



Workshop

Implementation of the Urban Waste Water Treatment Directive in Rural Areas

Implementation strategies against the background of
the Water Framework Directive

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Staatliches Amt für Umweltschutz
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Rural wastewater treatment in Hungary

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Management**

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- **Introduction**
- **Actual situation of harmonisation with the UWWTD**
- **Characteristics of rural area in Hungary**
- **Problems identified in rural area**
- **Possible solution for rural WWT**
- **Summary**

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INTRODUCTION

- **Public water supply is provided in 99,9% of the settlements to 92,1% of all dwellings**
- **27,2 % of all settlements and 51% of dwellings are served by public sewerage**
- **Coverage in Budapest 90%, in other big towns 75%, in other towns 45-50%, in villages 35%**
- **Treatment of collected waste water 90,3% is solved, but 35,2 % only preliminary treatment and 12% is the advanced treatment**

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Harmonisation with UWWTD

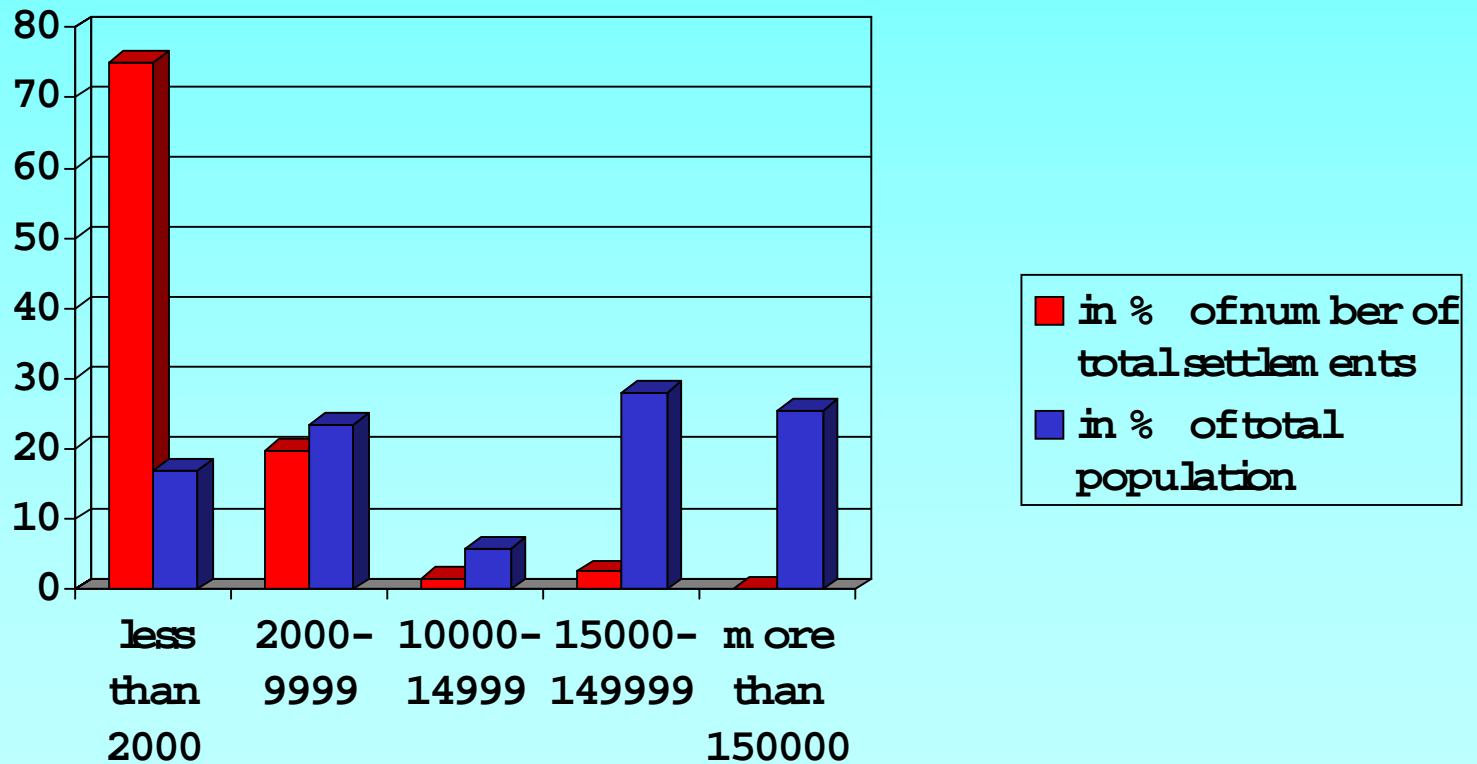
- **Provision of wastewater collection and treatment is obligatory task of municipalities in agglomerations with more than 2000 p.e. (Water Act)**
- **Criteria for identification of agglomerations used for UWWTD (Gov.Decree)**
- **Identification of sensitive area (Gov.Decree)**
- **Conditions for discharges of wastewater to recipients and to collection systems (Gov.Decree)**
- **National Implementation Programme for UWWTD (first version based on 1998 inventory, ongoing update)**

