantities ranged from about 210 hm<sup>3</sup> in Mazowieckie voivodship to about 28 hm<sup>3</sup> in Opolskie voivodship, along with an increase of the amount of discharged waste water in rural areas<sup>5</sup>. This results from rise in investment outlays on all - navigable sewage systems and systems discharging municipal waste water.

The length of **gas-line network** amounted to about 122 thous. km, of which 103 thous. km fell to the distribution gas network. The largest congestion of gas-line network [in km per 100 km<sup>2</sup>] occurs within the areas of: Małopolskie (131,7), Śląskie (114,0) and Podkarpackie (90,6) voivodships, with the dominant position of urban areas where the aforementioned indicator reached a level of 222,2 km.

<sup>3</sup> See graph 2 „Dynamics of increase of the sewerage system by voivodships in 2005”

<sup>4</sup> See TABLE 8 „Sewerage system installations”

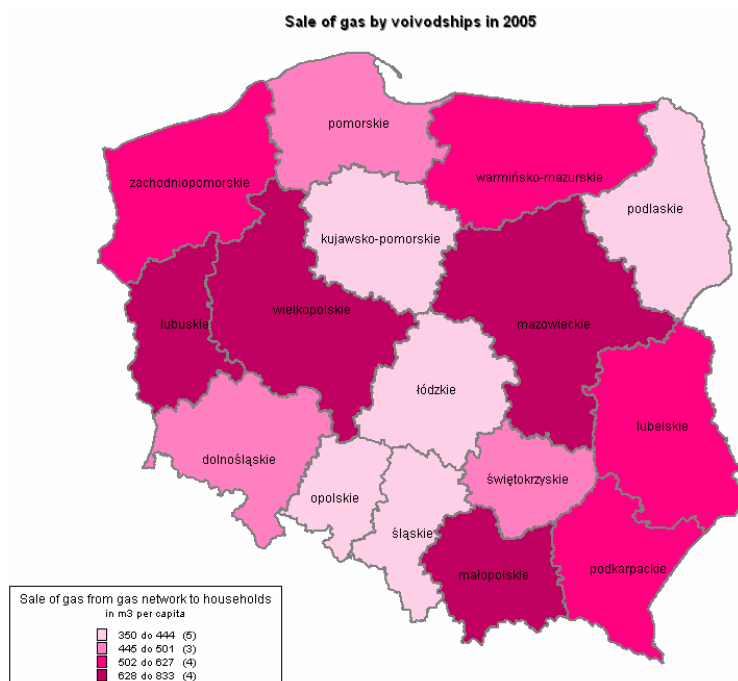
<sup>5</sup> See graph 3 „Dynamics the quantity of waste water discharged by voivodships in 2005”



The highest increase in the length of gas distribution network [total, in km] in comparison to the previous year was in Wielkopolskie voivodship, an increase by about 545 km. As for Opolskie, Świętokrzyskie and Podlaskie voivodships the increase was below 50 km.

The rate of infrastructural development has still been higher in rural areas - the dynamics is equal to 102% (by 101,4% in urban areas). This phenomenon provided an increase in percentage of the total rural population using gas from 17,8% (in 2004) to 17,9%. The dynamics by territorial layout is presented on the graph 4<sup>6</sup>.

The biggest share in the sales of gas from gas-network [in m<sup>3</sup>] to households (per one recipient) was noted in: Wielkopolskie (832,5) whereas the lowest in Mazowieckie. (652,2) voivodship.

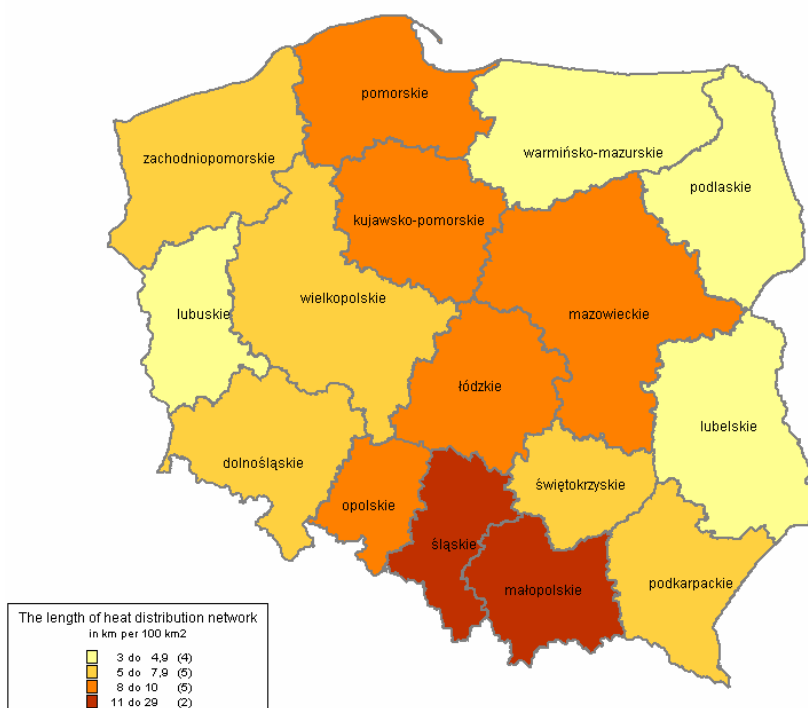


<sup>6</sup> See graph 4 „Dynamics of increase of gas-line network (distribution) by voivodships in 2005”

The length of **heat network** was about 23 thous. km, including about 15 thous. km of transmission network. It increased in comparison to the previous year by about 0,8% in total, of which the length of transmission network by about 1,5%.

According the territorial division the largest congestion of heat network [in km per 100 km<sup>2</sup>] occurred in the following voivodships: Śląskie (28,8) and Małopolskie (11,4).

Heat distribution network in km by voivodships in 2005

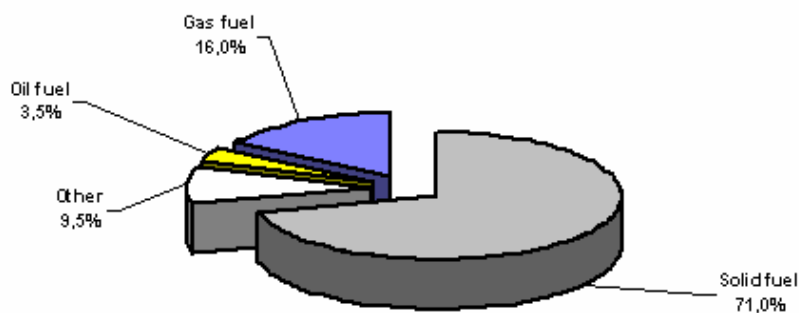


During the year the total sales of heat energy were about 215 917 TJ, of which the sales of heat energy for the housing heating needs were about 180 942 TJ. This allowed to provide heating to buildings with a total cubic capacity of about 1 728 327 thous m<sup>3</sup>.

The share of used fuel at the annual production of heat energy is presented on the circular chart.

