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THE EVALUATION OF COMPLIANCE WITH ASSUMPTIONS OF THE NATIONAL PROGRAMME FOR MUNICIPAL WASTEWATER TREATMENT ON RURAL AND RURAL-URBAN AREAS OF THE OPOLSKIE VOIVODESHIP

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OCENA STANU WYPEŁNIENIA ZAŁOŻEŃ KRAJOWEGO PROGRAMU OCZYSZCZANIA ŚCIEKÓW KOMUNALNYCH NA TERENACH WIEJSKICH I WIEJSKO-MIEJSKICH WOJEWÓDZTWA OPOLSKIEGO

STRESZCZENIE: W pracy przeanalizowano stan wdrażania założeń Krajowego Programu Oczyszczania Ścieków Komunalnych (KPOŚK) na terenach wiejskich i wiejsko-miejskich województwa opolskiego na koniec 2010 roku oraz możliwości jego realizacji do 2015 roku. Analiza danych na koniec roku 2010 dotyczących realizacji KPOŚK na terenach wiejskich i wiejsko-miejskich województwa opolskiego wskazuje na szereg problemów i utrudnień wpływających na opóźnienie w realizacji założonych celów. Jednocześnie, analizując możliwości wypełnienia założeń KPOŚK na koniec 2015 roku, stwierdzono, że istnieją jeszcze realne szanse na ich terminową realizację. Konieczne jest jednak uściślenie współpracy z instytucjami mającymi wpływ na jego realizację.

SŁOWA KLUCZOWE: tereny wiejskie, kanalizacja, oczyszczanie ścieków, Krajowy program oczyszczania ścieków Komunalnych

Introduction

In 2015 will end the transitional period enshrined in the Treaty of Accession concerning Poland's compliment with the requirements of the Urban Water Waste Treatment Directive. Poland was obliged to build, expand and modernize the municipal wastewater treatment plants and waste water collecting systems, as this should be reflected in the state of natural environment in our country. In order to implement the provisions of the Treaty of Accession the main issue was, and still is, to direct the funding stream to the water and wastewater industry in order enable the implementation of actions required to complete these provisions. At the same time, taking into account the implementation period and extend of actions, the ongoing monitoring and analysis of the obtained results are essential.

In the national system, actions referring to the Accession Treaty concerning the water and wastewater treatment were recorded in the Act of 18 July 2001 on Water Law. According to the Article 43 of the Water Law, Minister of the Environment is responsible for the development of the National Programme for Municipal Waste Water Treatment (NPMWWT). The purpose of the NPMWWT is to stimulate, enforce and coordinate the actions of commune authorities and water supply and wastewater treatment service providers in the range of expansion, construction and modification of wastewater facilities and municipal waste water treatment plants. Agglomeration – is a basic unit, which according to the NPMWWT is authorised to apply for financial measures on investment to modernize the wastewater treatment sector in a commune which forms the agglomeration. Main assumptions of the NPUWWT are:

- By 2015 all agglomerations of more than 2000 P.E. should be equipped with wastewater collecting systems and municipal wastewater treatment plants.
  - agglomerations > 100,000 P.E. should be equipped with wastewater treatment plants with higher efficiency of biological nutrient removal that not exceed limit of 10 mg/L as N and 1 mg/L as P by 2010; and extension of wastewater treatment systems till the year 2015 (waste water collecting systems exist in all agglomerations of this size);
  - agglomerations from 15,000 to 100,000 P.E. should be equipped with biological waste water treatment plants with higher efficiency of biological nutrient removal that not exceed limit of 15 mg/L as N and 2 mg/L as P by the year 2010; and extension of wastewater treatment systems till the year 2015 (wastewater collecting systems exist almost in all agglomerations of this size);
  - agglomeration between 2,000 and 15,000 P.E. should be equipped with biological wastewater treatment plants and extension of wastewater treatment systems should be implemented by 2015.
- In 2015 network systems will provide following services:
  - in agglomerations > 150,000 P.E., for at least 98% of the population;

