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ANALYSIS OF LEGAL CONDITIONS OF WATER MANAGEMENT IN SUPPLYING THE POPULATION WITH DRINKING WATER IN POLAND

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ANALIZA UWARUNKOWAŃ PRAWNYCH GOSPODAROWANIA WODĄ W ZAKRESIE ZAOPATRZENIA LUDNOŚCI W WODĘ PITNĄ W POLSCE

STRESZCZENIE: Zapewnienie ludności odpowiedniej jakości wody jest jednym z podstawowych warunków rozwoju zrównoważonego. Podstawowym aktem prawnym, regulującym problemy związane z gospodarowaniem zasobami wodnymi w Polsce, jest ustawa Prawo wodne. Z punktu widzenia zaopatrzenia ludności w wodę do spożycia uwagę należy zwrócić na nacisk jaki położono na spełnienie zasady zwrotu kosztów usług wodnych.

Celem artykułu jest zaprezentowanie stanu prawnego w odniesieniu do zaopatrzenia ludności w wodę do spożycia oraz aktualnego wykorzystania wód do tego celu.

SŁOWA KLUCZOWE: zasoby wodne, usługi wodne, jakość wody, ustawa Prawo wodne

Introduction

Supplying the population with enough high-quality water is one of the essential conditions for sustainable development. However, unlimited access to drinking water of good quality is still not even close to reality in a significant number of countries. The World Health Organization (WHO) reports that¹:

- since 1990, 2.6 billion people have gained access to sources of treated drinking water, but 663 million people are still deprived of it;
- at least 1.8 billion people worldwide use water sources contaminated by faeces;
- from 1990 to 2015, the percentage of the world's population using drinking water of appropriate quality increased from 76 to 91%;
- water scarcity problems affect over 40% of the world's people; more than 1.7 billion people currently live in river basins where water use exceeds the source's capacity for renewal of water;
- 2.4 billion people lack access to basic sanitation, such as toilets;
- more than 80% of communal sewage is discharged directly into rivers or the sea without any treatment;
- nearly 1,000 children die every day from water-contamination-related diseases.

These data indicate how much still needs to be done to achieve a satisfactory level of provision of access to appropriate quality drinking water for the population.

Management of water resources should cover social needs such as the protection of water resources. The appropriate legal framework should include this. Few elements are crucial in shaping the country's water policy, the direction toward which the changes of water management strategy are heading, the way how does the state fulfill social needs and protect water. When the state is taking action in line with the principles of sustainable development, it must also take into account the human factor. Public awareness of the problems related to water management needs to be widespread among the public. This raises the issue of education regarding not only ecology but also the problem of awareness of legal requirements in using water resources.

The evolution of law is an important issue. Does it follow the needs of the people and the limitations of the water resources? The Polish legal framework regarding water protection and water management is constantly being adapted to the legal requirements of the EU.

¹ United Nations website, www.un.org/sustainabledevelopment/water-and-sanitation [30/06/2016].

The aim of this article is to present the legal status of water management regarding the supply of drinking water of the people in Poland and to describe the current use of drinking water and its quality.

Literature research including legal acts and source material was used in the article.

The protection of drinking water sources

The basic legal act regulating issues related to water resources management and water protection in Poland is the Water Law Act². The act emphasizes that water management serves the needs of the citizens, the economy, water protection, and the environment associated with these resources, in particular, regarding ensuring adequate quantity and quality of water for the population. To keep water suitable for supplying the public, the surface and groundwater sources need to be subject to constant monitoring.

Surface waters are evaluated according to the classification of the ecological status, ecological potential, and chemical status. Ecological status and potential express the quality of the structure and functioning performance of the surface water ecosystem. It is classified based on the results of studies of the biological elements such as the physicochemical and hydro-morphological indicators, whereas classification of the chemical status of surface water is carried out using the results of analysis of measurements of chemical contaminants³.

Groundwater classification is determined by the physical and chemical indicators, with five classes of water being defined, where the first class indicates water of high quality and the fifth class represents water of poor quality, where the water parameters indicate the anthropopressure. The chemical state represents the good or poor chemical status⁴. Constant analysis of the water quality allows evaluation of the potential use of water for drinking and allows an adequate response once the poor water quality caused by human factors is recorded.