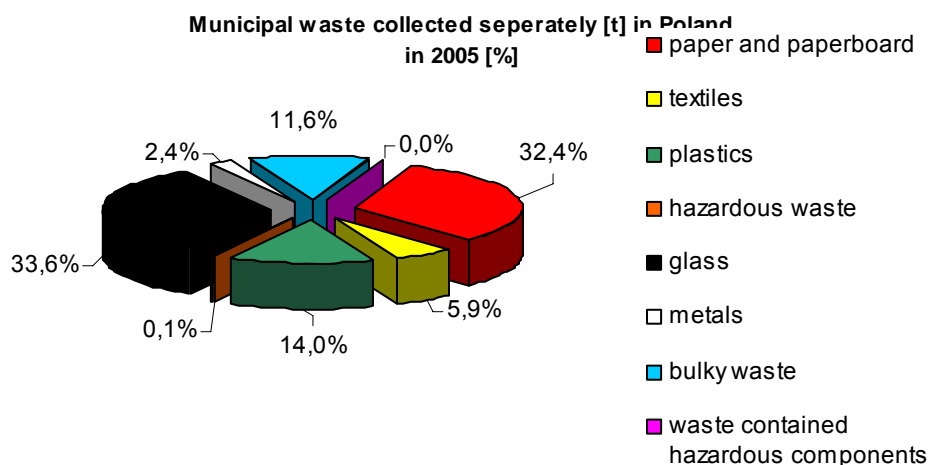
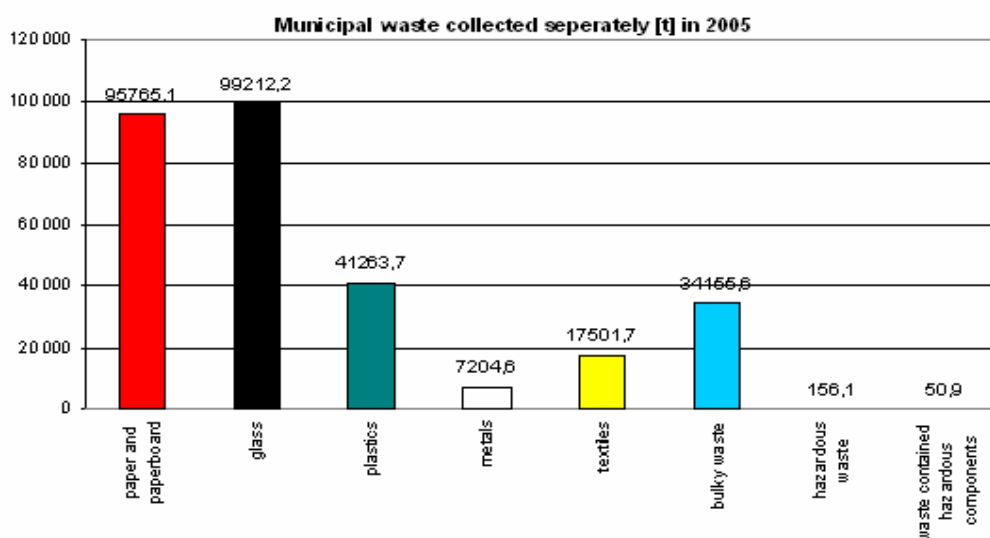
In the course of the last five years the share of gas fuels increased from 5,7% in 2000 to 16% in 2005 with a simultaneous decrease of the share of fixed fuels at the same period (from 87,9% to 71%).

The share of used fuel by type at the annual production of heat energy in 2005



It is estimated that in 2005 over 9 352 thous. t of municipal waste was collected. In territorial division the largest quantity of waste was collected in mazowieckie voivodship (1500 thous. t) while at least in świętokrzyskie voivodship (185 thous. t). The average indicator of collected municipal waste was 245 kg per 1 inhabitant. Total quantity of collected municipal waste and per 1 inhabitant in each voivodship was presented on maps<sup>7</sup>.

About 295,3 thous. t of municipal waste was collected separately. The quantity of almost all types of waste collected separately rose slightly in comparison with the previous year. It was only remarked decrease of quantity of collected metals and bulky waste. The effects of separate collection in thousand tones and percentage present diagrams below.

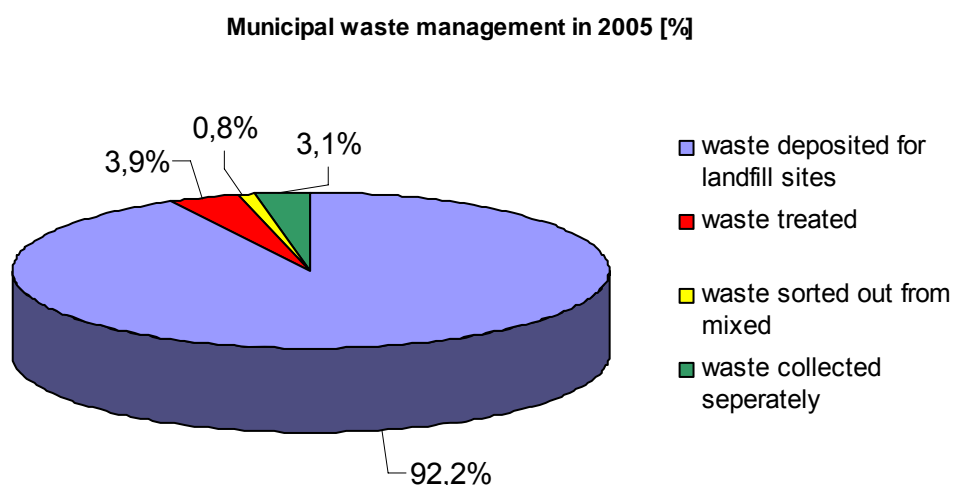


From the analysis of received data it results that 2 308 of gmina offices ran separately collection of municipal waste, but there was only 1 547 gminas in which also other waste

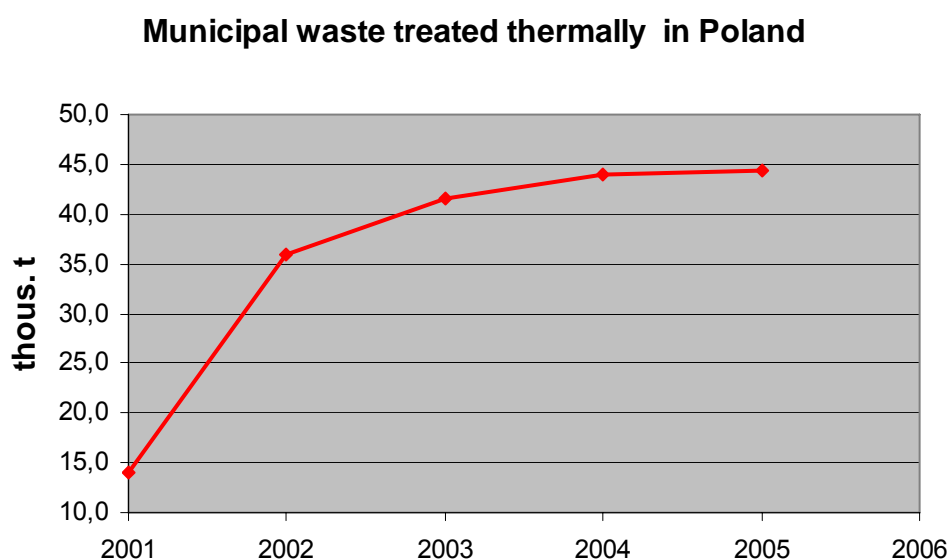
<sup>7</sup> See the maps: „Municipal waste collected in 2005 by voivodships”  
“Municipal waste collected in 2005 per 1 inhabitant”.