  - in agglomerations > 100,000 P.E., for at least 95% of the population;
  - in agglomerations between 15,000 and 100,000 P.E., for at least 90% of the population;
  - in agglomerations between 2,000 and 15,000 P.E., for at least 80% of the population.
- Other part of the population not provided with the wastewater collecting systems should use individual waste water disposal systems.
- Realisation of investments covered by the NPMWWT is intended to provide a minimum of 75% of the total load of nitrogen and phosphorus removal from municipal wastewater in the whole country. The minimum of 75% reduction of total nitrogen and total phosphorus should be obtained, if:
  - in the class of wastewater treatment plants for agglomerations between 2,000 and 15,000 P.E., conventional biological wastewater treatment plants will be used;
  - in the class of wastewater treatment plants for agglomerations above 15,000 P.E. will enhance total nitrogen and total phosphorus removal[12].

Objective and Scope

The primary objective of the study is to present results and the NPMWWT implementation analysis according to the Opolskie Voivodeship. Due to the fact that rural areas are still the major source for biogenic volatile organic compound emissions, particular attention was paid to the rural and rural-urban areas. The analysis concentrates on the data from 2010 and has a time perspective up to 2015. Data analysis was based on the data obtained from the report on implementation of the NPMWWT prepared by the Marshal's Office of the Opolskie Voivodeship at the end of 2010.

Methodology

Results and their analysis were performed basing on source documents, such as:

- report on implementation in 2010 of the NPMWWT prepared by the Marshall's Office of the Opolskie Voivodeship;
- the NPMWWT2003 updated by the NPMWWT2005, NPMWWT2009 and NPMWWT2010;
- „Terms and Definition under the Urban Waste Water Treatment Directive (91/271/EEC)", Final version of Commission paper, Brussels, 16 January 2007;

[1] National Programme for Municipal Waste Water Treatment.

[2] P. Błaszczyk, M. Gromiec, R. Miłaszewski, *Wpływ realizacji KPOSK na zaspokojenie zapotrzebowania na usługi komunalne*, „Gaz, Woda i Technika Sanitarna" 2012 nr 7/8, s. 251 – 253.

- data on administrative division of the Opolskie Voivodeship into urban, rural and rural-urban communes.

Based on the above mentioned documents, the following formulation was carried out:

- *Analysis of individual agglomerations of the Opolskie Voivodeship in 2010 with a particular focus on rural and rural-urban areas in terms of the method of waste water drainage and treatment, construction of waste water systems, waste water treatment plants and sources of financing.*

  For this purpose, 49 agglomerations defined in the NPMWWT have been assigned the status o rural or rural-urban agglomeration. The assignment was based on the status of communes (gmina) that belongs to a particular agglomeration. After the division was made, based on the data obtained from the report on implementation of the NPMWWT for the year 2010 prepared by the Marshal's Office of the Opolskie Voivodeship, an analysis was performed on the method of waste drainage and treatment, construction of waste water and collection systems, waste water treatment plants and sources of financing.
- *Environmental impact analysis associated with the limit values for biogenic volatile organic compound emissions*.

  For this purpose, the pollution removal performance level of biogenic emissions was calculated based on the EC recommendations stated in the „Terms and Definition under the Urban Waste Water Treatment Directive (91/271/EEC)"[3].
- *Assessment of tasks implemented under the NPMWWT performed by particular agglomerations on wastewater systems, wastewater treatment plants and funding for the programme in 2010.*

  For this purpose, the assessment of the facilities of the sewerage network has covered the comparison of the total length of sewerage network by the year 2010 with the data presented in the U-NPMWWT2005. Analysis of the wastewater treatment plants covered the issue of complying by the individual wastewater treatment plants in agglomeration with the requirements specified in the Regulation of the Minister of the Environment on[4] conditions that must be met to discharge wastewater to water or soil and on substances particularly harmful to the aquatic environment. The analysis covered five key pollution indexes, such as BOD_5, COD, total suspended solids, general nitrogen and general phosphorus. The assessment of financing for the programme included comparison of the total costs of implementation of collective sewerage systems up to the year 2010 with the projected implementation costs of the investments specified in the U-NPMWWT2005. Similar

[3] Terms and Definition under the Urban Waste Water Treatment Directive (91/271/EEC), Final version of Commission paper, Brussels, 16 January 2007).

