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Financialisation of the water sector in Poland

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FINANCIALISATION OF THE WATER SECTOR IN POLAND

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Abstract: Over the last decade there has been dynamic development of technical infrastructure connected with the water economy in Poland. In the years 2000-2013, the water system network expended three times. Such development was possible thanks to the subsidies granted for the realisation of infrastructural investments under the European Union pre-accession (ISPA) as well as post-accession programmes (Structural Funds, Cohesion Funds) supported by state institutions responsible for environmental protection (the Ministry of Environment, the National Fund of Environmental Protection and Water Management). The financial means obtained from bank loans constituted an insignificant part of infrastructural investments.

Responsibility for the water system, including the collective supply of water and collective discharge of sewage, is held by gminas¹ and it is their own task under the municipal economy. Gminas, the number of which is 2479 in Poland, commission water and sewage service enterprises to perform these tasks. Such enterprises, characterised by a very fragmented structure, play a monopolistic role in a given gmina or a collection of gminas. That is why, the process of financialisation of this sector seems to be rather slow. Political conditions in local communities constitute additional limitations to abrupt ownership transformations in the water sector.

Of key importance in water sector is the process of establishing tariffs for collective water supply and collective sewage discharge. The manner of validating the tariffs by gminas is, however, rather questionable. The total price of water supply in Poland varies to

¹ Gmina - a self-governing community and its respective territory. The inhabitants of every gmina make up a self-governing community by virtue of law. Every gmina performs public activities for itself and on its own responsibility. The scope of gminas' activities includes all public issues of local importance, unrestricted by statutes for other entities. Satisfying collective needs of a community is the gmina's own task. Gminas have legal personality. The independence of a gmina is subject to judicial protection.

a large degree, compared to the prices of electricity or gas supply. It comes as a result of geographical and geological conditions in particular gminas as well as a large scale of proecological investments. Furthermore, the prices of water constitute a crucial political factor used in the fight for votes in the local government elections. The agreement from the gmina's authorities to increase water prices may contribute to their political defeat and a loss of influence.

The sector of water and sewage services is not supervised by a central regulatory authority. The functioning of water and sewage service enterprises is supervised by individual gminas. Thus, a conflict of interests occurs, i.e. gminas establish water and sewage service enterprises which they subsequently supervise. That is why, there has been a discussion in Poland over the creation of a central regulatory authority and the consolidation of the sector. These activities could lead to an intensive privatisation of this area of the economy and a significant growth in the level of financialisation of this sector.

Key words: water, water sector, provision of water, collective water supply, water and sewage service enterprises, financialisation of the waters sector.

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1. Introduction

Provision of water is an activity which consists of water collection, treatment and supply performed by a water and sewage service enterprise. The process of collective water supply is inadvertently connected with the process of collective sewage discharge, i.e. the activity which consists in discharging and treating sewage, performed by a water and sewage service enterprise. The main focus of this article is primarily on the services associated with collective water supply, yet the author refers to the process of collective sewage discharge where it is necessary for better understanding of the issues in question. Collective water supply and collective sewage discharge are the tasks of every gmina² in Poland and are performed by water and sewage service enterprises. A water and sewage service enterprise means an establishment running a business activity which provides collective water supply or collective sewage discharge, as well as gminas' organisational units without legal personality which perform such activities. Supplying water or discharging sewage is carried out through a network, i.e. water or sewage drains with all necessary equipment and devices which belong to and / or are operated by / managed by a water and sewage service enterprise. The recipient of the services connected with collective water supply and sewage discharge is every person (natural or legal) who uses these services under a written agreement with a water and sewage service enterprise.

The main aim of this paper is to investigate structural links between financialisation and the real economy in Poland with a specific reference to the water sector. To achieve this aim, the following tasks have been set and realized in particular parts of this study. To begin with, historical conditions for the development of the sector of water and sewage services are delineated in part one. Next, part two presents the principles of functioning of water and sewage service enterprises. The following section of the study identifies and evaluates organisational and legal forms of collective supply of water. The author also conducts an analysis of the market structure of water and sewage network services. An important part of this work is devoted to principles of establishing

² **Gmina** - a self-governing community and its respective territory.

tariffs for collective water supply. It is associated with the prices and payment rates for collective water supply. In addition, the role of the gmina as a regulator of the collective water supply system is identified in the subsequent part of the work, followed by an assessment of the financial statements of water and sewage service enterprises. In the background of the above-mentioned points, the author assesses already realised investments and the investment potential of water and sewage service enterprises

Various comparative and descriptive research methods have been used in this paper, in particular the SOP approach from the perspective of housing developed by Bayliss, Fine, Roberston (2013). A key issue here is the assessment of the influence of financialisation on the water and sewage sector. If this influence proves to be crucial, there is a need to determine the way in which financialisation affects the systems of provision (SOP) for the delivery of water in Poland and the consequent outcomes for equity. A system of provision (SOP) is defined as an array and sequence of activities, technologies and institutional arrangements that come together in the provision of a particular product or service and which dovetail with the cultures attached to water sector. Different components of the sop interact to create specific outcomes, which affect the affordability, accessibility and quality of the water. There is a need to identify the structural and contextual determinants of the systems that lead to such outcomes. These determinants include among others history, income and distribution, government policy, infrastructure, industry structure, labour, ownership structure, finance access. They may be analysed in terms of four different perspectives: processes, structure, participants and mutual relations among them (See more: Bayliss, Fine, Roberston, 2014, p.13). To complete main aim, the author has conducted an analysis of the system of provision for water in Poland for the years 1989-2011/1q.2014. The initial date of the research is connected with the beginning of political and economic transformations in Poland and the closing date stems from the availability of statistical data. Poland has been a member of the European Union since 1 May, 2004.

This paper is based on interviews, data, reports and information obtained from Ministry of the Environment, National Fund for Environmental Protection and Water Management, National Board of Water Economy, National Central Statistical Office, "Wodociągi Polskie" Chamber of Commerce, „Wodociągi-Kanalizacja” Journal.

2. Initial remarks

Water is the main source of life for all organisms on earth. Poland ranks among the countries with relatively scarce water resources. The annual stock of freshwater amounts to 1600 m³ per 1 inhabitant, while in most European countries this stock is approximately 5000 m³ per 1 inhabitant. Furthermore, surface water resources in Poland are characterised by great temporal and territorial changeability. Consequently, there are temporary surpluses and deficits of water in rivers. Storage reservoirs can compensate for this changeability only to some degree, due to the fact that the total capacity of these reservoirs does not exceed 6% of an annual volume of water drainage from the county area. The main source of water supply is surface water. The water collected from rivers and lakes cover over 84% of needs. Underground water resources are used primarily to supply the inhabitants with drinking water (See more in GUS, 2013).

Between 2000-2012 there was substantial investment in technical infrastructure connected with the water sector. In that period, the water and sewage network was extended, obsolete and inefficient infrastructure was eliminated from use, new sewage treatment plants were built and the existing ones were modernised, devices used for the reduction of a pollutant load in sewage were installed. In the years 2000-2012, the number of cities with sewage treatment plants increased by 102 from the level in 2000 (69% of total population had access to sewage treatment plants). The water supply network grew three fold in that period and amounted to 283 thousand km in 2012. It shall be noticed at this point that such an investment scale would not be possible without the financial support from gminas – the owners of water and sewage service enterprises (from 15 to 30% of the investment value), financial means from the state's budget (from 10 to 20%), funds from the European Union (from 10 to 25%), as well as the resources from ecological funds (from 10 to 20%) and bank loans (up to 10%).

The vast majority of the Polish people, i.e. 88% of total population, use the water supply network (See more in GUS, 2013). The largest share of water consumption belonged to the industry sector, accounting for over ¾ of total consumption. Konin has the largest water consumption, being one of the main lignite coal fields and having a complex of power

plants. The largest water consumption by households is in Warsaw, i.e. the city with a largest number of inhabitants (over 1.7 million people). It shall be noted, however, that water consumption decreased systematically in 2000-2012. This reduction in consumption results above all from the fact that measuring devices (water meters) were installed, less water was lost during distribution, water prices increased, house water devices were modernised and the users began to show a saving approach to water consumption.

Collective water supply is provided by water and sewage service enterprises, the number of which is approximately 1800 in Poland. A comprehensive analysis of this sector is extremely difficult, due to lack of detailed statistical data concerning all of these enterprises. Moreover, the sector of water and sewage services is very fragmented and consists of a number of supply regions (local markets) on the area of one or more gminas.

Table 1. Basic data on collective water supply (2012)

Specification	2012
Water supply network	
- transmission network in km	17179,8
- distribution network, total in km	283102,5
- distribution network per 100 km ²	90,5 ³
- distribution network in urban areas:	63147,7
- distribution network in rural areas:	219954,8
Length of network which is owned by public sector (municipal and mixed)	
- transmission network in km	16293,3
- transmission network in % of the total	95%
- distribution network in km	267390,5
- distribution network in % of the total	94%
Population using water supply system ⁴	
- grand total in thou.	33852
- in % of the total population	87,9
Water consumption in Poland, in hm ^{3**} , total	9247,1
- for industrial purposes	7708
- for purposes of exploitation of water supply network (of which households)	1539,1
Cities with decisive water consumption in the national economy, in hm ³	
- Konin	1388,5
- Ostrołęka	554,0
- Warszawa	313,7
- Skawina	288,8
- Szczecin	204,9
Consumption of water from water supply system in households:	
- total, in hm ³	1200,5
- per capita, in m ³	31,2
- urban areas, per capita, in m ³	34,5
- rural areas, per capita, in m ³	26,1
Enterprises in the water supply section; sewage and waste management*	
- number*	1489 (1793)
- working in thou.*	110
- revenue from the sale of products and goods, in million PLN*	28336
- expenditure on investments in total, in million PLN*	5571
- gross value of fixed assets, in million PLN*	78180

Explanations: * Based on the analysis of the economic activity of enterprises with over 9 employees conducted by the Central Statistical Office (GUS) for the year 2012, there were

³ Sewage distribution network per 100 km²: 40.2, Gas supply distribution network per 100 km²: 37.6.