than paper and cardboard was collected separately (that makes hardly 62% of all examined units)<sup>8</sup>. The low social consciousness causes that in Poland as a result of separately collection in general we do not obtain pure raw materials which is the basic requirement to deliver recovered raw materials from waste for recycling. Therefore it is necessary to direct this waste to sorting plants for cleaning it and eliminating useless things.

In 2005 there was collected separately about 3,1% of municipal waste. Lower than 1% was sorted out from mixed collected waste. Inconsiderable percentage of waste was treated in biological (3,4%) and thermally processes (0,5%). The rest part of waste, that is 92,2% was deposited for landfill sites. Domestic management of municipal waste in the past year was presented on below diagram.



In Poland thermally treating of municipal waste is still practised on a small scale. First and the only incineration plant of municipal waste started-up its activity in the end of 2000. Since 2001 in Warsaw grid incineration plant there has been transformed 180 thous. t of waste. This process presents underneath diagram.



<sup>8</sup> See the map „Municipal waste collected separately in 2005”.

About 6 297 thous. t of collected municipal mixed waste came from households; 2 291 thous. t from commerce, small business, offices and institutions and 468 thous. t from municipal services.

Depositing is still a common method of disposal of municipal waste in our country. In 2005 over 92% of collected waste ended on controlled landfill sites. At the end of the year 1 025 controlled landfill sites in operation were registered. These landfill sites occupied about 3 360 ha. The most of them was in voivodships: lubelskie - 123, dolnośląskie – 117 and wielkopolskie – 104.

Alarmingly occurrence is growing quantity of uncontrolled dumping-grounds<sup>9</sup> on which municipal waste is left. Although dumping-grounds are removed day by day in many gminas (during the year 4 982 of them were removed) in a very short time they appear again. In the end of 2005 gmina offices counted 2 583 dumping-grounds on theirs area. The reason of such situation is the fact that still not all of households are served by collecting waste as well as “imported waste” is thrown out in on the border voivodships. Such a big amount of existing dumping-grounds often with municipal waste (of which most in dolnośląskie voivodship – 329, śląskie 348 and zachodniopomorskie voivodship – 264) causes serious doubts on environment state.

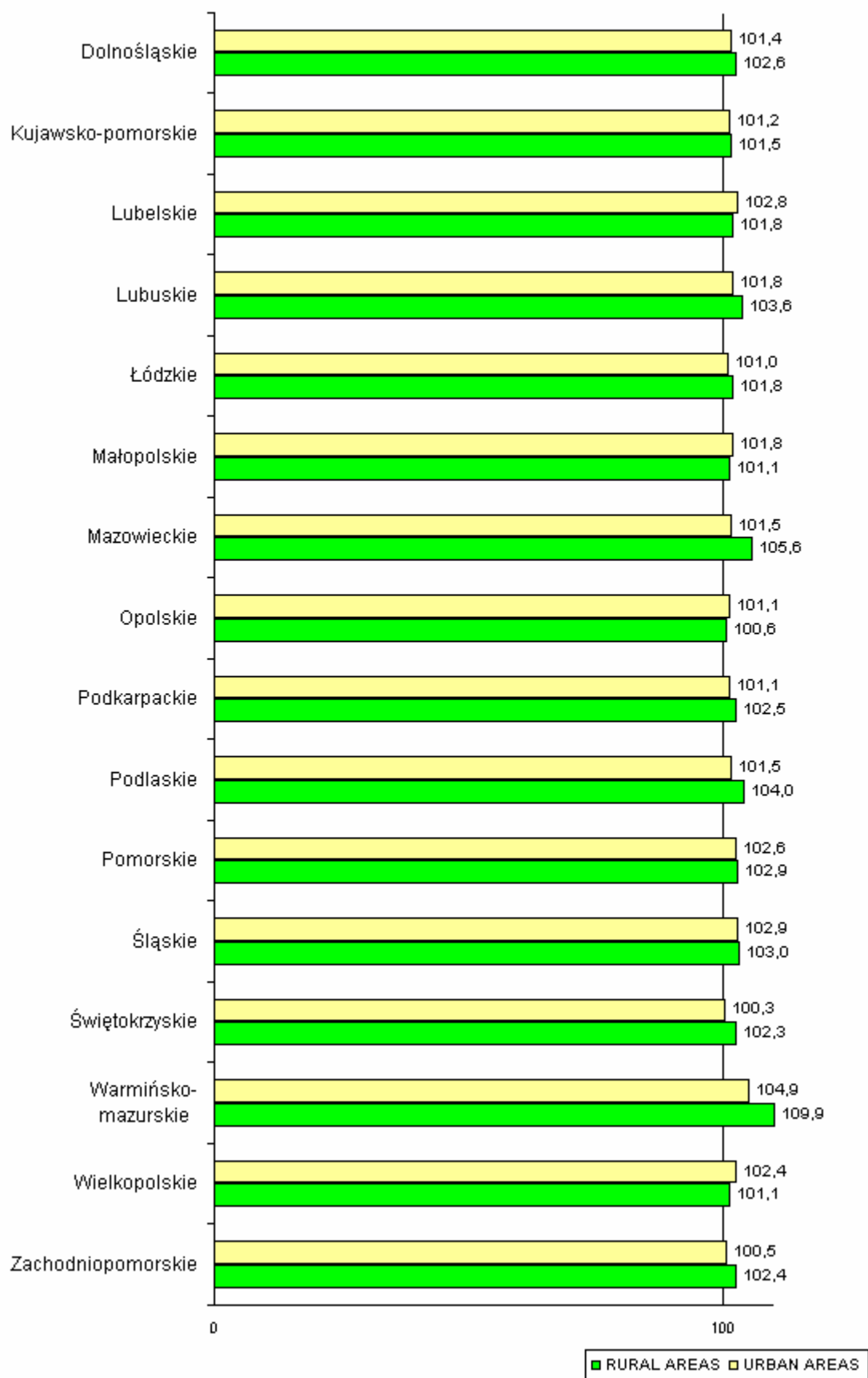
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<sup>9</sup> See the map „Uncontrolled waste dumps in 2005”.