[4] Regulation of the Minister of the Environment of 24 July 2006 on conditions that must be met to discharge wastewater to water or soil and on substances particularly harmful to the aquatic environment, („Polish Journals of Laws" 2006 No. 137, item 984 with further amendments).

analysis was performed in the range of the implemented investments in the area of the municipal waste water treatment plant.

- *Analysis of the potential opportunities to implement the assumptions of the NPMWWT by the end of 2015.*

  For this purpose, after comparing the deadlines for completion of investments specified in the U-NPMWWT2010 with the data presented by the Marshal's Office, the potential for implementation of investments being completed by 2015 was examined.

Discussion

2010 Analysis of agglomerations of the Opolskie Voivodeship with a particular focus on rural and rural-urban areas

According to the last update of the NPMWWT carried out in 2010, 49 agglomerations with a total of 1,108,053 P.E.[5] were established in the Opolskie Voivodeship. Among the distinguished agglomerations, special attention should be paid to the rural-urban (RU) and, particularly, rural (R) agglomerations (mostly to the agricultural ones), because of their large impact on the water quality, as well as the quality of the produced wastewater and their treatment method. Among 49 agglomerations, 37 is rural-urban and 12 rural.[6] Population equivalent in agglomeration varies in the range from 2,100 to 213,626 (table 1).

Based on the data indicated in the U-NPMWWT2010, by the end of 2010 the actual number of inhabitants in all agglomerations was 887,259. This figure comprises of: 630,142 people provided with sewerage system – the biggest population, 188,109 inhabitants use the services for collection of household refuse and 3,551 people use domestic waste water treatment plants. Taking into consideration the division on rural-urban and rural agglomerations, significant differences in the system for collecting waste water can be seen. In agglomerations that are typically rural, the household waste collection system is dominant; higher percentage of inhabitants uses alternative waste disposal methods (domestic household sewage treatment plants), (figure 1).

As the assumption of the NPMWWT is to implement actions aimed to build a sewage system in communes (gmina) and to construct waste water treatment plants, large needs, especially in the rural areas, can be still noted according to the discussed aspect. Here the household waste collection system is dominant (provided for approx. 60% of population), which often raises questions in the issue of its true and fair usage in terms of environmental protection and waste disposal.

[5] P.E. – population equivalent – means the organic biodegradable load having a five-day biochemical oxygen demand of 60 g of oxygen per day.

[6] Lists of municipalities in Poland in 2012. The Committee for Standardization of Geographical Names; www.ksng.gugik.gov.pl [21-01-2013].

Table 1
Agglomerations of the Opolskie Voivodeship according to U-NPMWWT2010 and their P.E.