According to the Regulation of 21 December 2015 concerning groundwater resources that are preferred for use as a source of drinking water, it is also important to protect their quantity. It is, therefore, essential to assess some of the resources to be managed. In this regard, the classification of water

² Ustawa z dnia 18 lipca 2001 r. – Prawo wodne/The Water Law Act of 18 July 2001 (Dz.U. no. 115, item 1229, as amended).

³ Chief Inspectorate of Environment of Poland website, www.gios.gov.pl [06/09/2016].

⁴ Rozporządzenie Ministra Środowiska z dnia 21 grudnia 2015 r. w sprawie kryteriów i sposobu oceny stanu jednolitych części wód podziemnych/ Ordinance of the Minister of Environment of 21 December 2015 on the criteria and methods for assessing the status of groundwater (Dz.U. no. 2016, item 15).

includes the good and poor quantitative status of groundwater bodies. If the resources are greater than the average long-term real groundwater consumption, the water is classified as being of good quantitative status. If the average long-term real consumption from groundwater sources is equal to or higher than the resources available, the water is classified as being of poor quantitative status. This is linked to lowering of the water table as a result of human activity. An assessment of the amount of groundwater allows its rational use to be planned. This enables the issuance of permits for the use of groundwater, taking into account the protection of the size of the resource.

According to the Water Law Act, the protection of water which represents sources of drinking water includes water protection zones and the protected areas of inland water reservoirs. An intake protection zone (IPZ) is an area with applicable prohibitions, orders, and restrictions on land use and water use. To protect these water resources against degradation, they may be included in protected areas. In such areas, the erection of buildings or other activities that may cause permanent pollution of soil or groundwater, particularly carrying out investments classified as projects affecting the environment, may be prohibited.

The Water Law Act protects water resources with the best quality: groundwater. It establishes the principle that groundwater should be used for drinking and industries that require water of good quality, namely the pharmaceutical and food industries.

Surface water that could be a source of drinking water must meet certain requirements. The Polish law regulates the types of utilization of water resources for drinking through the decree of the Minister of Environment of 27 November 2002 on the requirements to be met by surface water used for the public supply of water intended for human consumption⁵. The Regulation distinguishes three categories of water:

- Category A1: water requiring simple physical treatment, particularly filtration and disinfection,
- Category A2: water requiring typical chemical and physical water treatments, particularly pre-oxidation, coagulation, flocculation, decantation, filtration, and disinfection (final chlorination),
- Category A3: water requiring high-performance chemical and physical water treatment, particularly oxidation, coagulation, flocculation, decan-

⁵ Rozporządzenie Ministra Środowiska z dnia 27 listopada 2002 r. w sprawie wymagań, jakim powinny odpowiadać wody powierzchniowe wykorzystywane do zaopatrzenia ludności w wodę przeznaczoną do spożycia/ Ordinance of the Minister of Environment of 27 November 2002 on the requirements to be met by surface water used for the public supply of water intended for human consumption (Dz.U. no. 204, No. 1728).

tation, filtration, activated carbon adsorption, disinfecting (ozonation, final chlorination).

The suitability of surface water for supply to the population as drinking water is classified according to the type of treatment process it must first undergo to be suitable for consumption. Each category of water corresponds to specific values of water quality. The provisions contained in the following European Union directives were transposed into the regulation above:

- Council Directive 75/440 / EEC of 16 June 1975 concerning the quality required of fresh surface water intended for the abstraction of drinking water in the Member States;
- Council Directive 79/869 / EEC of 9 October 1979 concerning the methods of measurement and frequencies of sampling and analysis of surface water intended for the abstraction of drinking water in the Member States.

The reference to water quality determined by the method of water treatment is included in the Ordinance of the Council of Ministers of 12 October 2015 on fees for using the environment⁶. The fees for consumption of surface and groundwater vary depending on which pretreatment process is applied to the water before use. The fee is higher if the water is treated with simple methods, and analogically the fee decreases if the water is treated with more complicated treatment processes before use.

The classification is purely theoretical with no practical application. It only gives some picture of the quality of water used for drinking, but the thresholds for each category are still the principal values in this matter. Every company that abstracts the water for consumption applies such treatment technologies to achieve proper parameters of water quality to make it is safe for consumers.