⁴ Population using sewage system, grand total in thou.: 24788.4, in % of the total population: 64.3. Population using gas supply system, grand total in thou.: 20193.5, in % of the total population: 52.4.

76939 entities; the study did not include public organisational units ** 1 hm³ = 1 000 000 m³.

Source: Based on the data of the Central Statistical Office (2013, 2014).

3. Historical development of the sector of water and sewage services in Poland

Water and sewage service enterprises operating in Poland in 1918, after the country had regained its independence, could be classified as: a) enterprises which remained under their own public regulatory boards (not separated or separated from municipal administration) or private boards (acting as public limited companies or limited liability companies), b) mixed enterprises, possessing private capital or cooperative capital shares, acting as public limited companies or limited liability companies, c) licenced or leased enterprises (Dymaczewski, Sozański 2002, p. 59).

After World War II, in the 1950s, the pre-war forms of municipal self-government were liquidated. It stemmed from the introduction of the socialist form of government, dominated by public ownership and the process of centralisation. In larger cities, a single or multi-branch state enterprises were established, which in 1981 became public utility enterprises. In smaller towns and rural gminas, the activity in the area of water and sewage system services was handed over to budgetary institutions or units. With the course of time, the process of centralisation of single-branch enterprises took place. In capital cities of provinces, regions enterprises were established, encompassing a vast majority of the city in their activities. At the beginning of political and economic transformations in Poland, in early 1990, there were approximately 50 single-branch water and sewage service enterprises in Poland, 80% of which were within the provincial or regional reach. In smaller towns, water and sewage networks were operated by multi-branch enterprises, i.e. urban economy enterprises or urban and housing enterprises. Budgetary institutions or units operated in small towns, and provincial institutions of water services operated in villages. Rural water networks were built and operated also by large state agricultural farms (Dymaczewski, Sozański 2002, pp. 59-60).

In 1990, collective water supply and sewage discharge were regarded to be the tasks of every gmina, which was also given the state property connected with the realisation of this task. It was also the beginning of decentralisation and municipalisation of provincial enterprises, provincial institutions of water services, municipalisation of municipal enterprises, as well as transferring to gminas factory water networks (in state-owned enterprises) serving settlement units (Dymaczewski, Sozański 2002, p. 60). When the ownership and organisational transformations began in 1990, gminas did not analyse the economic conditions of water and sewage service enterprises. Organisational changes consisted in separating smaller units from large enterprises, the units which would serve just one gmina. As a result of this reorganisation, the costs of the newly created entities increased considerably. For political reasons, it was embarrassing both for local authorities and government to reveal that the charges for water and sewage services were underpriced (below cost value), that a renovation backlog occurred or that necessary replacements of decapitalised and malfunctioning technical devices were neglected. Besides the statutory, postponed dates of ownership transformations, there were no crucial reasons for conducting a rapid ownership transformation. As a result, this process took a long time. A large number of companies and budgetary establishments were created only when the Act on the municipal economy from 1997 forced the final yearly date of establishment of or transfer of water and sewage services to commercial law companies or budgetary establishments (Dymaczewski, Sozański 2002, p. 68). It seems important to highlight at this point that the key instruments of political and economic transformations in Poland were: privatisation and decentralisation. The above-mentioned transfer of wealth from gminas to water and sewage service enterprises fitted perfectly the trend of ownership transformations which was dominant in the economy of the times. However, in the sector under analysis, the transfer of wealth happened together with the transfer of rights to this wealth. Thus, gminas remained the owners of water and sewage service enterprises, which in turn owned the water and sewage network infrastructure. Furthermore, numerous transgressions in this area continue. Today, there are many gminas (ca. 500) where water and sewage services are performed by the gminas'

departments, which de facto is against the law concerning also water and sewage service enterprises.

4. Principles of functioning of water and sewage service enterprises

Water and sewage service enterprises established after 1997 cover the basic living needs of local communities. These entities have a monopoly position on given local markets. The sector of water and sewage services is regulated by the Act of 7 June 2001 on collective water supply and collective sewage discharge (uniform text Journal of Laws of 2006 no. 123, item 858 with amendments). This law specifies the principles of and conditions for collective supply of water fit for human consumption and collective discharge of sewage, including: 1) the principles of functioning of water and sewage service enterprises, 2) the principles of creating conditions for ensuring the continuity of supply and proper quality of water, reliable discharge and treatment of sewage, requirements concerning the quality of water fit for human consumption, and 3) the principles of the protection of consumer interest, including the requirements of the environmental protection and optimisation of costs.

In accordance with the above-mentioned act, a water and sewage service enterprise is obliged to ensure the capacity of its water supply system devices and sewage devices for the performance of water supply in the required amount and under proper pressure, to ensure supply of water and discharge of sewage in a continuous and reliable manner, as well as to ensure proper quality of supplied water and discharged sewage. It shall be noted here that it is economically unjustified (profitable) to transmit water over long distances or to equip scarcely populated areas with water technical infrastructure.

A water and sewage service enterprise devises a long-standing plan of development and modernisation of water supply system devices and sewage system devices which belong to the enterprise. This plan specifies in particular: the planned scope of water supply and sewage discharge services, development and modernisation undertakings for particular years, undertakings aiming at rationalising water consumption and introducing sewage systems, investment expenditures in particular years, manners of financing future investments. The plan should be compatible with the gmina's development directions

specified in the study of conditions and directions of spatial management of every gmina, with the provisions of local spatial management plans and the provisions of a permit issued to the enterprise for performing services connected with collective supply of water and collective discharge of sewage. Moreover, a water and sewage service enterprise is obliged to ensure the construction of water supply and sewage discharge system devices specified by gminas in the study of conditions and directions of spatial management of a gmina and local spatial management plans within the scope agreed on in the long-standing development and modernisation plan.

In order to perform the services of collective water supply or collective sewage discharge, an enterprise needs permission from the head of the gmina (mayor) granted through official decision. Such permission may be granted at the request of the water and sewage service enterprise which: 1) has its branch or a representative office in Poland, 2) possesses financial means or a proven possibility of obtainment of the means in the amount necessary to perform the services in the proper manner, 3) possesses technical resources adequate to the scope of performed activities.

Supplying water or discharging sewage is conducted in accordance with a written agreement for water supply or sewage discharge concluded between a water and sewage service enterprise and the recipient of its services. The agreement contains in particular provisions concerning: a) the quantity and quality of water supply or sewage discharge services and the conditions for the provision of these services, b) the manner and dates of clearings, c) the rights and obligations of the parties to the agreement, d) the conditions for repairing failures of the water or sewage network terminals which belong to the recipient of services, e) the procedures of and conditions for the supervision of water supply system devices and sewage system devices, f) the provisions included in the permit, g) the period of the agreement and the liability of each party for a default, including the conditions for the termination of an agreement. Unless otherwise stated in a water supply agreement or a sewage discharge agreement, the recipient of the services is held accountable for ensuring reliable functioning of the water network installations and terminals or sewage network installations and terminals including the water meter. These devices are usually located within the plots or buildings owned by real estate owners. It seems worth explaining, with

reference to point a), that a gmina may commission an external entity to test the quality of water.

A water and sewage service enterprise may cut the supply of water or close a sewage terminal if: a) the water network terminal or sewage network terminal have been installed against the regulations; b) the recipient of the services has failed to settle the payment due for two complete accounting periods (usually two months), following after the day of receiving a reminder to settle the outstanding payment; c) the quality of discharged sewage does not comply with the requirements specified in the regulations or there has been a deliberate damage to or omission of the measuring device; d) there has been illegal consumption of water or illegal discharge of sewage, i.e. consumption or discharge without an agreement or with deliberately damaged or omitted water meters or other measuring devices. A water and sewage service enterprise which has cut off the supply of water due to failure to settle the payment by a recipient is obliged to provide the recipient with a supplementary point for the abstraction of water fit for human consumption and to inform the recipient about the possibility of using such a point. Such a point is usually located outside the house, yet within a given borough or town. A water and sewage service enterprise shall inform the powiat⁵ sanitary inspector, the head of a gmina (mayor) and the recipient of the services about its intention to cut off the supply of water or close a sewage terminal and about the places and manners of using supplementary points for the abstraction of water at least 20 days before the intended date of the cut-off or closure. The data concerning the number of households which were cut off from the water supply system are unavailable.