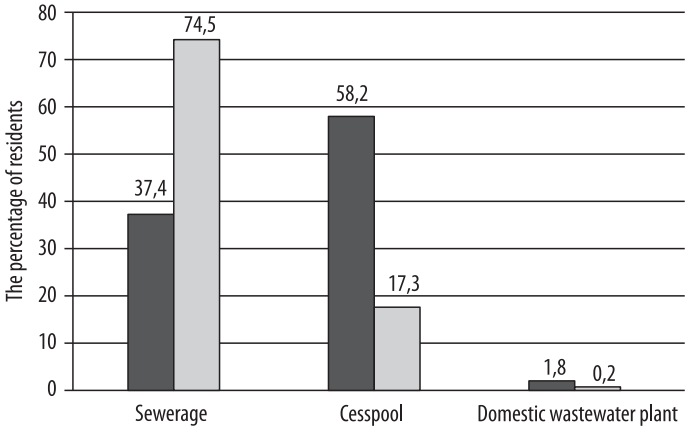
L.p.	Agglomeration	Type of agglomeration	Communes in the agglomeration	P.E.
1	Opole	RU	Opole, Chrząstowice, Dąbrowa, Łubniany, Komprachcice, Prószków, Tarnów Opolski	213 626
2	Nysa	RU	Nysa, Głuchołazy, Otmuchów, Pakosławice, Paczków	145 997
3	Kędzierzyn-Koźle	RU	Kędzierzyn-Koźle, Bierawa, Cisek, Reńska Wieś	70 000
4	Krapkowice	RU	Krapkowice, Strzeleczki, Gogolin, Prószków	55 553
5	Brzeg	RU	Brzeg, Lubsza, Olszanka, Oława, Skarbimierz, Lewin Brzeski	65 368
6	Prudnik	RU	Prudnik, Głuchołazy	45 734
7	Namysłów	RU	Namysłów, Domaszowice, Świerczów, Wilków	38 155
8	Zdzieszowice	RU	Zdzieszowice, Walce	44 150
9	Kluczbork	RU	Kluczbork, Lasowice Wielkie	51 658
10	Strzelce	RU	Strzelce Opolskie, Jemielnica,	49 358
11	Praszka	RU	Praszka, Gorzów Śląski, Radłów, Rudniki	14 881
12	Ozimek	RU	Ozimek	22 454
13	Turawa	R	Turawa, Łubniany, Chrząstowice	29 100
14	Kietrz	RU	Kietrz	11 362
15	Głogówek	RU	Głogówek	16 962
16	Wołczyn	RU	Wołczyn	14 951
17	Niemodlin	RU	Niemodlin	7 893
18	Lewin Brzeski	RU	Lewin Brzeski	9 751
19	Zawadzkie	RU	Zawadzkie	10 591
20	Paczków	RU	Paczków	14 348
21	Grodków	RU	Grodków	15 839
22	Olesno	RU	Olesno	14 964
23	Korfantów	RU	Korfantów, Prudnik	10 540
24	Gogolin	RU	Gogolin	8 304
25	Pawłowiczki	R	Pawłowiczki	4 386
26	Popielów-Karłowice	R	Popielów	8 568
27	Murów	R	Murów	6 067
28	Tarnów Opolski	R	Tarnów Opolski, Izbicko	13 580
29	Kolonowskie	RU	Kolonowskie	8 070
30	Prószków	RU	Prószków	5 940
31	Dobrodzień	RU	Dobrodzień	7 230
32	Branice	R	Branice	5 011
33	Trzebieszyn	R	Lasowice Wielkie	3 521
34	Baborów-Sułków	RU	Baborów	4 272

L.p.	Agglomeration	Type of agglomeration	Communes in the agglomeration	P.E.
35	Polska Cerekiew	RU	Polska Cerekiew	4 000
36	Ujazd	RU	Ujazd	7 074
37	Skoroszyce	R	Skoroszyce	3 303
38	Bodzanowice	RU	Olesno	3 630
38	Ścinawa	RU	Korfantów, Prudnik	b.d
40	Naczęsławice	RU	Pawłowiczki, Głogówek	3 441
41	Zębowice	R	Zębowice	4 150
42	Pokój	R	Pokój	5 594
43	Biała	RU	Biała	9 111
44	Łącznik	RU	Biała	4 833
45	Mąkoszyce	R	Lubsza	2 235
46	Pietrowice	RU	Głubczyce	2 300
47	Lisięcice	RU	Głubczyce	2 703
48	Zlewnia rzeki Troi	RU	Głubczyce	2 100
49	Leśnica	RU	Leśnica	5 395

