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MUNICIPAL INFRASTRUCTURE IN 2012

WARSAW 2013

STATISTICAL INFORMATION AND ELABORATIONS

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PREFACE

The present publication is a consecutive edition of “Municipal Infrastructure”. It aims at presenting data recipients with the characteristic of municipal services market in Poland in 2012 and presentation of tendencies of changes taking place in surveyed area of activity.

The elaboration includes information on installations and municipal services in the scope of water supply and sewage 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 regarding the location of facilities or the place of rendering municipal services and are presented for Poland as a total and with the breakdown into voivodships, urban, and rural areas.

The publication uses the results of compilations, got from statistical reports completed by entities, which scope of economic activities includes supplying of water to households, and discharging wastewater from them as well as collecting of municipal waste and liquid waste, treating and recycling of municipal waste, or distributing of electricity, heat energy, and gas from gas-line network.

The authors will be grateful to all people and institutions for sending their comments, which will shape and enhance the content of next editions of the publication.

*Director
of Trade and Services Department
Ewa Adach-Stankiewicz*

Warsaw, November 2013.

CONTENTS

PREFACE3

SYMBOLS5

ABBREVIATIONS5

1. METHODOLOGICAL REMARKS6

2. GLOSSARY OF KEY TERMS7

3. MUNICIPAL INFRASTRUCTURE IN 20129

 3.1. WATER SUPPLY SYSTEM AND SEWAGE SYSTEM MANAGEMENT9

 3.2. ENERGY MANAGEMENT AND GAS ENGINEERING..... 14

 3.3. HEATING MANAGEMENT 16

 3.4. MUNICIPAL WASTE MANAGEMENT 17

4. TABLE LIST – PLACED IN SEPARATE EXCEL FORMAT FILE.....24

SYMBOLS

| | |
|------------|---------------------------------------------------------|
| “_“ | – magnitude zero. |
| “0” | – magnitude not zero, but less than 0.5 unit. |
| “x” | – not applicable. |
| "of which" | – indicates that not all elements of the sum are given. |

ABBREVIATIONS

| | |
|------------------|------------------|
| thous. | thousand |
| mln | million |
| m | metre |
| m ² | square metre |
| m ³ | cubic metre |
| hm ³ | cubic hectometre |
| km | kilometre |
| km ² | square kilometre |
| ha | hectare |
| dam ³ | cubic decametre |
| kWh | kilowatt-hour |
| MWh | megawatt-hour |
| GWh | gigawatt-hour |
| J | joule |
| kJ | kilojoule |
| GJ | gigajoule |
| TJ | terajoule |
| cont. | continued |
| pc | piece |

1. METHODOLOGICAL REMARKS

Sources of information on municipal infrastructure in 2012 are results of statistical surveys carried out on reports M-06, M-09, and SG-01 part 3 as well as the secondary use of data from the survey on balance of energy carriers and heating infrastructure, and data coming from internal information systems of the Energy Market Agency S.A.

Data on water supply and sewage system management are collected within the full survey which comprises units with a primary, secondary or ancillary activity in management of water supply and sewage systems or liquid waste collection.

Data on energy management cover units which were granted concessions for transmission and distribution fuels and energy. Information on the number of consumers and consumption of electricity concern households and collective accommodation places that pay bills for consumption of electricity according to rates of "households" tariff group. Data on consumption of electricity are presented on the basis of information on advanced payments made by consumers.

Data regarding number of consumers of gas fuels come from entities which have concessions for gas trade, and are based on number of contracts with consumers of gas from gas supply network.

Information on heating include residential, and office and institutional buildings with central heating provided by transmission thermic-line considered as the system of joint installations, co-operating with each other, used for transmitting and distribution of heating medium to the recipient. Information regarding the boiler-houses or boiler-rooms cover 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, and installed facilities protecting atmosphere (limiting emission of pollutants to atmosphere).

Information on municipal waste comprise total quantity of waste collected during the year (including waste from households, commerce, small business, offices and institutions as well as municipal services), municipal waste collected separately for recycling, waste deposited on controlled landfills and waste subject to biological, mechanical-biological, and thermal treatment. Survey providing the above information is a full survey and covers entities involved in activities related to collection and treatment as well as recycling of municipal waste.

When computing data per 1 inhabitant (1,000 population, etc.) as of the end of a year (e.g., population using municipal installations), population as of 31 XII was used, whereas data describing the magnitude of a phenomenon within a year (e.g., consumption) as of 30 VI. For calculations regarding population, data prepared on the basis of the Population and Housing Census 2011 were used.

2. 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 supply and sewage management, heating management as well as distribution of fuels and energy to households, and municipal waste management.

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

Water supply system – a set of water network devices serving collection of surface and underground waters, public wells, devices serving storage and treatment of water, water supply networks, water pressure control devices.

Water supply transmission network – conduits bringing water from distant water intakes to distribution line.

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

Water supply service line – a segment of a conduit connecting water supply network with internal water supply installation in a property of consumer together with a valve past the main water-meter.

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

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

Water delivered for production purposes is 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 lavatories, bathrooms, dining-rooms, canteens, day-rooms, and office buildings which are located within the plant).

Sewage system is a complete sewage collection system serving discharging of wastewater, including sewage network, outlets of devices used to emit sludge into the waters, or into the ground, sewage pretreatment and treatment facilities, and sewage pumping stations.

Active sewage network – a system of covered (underground) conduits discharging sewage from buildings and other objects to collectors or sewage treatment facilities.

Sewage service line – a segment of conduit connecting internal sewage installations in a property of the services consumer with the sewage network after a first inspection chamber from a side of a building, and in case of its lack – from a boundary of a property.

Wastewater discharged – household wastewater or a mixture of household wastewater with rainfall wastewater or a mixture of household wastewater with industrial wastewater and rainfall wastewater.

Septic tank – an installation and device intended for an accumulation of liquid waste where it is generated.

Liquid waste – sewage stored temporarily in septic tanks.

Cast station – an installation and device, placed near a sewer or a wastewater treatment plant, intended for collecting of liquid waste, transported by sewage disposal vehicles from where it was accumulated.

Gas supply 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;
- service line – a system of conduits joining distribution gas-line system with buildings and other objects.

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

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.

Biodegradable waste – waste capable of undergoing anaerobic or aerobic decomposition.

Treatment of waste – 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.

Landfill site – a structure for the deposit of waste.

Thermal waste treatment – incineration of waste by oxidation and other processes of thermal treatment of waste including pyrolysis, gasification, and plasmic process provided that substances originating from these processes of thermal treatment of waste are incinerated afterwards.

Composting of waste – aerobic processing of municipal waste that are subject to biological decay in controlled conditions by using microorganisms in order to neutralize the waste.

Waste management – the collection, transport, recovery and disposal of waste, including the supervision of such operations and after-care of disposal sites.

Waste collection – the gathering, sorting or mixing of waste for the purpose of transport.

3. MUNICIPAL INFRASTRUCTURE IN 2012

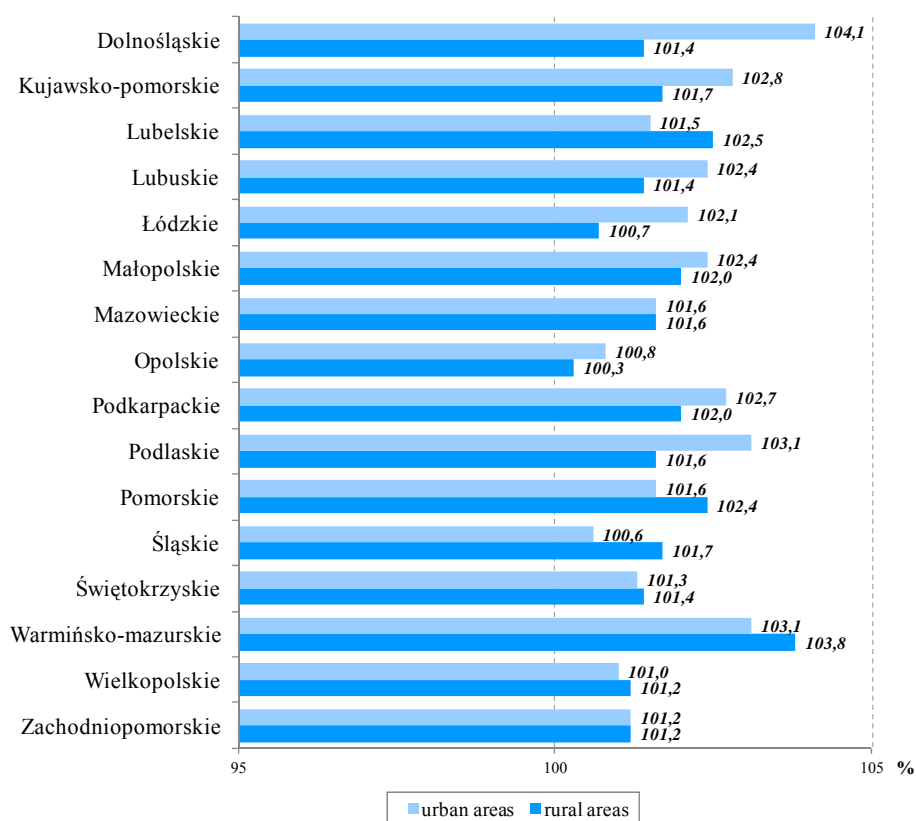
3.1. WATER SUPPLY SYSTEM AND SEWAGE SYSTEM MANAGEMENT

