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ECONOMIC AND SOCIAL ASPECTS OF THE DEVELOPMENT OF WASTE WATER CHARGES IN POLAND

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One of requirements of Urban Waste Water Directive (91/271/EEC) is designation sensitive aeas to eutrophication.

In November 2000 Polish Government made decision on the recognition of the whole territory of Poland as the sensitive area to eutrophication. In the light of the provisions in the Urban Waste Water Treatment Directive, this involves the obligation to implement highly efficient technologies of removal total nitrogen and phosphorus from waste water from agglomerations more than 10 000 p.e.

During technical consultations with European Commission and in the "Implementation Plan" related to the UWWT Directive, Poland decided to choose alternative solution from this directive, which allows for especially advanced waste water treatment only in certain agglomerations, so as to achieve reduction of both the total nitrogen and the total phosphorus load in urban waste water by at least 75 %. This solution is favourable to Poland in terms of economy and technology.

In 2000 in Poland were estimated 1 479 agglomerations. Number of agglomerations in each category and organic load of waste water, discharged into water, expressed as p.e. and % are shown in table 1:

Table 1: Number of agglomerations and organic load of waste water, discharged into water.

Size of agglomeration (p.e.)	Number of agglomerations	Organic load of waste water, expressed as:	
		p.e.	%
> 15 000	400	32 838 488	86,0
including:			
> 100 000	78	21 462 747	65,0
15 000 – 100 000	322	11 375 741	21,0
10 000 – 15 000	100	1 256 796	3,5
2 000 – 10 000	979	4 048 782	10,5
Total	**1 479**	**38 144 066**	**100**

In 1079 agglomerations between 2 000 and 15 000 p.e. – 348 of them is equiped with conventional biological waste-water treatment plants; in 322 agglomerations between 15 000 and 100 000 p.e. – 98 of them is equiped with enhanced biogenic removal waste-water treatment plants; in 78 agglomerations more than 100 000 p.e. – 23 of them is equiped with enhanced biogenic removal waste-water treatment plants.

In order to achieve at least 75 % reduction of total nitrogen and total phosphorus load in urban waste-water it is necessary to construct, modernise and expand:

- sewage systems in all agglomerations,
- 731 conventional biological waste-water treatment plants in agglomerations between 2 000 and 15 000 p.e.,
- 224 biological waste-water treatment plants with enhanced biogenic removal in agglomerations between 15 000 and 100 000 p.e.,
- 55 biological waste-water treatment plants with enhanced biogenic removal in agglomerations more than 100 000 p.e.

Waste-water treatment plants in agglomerations between 15 000 and 100 000 p.e. should remove total nitrogen and total phosphorus up to maximum values less than 15 mg N/l and 2 mg P/l (with minimum reduction of total nitrogen 80 % and total phosphorus 85 %); waste-water treatment plants in agglomerations more than 100 000 p.e. should remove total nitrogen and total phosphorus up to maximum values 10 mg N/l and 1 mg P/l (with minimum reduction of total nitrogen - 85 % and phosphorus 90 %) . Conventional biological waste-water treatment plants in agglomerations between 2 000 and 15 000 p.e. should remove total nitrogen and total phosphorus up to minimum 30 % reduction of N and 40 % of P.

Transitional period for the implementation of UWWT Directive in Poland will last to 31.12.2015. Construction, modernisation and expansion of sewage systems will cost in Poland 18,3 milliard zlotys; construction, modernisation and expansion of waste-water treatment plants will cost 12,3 milliard zlotys. These costs are shown in table 2.

Table 2: Costs of constructing, modernizing and expanding sewage systems and waste-water treatment plants in agglomerations in Poland.

	Size of agglomeration (p.e.)	**Number of agglomerations**	**Number of agglomerations equipped with sewage systems**	**Costs of constructing, modernizing and expanding [million zlotys]**	
				sewage systems	**waste-water treatment plants**
1.	> 100 000	78	78	4 201 645	5 919 118
2.	15 000 ÷ 100 000	322	321	8 151 522	2 880 772
3.	10 000 ÷ 15 000	100	97	1 009 943	510 161
4.	2 000 ÷ 10 000	979	603	4 940 343	3 042 316
	Total	**1 479**	**1 098**	**18 303 454**	**12 352 368**

The investment outlays spent in 1999 in Poland, including agglomerations more than 2000 p.e., were:

- for the sewage systems – 1 426 million zlotys,
- for waste-water treatment plants – 1 365 million zlotys.

As it result for the comparison of the investment needs and the outlays being spent currently, completion of the investment program by 2015 is feasible.

In Poland the existing economic and financial system for environmental protection falls into three parts:

1. Ecological charges in general
2. Public and private institutions, especially financial ones, both commercial and non-commercial which allocate funds on and off the market to the aplying entities: business, public institutions, local governments, households. These institutions include:

- specific ecological funds; general (environmental protection and water management funds) and specific (e.g. fund for protection of agricultural forestry areas)
- the state budget, local and regional budgets
- commercial financial institutions, especially banks that extend ecological loans on market terms
- other non-commercial domestic financial institutions (apart from environmental protection funds), e.g. foundations. We may include here commercial institutions to the extent to which they let environmental credits and loans on terms better than market terms thanks to the support from the National Fund (e.g., BOS – Bank for Environmental Protection)
- pre-accession aid funds from the EU (PHARE, ISPA, SAPARD)
- foreign financial institutions and other aid programs.