A water and sewage service enterprise is obliged to conduct regular assessments of the quality of water. The head of the gmina (mayor) is entitled to supervise business activities of a water and sewage service enterprise in terms of their conformity with a granted permit. A key role is played here by the council of gmina which, having analysed draft rules and regulations concerning water supply and sewage discharge drawn up by water and sewage service enterprises, shall pass the final regulations concerning water

⁵ A powiat is a local government, second degree entity of administrative division, encompassing a part of the area of a province where a few gminas are located.

supply and sewage discharge. These regulations are considered local enactments. They should specify the rights and obligations of water and sewage service enterprises and the rights and obligations of the recipients of their services, including: 1) a minimum level of services performed by a water and sewage service enterprise in terms of water supply and sewage discharge; 2) detailed conditions for and manners of concluding agreements with the recipients of the services; 3) the manner of settling payments based on prices and payment rates fixed in a scale of charges; 4) conditions for joining the network; 5) technical conditions specifying the possibility of accessing water and sewage network services; 6) manners of accepting a terminal by a water and sewage service enterprise; 7) procedures in case of failure to provide continuity of services and proper parameters of supplied water and sewage discharged into the sewage network; 8) standards of customer service, and especially the manners of handling complaints and exchanging information about disruptions in water supply and sewage discharge; 9) conditions for supplying water for fire-fighting purposes.

5. Organisational and legal forms of collective supply of water

The supply networks, collective supply of water and collective discharge of sewage are the responsibility of gminas⁶. They constitute the tasks of every gmina and are part of the municipal economy. This economy encompasses in particular public utility activities, the aim of which is current and uninterrupted satisfying of collective social needs by means of providing universally available services⁷.

In order to perform these tasks, every gmina can set up organisational units and conclude agreements with other entities, including non-governmental organisations⁸. The forms of conducting its economy by every gmina, including the performance of public utility

⁶ The inhabitants of every gmina make up a self-governing community by virtue of law. Whenever the author uses the terms gmina, it shall be understood as a self-governing community and its respective territory. Every gmina performs public activities for itself and on its own responsibility. Gminas have legal personality. The independence of a gmina is subject to judicial protection (Law of 8 March 1990 on gmina self-government, uniform text, Journal of Laws of 2013 item 594 with amendments).

⁷ Article 1 of the Law of 20 December 1996 on the urban economy (uniform text, Journal of Laws of 2011 no. 45, item 236).

⁸ Article 9 of the Law of 8 March 1990 on gmina self-government, uniform text, Journal of Laws of 2013 item 594 with amendments).

activities, are specified by a statute⁹. Gminas can commit natural persons, legal persons or organisational units without legal personality to perform the tasks related to the municipal economy by means of an agreement. All of the above-mentioned legal forms are used also in collective supply of water and collective discharge of sewage. Thus, it seems justified to take a closer look at these forms in order to gain a further insight into the matter.

A self-government budgetary establishment performs the above-mentioned tasks against payment for supply of water and discharge of sewage, covering the costs of its activities with its own revenues. While setting up the self-government budgetary establishment, the council of gmina shall determine the following: the name and main headquarters of the establishment, subject of its activities, sources of own revenues, level of current assets of the establishment and assets given to the establishment for use, deadlines for and manners of setting advance payments of surplus of current assets made by the establishment to the gmina's budget as well as deadlines for and manners of making annual settlements and payments to the budget. The basis of the financial economy of the self-government budgetary establishment is an annual financial plan encompassing the revenues, including subsidies from the gmina's budget, costs and other strains, the level of current assets, the level of receivables and liabilities at the beginning and the end of the period as well as settlements with the gmina's budget. A self-government budgetary establishment may receive from the gmina's budget: entity subsidies, purpose subsidies on current activities or on financing or subsidising the costs of investment realisation¹⁰.

Gminas may establish limited liability companies or public limited companies and they can join such companies. Furthermore, gminas may also establish limited liability partnerships or partnerships limited by shares. However, the majority of companies in which gminas participate are limited liability companies, sole proprietorships constituting legal persons (or gmina's legal persons where the gmina owns 100% of shares). The basis for the functioning of such a company is the contract of partnership preceded by an appropriate resolution of the council of gmina. A minimum initial capital of a limited liability

⁹ Law of 20 December 1996 on the urban economy (uniform text, Journal of Laws of 2011 no. 45, item 236).

¹⁰ Article 15 and 16 of the Act of 27 August 2009 on public finance (uniform text, Journal of Laws of 2013 item 885, with amendments).

company is 5000 PLN. The body of a limited liability company is made up of the board of shareholders, supervisory board and company management board.

Municipal companies which were not given any organisational and legal form or privatised by the council of gmina by 30 June 1997, became – by virtue of law – sole proprietorships as of 1 July 1997. The gmina is represented in the gmina company by the head of the gmina (mayor) and there is also the supervisory board.

The decision-making bodies of every gmina (the council of gmina, city council, town and gmina council) decide on choosing the forms and manners of conducting the municipal economy, the level of process and payments or the manners of setting prices and payments for collective water supply and sewage discharge services¹¹. The legal forms under discussion are used in particular gminas.

The structure of water and sewage service enterprises may be analysed on the basis of the REGON register kept by the Central Statistical Office (GUS). Detailed data concern the end of 2013 (table 2). At that time, there were 1807 business entities with very diversified legal and organisational form registered in the department of water collection, treatment and supply. It shall be noted that at the end of 2012 there were 1489 entities registered in the department of water supply, sewage and waste management. Furthermore, not all enterprises taken into account in 2013 in the REGON register were also water and sewage service enterprises. Besides, it is estimated that over 500 gminas run water and sewage service-related activities exclusively by means of a separate division in the organisational structure of the gmina¹². Considering the disruptions in the structure of organisational forms in this sector, the following conclusions might be drawn. Taking a closer look at the enterprises dealing with water collection, treatment and supply, one might notice that the majority are organised as budgetary establishments (almost 32%), commercial law companies (over 36%), especially limited liability companies, and less frequently public limited companies, as well as water companies (almost 16%). When it comes to the commercial law companies, in the majority of cases the sole or majority

¹¹ Article 4 of the Act of 20 December 1996 on the urban economy (uniform text, Journal of Laws of 2011 no. 45, item 236).

¹² The estimated conducted with the help of Mr Mateusz Bogdanowicz, "Wodociągi Polskie" Chamber of Commerce.

owners were gminas (543 out of 656 companies). The other entities from this group were companies with only the domestic capital (123 companies), companies with a share of foreign capital (18 companies) and sole-shareholder companies of the State Treasury (8 companies) (Cf. Bogdanowicz, IGWP, 2011). Detailed data referring to the above point are not available.

Table 2. Legal and organisational forms of the water sector (data for 2013)

Legal and organisational form	Number	Share
Budgetary establishments	582	32%
Commercial law companies	656	36%
Water companies	286	15,8%
Natural persons running business activities	244	14%
Partnerships	33	1,8%
State-owned enterprises	3	0,2%
Cooperatives	3	0,2%
Total	1807	100%

Explanations: entrepreneurs register in the REGON system in 2013 in the department of water collection, treatment and supply. Not all of the entities taken into account in the register are also water and sewage service enterprises within the meaning of the Article 2 point 4 of the act on collective supply of water and collective discharge of sewage (uniform text, Journal of Laws of 2006 no. 123, item 858, with amendments).

Source: Analysis based on Bogdanowicz, IGWP (2014).

The results of the research conducted by UOKiK (2011, pp. 15-16) indicate that the seat and domain of activities of: a) limited liability companies are – to a similar degree – both small towns and large cities, b) budgetary enterprises are the towns (areas) with relatively small populations amounting to fewer than 25 thousand inhabitants, c) public limited companies are large towns with more than 50 thousand inhabitants.

Taking into consideration the above characteristics, it shall be noted that the markets of collective water supply and collective sewage discharge are very local in their character. They boil down to the area of one or a few gminas. It shall be noted that in a situation when a water and sewage service enterprise operates in a few gminas, it has to prepare a separate tariff application for each gmina. Thus, prices of water in particular gminas include the costs concerning the area of a given gmina. The total number of gminas in Poland is 2479. Water and sewage service enterprises work predominantly as budgetary establishments or as commercial law companies, more frequently as limited liability

companies and less often as public liability companies. Furthermore, some transformations in organisational forms of collective water supply and collective sewage discharge services from can be noticed (from budgetary establishments to limited liability companies).

6. Market structure of water and sewage network services

Providing services on the market of water and sewage network services can take place only through a network of technical infrastructure¹³ which is extremely capital consuming and creates high barriers for entering the sector. Water and sewage service enterprises operate as a network monopoly, providing a universal access to services. Additionally, water used both for living purposes and technological processes does not have any substitutes. Thus, a question arises whether the economic efficiency of natural monopolies will not be lower than that of rival markets, and if yes, then how can competitive conditions be brought to water and sewage service markets. The Office of Fair Trading (UOKiK) presented a comprehensive analysis of these issues in its report for the year 2011.

An essential possibility of introducing competition to a given sector is to distinguish such services in the sector which constitute a natural monopoly and such services which may be subjected to the rule of competition. Thus, the legislators aim at breaking the relationship chain between “production – transmission – distribution” and privatising production and distribution. The recipient of the services has a possibility to choose the producer or source of purchase of services. The network is not subjected to the principles of competition. Its functioning as well as the conditions for accessing and using the network are subject to control and supervision by specialised and impartial regulatory organs independent from market participants (UOKiK, 2011, pp. 17-18).