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Characterisation of spatial structure of settlements

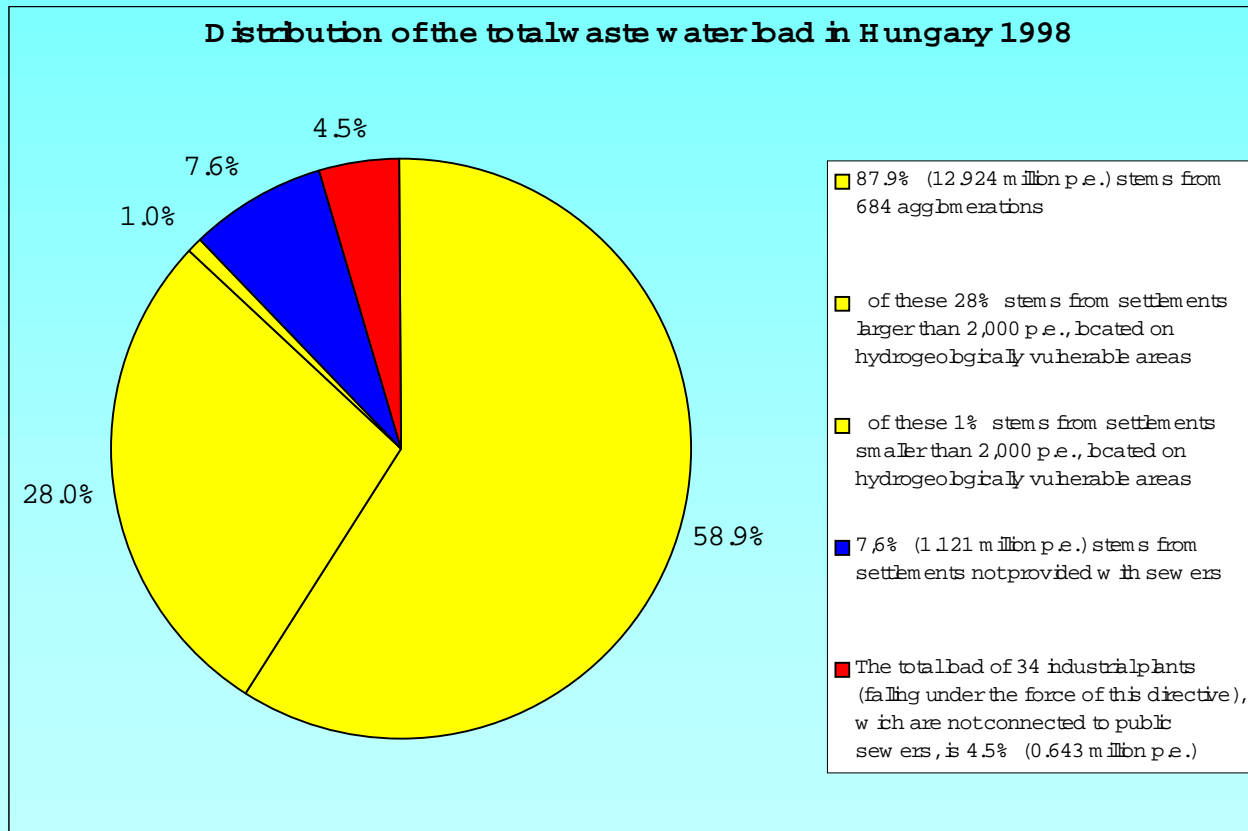
- Total number of settlements : 3135 with total population of **10 203 279**
- 2373 (75,7%) of them have population less than 2000 and represent **1 739 233** people
- 625 have population less than 10000, and **2 397 355** people live in these settlements
- 49 have population between 10 and 15 thousands and number of total population **597 956**
- 83 have population between 15 and 150 thousands with total population of **2 862 981**
- 5 towns have more than 150 000 inhabitants with total population of **2 605 754**

