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ASSESSMENT AND DEVELOPMENT OF MUNICIPAL WATER AND WASTEWATER TARIFFS AND EFFLUENT CHARGES IN THE DANUBE RIVER BASIN.

Volume 2: Country-Specific Issues and Proposed Tariff and Charge Reforms: Slovak Republic – National Profile

WORKING FOR THE DANUBE AND ITS PEOPLE

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PREFACE

The Danube Regional Project (DRP) consists of several components and numerous activities, one of which was "Assessment and Development of Municipal Water and Wastewater Tariffs and Effluent Charges in the Danube River Basin" (A grouping of activities 1.6 and 1.7 of Project Component 1). This work often took the shorthand name "Tariffs and Effluent Charges Project" and Phase I of this work was undertaken by a team of country, regional, and international consultants. Phase I of the UNDP/GEF DRP ended in mid-2004 and many of the results of Phase I the Tariffs and Effluent Charges Project are reported in two volumes.

Volume 1 is entitled *An Overview of Tariff and Effluent Charge Reform Issues and Proposals*. Volume 1 builds on all other project outputs. It reviews the methodology and tools developed and applied by the Project team; introduces some of the economic theory and international experience germane to design and performance of tariffs and charges; describes general conditions, tariff regimes, and effluent charges currently applicable to municipal water and wastewater systems in the region; and describes and develops in a structured way a initial series of tariff, effluent charge and related institutional reform proposals.

Volume 2 is entitled *Country-Specific Issues and Proposed Tariff and Charge Reforms*. It consists of country reports for each of the seven countries examined most extensively by our project. Each country report, in turn, consists of three documents: a case study, a national profile, and a brief introduction and summary document. The principle author(s) of the seven country reports were the country consultants of the Project Team.

The authors of the Volume 2 components prepared these documents in 2003 and early 2004. The documents are as up to date as the authors could make them, usually including some discussion of anticipated changes or legislation under development. Still, the reader should be advised that an extended review process may have meant that new data are now available and some of the institutional detail pertaining to a specific country or case study community may now be out of date.

All documents in electronic version – Volume 1 and Volume 2 - may be read or printed from the DRP web site (www.undp-drp.org), from the page Activities / Policies / Tariffs and Charges / Final Reports Phase 1.

We want to thank the authors of these country-specific documents for their professional care and personal devotion to the Tariffs and Effluent Charges Project. It has been a pleasure to work with, and learn from, them throughout the course of the Project.

One purpose of the Tariffs and Effluent Charges Project was to promote a structured discussion that would encourage further consideration, testing, and adoption of various tariff and effluent charge reform proposals. As leaders and coordinators of the Project, the interested reader is welcome to contact either of us with questions or suggestions regarding the discussion and proposals included in either volume of the Project reports. We will forward questions or issues better addressed by the authors of these country-specific documents directly to them.

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Abbreviations

BOD	Biological oxygen demand
HH	Households
ICPDR	International Commission for the Protection of the Danube River
MoE	Ministry of Environment
MU	Management unit
NRO	National Office for Regulation of Network Sectors
SEF	Slovak Environmental Fund
SWME	Slovak Water Management Enterprise
VAT	Value added tax
W&WW services	Water and wastewater services
WFD	Water Framework Directive
WW utility	Water Works utility
WWTP	Wastewater treatment plant

1 Introduction

This report is, first of all, a compilation of information and data that describing the institutions and conditions that shape and characterize the provision of municipal water and wastewater service in Slovakia. The purpose of this compilation is to provide background and inspiration for proposals to reform both the current system of water and wastewater tariffs and effluent charges and coincident proposals to adjust or modify the legal and regulatory system within which these tariffs and effluent charges function in Slovakia. Indeed, some chapters include brief analyses suggesting such reforms and Chapter 9 concludes this report with preliminary proposals for reforms in the institutional setting and design of these tariffs and charges. The aim of these proposals is to improve the management of water and wastewater resources used in the municipalities of Slovakia generally and, including protection of water resources from nutrient loading and toxic substance originating from municipal systems.

1.1 Overview

The territory of Slovakia covers 49,034 km^2. The country is divided into 8 regions and 79 districts. Within this broader administrative division there are 2,883 municipalities. Slovakia has a population of around 5.4 million and a population density 109.9 inhabitants per km^2. Slovakia is a rural country of small settlements, the urban population is 56% concentrated in a few larger cities.

Slovakia is a country in economic transition. In 2000 the GDP reached 887.2 bill. SK (constant prices). The average unemployment rate in 2002 was 19.6%. The rate of inflation increased dramatically in 1999, when large portion of the price reform of public services was introduced (including water services). In May 2004, Slovakia became a member of the EU.

1.2 Overview of the Origins and Status of the Municipal Water and Wastewater Industry

Management of water resources did not undertake any economic restructuring the political changes after 1989. The Government has had the responsibility to regulate, develop, and provide water services to all users, such as households, industry and agriculture. However, several administrative changes impacted also the economic development of water infrastructure and water and wastewater (W&WW) services provisions.