At the end of 2012 the length of water supply distribution network amounted more than 283.1 thous. km and rose by about 2% (i.e. by 4.8 thous. km) in comparison to the previous year. The largest congestion of network according to territorial division [in km per 100 km²] was observed in śląskie (164.6), kujawsko-pomorskie (125.5), łódzkie (121.8), and małopolskie (119.0) voivodships; the smallest was observed in zachodniopomorskie (45.7) and lubuskie (47.6) voivodships.

The network in the rural areas comprised almost 78% of the total length of network in Poland. In 2012, in rural areas almost 4 thous. km of new network were built. The highest increase in the network [in km] in the rural areas concerned: mazowieckie (528.4), warmińsko-mazurskie (467.8), lubelskie (428.2), and kujawsko-pomorskie (333.5) voivodships. In opolskie, lubuskie, and zachodniopomorskie voivodships the increase was below 100 km during a year.

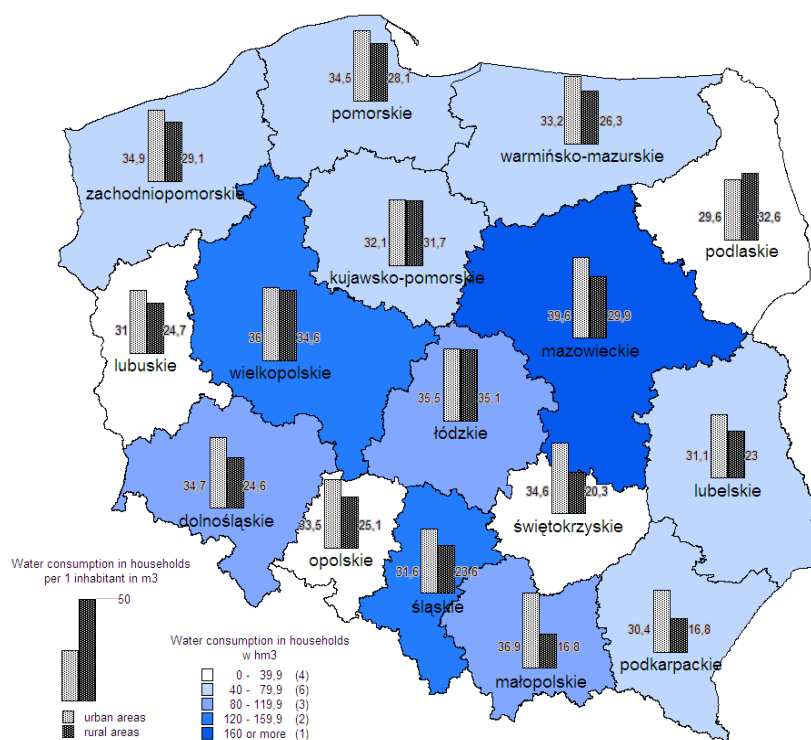
Change of length of the water supply network in 2012 [%]

[2011=100]



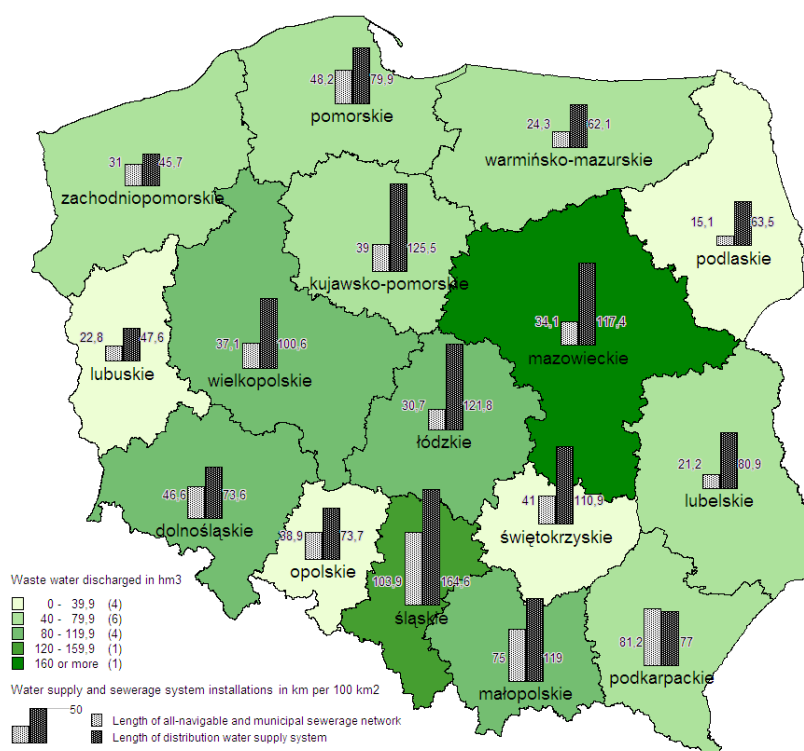
In 2012 the biggest water consumption [in m³] by households per one inhabitant was recorded in: mazowieckie (36.1) and wielkopolskie (35.4) voivodships, whereas the lowest in podkarpackie (22.4) and małopolskie (26.6) voivodships.

Water consumption in 2012 by voivodships



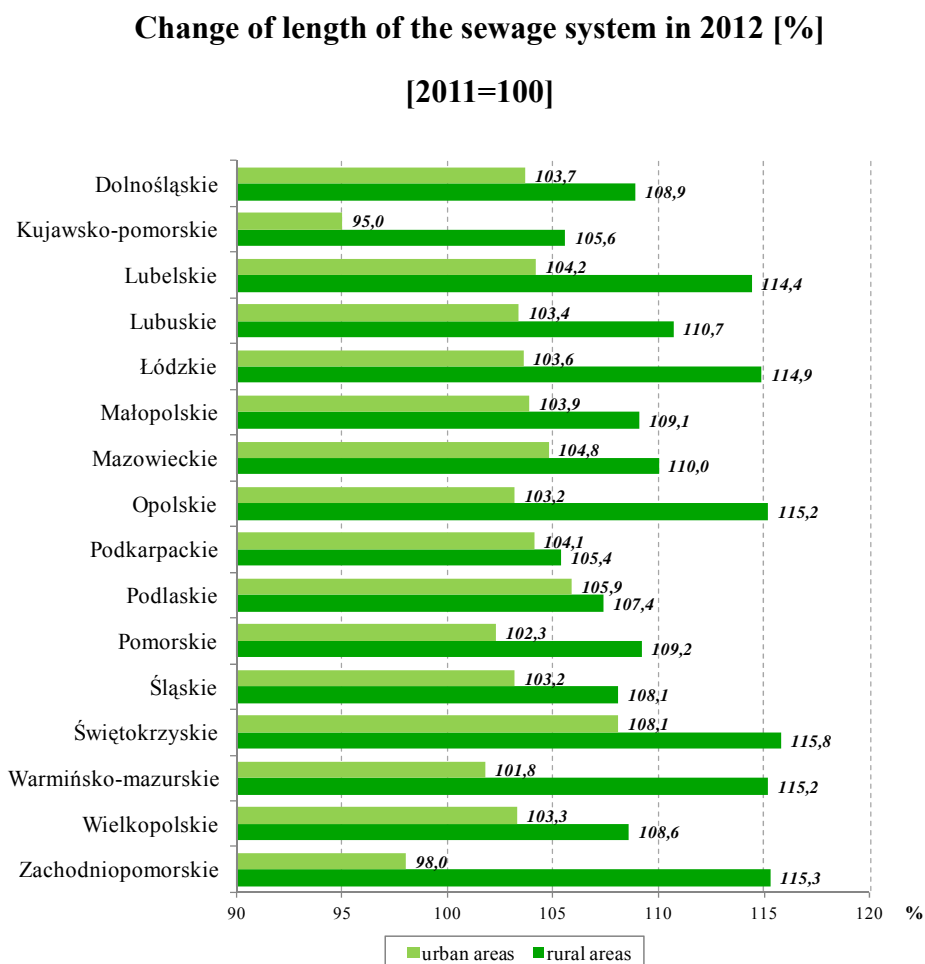
The value of this indicator in urban areas ranged from 39.6 m³ in mazowieckie to 29.6 m³ in podlaskie voivodship, while in rural areas from 35.1 m³ in łódzkie to 16.8 m³ in podkarpackie voivodship.