In the sector of water and sewage network services in Poland such a solution has not been used for the following reasons: 1) geographically narrow markets of water and sewage network services, most frequently boiling down to the area of one gmina (the number of which is 2479 in Poland) or a few gminas, based on inter-gmina agreements or

¹³ A network means water or sewage conduits together with accessories and devices which are used for supplying water or discharging sewage, and which belong to a water and sewage service enterprise.

inter-gmina associations, 2) an interlinked ownership structure of the relationship chain of “production –transmission - distribution”; a water and sewage service enterprise is usually the owner of the network, 3) uneconomical character of duplicated equipment and facilities on local markets, for example a few competitive sewage treatment plans in one area, 4) a possible threat for the inhabitants in the case of violating water quality norms by one distributor who uses a common network.

Another possibility of introducing competition to a given sector is replacing the real competition which has appeared on the market, which cannot take place in the natural monopoly, with the competition for the local market. Such a solution is possible to be implemented among all through a tendering procedure between the owner of the transmission network and the winner of the tender for the operation and provision of water supply services and/or sewage discharge services (UOKiK, 2011). Such a solution does not, however, function in this sector. For this solution to be implemented it is necessary to fulfil one fundamental condition. The entity which invites to tender (gmina) must be the owner of the transmission network. However, while implementing this solution, it is not necessary that there are a number of already running, professionally prepared and equipped entities on the market, ready to begin the competitive struggle for the market, irrespective of the place of the tender, and provide network management services in the case of winning the tendering procedure. It is assumed that such entities will appear in the course of functioning of such a solution.

Taking into consideration the Polish reality, this fundamental condition cannot be fulfilled. According to the research conducted by UOKiK, the owners of water and sewage transmission networks are in many a case the entities which run their business activities consisting in water supply and sewage discharge based on the networks (UOKiK, 2011, p. 19). Table 3 presents the ownership structure of transmission networks based on a sample selected by UOKiK. What follows from data is that the owners of water transmission networks are predominantly water and sewage service enterprises, with just a minor participation of gminas. According to UOKiK, applying such a solution, the sector will be more susceptible to privatisation than to introducing the principles of competition on the market.

Table 3. Ownership structure of the water network included in the UOKiK research

Size of town	Network owner			
	Gmina		Entrepreneur	
	Sole	Majority	Sole	Majority
Up to 25000	10	2	11	10
25000-50000	2	1	15	15
50000-100000	2	2	15	12
More than 100000	0	0	12	13
Total	14	5	53	50
<i>Share in %</i>	<i>11%</i>	<i>4%</i>	<i>43%</i>	<i>41%</i>

Remark: the table takes into account the water networks which were owned by a gmina or an enterprise in at least 51%.

Source: Analysis based on UOKiK (2011, p. 19).

When there is no possibility of introducing competition due to a natural monopoly in Poland, neither on the basis of a primary conception nor on the basis of additional conception, comparative competition might be introduced. The financial results of water and sewage service enterprises would be dependent on the management abilities compared to similar enterprises running on other local markets (geographically speaking) and in similar mezeoeconomic conditions. The conditions for implementing comparative competition in the water and sewage service sector are the following: 1) the possibility of comparing the efficiency of economic activities of particular water and sewage service enterprises, 2) creating an institution which would perform such comparisons, 3) the possibility of influencing the level of prices for collective water supply services by such institutions (UOKiK, 2011, p. 20). Unfortunately, none of the forms of comparative competition in the water and sewage service sector functions in its full scope. Partial research is conducted only by the "Wodociągi Polskie" Chamber of Commerce.

7. Principles of establishing tariffs for collective water supply

One of the most important issues in the water and sewage service sector are the principles of setting tariffs for collective supply of water and collective discharge of sewage. A tariff means a list of publically announced prices and charges for collective water supply and collective sewage discharge as well as the terms and conditions for their use.

A water and sewage service enterprise devises its own tariff for collective water supply and sewage discharge in a manner ensuring the necessary revenues (full cost recovery), protection of the recipients of the services from an unreasonable increase in prices and payment rates, elimination of cross-subsidy¹⁴ motivation of the recipients to rational consumption of water and limitation of sewage, clarity of estimating and checking the prices and payment rates¹⁵.

The tariffs for collective water supply and collective sewage discharge specify the type of the service performed, type and structure of tariffs, tariff groups of service recipients, types and levels of prices and payment rates, conditions for making settlements, including the equipment of real estate with the necessary devices and meters as well as the conditions for the use of prices and payment rates, especially the range of services provided for particular tariff groups of recipients and the quality standards of customer service¹⁶. A tariff group of recipients means the recipients specified on the basis of the characteristics of water consumption and sewage discharge, conditions for collective water supply and sewage discharge and on the basis of the manner of making settlements for provided services.

The tariffs, depending on their type and structure, for particular groups of recipients include: 1) a price for 1 m³ of supplied water, 2) a subscription charge per recipient, 3) a price for 1 m³ of discharged sewage, 4) a price for a unit of paved surface from which rain water and thaw is discharged with the use of rain sewage system, including the type and manner of use of the surface, 5) a subscription payment rate per recipient¹⁷. The subscription payment rate means a value in Polish zlotys per recipient for a clearing period which the recipient of the services is obliged to pay to the water and sewage service enterprise for maintaining the water system or sewage system devices ready for use as

¹⁴ Cross-subsidy means covering the costs concerning one type of economic activities performed by a water and sewage service enterprise or one of the tariff groups of the recipients of services with the revenues obtained from other types of economic activities performed or other tariff groups of recipients.

¹⁵ §3 of the Regulation of the Minister of Construction of 28 June 2006 on the manners of determining tariffs (...).

¹⁶ §4 of the Regulation of the Minister of Construction of 28 June 2006 on the manners of determining tariffs (...).

¹⁷ §5 of the Regulation of the Minister of Construction of 28 June 2006 on the manners of determining tariffs (...).

well as for the reading of meters or other measuring devices and settling the amount due for the supplied water or discharged sewage.

A water and sewage service enterprise determines the tariffs for 1 year on the basis of necessary revenues after allocating them to particular tariff groups of recipients. The enterprise takes into consideration above all the costs connected with providing services incurred during the previous accounting year, based on the accounting records, including the changes planned in the costs during the year when the tariff is valid, the changes in the economic conditions as well as the amount of services and the terms and conditions of their provision; the costs resulting from the expenditures planned for investments on the basis of a long-standing plan of development and modernisation of water system and sewage system devices owned by the enterprise. While establishing the necessary revenues, the costs of exploitation and maintenance are of particular importance, including: the amortisation and amortisation write-off, taxes and payments independent of the enterprise, charges for using the environment, costs of self-purchased water or sewage discharged into the sewage network devices not owned by the enterprise, repayment of capital instalments exceeding the value of amortisation or abatement, repayment of interest from credits and loans, irregular debts and profit margin^{18,19}. That is why the accounting records should above all make it possible to separate fixed and variable costs, revenues connected with particular types of activities of the water and sewage service enterprise as well as with reference to particular tariffs, establish the costs connected with investment activities in the previous accounting year, allocating necessary revenues according to the tariff groups of recipients.

A water and sewage service enterprise chooses the structure and type of the tariff taking into account the following:

- 1) depending on the assumed type of the tariff for particular tariff groups of recipients:

¹⁸ §6 of the Regulation of the Minister of Construction of 28 June 2006 on the manners of determining tariffs, the model of the application for the validation of tariffs and the conditions for making settlements for collective water supply and collective sewage discharge (Journal of Laws of 2006 no. 127, item 886).

¹⁹ „The gmina may also have a considerable, yet indirect impact on determining the level of necessary revenues if, being the owner of the water and sewage network infrastructure, it renders it available for the system operator against payment, deriving measurable financial benefits in the form of e.g. leasehold (...)” UOKiK, 2011, p. 27.

- a) uniform tariffs with uniform prices for services and uniform payment rates for all tariff groups of recipients, separate for water supply and sewage discharge,
 - b) diversified tariffs with different prices for water supply and sewage discharge as well as different payment rates, depending on the type of the tariff group of recipients,
- 2) depending on the structure of the tariff:
- a) a single tariff with prices for 1 m³ of supplied water and 1 m³ of discharged sewage or prices for a measurement unit of polluted hard surface, its type and manner of management, from which rain and snow sewage is discharged, without the subscription rate,
 - b) a multiple tariff with prices and payment rates,
- 3) depending on the diversity of water prices at various levels of its consumption or sewage prices at various levels of its discharge:
- a) a seasonal tariff characterised by higher prices for water or sewage in the peak of the water and sewage service season and lower prices outside the season,
 - b) a progressive tariff used in the case of limited possibilities of collecting water or treating sewage by a water and sewage service enterprise, in which the prices for water or sewage grow along an increase in their amount exceeding the level which is not smaller than it is provided for in the provisions concerning average water consumption quotas²⁰.

A water and sewage service enterprise performs the following activities, in order to determine tariff prices and payment rates, for water supply and sewage discharge respectively: it divides the recipients of its services into tariff groups of recipients, chooses the type of the tariff, allocates the necessary revenues to particular tariff groups of recipients according to the assumed structure of prices and payment rates, and it estimates tariff prices and payment rates. Estimating tariff prices and payment rates is done by dividing planned annual necessary revenues by a planned annual amount of provided services. The planned annual amount of provided services is estimated, in turn, as

²⁰ §14 of the Regulation of the Minister of Construction of 28 June 2006 on the manners of determining tariffs (...).

a sum of a verified amount of services provided in a fiscal year preceding the year of scheduled introduction of the tariff and a change in the amount of provided services, including that resulting from scheduled realisation of a long-term plan of development and modernisation²¹.