With respect to infrastructure development, the W&WW services were funded directly by the Government (through the Ministry of Forest and Water Management). These services were provided for both inhabitants and industry (industrial activities were also in state hands).

Water industry was not privatized and W&WW services were still provided by the state-own water works (WW) utilities, even though the Act on Municipalities (from 1990) delegated the public services (among W&WW services) to municipalities. The economic recession brought several problems in water infrastructure development:

- Changes in management, investment policies, and house-keeping performance of other industrial sectors were not the case in the water industry as this sector did not experience any restructuring
- State contributions to investment in W&WW systems decreased (stopped) and state budgetary assistance was directed toward the recovery of operating costs
- Accounts receivable of water operators – both direct and secondary debts - increased
- Metering of households brought decreases in water consumption and W&WW utilities were not prepared to for the consequent loss in revenues.

1.3 Future Directions

In 1997 the Government decided on the decentralization of W&WW services and a transfer of assets to the municipal level. Unfortunately, the process was politically hampered and several times postponed. The final decision on the decentralization was taken in 2003. The year 2003 is a critical year and it is important for the reader of this report to realize following issues:

- the Act on Water Supply and Sewerage Utilities was adopted in 2002 and implementation began in 2003
- the Water Act was adopted in 2003, will be implemented from 2003 and there is a plan to amend the Water Act in 2004 (to meet the compliance with the EU Water Framework Directive)
- decentralization (transfer of state owned W&WW utilities to municipal water companies) will be completed by the end of 2003 and the municipal water companies will be allowed to enter public – private partnerships
- decentralization with former state administration responsibilities (also in other sectors, such as education, health care, urban planning, waste management) being transferred into municipal level and the decentralization will be completed by 2004 (public policy reform)
- during 2003, all valid water discharge permits are being revised by environmental authorities and new permits (taking into account stricter pollution limits) are being issued
- the Government adopted the Regulation on Provisions of Water Services and it was implemented in 2003. Before this period, the water prices for households were limited by the resolution (decision) of the Ministry of Finance and prices for other clients were individually negotiated between operators and clients. From 2003, the prices for households are regulated based upon the justified economic costs of service provisions. The National Office for Regulation of Network Services has the decision making power to decide on the maximum allowable price both for households and other clients. The National Office annually issues decisions about the maximum prices and tariffs to each individual supplier of W&WW services.
- based upon the Directive Specific Implementation Plan to meet the EU requirements (MoE, 2001), the Government has committed to develop an investment strategy to construct the water infrastructure. As a part of the strategy, the financial plan to absorb EU funds and to prioritize investment projects is supposed to be outlined. The strategy is to be finalized by 2004.

2 Legal and Institutional Setting

2.1 National Laws and Regulations Governing Provision of Municipal Water and Wastewater Service

2.1.1 Common Provision

Main water services related legislation is as follows:

- Water Act 184/2003 was adopted recently and transposed the EU water-related legislation (except of several provisions of WFD). According to the Water Act, each agglomeration larger that 2000 person-equivalent (pe) should be connected to a sewerage system and wastewater should be treated prior to discharge to the recipient water body. For agglomerations larger than 10 000 pe, adequate treatment that removes nutrients should be provided. The Water Act defines the time schedule to meet the obligation to construct sewage systems with the adequate treatment. That is the year 2010 for large agglomerations (more than 10 000 pe) and 2015 for small agglomerations (from 2 000 – 10 000 pe)1.

  According to Water Act, each withdrawal of water and each discharge of wastewater are subject of permit. There is a Regulation 491/2002 on permissible levels of pollution discharges and ambient quality standards of receiving waters.

  Also, according to the 2003 Water Act, every discharge of wastewater into the recipient is subject to an effluent charge. The details are provided in the Regulation 35/1979 on Pollution Charges. This regulation was adopted in 1979 (with a small amendment in 1989) thus does not address neither incentive nor revenue raising functions of pollution charge. In general, the pollution charge depends on the quantity and quality of discharged wastewater. Five polluting substances are currently subject of payment (BOD5, insoluble substances, crude oil substances, acidity or alkalinity, dissolved inorganic salts). Water experts now discuss a proposal of a new effluent charge regulation, no consensus was found yet.
- Act 442/2002 on Water Supply and Sewerage Utilities establishes basic conditions for organization and provision of service. The Act regulates the establishment, development and operation of public water works. According to the Act, the owner and operator could be any physical or legal person that receives a license to own or operate the system. Services are provided by operators and revenues from these services go directly to operator or owner of facility. The maximum permissible tariff for W&WW service is set by the National Office for Regulation of Network Sectors and applies nationwide.
- Act 514/2001 on Human Health Care that sets hygienic requirements for the drinking water supply. The Act also provides for the inspection of drinking water operators with respect to meeting the hygienic limits of drinking water provided to inhabitants.