Wastewater discharged in 2012 by voivodships in 2012



At the end of 2012, the length of sewage system amounted almost 126 thous. km and rose by above 7% in relation to the previous year (i.e. by about 8 thous. km). The largest congestion of sewage network [in km per 100 km²] according to territorial division occurred in: śląskie (103.9), podkarpackie (81.2), małopolskie (75.0), and pomorskie (48.2) voivodships.

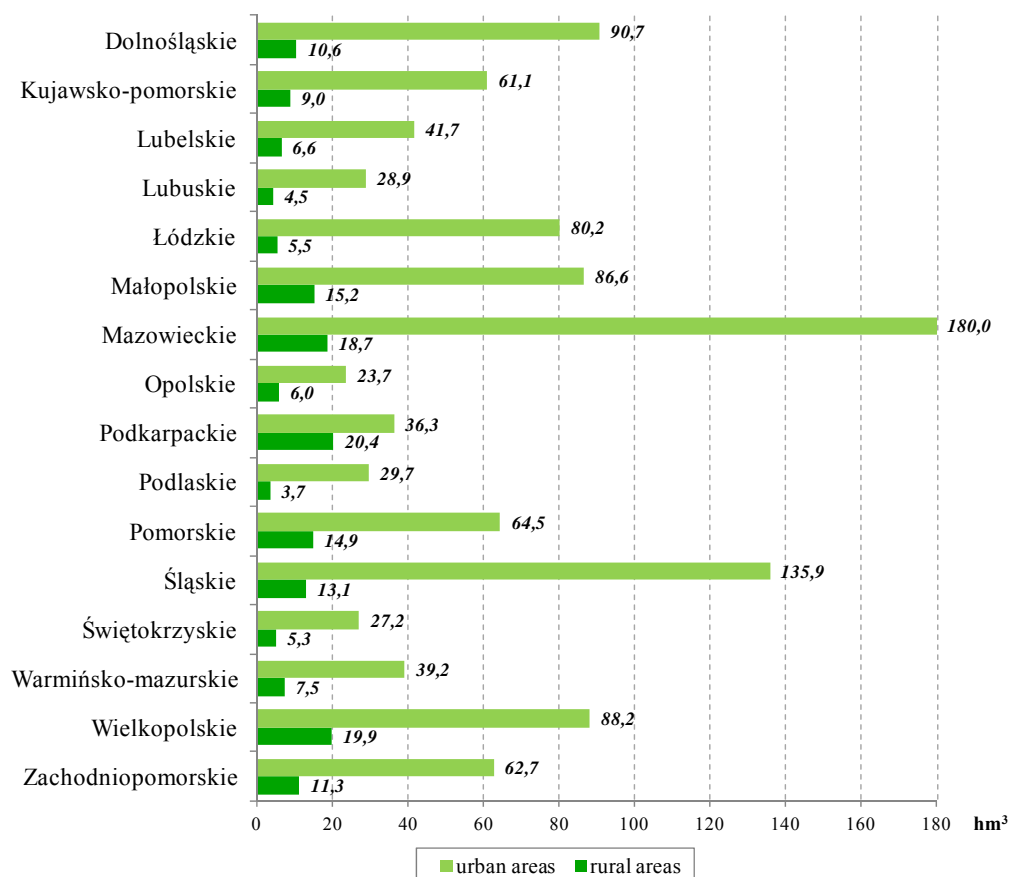
During 2012, in rural areas there was an increase of almost 6 thous. km of the new network (9.8%), and in urban areas almost 2 thous. km (3%).



The biggest increase in the newly-built sewage system [in km] occurred in mazowieckie (801.5) and małopolskie (741.2) voivodships. In kujawsko-pomorskie and podlaskie the increase was below 190, and in the remaining voivodships it was above 200.

There were observed significant differences in amount of wastewater discharged. These quantities ranged from almost 200 hm³ in mazowieckie voivodship to 30 hm³ in opolskie voivodship.

Wastewater discharged by voivodships in 2012 [hm³]

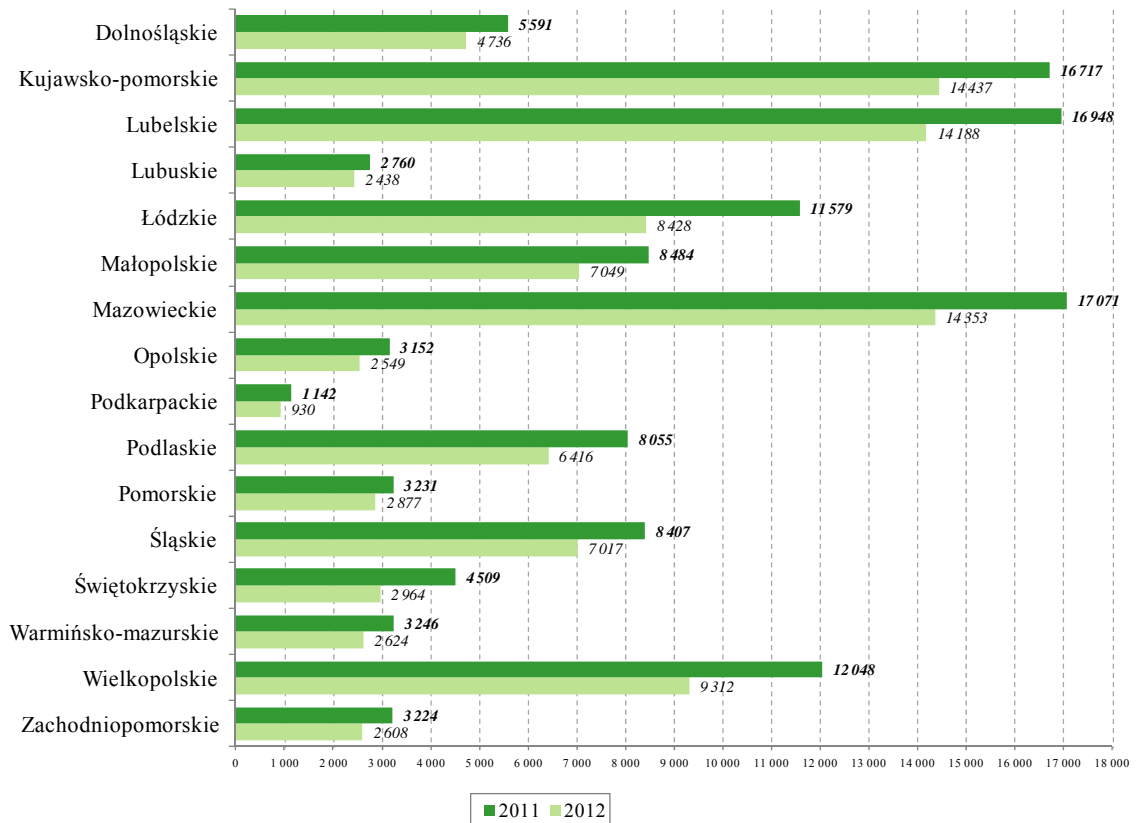


As not all buildings were connected to the sewage network, part of sewage was discharged into on-site wastewater disposal systems (septic tanks or on-site wastewater treatment facilities).

The number of septic tanks, in which liquid waste were temporarily stored, dropped from about 2,359 thous. in 2011 to 2,318 thous. in 2012, whereas the number of household wastewater treatment sites has risen from about 103 thous. in 2011 to about 126 thous. in 2012 (by 22.6%).