Classification of water should, therefore, be designed so as to be understandable and easy to interpret. Nevertheless, categories of water based on treatment methods do not meet these requirements. There are new methods of water treatment that allow safe water quality for the population to be achieved using water that was only recently still classified as unsuitable for consumption. However, there will always be a certain level of pollution beyond which the water is not safe to drink because the available treatment methods allow for too small a reduction of pollution or the treatment is currently not economical. Therefore, the classification of water as safe for drinking can be based on the highest values of water quality indicators, which can

⁶ Rozporządzenie Rady Ministrów z dnia 12 października 2015 r. w sprawie opłat za korzystanie ze środowiska/ Ordinance of the Council of Ministers of 12 October 2015 on fees for using the environment (Dz.U. item 1875).

be reduced by currently available methods to a level ensuring safe consumption.

The supply of drinking water of appropriate quality

The Water Law Act defines three types of water uses: common, normal, and special. The common use of water relates to the use of public waters to satisfy personal household or agricultural needs without the use of special technical devices as well as for recreation, hiking, and amateur fishing. Thus, in this situation, where the surface water is polluted significantly, this type of water use cannot be considered as supplying drinking water.

Normal use of water refers to a land owner having the right to use the waters that are on his or her property and underground water contained in the soil within his or her property. So we can use underground water for drinking from wells dug on our land. This law, however, does not include the possibility of abstraction of water with the help of technical appliances that require a water permit. The law provides for the possibility of collecting surface water or groundwater without permission if the amount is not greater than 5 m³ per day.

According to the Water Law Act, the water use of greatest importance for the public supply of drinking water is the special use of water, which goes beyond the common and normal uses of water. Special use means that the water is abstracted with a water supply system. This type of water usage requires a water permit.

In Polish conditions, the entity responsible for the collective supply of drinking water for the people is the municipal office. It is regulated by the Act of 7 June 2001 on the collective water supply and collective wastewater treatment⁷. The obligation to provide water to residents of the municipality is most often fulfilled through water supply and sewage treatment companies. The company charges the municipality office for the services provided. For most households, the fee is calculated by water meters installed in their homes⁸.

⁷ Ustawa z dnia 7 czerwca 2001 r. o zbiorowym zaopatrzeniu w wodę i zbiorowym odprowadzaniu ścieków/ Act of 7 June 2001 on the collective water supply and discharge of wastewater (Dz.U. no. 72, Item 747, as amended).

⁸ Rozporządzenie Ministra Budownictwa z dnia 28 czerwca 2006 r. w sprawie określania taryf, wzoru wniosku o zatwierdzenie taryf oraz warunków rozliczeń za zbiorowe zaopatrzenie w wodę i zbiorowe odprowadzanie ścieków/ Regulation of the Minister of Construction dated 28 June 2006 on the determination of tariffs, the model application for approval of tariffs and conditions of payment for collective water supply and collective sewage disposal (Dz.U. no. 127, item 886).

Individually owned wells may also be sources of drinking water for people. However, it is safer to use the collective water supply system due to the constant control of water parameters. The water from wells often does not meet the parameters required for consumption. There are many reasons for this, but the main one is the low awareness of individual well owners. Among the main reasons for this, we can name⁹:

- poor sanitary conditions of land adjacent to the well, especially in rural areas without access to the water supply and waste treatment system;
- leaking septic tanks, causing the transmission of pollutants into water and soil;
- storage of waste at unsuitable sites, which can allow penetration of leachate into the soil, groundwater, and surface water;
- detergent residues and plant protection products, which pose a risk of contamination by hazardous chemicals to the aquatic environment;
- excessive use of fertilizers on agricultural land, resulting in leaching of nutrients from the soil and their penetration into water and soil.

In Poland, the parameters of water intended for drinking are defined in the Act of the Ministry of Health of 13 November 2015 on the quality of water intended for human consumption¹⁰. Such water must meet the physical, chemical, bacteriological, and organoleptic requirements. The obligation to control water intended for drinking from the public water supply rests with the competencies of the water supply company. The control mentioned above is conducted as a part of the internal control policy of the companies, as described in the act on collective water supply and sewage disposal. In the case of exceeding the limit values of the water quality parameters, the company is obliged to inform the competent state district or state border sanitary inspector and the mayor, or city president. Also, if the parameters exceeded concern any radioactive elements, the company must notify the President of the National Atomic Energy Agency. The decision on whether or not water is suitable for drinking belongs to the competent state district or state border sanitary inspector, based on the results of water sample analysis conducted on a fixed schedule. The results are delivered by the water supply companies, which are obliged to carry out checks, or by the companies using water from the individual intake as part of their commercial activity or in the public buildings. If the exceeding of the limit values for a given water parameter, except for microbiological parameters, does not pose a health hazard and can be removed within 30 days, the competent state district or state border sani-

⁹ www.archiwum.ekoportal.gov.pl [30/06/2016].