[1] *Although the Water Act refers to "agglomeration" as requested and defined by the EU directive, further in the paragraphs, the obligation to connect inhabitants to sewerage and WWT systems is given to the "administration unit" - municipality. This might have "investment constraint" consequences because it could happen that few or several municipalities smaller than 2 000 pe will not be on "priority list" for the infrastructure development even thought they do not fit into the "agglomeration" classification of the EU. Currently, there is a research project conducted by the Water Research Institute that should consolidate "appropriate agglomerations" that would support the investment decisions with respect to the construction of water infrastructure. Unfortunately, the research is in delay to prepare Slovakia for decent investment projects for EU structural funds.*

2.1.1.1 Service Area

Service area is defined primarily by five W&WW utilities that administer W&WW services to inhabitants and industries. These five large units were (till 2003) subdivided into smaller "odstepne zavody" that were typically connected to district town as follows:

- Bratislava W&WW utility
- West Slovakian W&WW utility and its 11 small units (Bratislava-vidiek, Dunajska Streda, Galanta, Komarno, Levice, Nitra, Nove Zamky, Senica, Topolcany, Trencin, Trnava)
- North Slovakian W&WW utilities and its 7 small units (Cadca, Dolny Kubin, Liptovsky Mikulas, Martin, Povazska Bystrica, Zilina, Ruzomberok)
- Middle Slovakian W&WW utilities and its 7 small units (Banska Bystrica, Lucenec, Prievidza, Rimavska Sobota, Velky Krtis, Zvolen, Ziar nad Hronom)
- East Slovakian W&WW utilities and its 12 small units (Bardejov, Humenne, Kosice, Poprad, Presov, Revuca, Spisska Nova Ves, Stara Lubovna, Svidnik, Trebisov, Vranov nad Toplou).

In addition to state-owned W&WW utilities, some municipalities individually built and operated so called "municipal water systems". The legal basis for the establishment of municipal water system is given in the Act on Municipalities (of 1990).

Service areas are in general defined by

- the size of state owned W&WW utilities that coped, in general, with the borders of administrative districts, and
- limits of municipalities that established own W&WW systems.

Service areas have grown for several reasons, among which the availability of financial resources was the most important.

2.1.1.2 Conditions of Service

Conditions of services provided by operators are specified and defined in the Act on Water Supply and Sewerage Utilities. The customers should be served 24 hours a day with water quality that meets required hygienic standards. Customers must pay the invoice for the water received and wastewater discharged by/into the operator's facility.

2.1.1.3 Reporting Requirements

W&WW utilities operators are obliged to submit several reports that involve:

- cash flow
- annual reports on services provided
- annual reports on general operation and performance of the facility(ies)
- annual environmental report that include emissions and quantity of discharged wastewater, amount of withdrawn water
- annual report on pollution charges to be paid (based upon both the decision and the actual discharge).

These reports are submitted to responsible authorities and are accessible to the public. Aggregated statistical data are published by National Statistical Office (on scale of services provided), by the Ministry of Soil Management (on operation, subsidies, revenue and expenditures), and by the Ministry of Environment (on emissions).

2.1.1.4 Ownership of infrastructure

According to the Act on Water Supply and Sewerage Utilities, the owner and operator could be any physical or legal person that receives a license to own or operate the system. As the result of the transformation of water service provisions, municipalities are obliged to establish Municipal water companies (as successor companies of old W&WW utilities) where the involvement of private sector is not regulated. Currently, in Slovakia, there are municipal water companies that either provide services as public entities or contract public/private entities for limited period (from 10-25 years).

2.1.2 Self Service

Households that are not connected to the public water infrastructure use water from individual wells. These wells are equipped with single pumps and the quality of water is not monitored. The share of inhabitants supplied by water from individual wells is 15%. The individual withdrawal is not regulated. Households' self-service in the case of wastewater disposal is significant, representing 45%. The wastewater is disposed in individual septic tanks. Households using individual holder tanks are subject of random inspection with respect to regular emptying of septic tanks.

In order to make picture complete, the self-service user might be also an industry. Industry that withdraws water for industrial processes from own sources and discharge wastewater after the treatment at own WWTPs. Each user of water (more than 10 l/min or 4 800 m^3/year or 400m^3/month) and dischargers into the recipient must have a permit. Besides receiving a permit, self-serving entities must pay withdrawal charges and effluent charges.

2.2 Management Units

2.2.1 Administrative Units

Basic administration units are municipalities. According to the Act on Municipalities (1990), municipalities are responsible for the supplying their inhabitants with drinking water and provision of sewerage and treatment services. There are 2883 municipalities with the status of "town" or "village"[2].

2.2.2 Operating Units

In the past, the W&WW services were the responsibility of state-owned water and wastewater (W&WW utilities). These are still the operating units but a decentralization process is in progress and should have been completed by the end of 2003.

The state ownership means that planning, development, monitoring and budgeting was done by the Ministry of Soil Management. There were 5 W&WW utilities subdivided into "odsepne zavody - OZ" (daughter or smaller units without budgetary, development and planning autonomy) (totally 47). Sizes of OZ varied and usually were attached to a specific town or service area (see 2.2.1). The operation unit thus involved a physically integral unit of drinking water supply and distribution and collecting wastewater and treatment.

The revised system of operating units is not finalized, as the decentralization of 5 W&WW utilities is not completed yet. According to the Resolution of the Government (in June 2001), no more than 7 (!)