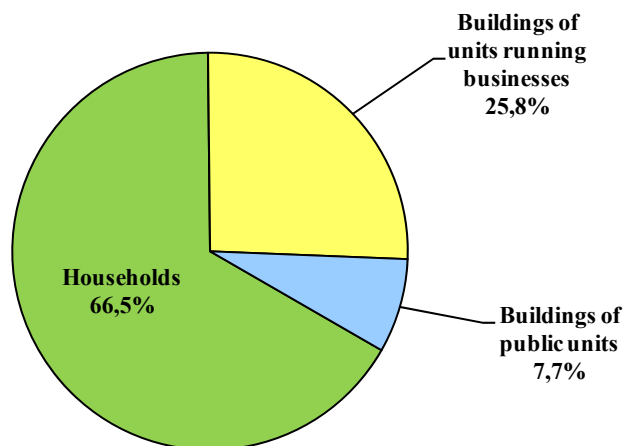
In 2012, about 72.2% of liquid waste was collected by private businesses (70.9% in 2011), whereas 27.8% by firms from the public sector (29.8% in 2011). The number of cast stations, which received sewage from septic tanks' users, amounted to 2,234 compared with 2,196 in the previous year.

Household wastewater treatment systems in 2011-2012 [pcs]



In 2012, about 23.8 thous. dam^3 of liquid waste was collected, a 4.3% decrease comparing with the previous year. About 66.5% of collected liquid waste originated from private households, 25.8% from buildings of units running businesses, and the remaining 7.7% from public buildings (in 2011, it was 65.2%, 26.5% and 8.3% respectively).

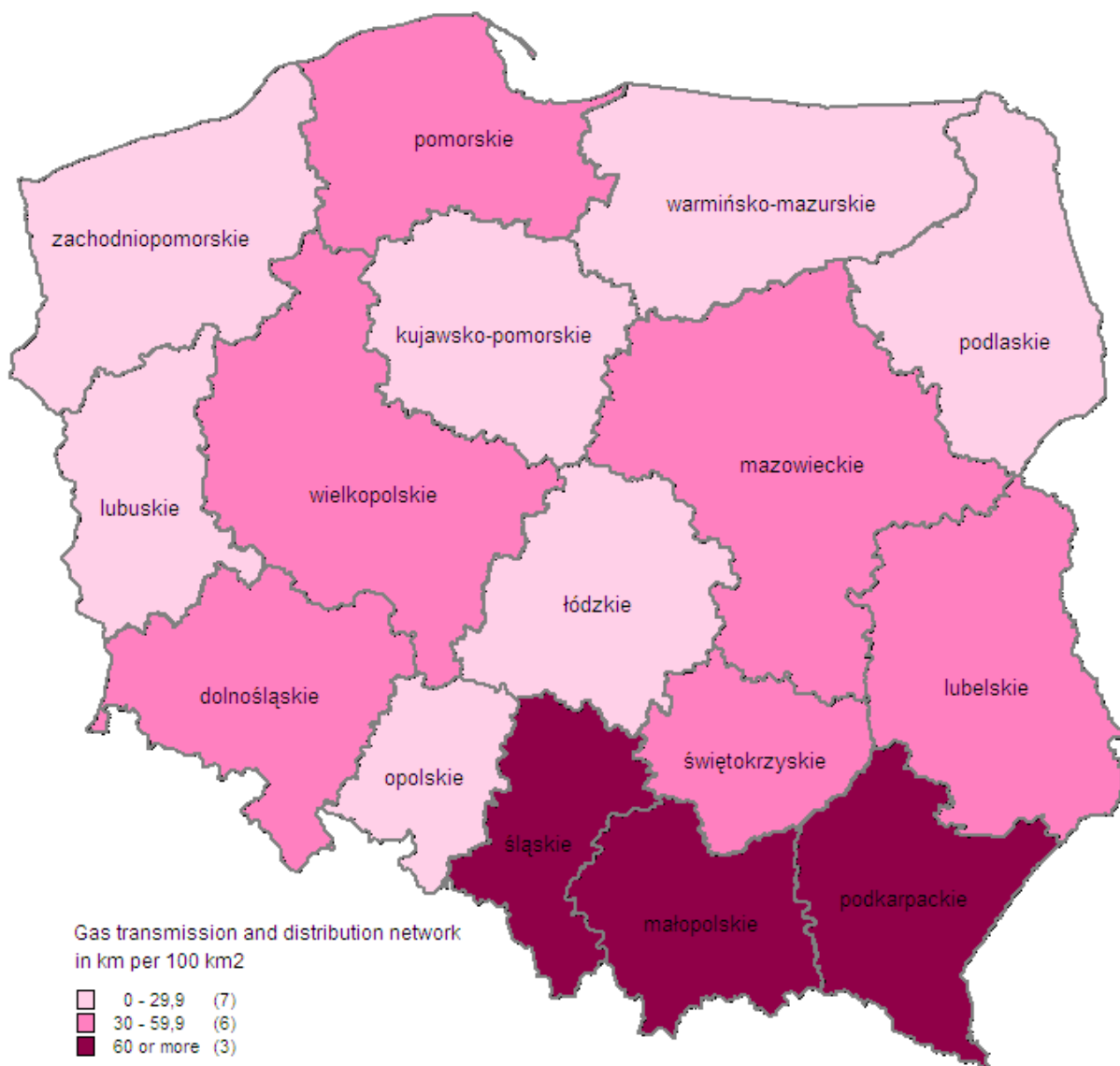
Sources of liquid waste in 2012 [%]



3.2. ENERGY MANAGEMENT AND GAS ENGINEERING

In 2012, the length of gas supply network amounted to more than 137 thous. km, of which almost 118 thous. km fell within the distribution gas network. The largest congestion of gas supply network [in km per 100 km²] occurred in małopolskie (137.7), śląskie (120.1), and podkarpackie (94.4) voivodships, of which 248.6 km in urban areas.

Gas infrastructure by voivodships in 2012

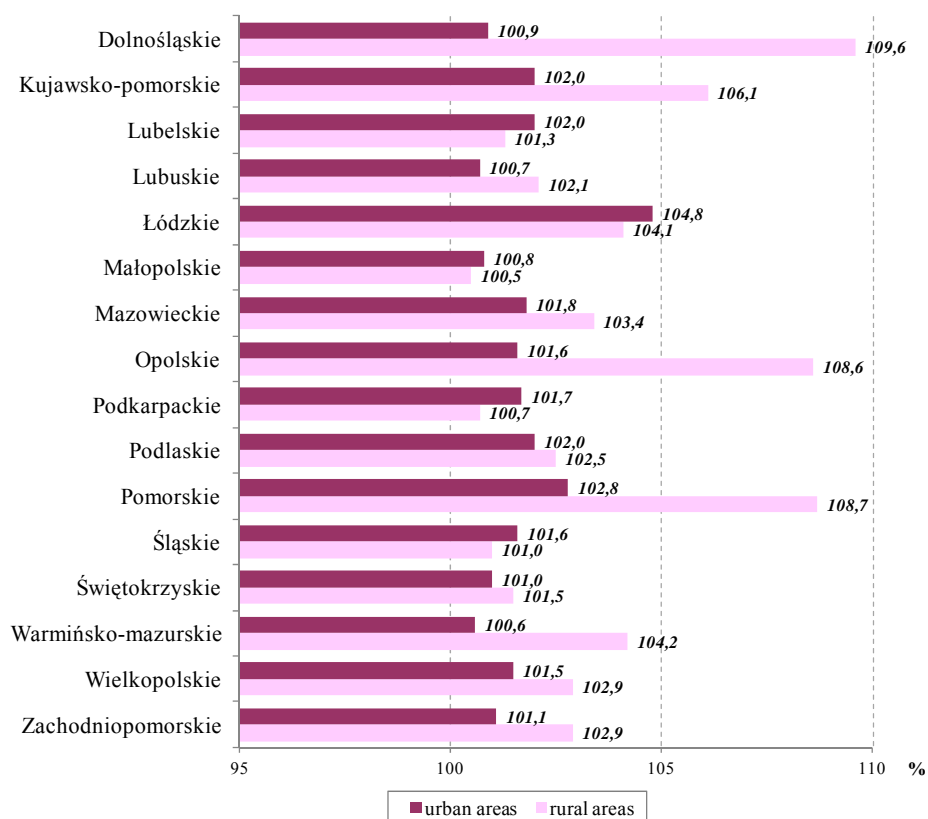


The highest increase in the length of gas distribution network in comparison to the previous year was in mazowieckie voivodship (almost 325 km) and wielkopolskie (250 km), and for świętokrzyskie, opolskie, lubuskie, warmińsko-mazurskie, and podlaskie voivodships the increase was below 50 km.