¹⁰ Rozporządzenie Ministra Zdrowia z dnia 13 listopada 2015 r. w sprawie jakości wody przeznaczonej do spożycia przez ludzi/ Ordinance of the Minister of Health of 13 November 2015 on the quality of water intended for human consumption (Dz.U, item 1989).

tary inspector decides on a conditional suitability of water for consumption, specifying acceptable parametric values. The limit values permissible for the parameter cannot be exceeded for more than 30 days during the preceding twelve months.

The provisions of the regulation mentioned above do not apply to water from private water supplies serving less than 50 persons or providing less than an average of 10 m³ of water per day. Therefore, the quality of the water abstracted from private wells does not need to meet sanitary requirements.

The use of water resources for drinking in the new draft of the Water Law Act

The government has prepared a draft of a new Water Law bill that will come into force in 2017. One of the most important changes will be the return of recentralization of water management. Therefore the principle of subsidiarity defined in the Second Environmental Policy that results from the EU treaty has been moved aside. This means the gradual transfer of competences and decisions on nature protection issues to the lower instance at the appropriate regional level (voivodeship, powiat, or municipal level), which allows the issue to be solved effectively at the lowest level of administration¹¹.

It is planned to create a new administration unit – a legal entity – with competence to finance the investments related to water management as well as raising funds for these investments, including extra-budgetary funds. The structure of water management will be added with new budgetary administration units, with the field of competencies covering the area of administrative governance, issuing administrative decisions in particular¹². Strengthening the role of the state in water management may be considered as an important change in the new Water Law. The new bill passes the matters of water management at all levels entirely to a new entity: the Polish State Water Holding „Polish Waters”.

The statement that groundwater should be used primarily to supply water for human consumption, present in the existing Water Law, is also upheld in the draft of the new bill.

From the point of view on supplying people with drinking water, it needs to be mentioned that a large emphasis has been placed on the cost recovery of water services. The concept of water services appeared in the Water Framework Directive of the European Union. The Directive states that water

¹¹ Second National Environmental Policy. Document adopted by the Council of Ministers in June 2000 and by parliament in August 2001.

¹² www.bip.kprm.gov.pl [30/06/2016].

services „means all services provided for the households, public institutions or other economic activities, allowing:

- abstraction, storage, treatment and distribution of surface water or groundwater;
- the waste water collection and treatment devices, which discharge treated wastewater into surface waters”¹³.

The Water Law, in a new wording, defines water services as having the aim of “providing households, public entities, and business entities with the use of water beyond the scope of the common, normal, or special uses of water”. Water services in respect of supplying the population with water include:

- extraction of groundwater or surface water;
- treatment of groundwater and surface water and their distribution.

The fee for water services for water consumption – in line with the Regulation of 12 October 2015 – will consist of a fixed charge and a variable charge dependent on the amount of water taken in line with the regulations defined in water permit. The fee for water services in this area will depend on the amount and quality of water used and on the collected water destination, its average long-term low flow rate, and the documented groundwater resources. The current legislation defining the fee for water consumption, which is one of the fees for using the environment, fixes the fee amount taking into account the quality and amount of water used but does not account for the average long-period low flow rate or the documented groundwater resources. Instead, the availability of water resources around the location of the water extraction unit in individual regional water boards is taken into account.

The actual fee for the water consumption will be determined individually by „Polish Waters” as a formal decision. The fixed fee rate will depend on the water consumption limit, defined in the water permit; in the case of groundwater it will depend on water accessibility while in the case of surface water it will depend on the average long-period low flow rate.† The fees will range from 500 to 2,000 PLN per 1 m³/s for groundwater and from 250 to 1000 PLN per 1 m³/s for surface waters. Depending on the amount of water extracted due to a water extraction permit or due to an integrated permit allowing extraction, purification, and use for water supply purposes, the fee rate will be respectively:

- 0.70 PLN per 1 m³ of ground water,
- 0.82 PLN per 1 m³ of surface water.