[2] *Villages are small units with the simple administrative and economic activities and towns are larger units usually providing public services to several surrounding villages.*

municipal joint stock water management companies can be created. There is an exception to this rule, as 4 water companies were established prior to the final decision on decentralization. These "grandfathered" exceptions are:

- The City of Trencin. The owner of the W&WW infrastructure is a company wholly owned by the City. The company that has a contract to operate the system is owned by a private investor - Suez Lyonnaise des Eaux-ONDEO (50.1%), and several municipalities (49.9%). The operating company was established in 1998 and was granted by a 20-year contract by the municipality.
- The City of Ruzomberok. In 1999 a concession to provide W&WW services was granted to the Slovak Cellulose & Paper Company. This occurred because the company was willing to accept municipal wastewaters to be treated in its facilities.
- The City of Komarno. In 1997 the City established a wholly city-owned and city-operated municipal water company KOMVaK, a.s.
- The City of Hlohovec. In 1998 the Hlohovec city established a municipal joint stock company – Dubovany Water and Sewage Company, s.r.o.

The process of decentralization is as follows:

- Property formally owned by the W&WW utilities is presently under the supervision of the National Property Fund
- Municipalities enter into negotiations with each other and W&WW utilities to establish municipal water companies[3]
- National Property Fund transfers assets and obligations to these newly created municipal water companies
- Once the property is transferred into the municipal water companies, these water companies can, in principle, form joint ventures with private companies or sell the assets to them. The later possibility was not tested yet.

By September 2003, following W&WW utilities have been cancelled (terminated) and new municipal water companies have been established:

- Bratislava (former Bratislava W&WW utility)
- Nitra Water Company (former West-Slovakian W&WW utility)
- Trnava Water Company (former West-Slovakian W&WW utility)
- East-Slovakian Water Company (former East-Slovakian W&WW utility)
- Podtatranska Water Company (former East-Slovakian W&WW utility)
- Middle-Slovakian Water Company (former Middle-Slovakian W&WW utility)
- North-Slovakian Water Company (former North-Slovakian W&WW utility).

In addition to the large W&WW utilities and the larger municipal systems described above, some municipalities constructed (so they are owners) and they operate W&WW services facilities. They began de-facto operation after 1989, when a cut in the central government budget for water and wastewater investments created a financial and service crisis situation. In 2001 such towns and

[3] *According to the Resolution of the Ministry of Soil Management, these companies must be publicly owned and ownership shares are divided according to the population size of each municipality regardless of the scope (extent) of w&ww services currently provided.*

villages served 4.8% of Slovak inhabitants served by a central water supply and 3.2% of Slovak inhabitant served by a central sewage collection and treatment systems.[4]

2.3 Service Users

In general, the following classes of water users are distinguished:

- households
- large industrial plants
- small industrial plants
- commercial and institutional bodies.

The classification of users (consumers) is based on

- the magnitude of water consumption and wastewater production,
- the type of wastewater pollution discharged to public sewer system and pretreatment (if any) used.

W&WW operators have separate contracts with each user connected to public water supply and sewer system. The quality and quantity of wastewater discharged to public sewer system is regularly monitored by W&WW operator and by user with frequency related to wastewater flow rate and level of wastewater pollution discharged.

The consent contract between user and operator usually sets the following limit values:

- withdrawal in m^3/year
- discharge in m^3/year,
- concentration average for particular pollution parameters in mg/l,
- maximum concentration and total mass limit in t/year.

This division is made also due to the different tariff rates of services. There are different tariff rates for "Households" and for "Others Users" (industries, and commercial and institutional units). This division is important because different ways of establishing and regulating tariff rates for W&WW services apply to these two classes of water users. Household consumers are inhabitants, but also, this group includes some "Other" entities that provide public services, such as kindergartens, schools, hospitals, social and reeducation centers.

2.4 Regulatory Units

2.4.1 Environmental Regulation

The Ministry of Environment is the responsible for the setting and enforcement of water-related and other environmental regulations. It also coordinates the activities of its water related institutions, such

[4] *It is not clear if these municipal water utilities have to enter into newly established municipal water companies because they are located in newly designed service areas. Positions differ; those municipalities that developed the facilities purely from own sources, work in "profit", and do not have technical problems in operation of w&ww services are reluctant to hand over (surrender) their assets into a large units with few shares.*

as Slovak Hydro-meteorological Institute (and from July 2003 also the Water Research Institute). The MoE supervises 8 Regional and 79 District offices responsible for the issuing permits to withdraw and pollute waters. These offices also give a permit for construction of facilities (such as water networks, sewer systems, pumping stations, water treatment and wastewater treatment plants)[5]. There are 5 local water inspectorates that report to the MoE. These inspectorates have the power to impose fines for violation of environmental legislation and regulations.

The Ministry of Health Care is the responsible for setting and enforcing hygienic limits of drinking water. The same pollutants as required by the EU Drinking Water Directive are regulated, with the main division to obligatory and recommended parameters. Through its 37 hygienic institutes (so called State Health Institutes), monitoring and compliance with the hygienic limits of drinking water is conducted[6]. Each drinking water operator has an obligation to regularly report on the production and quality of drinking water that is provided to the water system[7]. The Act on Health Care was amended in 2001 to require that drinking water quality be measured at the point of consumption, as required by the EU.