# **Graphs and maps**

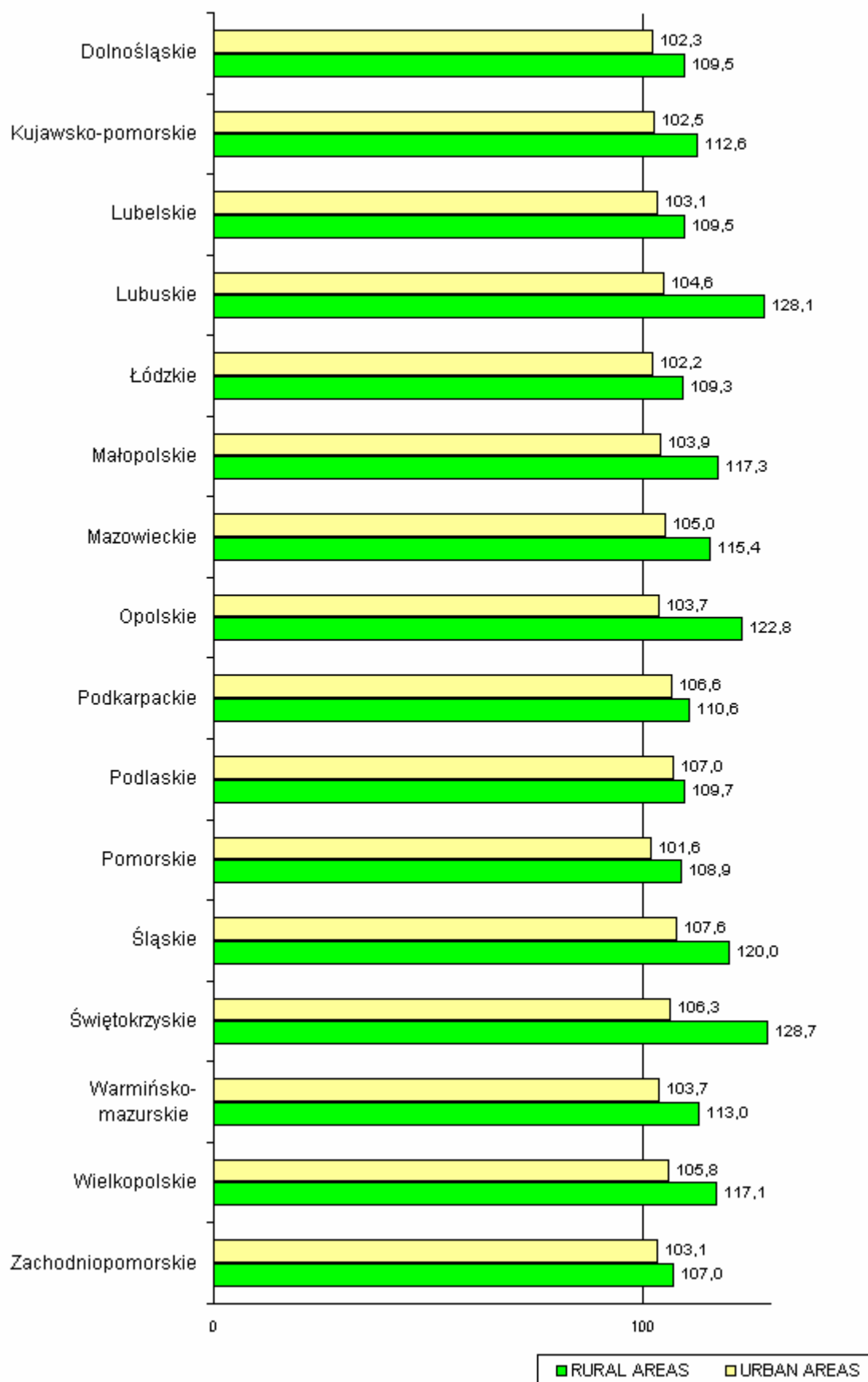
**Dynamics of increase of the water-line  
system by voivodships in 2005**  
[2004=100]