¹³ Dyrektywa 2000/60/EC Parlamentu Europejskiego i Rady z dnia 23.10.2000 roku w sprawie ustanowienia ram działalności Wspólnoty w dziedzinie polityki wodnej/ Directive 2000/60/EC of the European Parliament and of the Council of 23.10.2000 on establishing a framework for community action in the field of water policy.

Separate fees, depending on the quantity of water consumed, will be valid for the consumption of water in the form of a variable fee depending on the amount of groundwater or surface water extracted for municipality obligations regarding the collective water supply of the population. They will fit within the range of 0.60 to 0.15 PLN per 1 m³ of water used. The rates were reduced significantly compared to the first version of the draft bill¹⁴. The proposed changes would result in a sudden increase of the costs in agriculture and the food industry and would directly affect household budgets.

The second part of the definition, defining water services, refers to the costs incurred by water supply service providers. Regarding the provision of the population with drinking water, the water service providers are water supply and sewerage companies. Costs incurred by these companies are primarily the costs of maintenance of equipment and exploitation. The costs also include the water service costs. Therefore, the changes of fee rates will affect the final price of water. The principle of cost recovery of water services should, therefore, pass on the costs of the public water supply services to the recipient.

All these actions aim to protect drinking water resources and their rational use. However, we cannot forget about the economic capacity of households concerning the public water supply. The proposals for instruments supporting households in case of a sudden increase in the cost of obtaining water should be elaborated.

Analysis of the use and quality of drinking water in Poland

The effectiveness of legislation aimed at ensuring an adequate quality of drinking water for the population can be confirmed based on the water consumption and quality analysis.

According to the Act of 7 June 2001, the State Sanitary Inspection and other laboratories with documented quality systems of research approved by the State Sanitary Inspection deal with the usefulness of drinking water.

Figure 1 shows the amount of groundwater and surface water used between 2008 and 2014 by the public water supply through water supply systems.

According to the data shown in Figure 1, in seven years the consumption of water for the collective supply of population in Poland declined by 115.4 hm³, which represents a decrease of approximately 5.5%. This situation is due to a change of the accounting method for water from a flat rate tariff to billing based on water meter indications. This change, together with an increase in water prices, forced the population to use water more economi-

¹⁴ www.legislacja.gov.pl [30/06/2016].

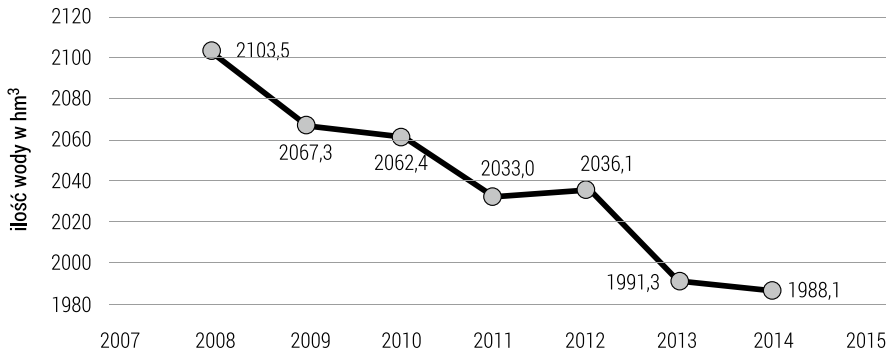


Figure 1. The amount of groundwater and surface water used for the public water supply in the years 2008–2014 [hm³]

Source: The author's own study based on *Environmental Protection 2015 – Statistical Information and Reports*, Warszawa 2015.

cally. The significance of environmental education of the population in this domain may be considered as marginal. Research conducted by the Ministry of the Environment showed that only 8% of respondents considered environmental protection as a problematic area, while 35% indicated water pollution as a problem and only 13% indicated water resources as a problem¹⁵.