In 2012, the infrastructure development rate was on a similar level both in urban (101.6%) and rural areas (101.9%).

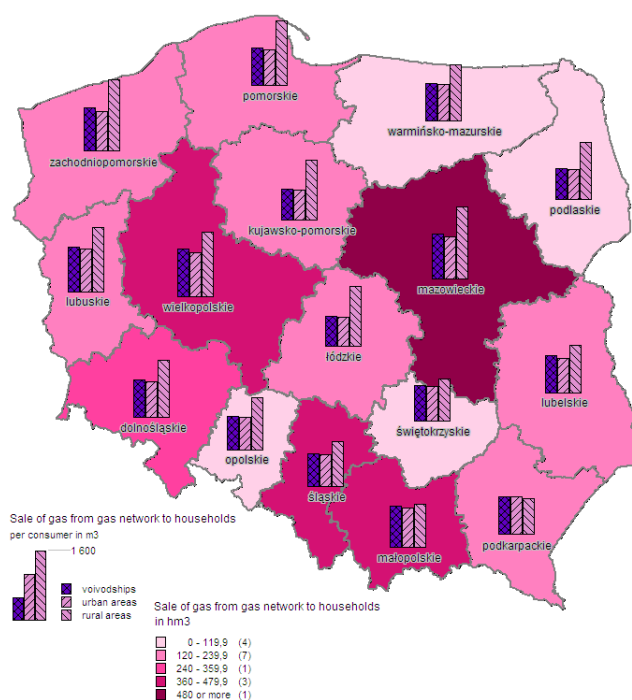
Change of length of gas supply distribution network in 2012 [%]

[2011=100]



The largest consumption of gas from gas network [in m³] in households (per one recipient) was noted in wielkopolskie (763.5), whereas the lowest in łódzkie (350.6) voivodship.

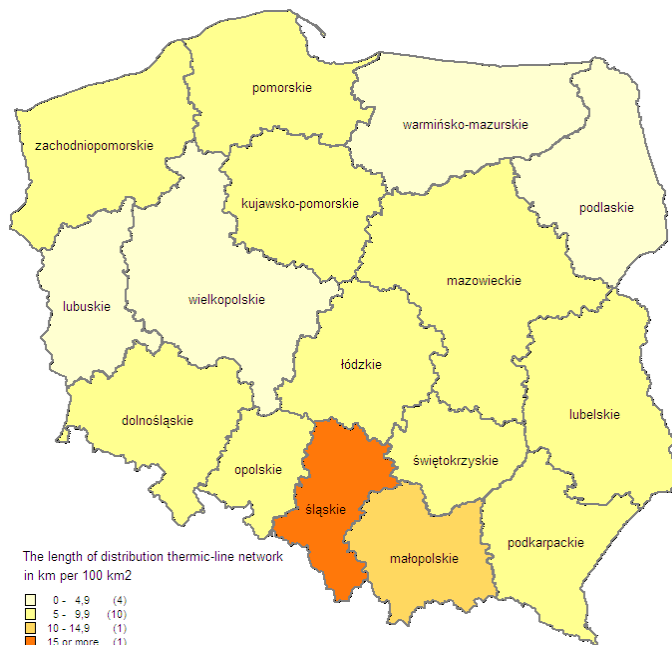
Sale of gas by voivodships in 2012



3.3. HEATING MANAGEMENT

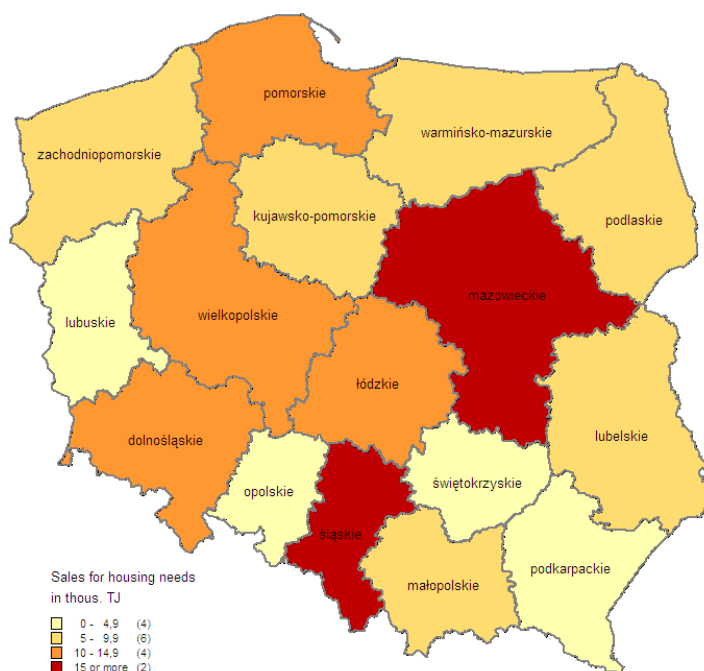
The largest congestion of thermic-line [in km per 100 km²] occurred in territory of: śląskie (29.9), małopolskie (13.1), mazowieckie, łódzkie (9.6 for each), and pomorskie (9.2) voivodships, and as for the remaining voivodships, it was below 9 km per 100 km².

Thermic-line by voivodships in 2012



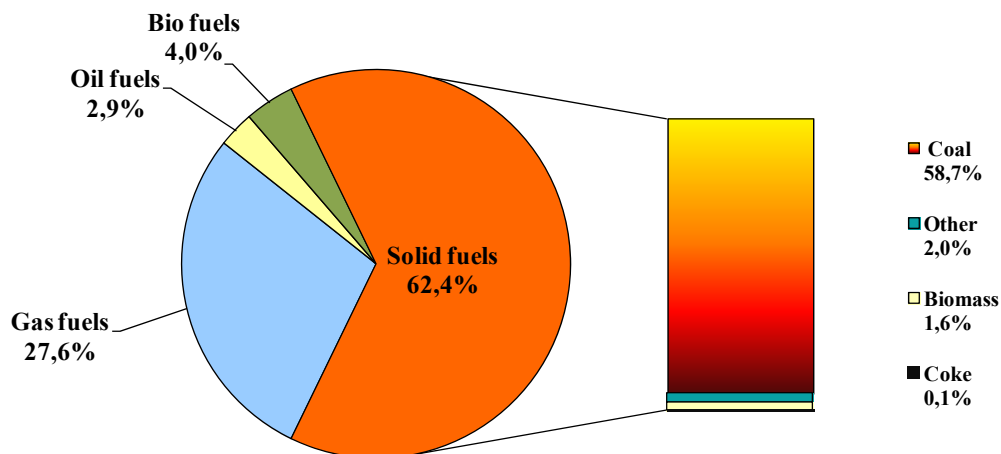
In 2012, the total sales of heat energy was almost 203 469 TJ, of which above 160 412 TJ for housing heating needs. This allowed to provide heating to buildings with total cubic volume of 1 855 630 thous. m³.

Sales of heat energy in 2012 by voivodships



Most of heat energy was produced with the usage of solid fuel – 62.4%, then gas fuel – 27.6%, bio fuels 4.0% and also oil fuel 2.9%.