Distribution of population between different types of settlements



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Total wastewater load



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Main criteria for identification of agglomerations

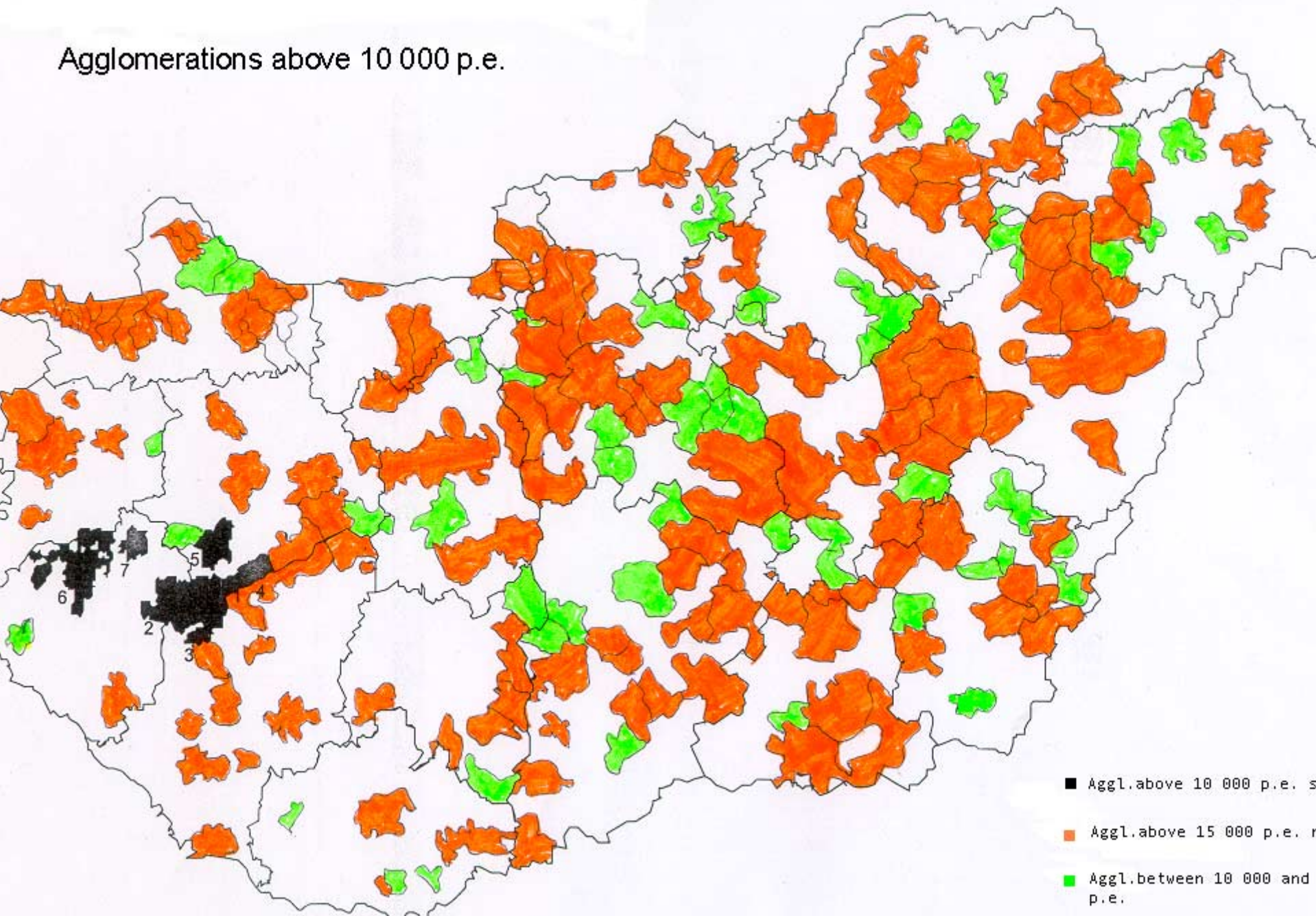
- **Population density in area - minimum 30 person/ha (in settlements with high ground water level lower density)**
- **Time of reaching the WWTP – less than 6 h (taking into consideration the daily change of flow)**
- **For 1 km of collector minimum number of connection - 45 households (120 p.e.)**
- **Calculation of load:**
$$\Sigma \text{p.e.}_{\text{aggl.}} = Q \text{ (m}^3\text{/d)} \times \text{BOD}_5 \text{ (g/m}^3\text{)} / 60 \text{ (g/m}^3\text{)} + \text{p.e.}_{\text{ind.}}$$
- **1 person= 1 p.e. in area not connected yet to system**
- **Comparison economy for different solution (connection to existing agglomeration or local solution)**