**Graph 1**

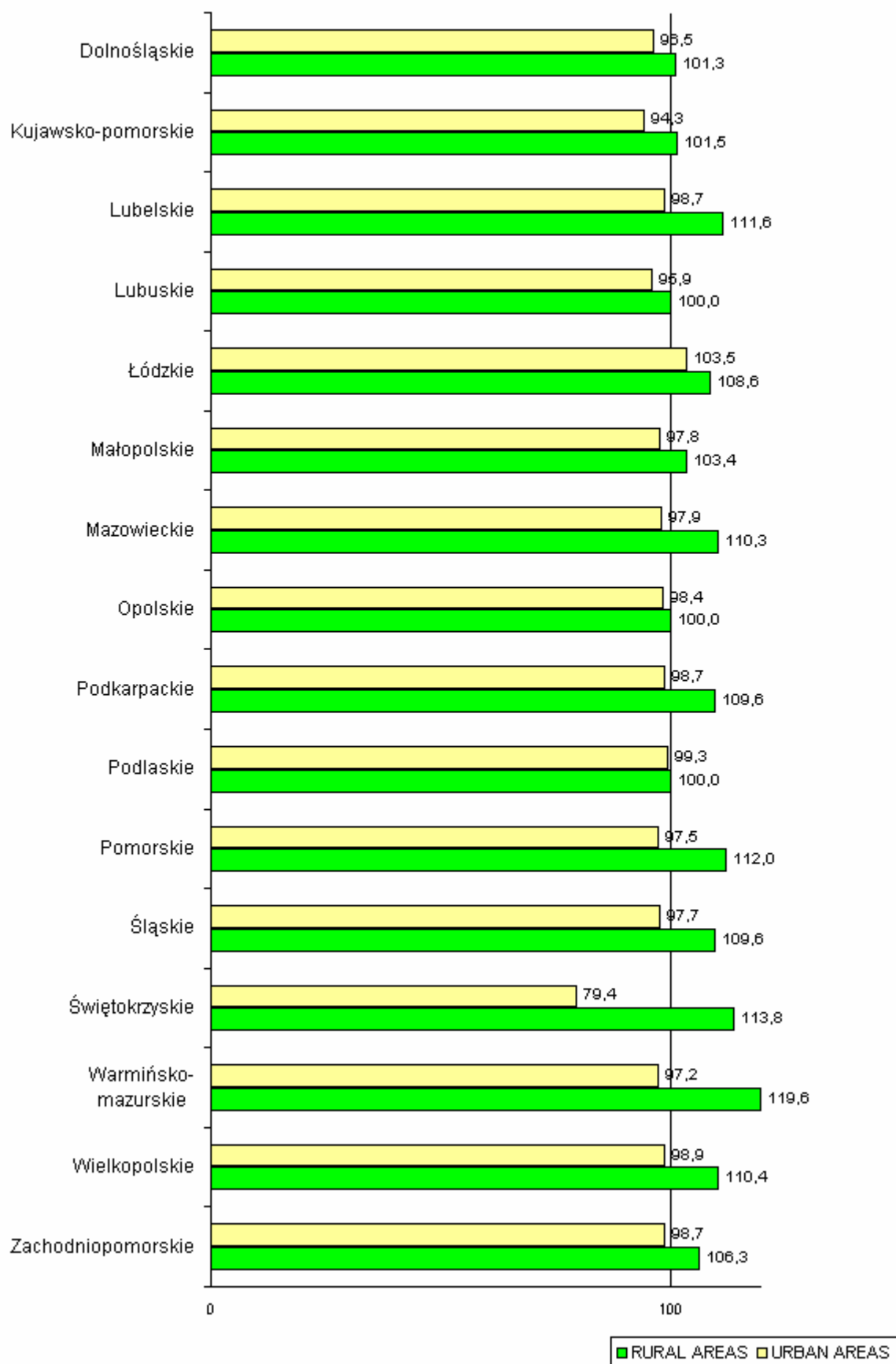


**Dynamics of increase of the sewerage system  
by voivodships in 2005**  
[2004=100]

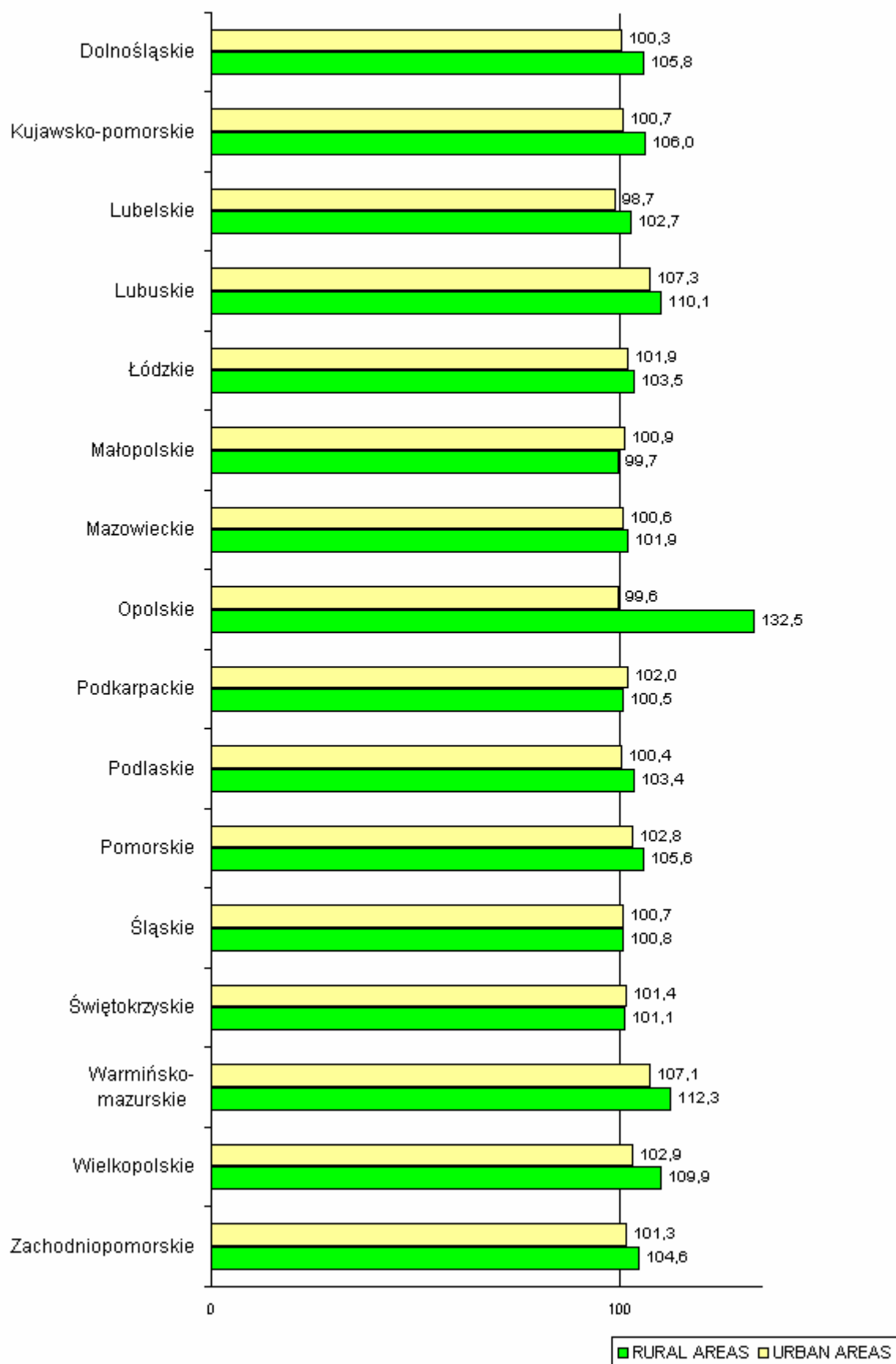
**Graph 2**



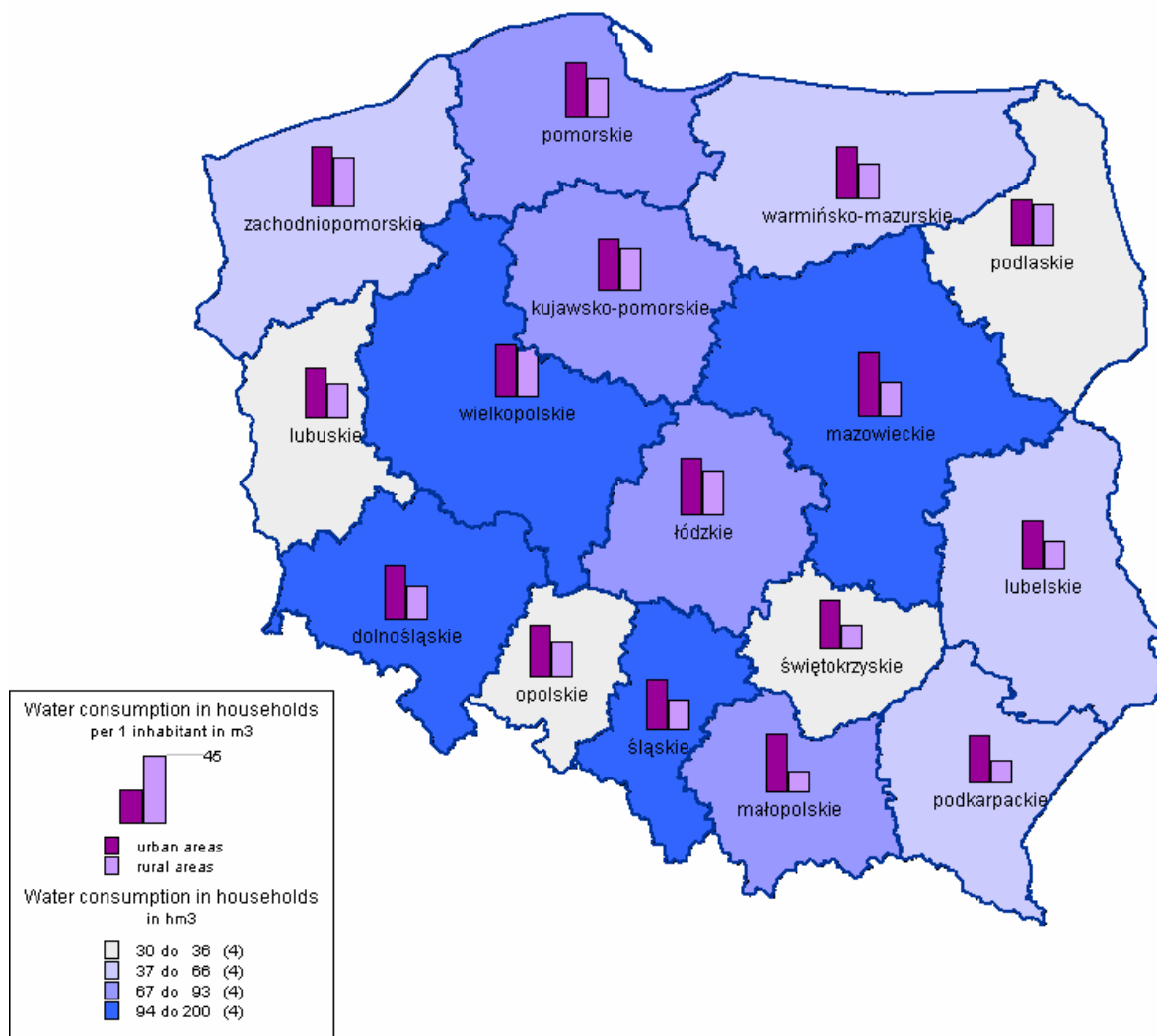
**Dynamics of the quantity of waste water discharged**      **Graph 3**  
**by voivodships in 2005**  
*[2004=100]*