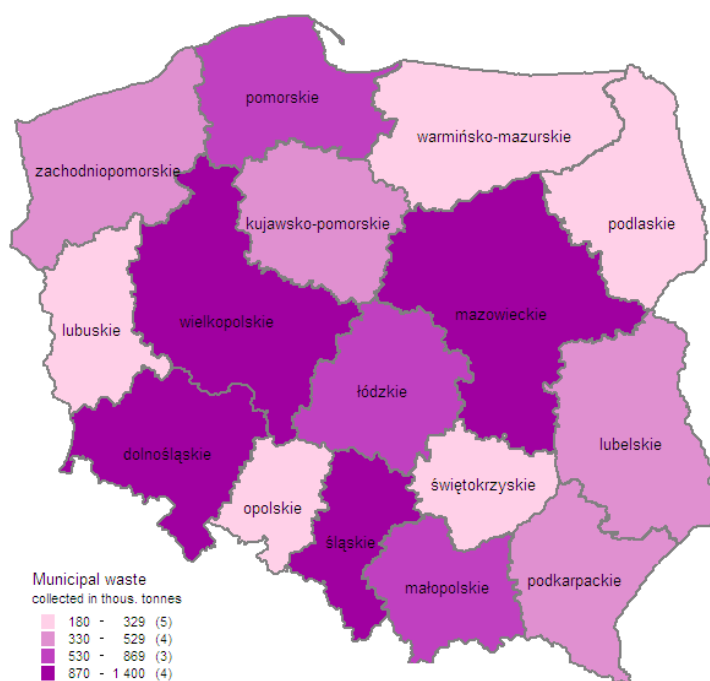
Types of fuel used for production of heat energy in 2012 [%]



3.4. MUNICIPAL WASTE MANAGEMENT

In 2012, in Poland 9,580.9 thous. tonnes of municipal waste were collected (in comparison to 2011 a 2.5% decrease). The amount of municipal waste generated also decreased – in 2012 it was 12,084.5 thous. tonnes, whereas in the previous year 12,128.8 thous. tonnes. Most municipal waste [in thous. tonnes] was collected in: mazowieckie (1,376.1), śląskie (1,351.4), wielkopolskie (933.9), and dolnośląskie (902.4) voivodships, whereas the least in: świętokrzyskie (181.4), podlaskie (241.9), opolskie (247.0), and lubuskie (304.1) voivodships.

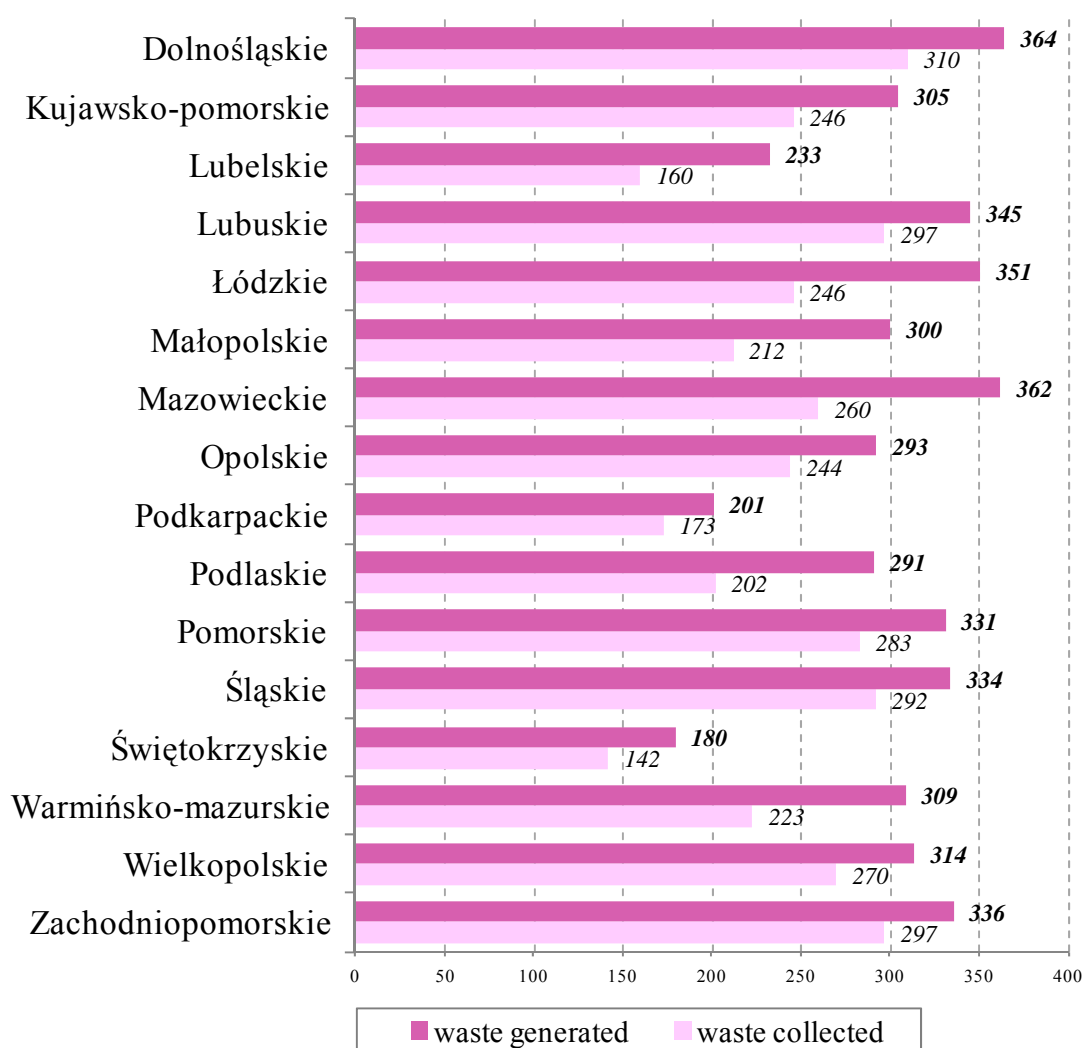
Municipal waste collected in 2012 by voivodships



In 2012, 59.5% of municipal waste was collected by private units (59.7% in 2011), whereas 40.5% by businesses from the public sector (40.3% in 2011).

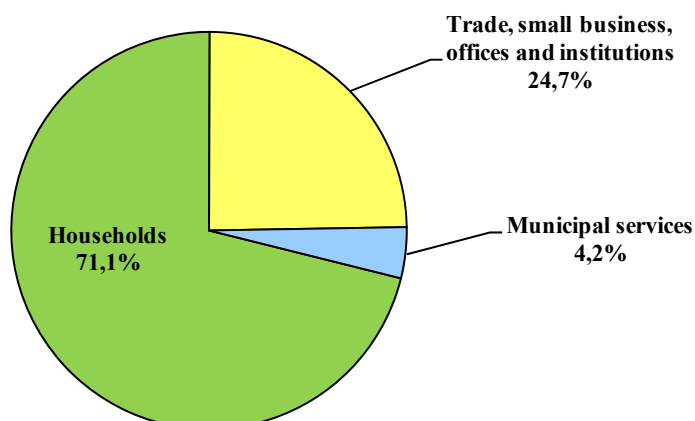
In 2012, there were about 314 kg of municipal waste generated per inhabitant, while the amount of municipal waste collected per inhabitant was at the level of about 249 kg.

Municipal waste generated and collected per inhabitant in 2012 [kg]



In 2012, the majority (71.1%) of mixed municipal waste was collected from private households. The next significant source (24.7%) was commerce, small business, offices and institutions. Waste from municipal services, such as street cleaning or maintenance of parks or cemeteries, accounted for 4.2% of total arisings of mixed municipal waste collected (in previous year it was 69.8%, 25.0%, and 5.2% respectively).

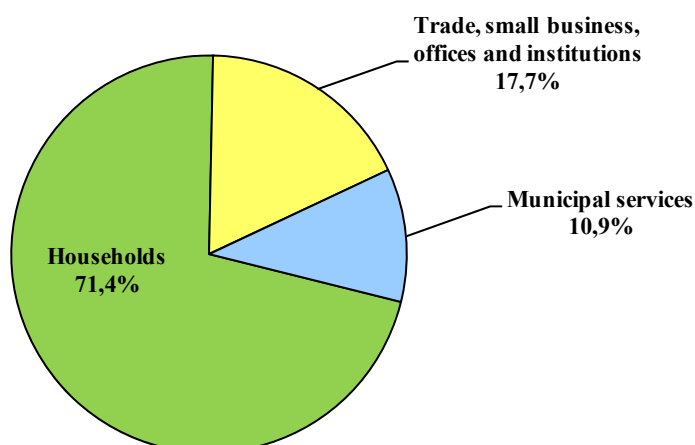
Sources of mixed municipal waste collected in 2012 [%]



In 2012, separate collection of municipal waste was provided in 2,410 gminas, of which biodegradable waste was collected in 1,210 gminas, and waste electrical and electronic equipment in 1,307 gminas (in 2011, in 1,031 and 1,289 gminas respectively). In 69 gminas separate collection was not organized (in 2011, in a territory of 89 gminas).