According to the research conducted by UOKiK among a selected group of water and sewage service enterprises, the majority applies the diversified multiple tariff (table 4). This type of a tariff offers different prices for supplied water and discharged sewage to particular tariff groups of recipients, as well as a subscription rate independent from the amount of provided services.

Table 4. The structure and types of tariffs used by selected water and sewage enterprises included in the UOKiK survey

Town where the enterprise's main seat is located	A	B	C	D
Up to 25000	6	9	4	16
25000-50000	2	7	6	21
50000-100000	2	9	3	19
Over 100000	2	8	1	16
Total	12	33	14	72
Share in %	9%	25%	11%	55%

Explanations: as for July 2011, A – number of enterprises which apply the uniform single tariff, B – number of enterprises which apply the uniform multiple tariff, C – number of enterprises which apply the diversified single tariff, D – number of enterprises which apply the diversified multiple tariff

Source: Analysis based on UOKiK (2011, p. 32).

In brief, the principles of establishing tariffs for collective water supply and sewage discharge in Poland are supposed to cover all the costs associated with running business activities of enterprises in the water sector and to bring a decent profit. Thus, the recipients shall bear such costs of water and sewage services which will ensure self-financing of the activities of water and sewage service enterprises, including making a profit. Such a formula of establishing tariffs facilitates the process of commodification of the water sector

²¹ §15 of the Regulation of the Minister of Construction of 28 June 2006 on the manners of determining tariffs (...).

and an intertwined process of financialisation. Furthermore, within the area of tariffs, the only stiffening of the market principles for water and sewage service enterprises is the change of tariffs only once a year. Such stiffening ensures stability of expenditures and a possibility for the recipients to plan these expenditures.

8. Prices and payment rates for collective water supply

The survey included 712 water and sewage service enterprises operating in all voivodeships in Poland. The analysis is based on the information collected from the “Ceny Wody” (Water Prices) website run by the “Wodociągi Polskie” (Polish Waterworks) Chamber of Commerce. Additionally, the author refers to the information provided by the “cena-wody.pl” website. All the data were updated at the end of September 2013.

In the sample of 712 enterprises included in the survey, the price of water ran at a level of 3.75 PLN for 1 m³ of supplied water and 5.98 PLN for 1 m³ of discharged sewage, at the end of September 2013 (table 5). It has to be noted that the analysed prices may include possible subsidies made by gminas to water and sewage service bills. The diversification of prices for the supply of water is relatively high, with the coefficient of variance amounting to 32%. Water prices should be increased in some areas by a subscription payment, amounting on average to 6.71 PLN monthly (the average based on existing subscription payments). Taking into account the price for supplying 1 m³ of water together with the subscription payment in the analysed group of enterprises, the total price of water²² for the first m³ of supplied water amounted on average to 5.10 PLN (1,22 EUR, 0,97 GBP²³), with very high diversification from 1.7 PLN to 24 PLN. Thus, the total gross price of water and sewage for the first m³ of supplied water and discharged sewage amounted on average to 11.88 PLN, with equally high diversification from 3.78 to 48.40 PLN. The average water consumption per one inhabitant was assumed to be 31.2 m³ annually in 2012, i.e. 2.6 m³ a month (GUS, 2013). The total cost of water supply and sewage discharge for 1 inhabitant

²² The price for 1 m³ of supplied water increased by the subscription independent of a m³ of supplied water, if occurs. It shall be noted that these estimates refer exclusively to the first m³ of supplied water; every next m³ means that the bill will be increased by the price of a m³ without the fixed charge, i.e. the subscription.

²³ Assuming an average exchange rate of 4,18 PLN per euro and 5,12 PLN per pound sterling. Source: The National Bank of Poland, table no. 157/A/NBP/2014 of 14 August 2014.

amounted on average to 27.35 PLN a month (6,54 EUR, 5,34 GBP), with high diversification from 10 to 76 PLN (median 25 PLN). It is assumed that the typical range of variance is between 18 and 37 PLN (+/- 1 standard deviation). By comparison, what follows from the results of the Central Statistical Office (GUS), the total cost of water supply and sewage discharge for 1 inhabitant amounted to 24.11 PLN on average a month.

Table 5. Water and sewage prices in households as for 30 September 2013 in PLN

Specification	Gross prices for m ³ , monthly			Subscription payment rates, monthly	
	Household water and sewage	Household water	Household sewage	Water supply	Sewage discharge
Average price	9,73	3,75	5,98	6,71	5,99
Standard deviation	2,95	1,19	2,14	2,97	4,22
Coefficient of variance	30%	32%	36%	44%	71%
Minimum price	3,78	1,73	2,05	1,37	0
Maximum price	29,2	10,18	19,6	17,13	22,9
Median	9,15	3,50	5,53	6,71	5,32
Number of entities	712	712	712	144	78

Explanations: The prices have been collected on the basis of a survey conducted by the "Wodociągi Polskie" Chamber of Commerce. The prices include subsidies made by gminas to the water and sewage bills.

Source: Author's own estimates based on the data of the "Wodociągi Polskie" Chamber of Commerce.

The total price of water supply in Poland is extremely diversified, compared to the price of electricity or gas supply. According to Tadeusz Rzepiecki, the President of the Council of the "Wodociągi Polskie" Chamber of Commerce differences in the prices of water stem primarily from the fact that water needs to be treated. The cost of treating abyssal water is different than that of surface water. Furthermore, the quality of abyssal water also varies; for example, the town of Kielce is supplied with water coming from limestone rocks, which means that it practically does not have to be treated, whereas in Bydgoszcz, where water is collected from the Brda River, considerable amounts of organic pollutants have to be removed from it (a press note published by IGWP).

Furthermore, the diversification of water prices is also influenced by considerable expenditures of some water and sewage service enterprises on development and modernisation of water system networks in particular areas of the country. In the years

1990 – 2013, the length of the water system network in Poland grew almost three times, from 93 thou. km to 287 thou. km. On the areas where water and sewage service enterprises did not have to perform or did not perform costly extensions of the network, their costs were relatively low, and in turn, the price for 1 m³ of water was also low. According to Dorota Jakuta, the President of the “Wodociągi Polskie” Chamber of Commerce”:

Increasing prices result from putting into use new infrastructure of high value compared to the existing one. In accordance with the provisions of the “tariff” regulation, the price should also include the profit. It is necessary for future investments. Finishing the modernisation of the water and sewage system and fulfilling the European norms of water quality – both the water we drink and the one that comes out from water treatment plants – causes an increase in prices. Poland has a chance, thanks to numerous undertakings, to improve the quality of its surface waters, especially those regarded as the sources of drinking water” (Jakuta, 2014)

The council of gmina may adopt a resolution concerning a surcharge on any one, the selected ones or all the tariff groups of the recipients of services. A gmina transfers the surcharge to a water and sewage service enterprise. An increase in water consumption in a given group of recipients is by principle financed by the other inhabitants of the gmina. Obviously, the higher water consumption is in a given group of recipients, the higher the surcharge is given to this group. As a result, a fundamental problem appears concerning the criteria for determining target groups and the principles of excluding particular persons from the support of the local government in case they have failed to fulfil the criteria.

9. The council of gmina as a regulator of the collective water supply system

The water and sewage service sector is not supervised by a central regulatory authority. It is the role of every gmina to supervise the functioning of water and sewage service enterprises. The principles of functioning of the water and sewage service market are specified in the Act of 7 June 2001 on collective water supply and collective sewage discharge. This act indicates the tasks of a gmina, serving as a regulator of a particular

local market. Collective water supply and collective sewage discharge belong to every gmina's own tasks.

In accordance with Article 28 paragraph 1 of the Act of 7 June 2001 on collective water supply and collective sewage discharge, the tariffs are subject to authorisation by means of a resolution adopted by the council of gmina, with the exception of the tariffs changed due to a change in the value added tax rate. A water and sewage service enterprise, within 70 days before a planned date of introducing a new tariff, shall present to the head of the gmina (mayor) a request for agreement. The request for agreement on the tariffs is appended with a detailed calculation of prices and payment rates and a current plan. The mayor shall check if the tariffs and the plan have been devised in accordance with the provisions of the act and verify the costs in terms of their justification.

Under Article 28 paragraph 5 of the Act, the council of gmina shall adopt a resolution concerning the authorisation of the tariffs within 45 days of the date of submission of the request or the rejection of the tariffs, provided that they have been devised against the provisions. In case the supervisory authority (province governor) deems the resolution invalid or when the resolution concerning the invalidity of the tariffs has not been annulled, the period of validity of the current tariffs shall be extended by 90 days from the day of receiving the supervisory decision by the water and sewage service enterprise. When the supervisory authority (province governor) deems the resolution invalid, the tariffs verified by the head of the gmina (mayor) shall enter into force after 14 days of the day of receiving the supervisory decision by the water and sewage service enterprise.

In accordance with Article 28 paragraph 8 of the Act, when the council of gmina fails to adopt a resolution within the period specified in paragraph 5, the tariffs verified by the head of the gmina (mayor) shall enter into force after 70 days from the day of submission of the request for agreement on the tariffs.