2.4.2 Economic Regulation

Formerly (till 2002), economic regulation was conducted by the Ministry of Finance that:

- regulated tariffs of W&WW services for Households. Rates were gradually increased from 1990 but still do not cover the full operating costs of operators[8]. It is necessary to mention, that tariffs for Others were not regulated and were individually negotiated between provider and client.
- provided budgets for the state-owned entities (those under the central government, such as W&WW utilities, SWME, Water construction company); municipalities are excluded as they receive annual budget based upon the size and number of population that includes an "infrastructure development budget". The state budget allocation in recent years gradually decreased.
- provided non-investment subsidies to recover the costs of W&WW service providers. The state subsidies gradually decreased and stopped in 2001.

From 2003 the National Office for Regulation of Network Sectors (Act 276/2001) was established to monitor and regulate water tariffs based upon the "justified" costs of each individual operator. Each provider of W&WW services must apply for the permit to charge "inhabitants and other" clients in a given year and the National Office issues a decision (that is publicly available) for each individual provider.

According to Act on Water and Sewerage System, anybody could provide W&WW services. Thus, the National Office regulates

- Maximum tariffs for Households and Other Users provided by large municipal operators
- Maximum tariffs for Households and Other Users provided by small municipal operators
- Maximum tariffs for Households and Other Users provided by any W&WW service operators

The maximum tariff for Households is defined as the maximum tariffs in the previous year multiplied by the coefficient 1.35 for drinking water and 1.30 for wastewater. This maximum tariff cannot be exceeded regardless of the production costs of the supplier. Above-mentioned coefficients will be

[5] It should be noted, that District and Regional offices (so called "general state administration") are established and budgeted by the Ministry of Interior. The Ministry of the Environment has a "supervision" role of the environmental departments of regional and district offices but has limited power to manage and control daily task assignments and their execution.

[6] Due to financial constraints, the regular monitoring of hygienic limits is done randomly or is targeted based on cases arousing suspicion, recent non-compliance or epidemic situations. Institutes also monitors bathing waters.

[7] Reports are not available for the public due to several „technical" problems of processing and interpreting of data received.

[8] The level of rates was constant until 1990 (the price of drinking water was 1.74 SK/m^3 and price of sewage water was 1.31 SK/m^3). In 2002, the price of drinking water was 11,50 Sk/m^3 and price of sewage water was 7,50 SK/m^3.

applied until the maximum tariffs of “Households” and “Other Users” are equal. There is a plan to reach the same tariff for both groups of consumers by 2005.

The National Office also classifies the "Others" grouped with “Households” to whom the maximum tariff is being charged; these are for example diagnostic centers, orphans, student hostels and dormitories, old people's homes. These “similar-to-household” consumers are specified in the decision for each individual supplier.

The National Office directly regulates maximum tariff for "Other Users". The steps are as follows:

- Average tariff of an operator is calculated based upon a complex formula. This formula includes “economically justified cost” (production cost) of operators, cost-plus-contract "profit" and correction coefficient of discount rate. There is a detailed list of those items that are eligible and non-eligible to be included into economically justified costs.
- The total cost of operator minus income from "Households and Others" (regulated prices) will create the tariff for "Other User" clients.

Basic rule is that the tariffs are designed to cover the operation costs of W&WW operator but discriminates against “Other Users” in favor of “Households and Other” consumers. Peculiar situation is when the operator has a high share of households where the maximum tariff is given (previous-year-price multiplied by 1.35 or 1.30) and the rest of the production cost must be reallocated among other clients (big cake of cost is divided among "Households and Others" and "Other Users" artificially and is based upon a “social affordability” of Households). It is not clear, what the basis for the maximum tariff was in the past. The coefficients are also “arithmetically” design to meet the same price of both groups in 2005.

3 Production Quantity and Quality

3.1 Water Production, Distribution and Consumption

Water for drinking water purposes is produced mainly from ground water sources (more than 83%). The production of water in m^3 and its trend is shown at the Table 1. The ratio between produced and invoiced water represents water losses (28.5%) and technological water (2.3%) (data of year 2001).

Table 1 Drinking Water Production, Sales, Losses, and Household Consumption in 1999-2001

Parameter	Unit	1999	2000	2001
Water produced, of which	mill m^3	402.5	391.7	367.2
from ground water sources	mill. m^3	336.0	323.6	304.2
Water invoiced, of which	mill.m^3	286.5	275.1	260.5
for households	mill.m^3	185.9	181.6	172.2
Losses and unaccounted water, of which	mill.m^3	116.3	117.0	107.2
Losses in pipelines	mill.m^3	96.8	94.7	104.7
Specific water consumption in households	l/inh.day	126.9	123.5	117.1

Source: Green report 2002

Development of the population connected to a drinking water supply system is shown in Table 2. Drinking water is consumed by Households and Other Users in a share of 66:34 (year 2001).