National Implementation Plan of WWTD in Hungary

Initial status and final goals

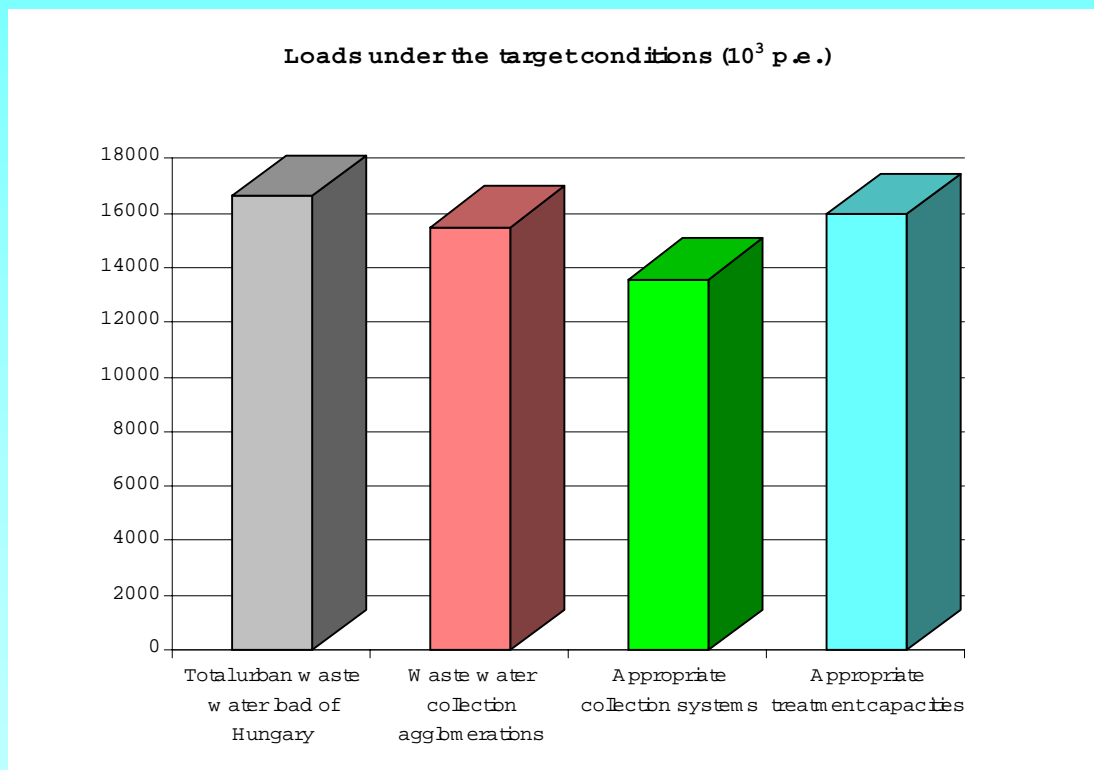
Year	Agglomerations of waste water collection				
	Number		Load 10 ⁶ p.e.		Loading ratio
	Total	with sewers	Total	with sewers	%
1998.	512	359	12,786	8,620	67,4
2015.	525	525	15,363	13,479	87,7

Agglomerations above 10 000 p.e.