RU – rural-urban
R – rural

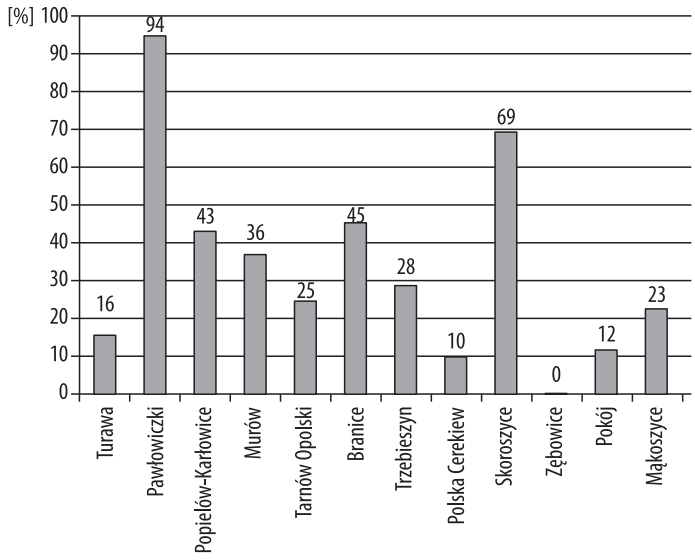
Source: own study based on: www.ksng.gugik.gov.pl [21-01-2013]; Report on implementation in 2010 of the NPMWWT prepared by the Marshall's Office of the Opolskie Voivodeship.

Figure 1
The percent of real number of residents in rural and urban-rural agglomerations of Opolskie Voivodeship, using several ways of waste water elimination



Source: own study based on Report on implementation in 2010 of the NPMWWT prepared by the Marshall's Office of the Opolskie Voivodeship.

Figure 2
The percent of P.E. using the sewerage in rural agglomerations



Source: ibidem.

Considering more accurate index, which is P.E.[7], significant differences are noticeable in the sewage system of typically rural areas, compared to rural-urban areas (figures 2 and 3). Among 12 rural agglomerations, only one (Zębowice) does not have a sewerage system. In other rural agglomerations, the percentage of P.E. provided with sewerage system ranges from 10% to 94%. However, the degree of rural communes being sewered is lower, in most cases, comparing with rural-urban communes.

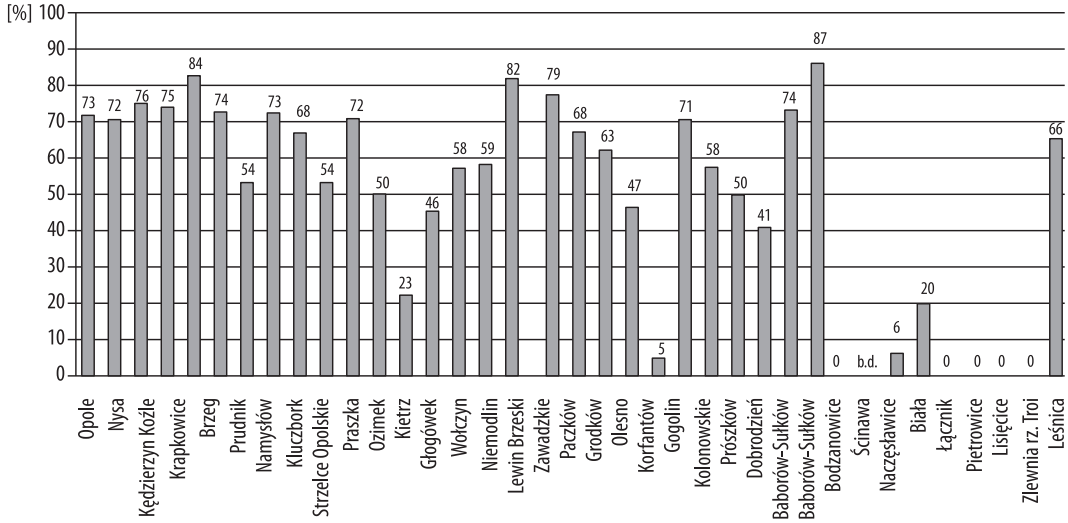
In rural-urban agglomerations, five of them do no have sewage systems (Bodzanowice, Łącznik, Pietrowice, Lisięcice, Troi river basin). In other rural agglomerations, the percentage of P.E. provided with sewerage system ranges from 5% to 87%. Average percentage of P.E. using the sewerage system was 27.5% and 65.58% in rural and in rural-urban areas, respectively.