Table 2 Population Connected to Public Drinking Water Supply, the Development in 1990-2001

% of population connected	1990	1995	1998	1999	2000	2001
Under municipal operation	2.2	3.1	4.1	4.3	4.5	4.3
Under W&WW utilities operation	73	76.3	77.7	74.5	74.6	74.9
Under other operation*	0	0	0	3.8	3.8	3.9
Total	75.2	79.4	81.8	82.6	82.9	83.6

Source: Green Report, 2002

* "under other operation" represents a newly established entities (for example Trencin) as mentioned in the chapter 2.2.2.

The household-specific consumption has a decreasing trend. This is thought to be caused by:

- an increase of water prices, and
- installment of meters at final consumer points.

Approximately 80-90% of the households' consumed water is metered. There are cases where this is technically impossible or meters were not installed yet. For those households where there are no water meters, there are two systems of charging for service:

- the charge is calculated based upon the total consumption from the water meter at the outlet of the operator that is divided by number of people living in the household, or
- the charge is estimated based upon the number of persons in households, usually 40 m^3 per persons per year.

There is not a significant increase of water-saving devices. The specific household consumption varies within different regions in Slovakia. For example, in Bratislava, it was 182 l/p/day, while in other regions less than 80 l/p/day. The average specific households water consumption was 123 l/p/day in 2001. This difference in the consumption should be investigated.

Drinking water is distributed directly to households either living in individual houses or in block of flats. In the latter case, the owner of the block of flats is responsible for the technical status of the pipes. This means that any leakage, corrosion of pipes or other failures should be corrected by the owner of the block of flats. The data on drinking water distribution are listed in Table 1.

3.2 Water Processing/Cleaning/Disinfection

The processing and cleaning the water supply is conducted in the first or second stage of water supply treatment. Technical and technological requirements of the cleaning and disinfection are stated in the permit that operator obtains for his operation. Hygienic authorities inspect the enforcement of the permit. There are only cases of violation (failure in disinfection) as almost all facilities are equipped by automatic dose system of disinfectant. In case of extraordinary situation (after flooding), the owner of facility (municipality) must ensure an alternative source of drinking water.

3.3 Wastewater Production, Collection and Discharge

Development of public sewer systems is not as advanced as the water supply network. 54.3% of the population is connected to sewerage and this has not increased significantly over the last several years. The main users of sewerage are households and provide for 57.5% of the wastewater. The rest is for "Others Users " represented by industry, commercial and institutional, and administrative bodies. Almost all municipal wastewater entering WWTPs is treated by mechanical and biological treatment (96.4%).

The level of treatment and performance of treatment facilities differ, ceteris paribus. According to the Approximation Strategy (2001, DANCEE-MoE), there is a need to upgrade more than 200 WWTPs and construct more than 300 WWTP in order to meet the EU Directive on municipal treatment of wastewater. Data on wastewater treated and discharged into the recipient water bodies are shown in Table 3.

Table 3 Wastewater Production, Treatment and Discharge in 1999-2001

Parameter	Unit	1999	2000	2001
Length of sewer network	Km	5 166	5 220	5 266
Wastewater discharged, of which	Mill.m^3	252.1	240.3	231.1
Sanitary wastewaters	Mill.m^3	143.0	137.2	132.9
Industrial and other wastewater	Mill.m^3	109.1	103.1	98.2

Source: Green Report, 2002

Development of the population connected to wastewater treatment plants is shown in Table 4.

Table 4 Population Connected to WWTPs (Development in 1990 – 2001)

% of population connected	1990	1995	1998	1999	2000	2001
Under municipal operation	1.3	1.4	2.4	2.5	2.6	2.9
Under W&WW utilities operation	49.4	51.1	51.6	48.7	49.0	49.1
Under other operation*	0	0	0	3.1	3.1	3.2
Total	50.7	52.5	54.0	54.3	54.7	55.2

Source: Green Report, 2002

* same as in Table 2

4 Economic Data

4.1 Tariffs

Tariffs were set up for Households by the Ministry of Finance till 2002. The setting of tariff did not involve any examination of the specific production costs of operators. Tariffs for "Households" were identical through the whole country and all operators charged the same maximum permitted price per m^3. The household bill is calculated on volumetric consumption of water (price multiply by volume of delivered water).

Tariffs for services to "Other User" clients were negotiated individually between the operator and the client. Many times it was the only way to recover the loss of "Household" clients. The parties to the negotiation of the tariffs were on the one hand the enterprise, and on the other - the operator of the W&WW services. The central Government did not influence these negotiations, but these negotiations could be strongly influenced by a market power and organization of the negotiating parties. Usually, the W&WW utility would set up the tariff in the whole district to which they provided the service. However, there were certain cases where the W&WW utilities set up different tariffs for „small" and „big" "Other User" clients.

Beginning in 2003, the National Office for Regulation of Network Sectors monitors and regulates water tariffs. Currently, the prices are not identical and might differ from region to region depending on operator production costs.

W&WW tariffs are subject to VAT (that was 6% in 1998, 10% by 2003 and 14% from 2003, 19% from January 2004).

Table 5 and Table 6 show the development of tariffs for drinking water and wastewater for households and average for other clients.