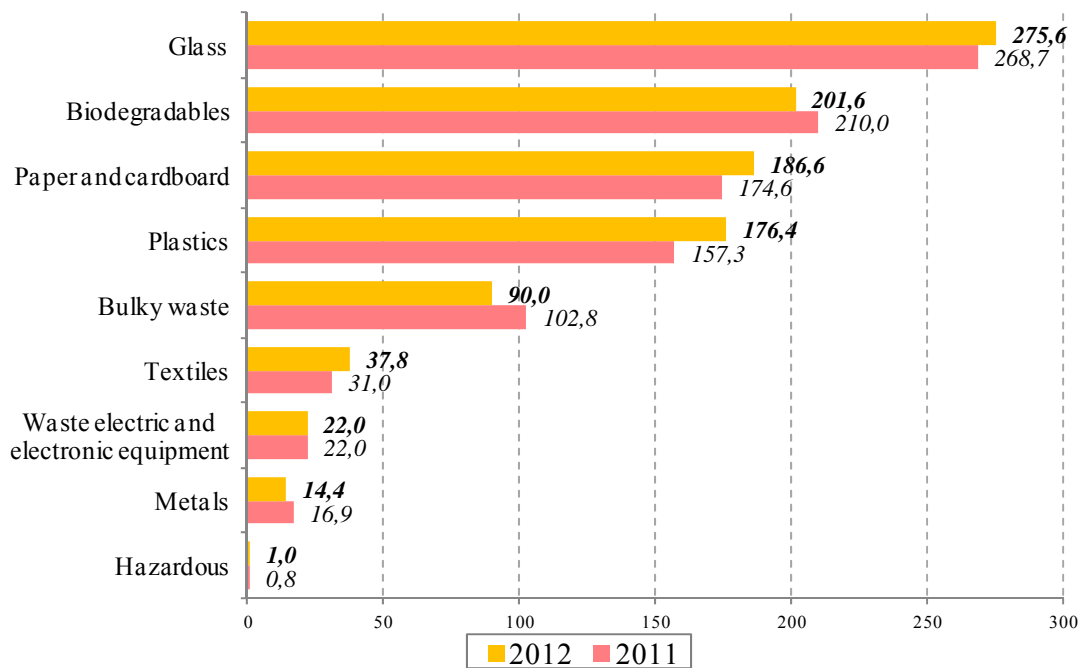
In 2012 most (71.4%) of separately collected municipal waste originated from households (mainly waste glass). Waste collected separately from commerce, small businesses, offices and institutions (mainly paper) accounted for 17.7%. Waste from municipal services (mainly biodegradable waste) was 10.9% of total arisings of municipal waste collected separately. In the previous year, it was 68.3%, 17.4% and 14.3% respectively.

Sources of municipal waste collected separately in 2012 [%]



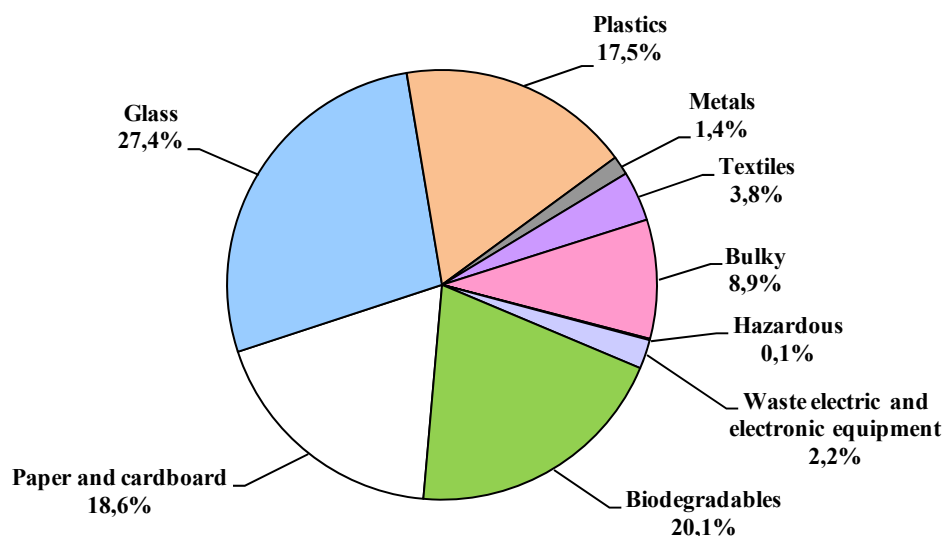
The share of separately collected waste in total amount of municipal waste collected increased from 10.0% in 2011 to 10.5% in 2012. Total tonnage of separately collected waste has increased from around 984 thous. tonnes in 2011 to around 1,005 thous. tonnes in 2012.

Municipal waste collected separately in 2011-2012 [thous. t]



In 2012, total amount of glass collected for recycling was 275.6 thous. tonnes (27.4% of the total waste collected separately). The amount of paper and cardboard collected separately was 186.6 thous. tonnes (18.6%). The amount of biodegradable waste collected separately was 201.6 thous. tonnes (20.1%), and plastics 176.4 thous. tonnes (17.5%). Considering the most commonly recycled materials, the amount of glass collected for recycling has increased since 2011 by 2.6%, the amount of paper and cardboard increased by 6.9%, and plastics by 12.2%. In 2012, there was collected 14.4 thous. tonnes of metal waste, a 14.9% less than in 2011.

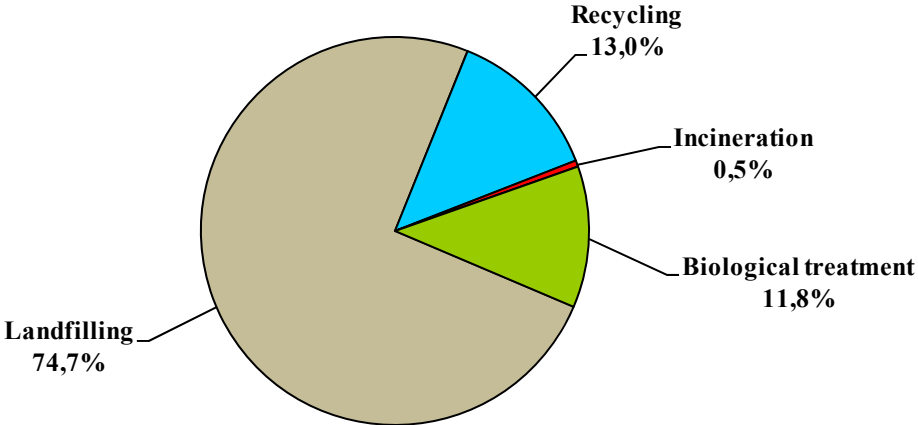
Municipal waste collected separately in 2012 [%]



The proportion of municipal waste being landfilled to waste collected fell from 77.9% in 2011 to 74.7% in 2012. However, the actual tonnage of waste being disposed of in this way decreased from 7,658.6 thous. tonnes in 2011 to 7,158.2 thous. tonnes in 2012 (by 6.5%).

In 2012, around 50.7 thous. tonnes of municipal waste were incinerated, which was 13.3% more than in 2011. However, the proportion of incinerated municipal waste to total tonnage of municipal waste collected, has remained constant (at the level of 0.5%).

Municipal waste management in 2012 [%]