According to Article 28 paragraph 9a f the Act of 7 June 2001 on collective water supply and collective sewage discharge, the council of gmina may, at a reasonable request of a water and sewage service enterprise, extend the period of validity of current tariffs, yet for no longer than one year. The justification of the request shall contain in particular the

information concerning the scope of provided services and the economic conditions justifying the extension of the validity period.

Taking into consideration the functioning of a gmina as a regulator of the water and sewage service sector, one might notice the disadvantages of this solution, such as:

1. a double role of the gmina as a regulator and participant of the market, i.e. the owner of a water and sewage service enterprise (member of the management board, members of the supervisory boards²⁴)
2. the period of the term of office of the council of gmina and resulting political pressure on lowering water prices by water and sewage enterprises
3. a lack of specialists who could evaluate the functioning of a water and sewage service enterprise, the efficiency of the water economy, including the possibility of limiting the loss of water in the water system network
4. mass failure to adopt a resolution by the council of gmina on the authorisation of tariffs, resulting among all from: a) inability to specify the regulations with which the tariffs are inconsistent, b) political will of the council of gmina to manifest their objection to the level of prices and payment rates, c) avoidance of additional audit of the procedures for setting tariffs by the province governor acting as a supervisory authority

According to Dorota Jakuta, the President of the "Wodociągi Polskie" Chamber of Commerce:

„Water is still regarded as political goods. Local government officials do not decide to introduce necessary tariff raises or postpone them to the time after the elections. The election banner “cheap water” or promises of “reducing the growth in water prices” are still in use by local government councillors. Despite changing legislative acts concerning the establishment and validation of water and sewage prices, price-related decisions are still – in a majority of cases – unfortunately a result of political decisions. On the other hand, the situation when the owner of an enterprise (gmina in this case), acting as the body which authorises the tariffs, and whose faith is in the hands of the voters, who in turn are the consumers of the products of this enterprise, has never been and will never be easy” (Jakuta, 2014).

At this point, it is worth referring to the results of a survey conducted among water and sewage service enterprises by the „Wodociągi Polskie” Chamber of Commerce in 2012.

²⁴ I do not object here to the fact that the owner participates in management or supervision activities. Personally, I believe that every owner should have a right to perform such functions.

According to the results of the survey, 55% of water and sewage service enterprises supported the existing system, with approximately 35% being for the creation of a central regulatory authority and absolute exclusion of gminas from the process of verifying the application and the decision concerning an introduction of a tariff, whereas the remaining pollees took into consideration other solutions.

Appointing an external regulator in the sector of water and sewage services would be beneficial for the following reasons:

- a) providing statistical information and technical and economic analyses regarding the entire sector of water and sewage services (approximately 1500 entities)
- b) motivating water and sewage service enterprises operating as local monopolies to manage their costs more efficiently
- c) resolving conflicts between water and sewage service enterprises and the recipients of their services in a professional and impartial manner
- d) creation of a code of good practices for water and sewage enterprises, especially encompassing the information requirements
- e) preparing and expressing an opinion on legislative changes aiming at improving the transparency of the functioning of the sector of water and sewage services
- f) supervision of the process of ownership transformations in water and sewage service enterprises, including the process of limiting the number of enterprise shares owned, consolidation processes which may take place in this sector in the future

Elaborating on the above benefits of introducing an external regulator of the market of water and sewage services, what has to be particularly highlighted is the need to provide information to the recipients of the market. This information would concern in particular the amount of the subsidy which water and sewage service enterprises receive from gminas, the scope of financing investment undertakings by a gmina in the sector of water supply services, the scope of the gmina's support in the form of real estate tax exemption or reduction offered to enterprises, the scope of maintaining the water system property by gminas, the scope of lending the water system property to enterprises free of charge (See more in: Chudziński, 2014). According to Paweł Chudziński, the President of the Aquanet S.A. Poznań Management Board:

“an insignificant part of our enterprises wants to publically present their data. It results partly from the lack of trust in the branch. On the other hand, it may be the result of a fear that some of our enterprises simply do not cope with their problems. Thus, sometimes the enterprise itself does not know what its problem is, since such slogans as “we have the best water in Poland” and “our company is the best water supply company in the country” is, unfortunately, still quite common among the management staff of these enterprises” (Chudziński, 2014)

A condition necessary to introduce an external regulator in the water and sewage service sector should be its market and organisational independence. The office of a regulator should ensure the balance of interests of the participants of the water and sewage service market governed by the protection of quality of drinking water, caring about the households' capacity to purchase water and sewage services and aiming at the economic efficiency of the enterprises in this sector. Introducing such a regulator requires a transitional period. This period would be especially important to small water and sewage service enterprises, which would have time to adapt the procedures to the existing regulations. It is deemed unreasonable for the external regulator to enter the sphere of authorising tariffs, simultaneously excluding the role of the gminas. It is assumed that such a process would lead to mass privatisation of water and sewage service enterprises. Furthermore, a crucial question arises concerning the costs of maintaining a central regulatory authority in the sector of water and sewage services. According to Bogdanowicz from the “Wodociągi Polskie” Chamber of Commerce, employment in such an institution would amount to approximately 100 people, which would definitely generate considerable costs. Let us add that such an office would have to analyse the situation of water and sewage service enterprises and the adequacy of the proposed tariffs to local conditions and the economic situation of the entity. In the existing situation, there are 2479 tariff applications, i.e. as many as the number of gminas in Poland.

In sum, the water and sewage services sector definitely lacks reliable, possibly comprehensive and updated information. In fact, apart from the Central Statistical Office (GUS) , the only entity which provides some information about the water and sewage services sector is the “Wodociągi Polskie” Chamber of Commerce, associating 450 enterprises. Filling this information gap shall be done with the support of the state. Only such a solution would make it possible to obtain information concerning water and sewage

service enterprises and the conditions of their functioning on particular local markets (in particular gminas).

10. Financial analysis of water and sewage service enterprises

The following part of this work is based on the results of the survey research entitled "Benchmarking. The results of water and sewage service enterprises in Poland for 2012", conducted by the "Wodociągi Polskie" Chamber of Commerce. The IGWP research conducted in 2013 included 144 enterprises, with a predominant share of medium and large enterprises operating as limited liability companies and with an insignificant share of small enterprises operating as budget companies. In the light of the above, the following results and conclusions shall be regarded with some caution.

The net return on sales (net profit / loss compared to net income on sales) among the analysed group of enterprises ran at a level of 2 – 4% for the median of water and sewage service enterprises under analysis (from 1.4% to 5.4% for the average), with a growth in the return occurring alongside a growth in the size of an enterprise. Larger enterprises operated as companies, especially limited liability companies, compared to smaller enterprises. Furthermore, the ownership structure had a significant influence on the obtained return. Ownership concentration (one gmina serving as an owner) led to obtaining a minimum net return on sales by an enterprise. The economic profit constituted a minor objective for such enterprises. In the majority, their owners did not aim at obtaining higher profits from the activities of water and sewage service enterprises and the realisation of the right to dividend. Such actions were probably not accepted by the local communities. The owner – a gmina, also acting as a regulator, shall establish such tariffs for water and sewage services which level the possibility of paying the dividend. The above results concerning the net return on sales may be distorted. According to IGWP (2013, p. 65), enterprises which have taken advantage of a non-returnable financial support (i.e. subsidies from the EU funds) and balance them within the due time, reveal them in their operating income. This income affects the result, but is not connected with an actual influence of monies in a given fiscal year.

The return on sales of water network services (gross profit / loss on water network activities compared to the income from the sales of services within water network activities) ran at the level of 1 – 2.5% for the median of water and sewage service enterprises under analysis (from 1% to 4.5% for the average). Given a high return on sales, exceeding 10%, a situation could have taken place where the enterprises which were repaying their loans included the interest on the loans in the price of water or included the surplus amount of paid instalments over amortisation or did not realise their planned investments completely (Cf. IGWP, 2013, p. 67). Some of the enterprises within the group of enterprises under analysis reached a negative rate of return on the sales of water network services. As a result, these enterprises calculated the price of water supply and sewage discharge services below their operating costs. Such a situation leads to problems with financial liquidity and postponing replacement investments. Additionally, there is no clear difference between the return on sales of water network services and the net return on sales in such aggregated data. It may mean that the importance of financial costs (including the interest on loans) is insignificant, and thus there is a relatively meagre share of financing investments with foreign capital. On the other hand, the income obtained outside the primary, strictly commercial activity of water and sewage service enterprises may play a crucial role for the income obtained by these enterprises.

The rate of return is perfectly complemented by an analysis of net index price for m³ of water (including all net income on water network activities compared to the amount of water sold). This rate includes the income from particular tariff groups of recipients, income on the subscription and other charges for water supply, independent from the amount of water consumed by the recipients, and it levels the differences resulting from various periods of introducing the tariffs (IGWP, 2013, p. 73). The net index price for 1 m³ of water amounted to 3.2 PLN – 3.7 PLN for the median of water and sewage service enterprises under analysis (from 3.6 PLN to 4 PLN for the average), while the index price increased together with a growth in the size of a water and sewage service enterprise. The scale and dynamics of modernisation of fixed assets in medium and large enterprises are larger than in smaller enterprises. According to Bogdanowicz (2014), index prices are not correlated with the obtained income. First of all, some water and sewage service

enterprises obtain high income, with a low index price. It gives room to raising a fundamental doubt whether these enterprises realise replacement investments with the aim to maintain fixed assets in a not-worsening condition and what role the political factor plays in the decision-making process in these enterprises. Secondly, some of the water and sewage service enterprises do not reach any income, with a relatively high index price of water. Such a situation may result from the realisation of new investments, which in the long-run may be beneficial for the owners of the enterprises.