Table 5 Regulated Tariffs, Average Tariffs and Average Cost for Drinking Water Supply in 1998-2001

Parameter in SK/m^3	1998	1999	2000	2001
Tariff for households (without VAT)	5.66	7.26	8.36	10.08
Average tariff for others (without VAT)	15.98	16.26	17.20	18.36
Average costs of operators	10.45	10.80	12.36	13.76

Source: Green Report, 2002

Operators themselves, based upon the reporting requirements, report on costs. The operators –former W&WW utilities – are (were) not audited, as they are operating units belonging to the Ministry of Soil Management that takes the responsibility for supervision and budgeting. Thus, these operators are obliged to report on costs and revenues according rules applied for any public institution. Newly created operators will report to Municipal Boards and Municipal Councils (no more information available now).

Table 6 Regulated Tariffs, Average Tariffs and Average Cost for Wastewater Collection and Treatment in 1998 – 2001

Parameter in SK/m^3	1998	1999	2000	2001
Price for households (without VAT)	3.77	3.77	5.54	6.65
Average price for others (without VAT)	11.36	13.19	14.37	15.16
Average costs of operators	6.44	7.49	8.50	9.49

Source: Green Report 2002

4.2 Sales

Sales of W&WW services are shown in Table 7 (data from 2002 are not available).

Table 7 Sales of Water Services in 2001

Parameter	Sale in mill. m^3	Share of services %		Income (mill. SK)
		Households	Others	
Drinking water	260.52	66.1	33.9	3 358
Wastewater	231.15	57.5	42.5	2 373

Source: Green Report, 2002

4.3 Effluent Charges

According to the Water Act (2003), the polluter is obliged to treat wastewater according to the state-of-art technologies (that is secondary treatment at the minimum). The Water Act also requires treating wastewater to meet the emission limits. Therefore, there are cases that the polluter had to add a tertiary step in order to meet the standards.

According to Regulation on Pollution Charges (from 1979), each polluter must pay a water effluent charge. These charges are governed by a permit system and are levied based on self-monitoring by polluters (effluent quantities and concentrations reported by the polluters). The amount of charge depends upon the quantity of pollutants in the wastewater and on the quantity of the receiving waters. Base effluent charges are levied on 5 basic pollutants. Additional effluent charge penalties of up to 200% of the base rate may be levied to reflect a high level of damage to receiving waters. According to the law, these additional charges must be paid from after-tax profits. The charge rates are not adjusted to inflation.

Effluent charges are collected by SWME and were a funding source of the Slovak Environmental Fund. From 2001, the State Funds have been cancelled and the revenues go into the general state budget. The current and proposed computation algorithms for the effluent charge is in the Table 8. The income of the SEF from water effluent charges and water penalties is shown at Table 9 (data are

available till 2000, as the SEF was cancelled and from 2001, the water effluent charges and penalties are the income of the state budget. The statistic is not kept specifically on the water charges).

Table 8 Structure of Effluent Charges in Sk/unit

Parameter	1979-2003	Proposal of 2003
BOD5	21.5 * Z $^{0.8265}$ (in thous. SK)	12 SK/kg
Insoluble substances	2.34 * Z $^{0.7514}$ (in thous. SK)	2,40 SK/kg
Crude oil substances	1.00 – 3.00 SK/m^3	
Alkalinity or acidity	135 SK/kmolle	
Dissolved inorganic salts	120 – 600 SK/t	0,50 SK/kg
Non-polar extractable substances	-	2 SK/kg
N_{anorg}		14 SK/kg
P_{total}		90 SK/kg
Cyanides total		2 800 SK/kg

Z- amount of pollution in tons per year
Source: working document of the MoE for the development of water pollution charges, 2001

Table 9 Revenue for the SEF from Water Effluent Charges in mill SK

Parameter	1997	1998	1999	2000
Water effluent charge	194.8	215.1	198.5	197
Water effluent penalties	6.2	4.7	6.7	6.0

Source: Report of the SEF, 2001

4.4 Grants and Transfers

Grants and transfers come from

- State budget
- Water Fund (cancelled in 2001 the revenue and distribution of grant is under the ministry of Soil Management)
- Environmental Fund (cancelled in 2001, the revenue and distribution of grants is under the Ministry of Environment)

Grants are according to Slovak classification divided into “investments” and “non-investments” grants. “Investment grants” mean grants for the development of infrastructure (construction of water supply networks, WWTPs, sewer systems, irrigation facilities). “Non-investment grants” are transfers to recover production cost of operators; however, they also include R&D, monitoring, and planning activities. Table 10 shows state grants for two main water units: river basin enterprises (SWME) and W&WW utilities. The grants have decreasing trend.

In the past (not shown in the Table 10), substantial non-investment grants were provided for W&WW utilities to cover “costs of provision of tasks in public interest”, or in other words to recover the production costs associated with household service users due to the limitation of the maximum allowable price. In recent years, non-investment subsidies were not allocated to W&WW utilities. This was due to state budget constrains rather then to correct the distortion in household tariffs. Also, there might be an explanation that the Government did not budget the W&WW utilities from 1996 due to planned decentralization (and possible privatization). In practice, it took more than 5 years for the final

decision on transfer: the Government let the W&WW utilities "dry out" and allowed the assets to depreciate (and lose value) before the completing the transfer to municipalities.).