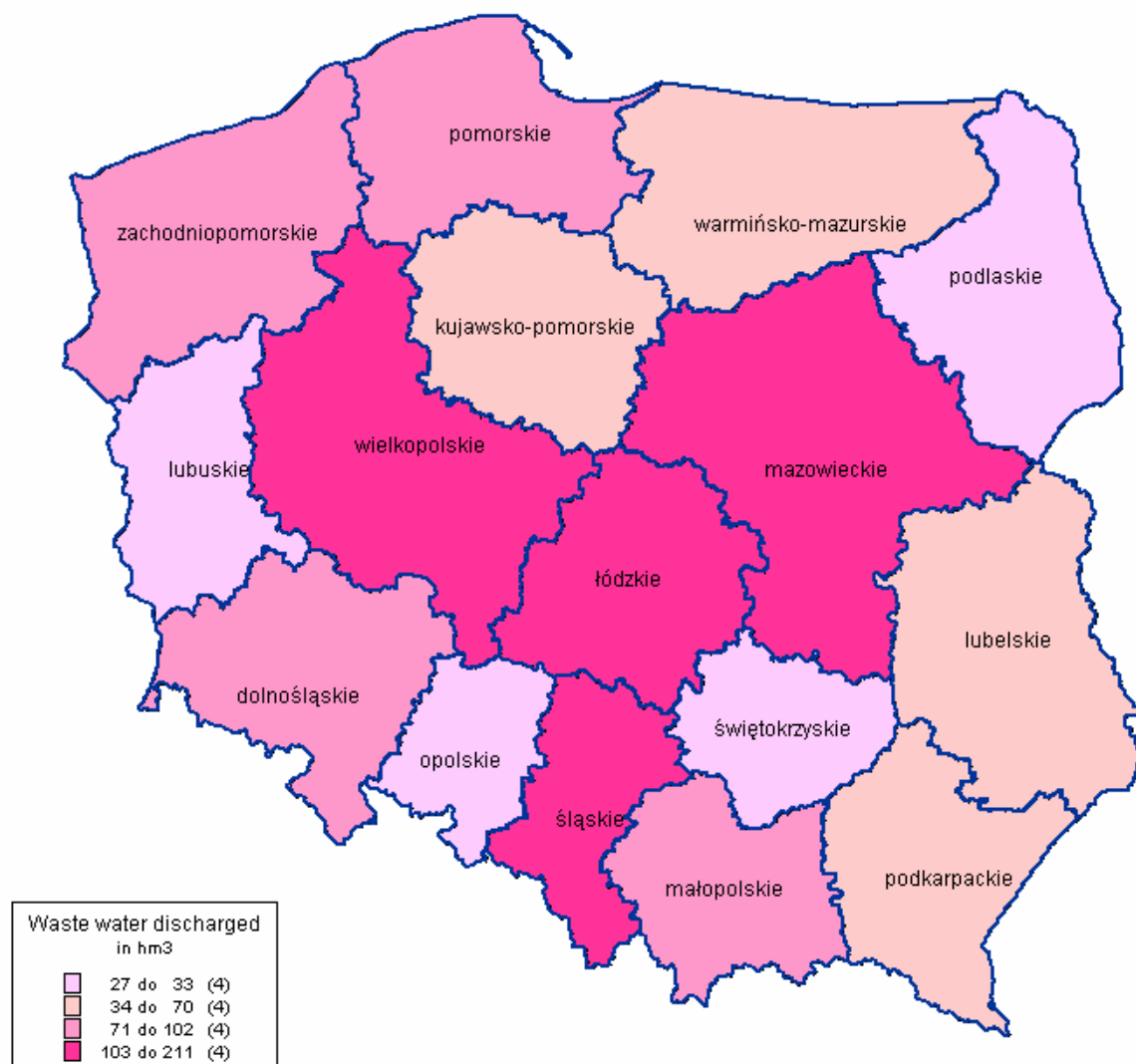
**Dynamics of increase of gas-line network (distribution) Graph 4**  
**by voivodships in 2005**  
*[2004=100]*