Financial liquidity (current assets compared to short-term obligations and short-term accruals) ran at the level of 1.5% for the median of water and sewage service enterprises (from 1.7% to 2.4 % of the average), which is a positive result. Smaller enterprises, in particular, have a tendency to temporary overliquidity. Serious problems with financial liquidity were noted in every 13th enterprise, in which the current liquidity index did not even reach the level of 0.5. Taking into account the scale of the sector, water and sewage service enterprises have a capacity to fulfil their obligations.

The index of financing assets with equity capital (equity capital compared to total assets) amounted from 62 to 75% for the median of analysed water and sewage service enterprises (from 63% to 71% of the average). The larger the enterprise, the greater the share of equity capital in the balance of the enterprise. Obviously, a fundamental question arises concerning the relationship between the rate of return on investments and the cost of the foreign capital involved. This relationship will determine to a large degree the return on equity capital, and thus the decisions concerning the changes in the structure of financing the assets of a water and sewage service enterprise. A key role in this area is played, however, by the financial means from the European Union which determine the scope of external finance of water and sewage enterprises, regardless of the above-mentioned relationship.

Debt servicing with the financial surplus (net profit plus amortisation to total debt servicing, i.e. capital instalments plus interest) amounted to 3.5 – 4.6% for the median of enterprises under analysis (from 7.7% to 14.3% for the average). The index of above 1.2 was obtained by 85% of enterprises. Bearing in mind the limitations of this index, it is assumed that enterprises did not have a problem with debt servicing.

In sum, the sector of water and sewage network services in Poland is characterised by generally low profitability, with maintained financial liquidity. Enterprises finance their activities primarily with their own capital. Foreign capital is mainly the means obtained from the European Union funds, with a relatively low share of commercial loans. In general, the owners of water and sewage service enterprises (usually one gmina, less frequently a few gminas together) realise among all the goal associated with providing the capacity to purchase water possibly to all the recipients in a given gmina. The goals connected with expanding the accessibility to the water and sewage networks and with the protection of the natural environment seem to be realised, as long as they do not disturb the realisation of the demand-related goal. Political factors play a vital role in this sector.

11. Investments of water and sewage service enterprises

The gross value of fixed assets in the section of water collection, treatment and supply increased from 29 billion PLN in 2005 to 51 billion PLN in 2012, which constituted approximately 1.8% of the value of total fixed assets. The expenditure on fixed assets used for water collection, treatment and supply constituted 1.2% of total investment expenditure in Poland in 2012. This expenditure increased over two times from 1.4 billion PLN in 2005 to 2.85 billion PLN in 2012 in current prices. In the analysed period, water and sewage service enterprises realised considerable investments aiming at improving the accessibility to water and sewage networks and the quality of water. An estimated degree of consumption of fixed assets in the section of water collection, treatment and supply amounted to 39%, with 45% consumption of total fixed assets.

Taking into consideration the expenditure on fixed assets used for the protection of the environment and water economy, what shall be highlighted is their high dynamics from 1.6 billion PLN in 2000 to 2.8 billion PLN in 2012 (table 6). In the structure of total expenditure, the most common are investments connected with water intakes and water networks.

Table 6. Outlays on fixed assets for environmental protection and water management, current prices, in million PLN

Specification	2000	2005	2010	2011	2012
Water management, including:	1652,8	1715,8	3565,2	3136,3	2787,9
- Water intakes and supply systems	851,8	863,3	1798,4	1308,5	1119,6
- Water treatment plants	196,8	291,8	709,4	414,2	374,5
- Water reservoirs and falls	205,8	335,3	441,4	546,1	394,5
- Regulation and management of rivers and streams	154,9	108,5	223,2	374,9	265,8
- Flood embankments and pump stations	243,5	116,9	392,8	492,6	633,5

Source: based on the GUS data (2013, p. 400).

A water and sewage service enterprise realises modernisation and development investments as well as investments connected with environmental protection with their own means, with loans and credits as well as with subsidies and subventions granted by the institutions possessing financial means for infrastructural and environmental investments. A predominant source of financing investments in the area of environmental protection, connected with water collection, treatment and supply, was an own contribution constituting approximately 34% in 2012. Another source of finance were the means obtained from the state's budget (ca. 20%) as well as foreign means (23%) and environmental funds (17%). Apart from domestic finance, investments were also co-funded with the European Union means, particularly from the European Regional Development Fund (Regional Operational Programmes) and the Cohesion Fund (Infrastructure and Environment Operational Programme).

Thanks to the investments in the area of environmental protection since 1990, the quality of water in Poland has been improving systematically. These investments and co-financed with the means from the European Union and the National Fund for Environmental Protection and Water Management. Water and sewage system investments allow not only for a faster socio-economic development, but they also make it possible to fulfil the requirements of Community directives important for the life and health of the people.

12. Institutions in the sector of collective water supply services

The changes in the sector of collective water supply accelerated considerably thanks to the works of the European Commission both at the pre-accession stage and after May 1st, 2004, i.e. Poland's accession to the Community. Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 established the framework for Community action in the field of water policy²⁵. The Water Framework Directive is a result of long standing works of the European Union member states aiming at efficient protection of water resources by the introduction of a uniform water policy, based on a clear, efficient and coherent legislative framework. This Directive commits member states to use their water resources in a rational manner and to protect these resources, following the principle of sustainable development and using an adequate, repetitive planning cycle. A superior goal of the Water Framework Directive is to obtain good condition of all waters by the year 2015. This goal stems from introducing the principle of sustainable development to politics, and it concerns: the satisfaction of the demand for water for people, farming and industry, the promotion of balanced consumption of water, protection of waters and water-dependent ecosystems remaining in good condition, the improvement of the quality of water and the condition of ecosystems spoilt by the human activity, the reduction of underground water pollution, the reduction of the effects of floods and droughts. The provisions of the Water Framework Directive introduce a system of planned water economy divided into river basin areas. For the purpose of obtaining good condition of waters, water management plans are devised for the river basin areas, including among all a summary of harmonised activities accounted for in the national water and environmental programme. The transposition of the provisions of the Water Framework Directive into the Polish legislation took place mainly by means of an Act of 18 July 2001 on Water Law²⁶ and its executive acts. Furthermore, the Water Framework Directive is also transposed to: the Act

²⁵ OJ L 327 of 22.12.2000, p. 1; OJ Polish special edition, ch. 15, vol. 5, p. 275 with amendments.

²⁶ Journal of Laws of 2005 no. 239, item 2019, with amendments.

of 27 April 2001 – Environmental protection law²⁷, the Act of 7 June 2001 on collective water supply and collective sewage discharge²⁸ as well as their executive acts.

The development of the water and sewage system infrastructure has directly and indirectly contributed to fulfilling the requirements stemming from the following EU environmental directives: a) Council Directive of 4 May 1976 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (76/464/EEC), b) Council Directive 91/271/ECC of 21 May 1991 concerning urban waste-water treatment, c) *Directive 2000/60/EC* of the European Parliament and of the *Council* establishing a framework for the Community action in the field of water policy. The provisions of the Treaty of Accession commit Poland to reduce the biodegradable pollution by 2015. A programme instrument aiming at coordinating and monitoring the activities in terms of the construction, extension and modernisation of the system of canals and urban sewage treatment plants is the National Programme of Urban Sewage Treatment (KPOŚK). A financial instrument allowing for the realisation of KPOŚK, apart from the national environmental funds and own contributions, are the aid funds from the European Union (NFOŚiGW 2011, p. 7).

The Minister of Finance directs the activities of the governmental administration department of water economy and environment. The department of water economy deals with such issues as: shaping, protecting and using the water resources in a rational manner; maintaining inland surface waters constituting the property of the State Treasury together with the technical infrastructure associated with these waters, including buildings and water devices; building, modernising and maintaining inland waterways; fire protection, including the construction, modernisation and maintenance of flood control water devices; coordinating the undertakings aiming at guarding and protecting the state against floods, functioning of the national hydrological and meteorological service, excluding the issues concerning monitoring of the quality of underground waters, international cooperation of border waters within the scope of the tasks belonging to the department.

²⁷ Journal of Laws of 2008 no. 25, item 150 with amendments.

²⁸ Journal of Laws of 2006 no. 123, item 858, with amendments.

The tasks within the scope of the water economy are realised by the President of the National Board of Water Economy (President of KZGW) – as a central administrative organ supervised by the proper minister dealing with the water economy issues. The President of KZGW performs the role of an organ superior, in the understanding of the Code of administrative proceedings, to province marshals and regional directors of the boards of water economy, and with regard to the issues specified in the Water Law Act. The tasks of the KZGW include in particular: preparing the national water and environmental programme, preparing draft projects of water management on the river basin areas; negotiating the projects of conditions for using waters from the aquatic regions; keeping a national water cadastre including the division into river basins areas; representing the State Treasury in terms of the property associated with water economy specified by the statute; programming, planning and supervising the realisation of the tasks associated with the maintenance of water or water devices as well as investments in the water economy; agreeing – in the part concerning the water economy – on the projects of priority programme lists of the National Fund for Environmental Protection and Water Management. In the strategic area, planning documents are drawn up in order to satisfy reasonable water needs of the inhabitants and to ensure better flood protection in the country. In the scope of the realisation of the programmes, there are the following goals: finishing the IT system of country protection against extreme hazards (ISOK), harmonising large projects with the Water Framework Directive (WFD) in the context of Article 42, update four of the National Programme of Urban Sewage Treatment (KPOŚK), finishing master plans on time, preparing tenders for Water Management Plans (PGW), Flood Risk Management Plans (PZRP), National Sea Water Protection Programme (KPOWM) and plans for counteracting the effects of droughts.