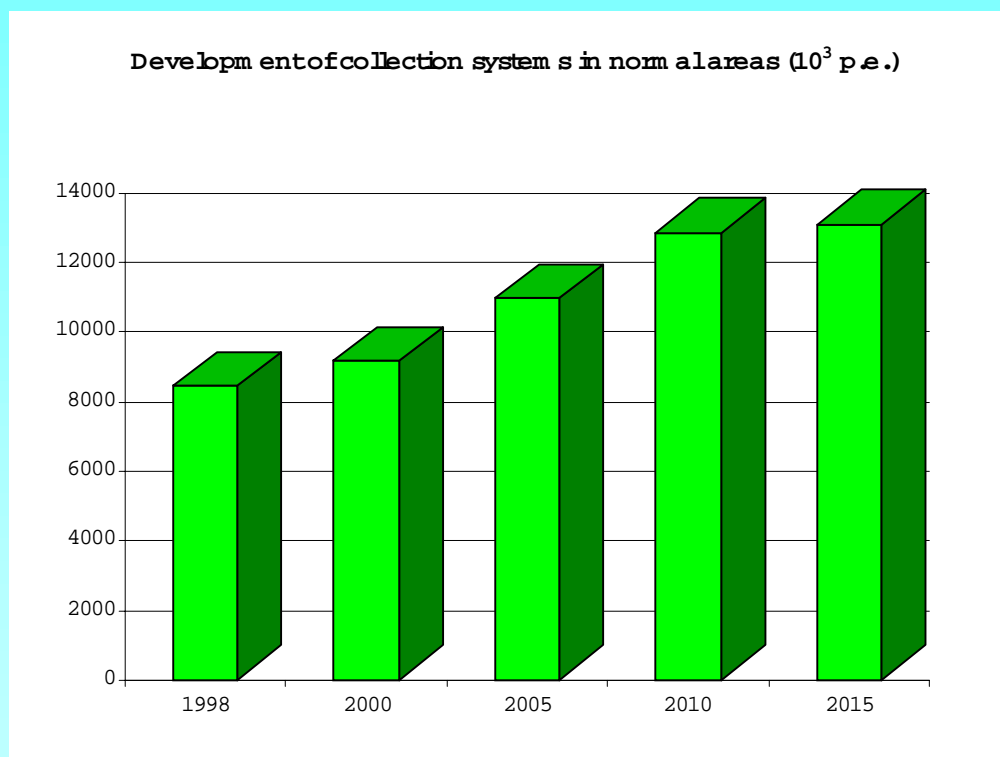
National Implementation Plan of WWTD in Hungary

Wastewater load in 2015



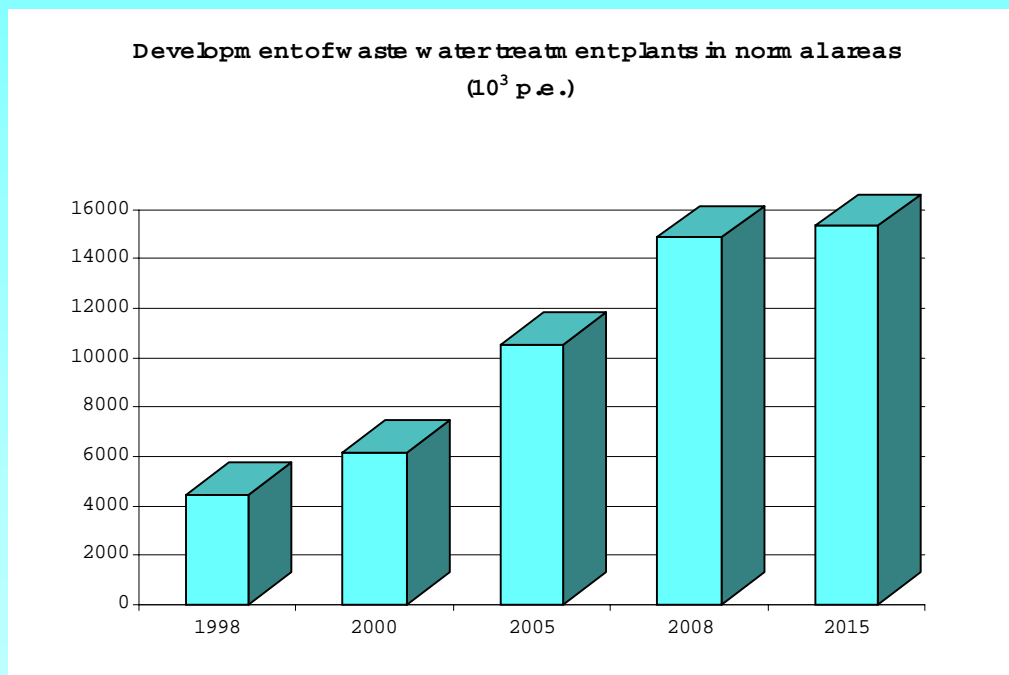
National Implementation Plan of WWTD in Hungary