As of December 31, 2010, total length of the waste water treatment network in agglomerations of the Opolskie Voivodeship amounted 3,176 km. In 2010, 192 km of waste water treatment network was constructed and approx. 1 km modified. At the same time, the length of waste water treatment network in rural areas reflects low level of P.E using the waste water system.

Construction and modification of wastewater treatment network in agglomerations of the Opolskie Voivodeship was largely implemented due to additional resources outside the self-government budget. There were mainly foreign funds

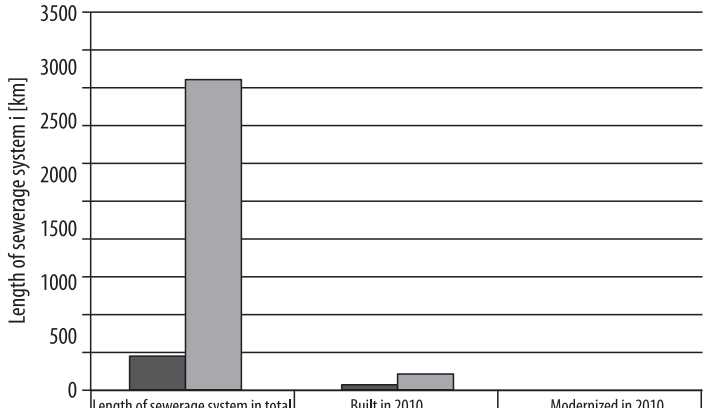
[7] Population Equivalent – the number expressing the ratio of the pollutant load in waste water and the unit pollutant load in waste water discharged by one inhabitant per day.

Figure 3
The percent of P.E. using the sewerage in rural-urban agglomerations



Source: ibidem.

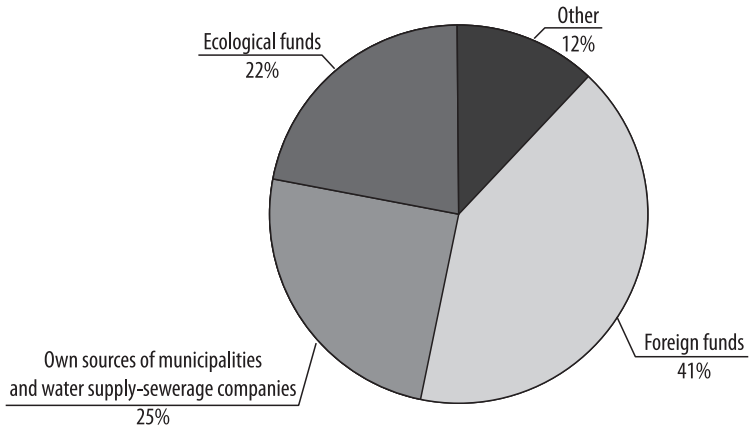
Figure 4
The length of sewerage in the Opolskie Voivodeship agglomerations (state of 31.12.2010)



	Length of sewerage system in total	Built in 2010	Modernized in 2010
Rural agglomerations	305,8	43,8	0,3
Ruual-urban agglomerations	2870,2	148,19	0,6

Source: ibidem.

Figure 5
Sources of sewerage building financing



Source: ibidem.

(41%), especially the RDP, ERDP, ROP and EEA FM[8]. 22% of the funding came from the environmental funds (the NFOŚiGW – the National Fund for Environmental Protection and Water Management, the RDOŚiGW – the Regional Fund for Environmental Protection and Water Management and the GFOŚiGW – Communal Fund for Environmental Protection and Water Management). Municipal local governments and water supply and wastewater treatment service providers granted 25% of funds. The remaining funds come from banks credis or private agencies (see figure 5). Total project cost in 2010 amounted 180,063.40 PLN.