The National Fund for Environmental Protection and Water Management (subsequently referred to as NFOŚiGW) was established as a result of the political and economic transformation which took place in Poland in 1989. Acting as independent entities, NFOŚiGW together with provincial funds for environmental protection and water management constitute a system of finance for the environmental protection in Poland. NFOŚiGW is a source of financing supra-regional environmental undertakings, whereas 16

provincial funds, which became legal entities in 1993, support the environmental protection finance at a regional level.

The system of environmental funds operating on the basis of the Common Strategy for the National Fund and provincial funds for environmental protection and water management for the years 2013-2016, with a perspective until 2020, is an important instrument for the realisation of the environmental protection policy in Poland. In the years 1989-2013, the National Fund concluded over 19 thou. agreements for subsidising projects, paying out from the domestic means ca. 33.1 billion PLN for investments, the total value of which exceeded 130 billion PLN. Also in this period, environmental undertakings were subsidised with the amount of approximately 19.6 billion PLN from the EU means managed by the National Fund. NFOŚiGW runs its own financial economy, working on the basis of the Act on the Environmental Protection Law. Realising in practice the principle of “whoever pollutes has to pay”, the National Fund is mainly supplied with the resources from: charges and fines for taking advantage of the environment, service and concession charges, charges resulting from the Energy Law and the act on the recycling of decommissioned vehicles, income on the sale of granted units of emission of greenhouse gases and other sources. NFOŚiGW ensures the use of foreign means allocated for environmental protection, including the means from the Cohesion Fund, the European Regional Development Fund, a Financial Instrument LIFE+, Norwegian Financial Mechanism and the European Economic Area Financial Mechanism. Thanks to the Green Investment Scheme (GIS) and the financial means obtained by Poland from international transactions for the sale of rights to emit carbon dioxide, granted under the Kyoto Protocol, NFOŚiGW subsidises investments within the scope of climate protection and reduction in the emissions of greenhouse gasses.

The sector of collective water supply is also subjected to the regulations of the President of the Office of Competition and Consumer Protection (President of UOKiK). This person ensures the current monitoring of the activities performed by water and sewage service enterprises, conducting relatively frequent proceedings in this sector with the aim to eliminate the violations of the Act of 16 February 2007 on the protection of competition and consumers (Journal of Laws no. 50, item 331 with amendments), both in terms of anti-competition practices and violation of collective interest of consumers.

The “Wodociągi Polskie” Chamber of Commerce acts as an advisory institution in the sector of collective water supply in Poland. The Chamber is a member of the Polish Chamber of Commerce with the main seat in Warsaw and the International Water Association with the seat in London, the European federation of national associations of drinking water suppliers and waste water services (EUREAU) with the seat in Brussels. Through its representatives, the Chamber is very active in three EUREAU commissions: on drinking water, on waste water and on economics. IGWP postulates the necessity of the government to aid the gminas which realise water and sewage system investments. Furthermore, the Chamber emphasises the need to verify the borders of agglomerations. So far, the process of establishing agglomerations has taken place without the participation of water and sewage service enterprises, and many a time the areas do not fulfil the condition of population density assumed at the level of 120 inhabitants per 1 km². Consequently, sewage and water networks are created on scarcely populated areas. IGWP also acts in favour of strengthening the monitoring of conducted investments and improving the process of reporting, i.e. the flow of information from all water and sewage service enterprises and gminas’ departments to IGWP. IGWP also points out to the problem of managing sewage sediments and the need to devise a national programme for the management of sewage sediments.

13. Conclusions

The level of financialisation of the water sector in Poland is low, yet revealing a perspective of a gradual growth in the future. It is a result of great fragmentation of water and sewage service enterprises and a key role that the local authorities, i.e. gminas, play in this sector. Gminas play the role of both the owners or majority shareholders of these enterprises and regulators of the water and sewage service sector (role of the council of gmina). The necessity of further infrastructural investments (water and sewage networks), with a growing debt incurred by gminas (some gminas have even reached a point beyond which they cannot incur any new debts) and the fragmentation of housing construction in the towns located around large cities, entails a further growth in the prices of and charges for water and sewage services. Such conditions will facilitate greater involvement of banks in

the financing of infrastructural investments, and the process of ownership transformations in the sector. There may occur an incentive to lower the participation of gminas in limited companies in favour of a growth in the participation of private entities. Nonetheless, the main requirement for engaging private entities is a large number of the potential recipients of services. In fact, in smaller towns and suburban areas, this process has already taken place. In smaller towns and villages, the requirement of ownership transformations in this sector is the consolidation of the sector. However, one has to bear in mind that the water and sewage sector also plays an important role in local politics, which will inhibit the process of ownership transformations in favour of increasing the participation of investment finance with bank loans. On the other hand, growing involvement of international consulting companies in the water sector in Poland may accelerate this process.

In the years 1989 – 2013 huge progress was made in terms of the water and sewage system infrastructure in Poland. Such progress was possible thanks to subsidising the realisation of infrastructural investments under the EU pre-accession and post-accession (after May 1st, 2004) programmes, with considerable support from gminas, central authorities (the Ministry of the Environment, the National Board of Water Economy) and the National Fund for Environmental Protection and Water Management.

The responsibility for the water system, including the collective supply of water and collective discharge of sewage, is held by gminas and is their own task under the urban economy. Gminas, the number of which is 2479 in Poland, commission water and sewage service enterprises to perform these tasks. Such enterprises, characterised by a very diluted structure, play a monopolistic role in a given gmina or a few gminas altogether. Of key importance in this sector is the process of establishing tariffs for collective water supply and collective sewage discharge. The manner of validating the tariffs by gminas is, however, rather questionable due to a dual role of the gmina – it acts as the owner of the water and sewage service enterprise and as a regulator (validating tariffs).

The total price of water supply in Poland varies to a large degree, compared to the prices of electricity or gas supply. It comes as a result of geographical and geological conditions in particular gminas as well as a large scale of proecological investments.

Furthermore, the prices of water constitute a crucial political factor used in the fight for votes in the local government elections.

The sector of water and sewage network services in Poland is characterised by generally low profitability, with maintained financial liquidity. Enterprises finance their activities primarily with their own capital. Foreign capital is mainly the means obtained from the European Union funds, with a relatively low share of commercial loans. Thus, the role of the financial system in the sector of collective water services is marginal. The perspective of increasing the role of the system in the sector will entail the process of proper privatisation. Privatisation, in turn, will not be possible due to great dispersion of water and sewage service enterprises. On the other hand, the process of consolidation is quite difficult due to the process of validating tariffs in particular gminas (when a water and sewage service enterprise operates in a few gminas, it has to conduct the process of validating tariffs in each of the gminas separately). It seems that the discussion, which has been taking place for a few years, over the implementation of a central regulator in the sector of validating tariffs, excluding gminas from the process, will lead to the consolidation of the sector, which – in turn – will lead to the process of privatisation and much greater participation of foreign capital in financing infrastructural investments.

It shall be stressed that the main reason for implementing a central regulator is the necessity to obtain full, systematic, reliable and current information about the sector of water and sewage system services. Providing local communities with such information should force water and sewage service enterprises to act, since they hold a monopolistic position on local markets, and their owner is a gmina represented by the councillors elected by these communities.

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- Ustawa z dnia 27 sierpnia 2009 r. o finansach publicznych (tekst jednolity Dz. U. z 2013 r. poz. 885, z późniejszymi zmianami)
- Ustawa z dnia 20 grudnia 1996 r. o gospodarce komunalnej (tekst jednolity Dz. U. z 2011 r. Nr 45, poz. 236)



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Ustawa z dnia 20 grudnia 1996 r. o gospodarce komunalnej (tekst jednolity Dz. U. z 2011 r. Nr 45, poz. 236).

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 (Dz. U. 2006 nr 127 poz. 886).

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THE ABSTRACT OF THE PROJECT IS:

The research programme will integrate diverse levels, methods and disciplinary traditions with the aim of developing a comprehensive policy agenda for changing the role of the financial system to help achieve a future which is sustainable in environmental, social and economic terms. The programme involves an integrated and balanced consortium involving partners from 14 countries that has unsurpassed experience of deploying diverse perspectives both within economics and across disciplines inclusive of economics. The programme is distinctively pluralistic, and aims to forge alliances across the social sciences, so as to understand how finance can better serve economic, social and environmental needs. The central issues addressed are the ways in which the growth and performance of economies in the last 30 years have been dependent on the characteristics of the processes of financialisation; how has financialisation impacted on the achievement of specific economic, social, and environmental objectives?; the nature of the relationship between financialisation and the sustainability of the financial system, economic development and the environment?; the lessons to be drawn from the crisis about the nature and impacts of financialisation? ; what are the requisites of a financial system able to support a process of sustainable development, broadly conceived?

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