Development of collection



National Implementation Plan of WWTD in Hungary

Development of WWTPs



National Implementation Plan of WWTD in Hungary

Cost of NIP

Development costs	Costs	
	10 ⁹ HUF.	10 ⁹ Euro
Between 1 January and 31 December 2015.		
<i>Development required by the EU</i>	925.3	3.559
<i>Development costs of settlements smaller than 2000 p.e.</i>	26.9	0.103
<u>Total costs of Hungary's National Implementation Programme on Waste Water Collection and treatment in the period 01 Jan. 1999 –31 Dec 2015</u>	952.2	3.662
<i>Of these the cost of projects implemented in the period 01 Jan. 1999 –31 Dec 2000</i>	142.1	0.546
<i>Tasks remaining for the period 01 Jan. 2001 –31 dec. 2015</i>	810.1	3.116
Tasks remaining for settlements smaller than 2000 p.e. for the period 01 Jan. 2001 –31 dec. 2015	23.8	0.089

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Characteristics of rural area

- **2373 settlements have less than 2000 p.e. load , between these 1479 have less than 1000 p.e.**
- **282 settlements are situated on vulnerable area of drinking water resources – they are part of the NIP (total load 242 951 p.e.)**
- **Typical rural settlements are concentrated in transdanubian hilly area**
- **Dominance of low income groups and elder inhabitants in these settlements**

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Problems identified in rural area

- **Piped water supply results in higher water use**
- **Generated wastewater pollutes shallow groundwater and often drinking water resources**
- **In some area increase of groundwater level**
- **In recreational area seasonal need is much higher**
- **Traditional collecting systems and treatment economically often not feasible**
- **Existing financing system do not cover individual solutions for households (e.g.septic tanks, sandfilters)**
- **Possibility to pay for services is rather low**
- **Low priority in National Programmes**

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Possible solutions for rural area

- **1st type**: In settlements where the central and/or other parts are feasible for collection :
combination of collection system and individual solutions, local treatment or connection to existing agglomeration (WWTP)
- **2nd type**: In settlements not feasible for collection:
individual solutions for each house or for group of them
- **For both type**: priority for environmental friendly solutions, like wetlands, agricultural use of sewage etc.

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Examples: 1st type

- **In Dombóvár area is under development a project for a mixed area, in frame of IKARUS project (co-operation with State of Baden-Württemberg)**
- **Main data of project:**
 - **Dombóvár town 24933 p.e +9 villages in agglomeration with total load of 9733 p.e.**
 - **Kaposzsekcső + 3 villages as subregion with total load of 3586 p.e.**
 - **another 12 villages with individual septic tanks and treatment of liquid waste on Dombóvár WWTP , representing total load of 9503 p.e.**

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Examples: 2nd type

- **Aparthant project**
- **Village in Tolna county, 360 houses, 1200 inhabitants, elementary school with 130 pupils, kindergarten for 30 children**
- **Individual septic tanks for wastewater (liquid waste), and local treatment of liquid waste collected by tankers from individual tanks**
- **Technology: Grid, settling tank with a digestion unit (5m³ for liquid phase, 100m³ for sludge digestion) reservation tank for liquid - 330 m³ , 1,6 ha for disposal – poplar plantation**

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Summary

- **The NIP for UWWTD contains the investment needs for agglomerations with load more than 2 000 p.e. and some smaller agglomeration on vulnerable drinking water resources**
- **There are no special regulations, guideline for rural wastewater treatment**
- **Lack of clear financing background delay the solution of the problems**
- **There is a need for a programme of rural wastewater development (technical, financial and regulations)**