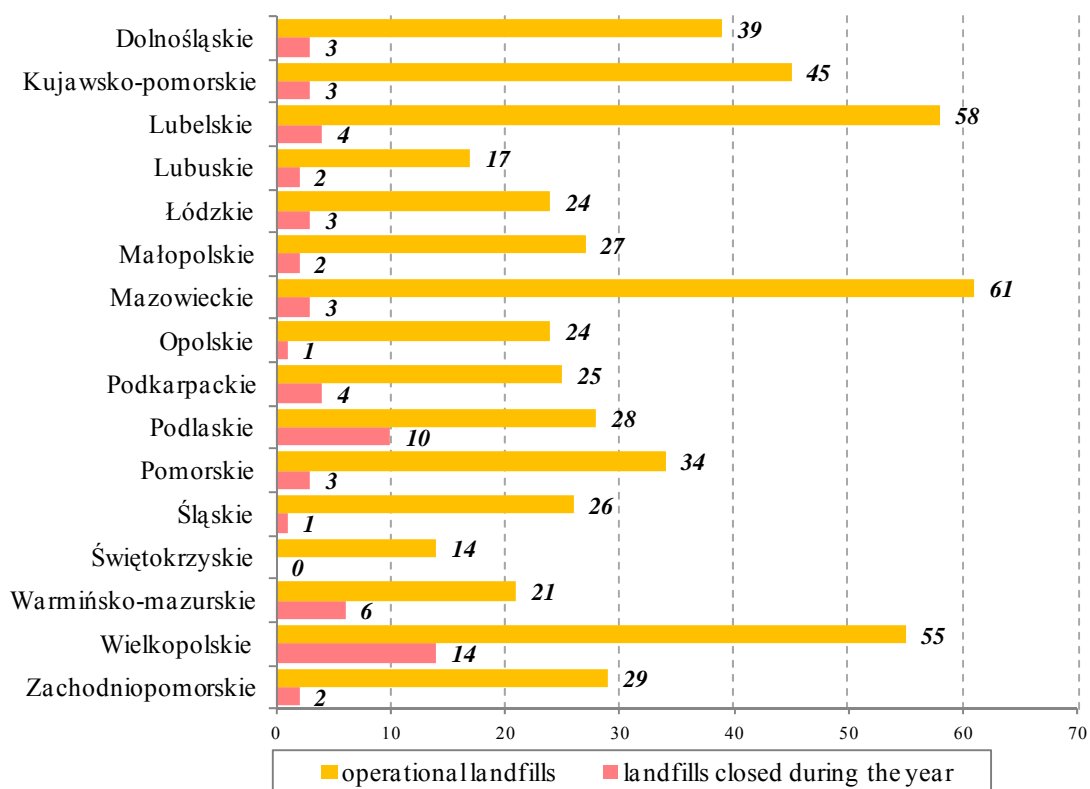


In 2012, about 1,128.2 thous. tonnes of municipal waste were treated by means of biological methods. These were mainly green wastes from gardens, parks, and cemeteries, compostable wastes from markets, biodegradable wastes from kitchens and waste from canteens. Compared to the previous year, the proportion of municipal waste being treated in that way has grown to the level of 11.8%. Around 439.9 thous. tonnes of materials designated for recycling were sorted out from mixed municipal waste.

At the end of 2012, there were 527 operating controlled landfill sites. They were occupying the total area of almost 2,198 ha. During 2012, there was closed 61 of such landfill sites, with an area of almost 132 ha.

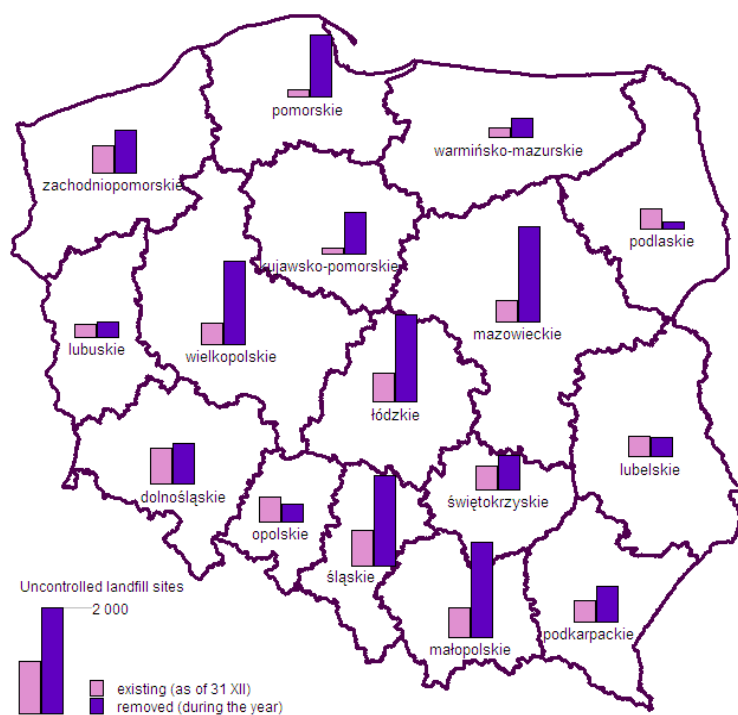
In 2012, among 430 of controlled landfill sites in operation with degassing installations almost 56.7% were those with landfill gas escaping to the atmosphere. On the remaining landfills, the collected gas was flared without energy recovery (a process of conversion of methane to carbon dioxide was taking place) or with energy recovery. In 2012, about 68,706 thous. MJ of thermal energy and around 163,812 thous. kWh of electrical energy was recovered by the means of neutralisation the captured landfill gas (by its burning).

Landfill sites in operation and closed during 2012 [pcs]



Uncontrolled landfilling of municipal waste was still one of issues of waste management in Poland. At the end of 2012, in Poland there were 2,334 illegal dumps, i.e. by 8% less than in the previous year.

Uncontrolled landfill sites in 2012



At the end of 2012, about 73% of existing uncontrolled dumping sites was located in rural areas, whereas almost 27% in urban areas. In 2011, it was 75% and 25% respectively. The number of uncontrolled dumping sites in urban areas in 2012 dropped by 0.6%, and in rural areas by 10.5% in comparison with the previous year.

The types of land most commonly affected by uncontrolled dumping of waste include land near to waste management facilities, derelict land, roadsides, back alleys, private land (particularly on the outskirts of urban areas) and watercourses. During 2012, about 10,623 of such dumping sites were removed, from which 83.1% in urban and 16.9% in rural areas. Compared to the previous year, total number of removed illegal dumping sites has decreased by about 19.5% (in urban areas it was a decrease of about 21.8%, whereas in rural areas there was a decrease by 6%). During removal of illegal landfills almost 85 thous. tonnes of municipal waste were collected, whereof 91.3% in urban and remaining 8.7% in rural areas.

4. TABLE LIST – PLACED IN SEPARATE EXCEL FORMAT FILE

1. MAJOR DATA REGARDING MUNICIPAL INFRASTRUCTURE IN 2005, 2010-2012
2. MUNICIPAL INSTALLATIONS
3. POPULATION USING MUNICIPAL INSTALLATIONS
4. WATER SUPPLY AND SEWAGE SYSTEM ADMINSTRATED BY REPORTING UNITS BY OWNERSHIP SECTORS
5. WATER SUPPLY INSTALLATIONS
6. WATER SUPPLY INSTALLATIONS IN 2005, 2010-2012
7. CONSUMPTION OF WATER FROM WATER SUPPLY SYSTEM IN HOUSEHOLDS
8. CONSUMPTION OF WATER IN HOUSEHOLDS BY OWNERSHIP SECTORS OF UNITS SUPPLYING WATER
9. SEWAGE SYSTEM INSTALLATIONS
10. SEWAGE SYSTEM INSTALLATIONS IN 2005, 2010-2012
11. EXPLOITATION OF WATER SUPPLY AND SEWAGE SYSTEM
12. COLLECTION OF LIQUID WASTE
13. LIQUID WASTE REMOVED TO WASTEWATER TREATMENT PLANTS
14. CONSUMERS AND CONSUMPTION OF ELECTRICITY IN HOUSEHOLDS
15. GAS SUPPLY NETWORK
16. CONNECTIONS AND CONSUMERS OF GAS FROM GAS NETWORK IN HOUSEHOLDS
17. CONSUMPTION OF GAS FROM GAS NETWORK IN HOUSEHOLDS
18. HEATING BY OWNERSHIP SECTORS
19. SALE OF HEATING ENERGY FOR MUNICIPAL PURPOSES IN GJ
20. BOILER-HOUSES AND THERMIC-LINE
21. CUBIC VOLUME OF BUILDINGS WITH CENTRAL HEATING
22. CHARACTERISTICS OF BOILERS BY TYPES
23. BOILER INSTALLATIONS PROTECTING ATMOSPHERE AGAINST EMISSION OF POLLUTION
24. PURIFICATION BY OWNERSHIP SECTORS
25. MUNICIPAL WASTE MANAGEMENT
26. MUNICIPAL WASTE COLLECTED AND GENERATED PER 1 INHABITANT IN 2005, 2010-2012
27. MIXED MUNICIPAL WASTE COLLECTED
28. MUNICIPAL WASTE COLLECTED SEPARATELY
29. METHODS OF TREATMENT OF MUNICIPAL WASTE
30. CONTROLLED LANDFILL SITES
31. DEGASSING OF CONTROLLED LANDFILL SITES
32. PLACES OF MUNICIPAL WASTE DEPOSITION
33. SEPARATE COLLECTION OF MUNICIPAL WASTE IN GMINAS