Environmental impact analysis associated with the limit values for biogenic volatile organic compound emissions generated in the area of the Opolskie Voivodeship

According to the Treaty of Accession of the Republic of Poland and to the plans contained in the NPMWWT, realisation of the planned investments is intended to provide a minimum of 75% of the load of total nitrogen and total phosphorus removal from municipal wastewater in the whole country. Reaching such result will be possible, if:

- in the class of waste water treatment plants for agglomerations between 2,000 and 15,000 P.E., the conventional biological waste water treatment plants will be used;
- in the class of waste water treatment plants for agglomerations above 15,000 P.E. the enhanced total nitrogen and total phosphorus removal will be applied.

[8] RDP /PROW/ – Rural Development Programme 2007-2013; ERDF /EFRR/ – European Regional Development Fund; ROP /RPO/ – Regional Operational Programme; EEA Financial Mechanism /MF EOG/ – European Economic Area Financial Mechanism.

Table 2
Data of biogenic pollution reduction in Opolskie Voivodeship

Inflow nitrogen load for P.E connected with sewage system [kg/y]	Outflow nitrogen load for P.E connected with sewage system [kg/y]	% of nitrogen reduction for P.E connected with sewage system	Real % of of biogenic pollution reduction	Inflow phosphorus load for P.E connected with sewage system [kg/y]	Outflow phosphorus load for P.E connected with sewage system [kg/y]	% of phosphorus reduction for P.E connected with sewage system	Real % of biogenic pollution reduction
2972385	436750	85	47	520212	56247	89	50

Source: own study based on publication: M. Rajca, I. Kłosok-Bazan, M. Smoła, *Ocena stanu wypełnienia zobowiązań zapisanych w Traktacie Akcesyjnym w zakresie dyrektywy 91/271/EWG*, Opracowanie wykonane na zlecenie KZGW, Opole 2012.

In the case of the Opolskie Voivodeship, the biodegradable pollutant loading reduction percentage for loads from suppliers connected to the public sewerage network is relatively high and amounts to 85% for nitrogen and 89% for phosphorus. However, after considering the total load of pollutants formed in the the region of the voivodeship, covering also the load of pollutants in the unsewered areas, this percentage is significantly lower and amounts to 47% and 50% for nitrogen and phosphorus, respectively. Table 2 shows percentages of nitrogen and phosphorus loading reductions with subdivision on the loading reductions in the sewered areas and reduction of actual pollutant loads generated over the whole territory of the Opolskie Voivodeship. Comparing the mentioned data with the assumptions defined in the Treaty of Accession and in the NPMWWT, the conclusion should be made that the primary obstacle to achieve the assumed levels of biogenic pollutant removal, is due to the fact that insufficient area is equipped with sewage system in the voivodeship; and in the next 5 years, institutions responsible for the NPMWWT implementation in the Opolskie Voivodeship should consolidate their actions, so at the end of 2015 the actual effect of reduction of nitrogen and phosphorus loading will increase.

Assessment of tasks implemented under the NPMWWT performed by particular agglomerations on waste water systems, wastewater treatment plants and funding for the programme at the end of 2010

The total number of 49 agglomerations defined in the Opolskie Voivodeship, 2 are of above 100,000 P.E., 13 agglomerations are in the range 15,000-100,000 P.E. and 34 agglomerations are from 2,000 to 15,000 P.E.. According to provisions of the NPMWWT, in all agglomerations > 100,000 P.E., collective wastewater treatment systems and municipal waste water treatment plants should be provided for at least 95% of the population. In agglomerations in the range of 15,000-100,000 P.E., the value was at least 90% of population and in agglomerations

Table 3
The degree of NPMWWT realization for the Opolskie Voivodeship in range of inventory of sewerage system in the end of 2010, including division of P.E. groups

Number of agglomerations in the Opolskie Voivodeship: 49					
≥ 100 000 P.E		15 000-100 000 P.E.		2000-15 000 P.E.	
Number of agglomerations	Agglomerations provided with sewage system ≥ 95% P.E	Number of agglomerations	Agglomerations provided with sewage system ≥ 90% P.E	Number of agglomerations	Agglomerations provided with sewage system ≥ 80% P.E
2	0	13	0	34	2

Source: ibidem.