3. Source of financing:

- ecological fees (charges) and penalties,
- own funds of the commercial and non-commercial financial institutions, including environmental protection and water management funds originating both from interest and loans extended and own financial activities,
- public funds allocated for environment protection purposes within the state budget and local self-governmental budgets,
- own funds of business, originating both from their cash-flows and from commercial bank credits,
- savings and other forms of own funds possessed by individuals (households) as well as their current income (e.g. in a case of operational fees on environmental infrastructure),
- transfer of foreign savings in the form of direct foreign investments enhancing financing of environmental projects by financial institutions acting in Poland and of assistance funds,
- financing through equity investments, i.e. future participation of the investor in ownership and profit gained by the environmental investment.

In Poland main sources of financing sewage systems and waste-water treatment plants are:

- resources from limited companies of water supply and sewage treatment, included in waste water price (generated for example from amortization of installations and from gains these companies),
- budgetary resources (from central, county – voivodship and communal – municipal budgets),

- ecological funds,
- credits, loans,
- foreign resources.

The share of particular stakeholders in the investment process for financing the investments in 1999 is shown in table 3.

Table 3: The share of particular stakeholders in the investment process for financing the investments in 1999.

Investment Type	Investment Outlays		Funding Sources (%)				
	Million zlotys	%	Own Resources[1]	Budgetary Resources[2]	Ecological Funds	Credits, loans	Foreign Resources
Sewage systems	1,426	100	56,0	9,3	25,0	7,5	2,2
Waste-water treatment plants	1,365	100	32,4	11,9	43,6	8,7	3,4

[1] – from limited companies of water supply and sewage treatment,
[2] - from Central, Regional (Voivodships) and Municipal Budgets.

Resources from limited companies of water supply and sewage treatment.

Mainly in Poland exist two kinds of enterprises of water supply and sewage treatment – limited companies and municipal factories (which are parts of municipalities).

Limited companies – enterprises of water supply and sewage treatment in their activity have to:
- manage these companies,
- operate all installations of water supply and sewage treatment,
- construct, modernise and expand water purification plants, pumping stations, waste-water treatment plants, sewage systems etc.

Resources for this activity proceed from sale water and waste-water (water supply and sewage treatment). They are included in water and waste-water price. Money for construction, modernisation and expansion all installations of water supply and waste-water treatment are generated for example from amortization of installations and from gains these companies) but investments of water supply and sewage treatment can be co-financed from Municipal Budget. Activity of limited companies is supported on Commercial Code. The highest power of these companies is Assembly of Partners of Limited Company. Members of this Assembly are: members of Municipal Management and President of Limited Company – Director of enterprise of water supply and sewage treatment.

Limited Companies are independent enterprises. Prices of water and waste-water are prepared as a result of economic account but they have to be accepted and confirmed by the Municipal Council.

Municipal factories of water supply and sewage treatment.

These factories are parts of municipalities. All investments of water supply and sewage treatment are financed from Municipal Budget.

Budgetary resources.

These resources proceed from local taxes.

Ecological Funds.

In Poland is realized principle "Polluter Pays". Every user pays environmental charges for waste-water discharges into surface waters; the level of these charges depends on:

- the category of waste-water,
- the level of load of discharged waste-water,
- kind of user – for example industrial waste-water treatment plant and municipal waste-water treatment plant pay different unit rates for discharges their waste-water.

From the beginning of 2002 the level of these charges will be the same for every user; for municipal waste-water treatment plants (and for all inhabitants) charges will be higher.

In Poland exists also system of environmental penalties which are paid in situation, when concentration of some substance (or parameter) in waste-water discharges exceeds allowed value in permission for waste-water discharges into waters.

The environmental charges for waste-water discharges and environmental penalties are divided and paid to:

- the National Fund for Environmental Protection and Water Management,
- the Regional (Voivodships) Funds for Environmental Protection and Water Management,
- the County Funds for Environmental Protection and Water Management,
- the Municipal Funds for Environmental Protection and Water Management.

Environmental charges and penalties are incomes of funds for environmental protection and water management and are being spent for financing construction, expansion and modernisation of waste-water treatment plants and sewage systems. Every year these charges are corrected according to the inflation rate.

The National Fund for Environmental Protection and Water Management co-finance investments in agglomerations more than 2000 p.e.; regional, county and municipal funds for environmental protection and water management can co-financed smaller agglomerations.

Funds for environmental protection and water management apply the following main forms of environmental protection funding:

- loan funding,
- subsidy funding.

Loan funding includes:

- loans granted by funds for environmental protection and water management,
- credits granted by banks from resources of funds for environmental protection and water management,
- credit lines from resources of funds for environmental protection and water management, serviced by banks.

In fact, these loans and credits are investors money, because of course they have to be repayed. But it must be stressed that such a credit or a loan from funds for environmental protection and water management can be reduced up to 50 % - in case when the investment is finished in proper time and when the intended environmental effect is achieved.

Development of waste-water charges in Poland will be gradually. It is very important from social point of view because inhabitants of agglomerations will pay these charges. As I stressed, as it result for the comparison of the investment needs and the outlays being spent currently, completion of the investment program by 2015 is feasible.