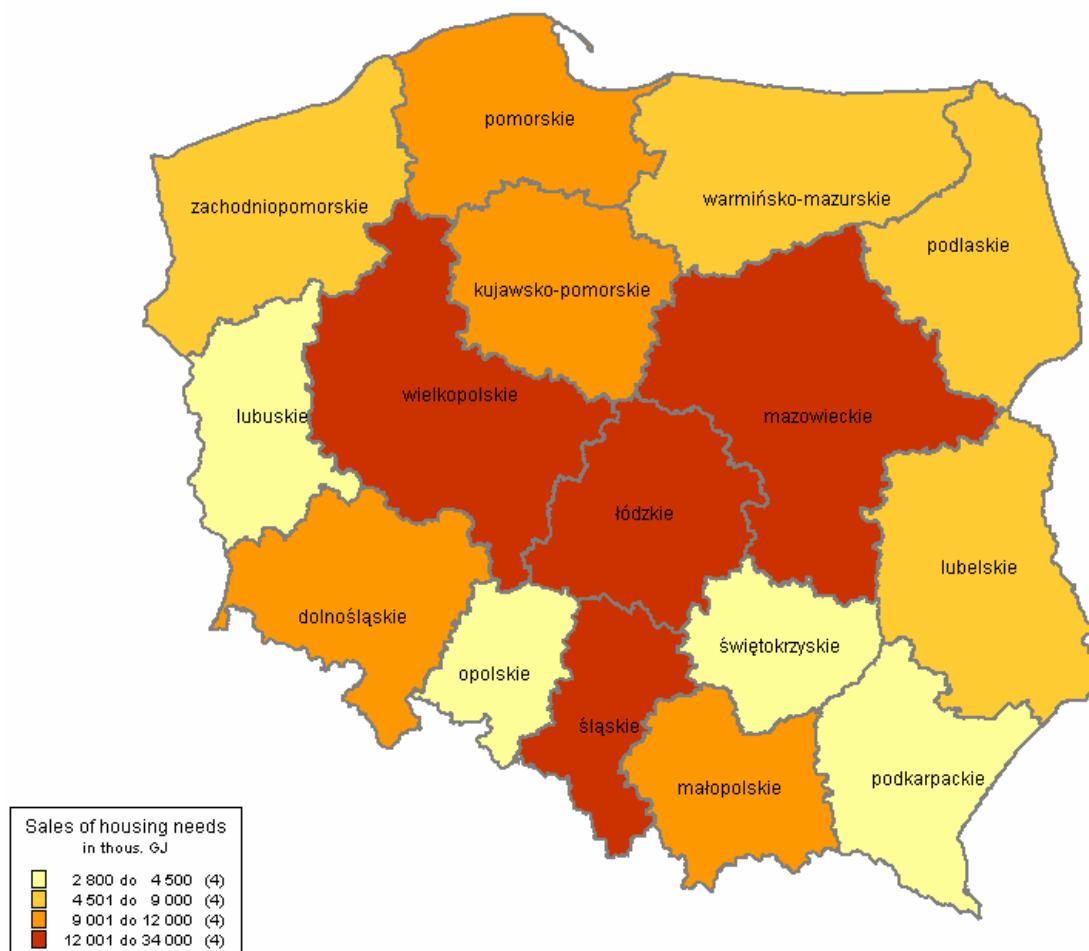
# Water consumption by voivodships in 2005



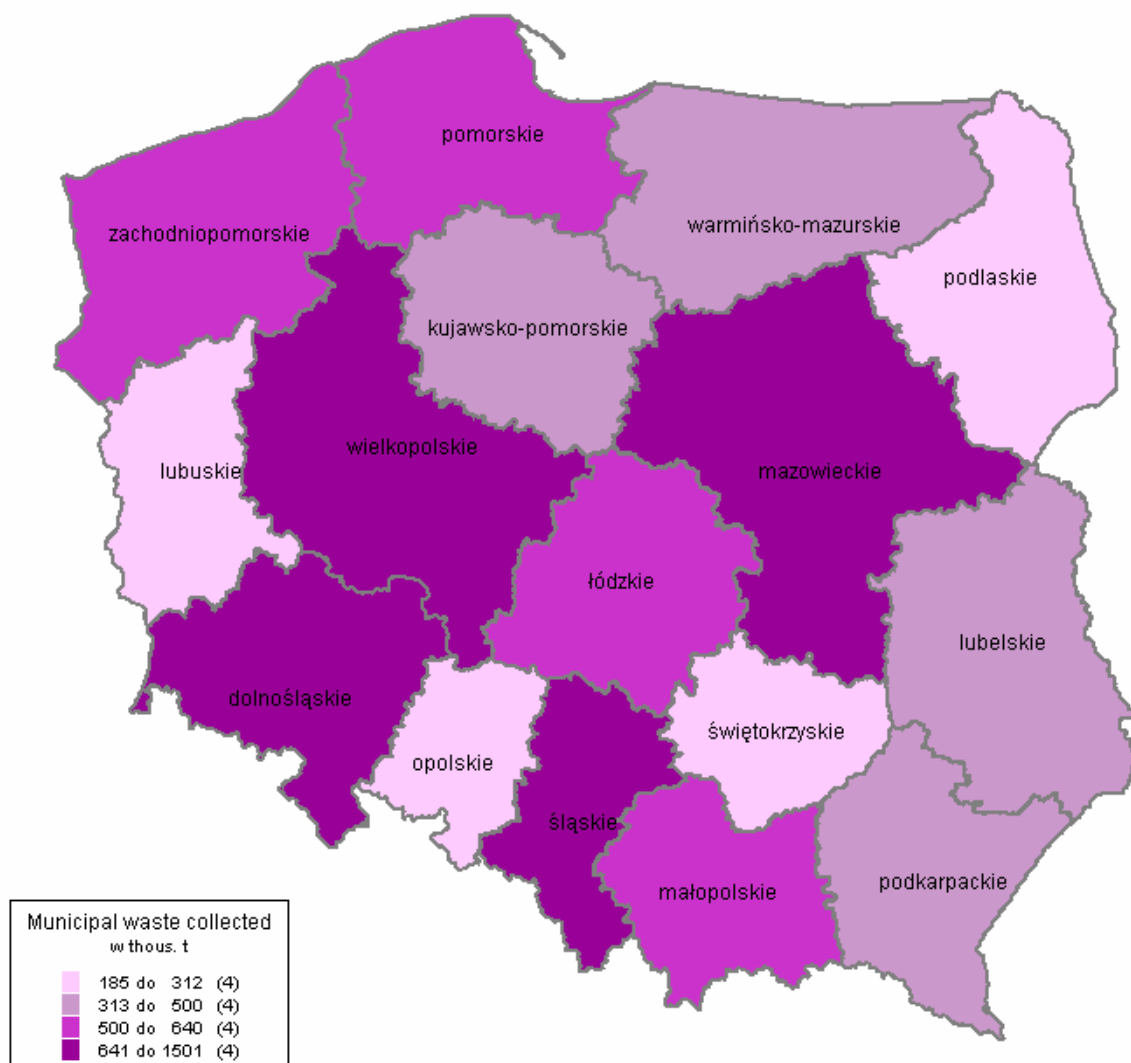
# Waste water discharged by voivodships in 2005