between 2,000 and 15,000 it amounted to 80%. Analysis of data on providing a sewage system for agglomerations in the Opolskie Voivodeship with division on particular classes of p.e. was presented in table 3. At the end of 2010, none of agglomerations above 100,000 P.E. was provided with a sewage system for 95% of the area. The reached percentage of P.E. using the sewerage system in these agglomerations ranged around the value of 73%. For the range of 15,000-100,000 P.E., which at the end of 2015 the rate value of areas supplied with sewage system should indicate 90%; there was also no agglomeration, which could complete the investment process. It should be also noted that in this class, the percentage of areas provided with sewage system varies greatly and ranges from 16% to 84%. With regard to agglomerations between 2,000 and 15,000 P.E., 2 of them complied with the assumptions of the NPMWWT at the end of 2010, which means that their percentage of areas provided with sewage system was higher than the assumed.

It should be noted that in provisions of the NPMWWT, the investment implementation was spread in time and agglomerations should reach the above mentioned rates by the end of 2015. However, analysing provisions of the NPMWWT concerning the planned length of waste water network in agglomerations in 2010, it was concluded that in the Opolskie Voivodeship at least 5 agglomerations did not construct the planned length of waste water network.

Regarding implementation of provisions on wastewater treatment plans, it can be stated that at the end of 2010 most of communes were still implementing the investment process, however, the environmental effects produced by wastwater treatment plants were satisfactory. All the analysed facilities after treatment, the wastewater complied with the requirements specified in the Regulation on conditions that must be met to discharge wastewater to water or soil and on substances particularly harmful to the aquatic environment.

Analysing the data to determine the degree of compliance with the provisions of the NPMWWT plan for financing up to 2010, it should be stated that majority of agglomerations comply with the specified assumptions. 38 from all

49 agglomerations comply with the provision of construction of wastewater network costs and 44 out from all 49 agglomerations comply with the provision of waste water treatment plants construction costs.

Analysis of the potential opportunities to implement the assumptions of the NPMWWT by the end of 2015

According to the NPMWWT, the investment is planned to be implemented in 2015. This period should be sufficient for implementation of all provisions of the document, since the results obtained in the Opolskie Voivodeship are satisfactory when compared with those of the whole country[9]. However, in some agglomerations, delays can be observed mostly from:

- offsets due to changes in the strategy according to schedule of key investments;
- funds from the Cohesion Fund obtained later than planned;
- lack of appropriate financial resources;
- time-consuming bureaucracy and administrative procedures for starting the investments;
- hard weather conditions.

Conclusion

Analysing the degree of fulfilment of provisions set in the NPMWWT on providing wastewater treatment infrastructure in particular agglomerations, it was noted that the highest percentage of p.e. provided with the sewerage network was recorded in Pawłowiczki agglomeration in Kędzierzyńsko-Kozielski Poviat and it amounted to 94%. Unfortunately, in the region, 6 of 49 established agglomerations is not provided with appropriate sewerage infrastructure, which means that the percentage of p.e. using the waste water collecting network is equal to 0. However, it should be noted that in all of these agglomerations construction works are undertaken aimed at achieving the required degree of areas supplied with sewage system.

In terms of investments concerning wastewater treatment plants, compliance with provisions of the NPMWWT on construction and proper functioning of waste water treatment plans is reached only in 20 agglomerations. Wherein, due to the fact that the standards were achieved in key agglomerations, the percentage of reduction of degradable pollutant loads for the Opolskie Voivodeship are relatively high and are 85% and 89% for nitrogen and phosphorus, respectively.

[9] Ibidem.

Data analysis on implementation of the NPMWWT in rural and rural-urban areas of the Opolskie Voivodeship points to certain problems and obstacles causing delays in implementation of the assumed objectives. The most important barriers are: financial problems, time-consuming administrative procedures for starting investments and difficult weather conditions.

There is still 4 years left, to complete the adjustment process It is hoped that this period will be sufficient for implementation of all provisions of the NPMWWT, especially since the results obtained in the Opolskie Voivodeship are satisfactory when compared with those of the whole country.