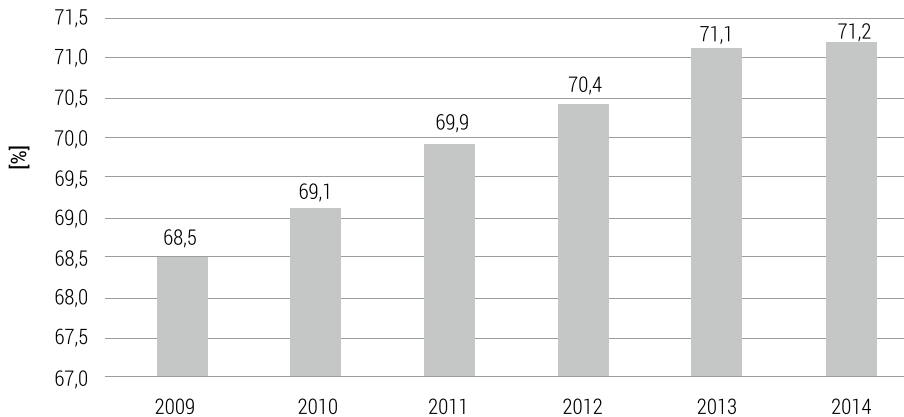


Figure 2. Percentage share of groundwater in the total use of water for supplying the population in the years 2009–2014

Source: The author's own study based on *Environmental Protection in 2015 ...*

¹⁵ The study of ecological awareness and behaviour of Polish citizens. Research tracking – measuring the October 2014 report by TNS for the Polish Ministry of Environment, www.mos.gov.pl [30/06/2016].

Therefore it can be concluded that the capacity of the household budget, and not intentional water saving, is the real cause of the decreasing water consumption.

Figure 2 presents the share of groundwater in the total amount of water used for the public supply of water.

The data presented in Figure 2 demonstrate a continuous increase in the use of groundwater resources for a public water supply.

Next to the amount of water used for consumption, the quality of water is essential. Table 1 presents the number of people supplied with water from the water supply system, including the people supplied with water of good quality.

Table 1. Use of tap water by the population in 2014

Water supply production performance [m ³ /d]	Population supplied with water	The share of the population supplied with water of appropriate quality [%]
≤100	1801,645	98,56
101-1000	9844,724	98,10
1001-10000	11383,005	99,31
10001-100000	9456,283	96,17
>100000	3611,258	100,00

Source: The author's own study based on the online article: *Jakość wody przeznaczonej do spożycia (The quality of water intended for human consumption)*, www.gis.gov.pl [28/06/2016].

The information presented in Table 1 indicates that only the largest water companies provide only water complying with the requirements for water intended for consumption.

It can be said that in 2014, about 98% of the population had access to water whose quality met the requirements of the Regulation of the Ministry of Health on the quality of water intended for human consumption. The remaining 2% had access to water conditionally approved for consumption or approved by temporary derogations from the standard regulations issued by the State Sanitary Inspection. According to the State Sanitary Inspection, it can be concluded that the national problem of supplying the population with water is due to the sometimes inefficient management of healthcare safety in small water supply plants. There are a large number of such small water supply plants in Poland, which often cannot invest in expensive technologies as well as the renewal and development of the exploited water sup-

ply system. From this point of view, it is advisable to build larger units. This trend can be observed in recent years, as the number of water intakes or water supplies with production rates $< 100 \text{ m}^3/\text{d}$ has decreased as a result of connection to larger water supply systems¹⁶.

Conclusions

Management of water resources in Poland has already undergone many modifications. Current trends are moving towards centralization of water management. This is clearly reflected in the draft of the new Water Law Act.

According to the principle that the best quality of water resources should be used as a source of drinking water, in Poland the amount of groundwater used for the collective public water supply is increasing. The amount of this water used in industry is decreasing as well. In the year 2000, for production purposes, 7637.9 hm^3 of water was used, of which 265.8 hm^3 was underground water. Groundwater represents 3.5% of the total consumption of water for production purposes. 203.4 hm^3 out of the total water intake of 7645.1 hm^3 was groundwater in 2015. This represents 2.7% of the total water collected by the production facilities from their own sources¹⁷.

The main changes to the current rules are dictated mainly by the requirements set by the European Union law. They are associated with the need for implementation of the EU directives, including the Nitrates Directive in particular. Regarding the water supply, the key issue is achieving the full recovery of costs of water services, which is related to future adjustments in the system of collective water supply fees. The current legislation regarding the quality of drinking water provides fully safe water produced by large water companies. Small companies have difficulty in complying with drinking water standards. However, take-overs of small units by larger companies are observed and are assumed to be a positive trend.

Acknowledgements

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¹⁶ The quality of water intended for human consumption, www.gis.gov.pl [28/06/2016].

¹⁷ Based on *Environmental Protection 2015 – Statistical Information and Reports*, Warsaw 2015.

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