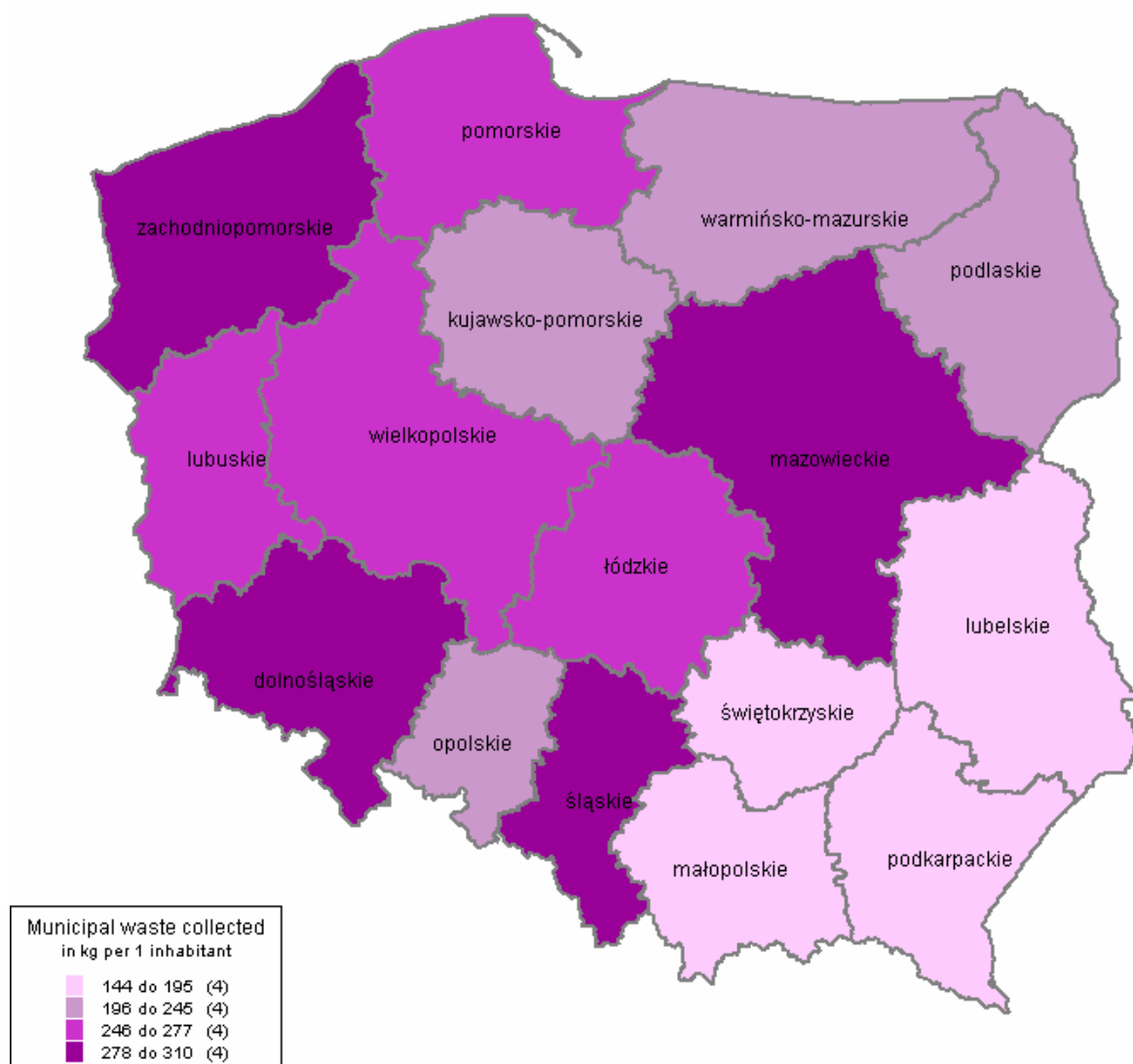
**Sales of heat energy by voivodships in 2005**



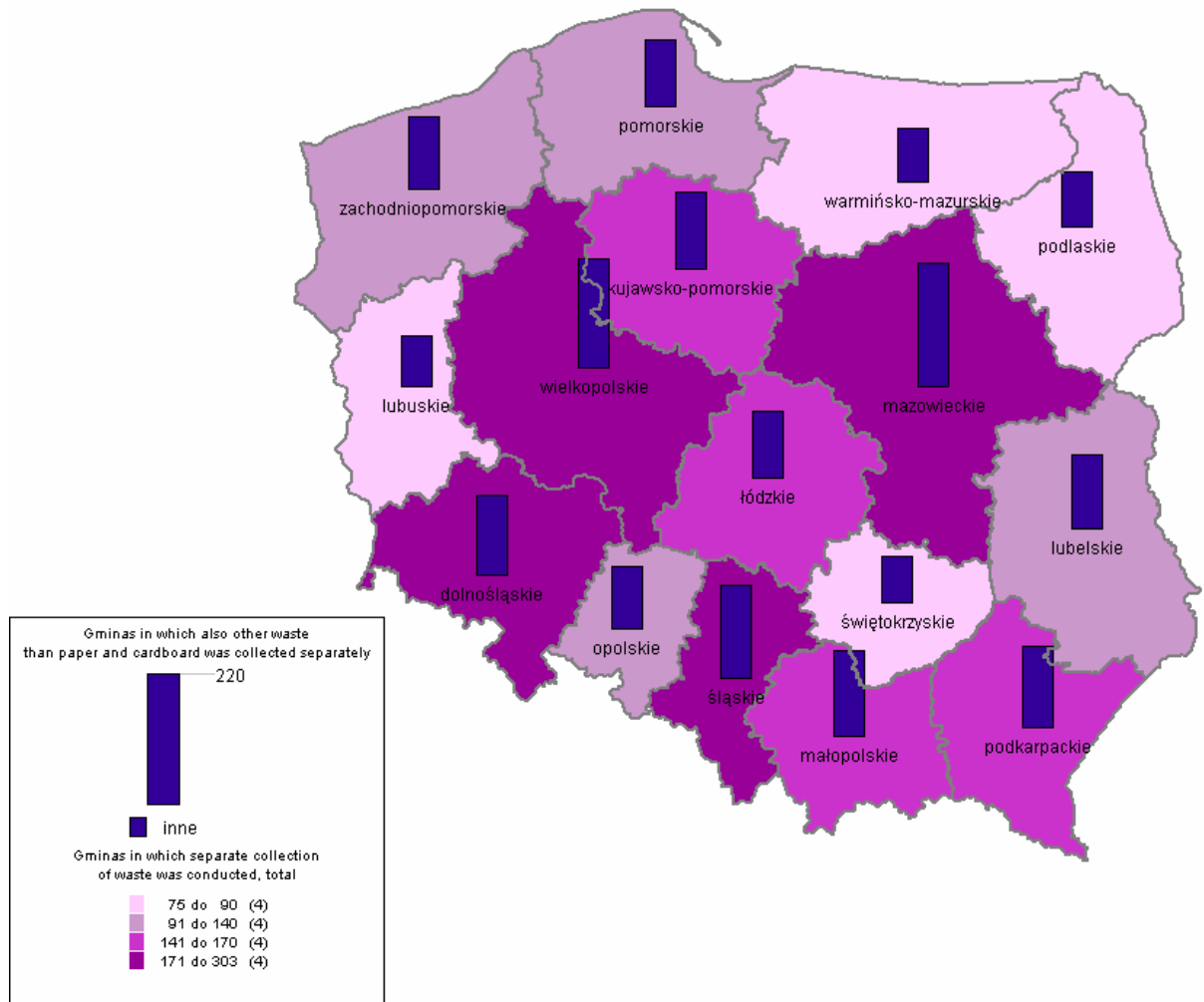
### Municipal waste collected in 2005 by voivodships.



### Municipal waste collected in 2005 per 1 inhabitant



# Municipal waste collected separately in 2005



# Uncontrolled waste dumps in 2005