Table 10 Grants to Water Operators in mill. SK in 2001

Grants (mill. SK) to/from	Type	SWME	WW utilities
State budget	Investment	214.2	650.4
	Non-investment	134.3	-
Water Fund	Investment	-	28.3
	Non-investment	150.0	-
Environmental Fund	Investment	-	7.5
	Non-investment	-	-

Source: Green Report, 2002

Cross-subsidies

There are several cross-subsidies situations:

- Cross-subsidies among different units of W&WW utilities, Providing subsidies to operators where the economic (and geographical and environmental) conditions are extremely unfavorable (and costly) for the operating unit (OZ) resulting in a financial loss. In areas where operators provided drinking water supply and sewerage services make a profit, that profit is reallocated among unprofitable OZ to attain a balanced budget in each of the units. Due to transformation of W&WW utilities enterprises this practice will end, and the water prices will increase more in those regions where the cost of providing W&WW services is very high.
- Cross-subsidies exist between two basic services – drinking water supply and sewerage; while the first service is an unprofitable activity, it must be subsidized by the second one.
- Cross-subsidies exist among “Households” and “Other Users”; due to the maximum allowable price for households, re-allocation of the revenues from Other Users is used to offset loses from "Household" tariffs that are less than the cost of providing that service..

5 Infrastructure of Municipal Water and Wastewater Services

5.1 Production and Processing of Municipal Water

The public water supply services 82.6 % of the population. There do exist different regional levels of water supply, e.g. Bratislava, Prievidza, Martin, Banska Bystrica with the highest supply rate of 94 % and a worse situation in the rural areas in eastern and southern Slovakia, with a supply rate of approximately 50 % (Vranov nad Toplou, Sabinov, Bytca, Kosice-okolie). Drinking water is produced from ground water sources (more than 80%) and from surface water. There is a decreasing trend in the consumption of drinking water that might cause operational problems in the production and distribution systems. Typical drinking water supply system consists of well, distribution system (main and network pipes), treatment facility (one-stage or two stage), pumping system, water reservoirs. A typical problem with the drinking water supply is a high percentage of losses in distribution (on average more than 25%).

5.2 Collection, Processing and Discharge of Municipal Wastewater

The sewer systems and wastewater treatment plants are behind the overall development of Slovakia's economy and society. Only 55% of inhabitants are connected to a sewer system. There are 205 municipal wastewater treatment plants (as of December 2000) that treat municipal (in most cases municipal and industrial) waters of which:

3.8 % of wastewater is discharged only after the mechanical treatment

96.2 % of wastewater is discharged after mechanical and biological treatment.

There are cases when a biological nutrient removal step is already installed in existing WWTPs. however, most of WWTPs are obsolete and will require both upgrade and modernization to achieve higher levels of nutrient pollution reduction, including nutrient removal.

According to the EU Urban Wastewater Directive, agglomerations larger than 2000 pe must be connected to sewer and wastewater treatment systems. Currently, it is reported that only 12 WWTPs currently meet the EU obligations and would not need any change. There are 290 municipalities in the category of 2000 - 5000 pe without any WWTPs in place. According to estimates in a DANCEE – MoE study, the number and type of WWTP to be constructed or upgraded are as follows:

- 287 new plants with technology to remove organic pollution with the complete nitrification
- 3 new plants with the technology to remove organic pollution with an enhanced biological removal of N_{tot} and P_{tot} (by chemical or biological methods)
- 243 existing plants that need an upgrade that will include complete nitrification and/or nutrient removal.

The changes in technologies, new connections and upgrade will result in increased generation of sludge. In 2000, 98 920 tons of dry sludge was produced of which more than 40% was disposed by land filling and the rest was applied on agricultural (or forestry) land.

6 Management Units

6.1 Types and Number of Management Units

Types and basic features on the administrative and management arrangements were described in the chapter 2.2.

In the early part of the 90s, W&WW services were 100% operated by the state-owned W&WW utilities although according to the Act on Municipalities (1990), these tasks were given to municipalities (which mandated W&WW utilities to operate W&WW services). In a few cases municipalities mobilized financial sources to construct and operate W&WW services.

6.1.1 Trends in Formation and Consolidation of the MUs

Process of decentralization of W&WW services was launched in 1996. That was a period of dramatic situations, and several conflicts and problems attended the decentralization process:

- The Ministry of Finance regulated the maximum prices applied to municipal consumers (thus, the transformed W&WW services operators would operate in a distorted market)
- The Ministry of Soil Management lacked the capacity to process and approve transformation projects received from applicants. In addition, the application process was without feedback to those who prepared transformation projects.
- The Act on Water Works Utilities was for a long time pending the approval in the Government, thus it was not clear what rules (type of ownership, concession, lease, full divestment) would be applied to new operators of water services
- Municipalities without water infrastructure in place were excluded from the transformation
- Municipalities (agglomerations of concentrated industries), where water supply and sewerage services resulted in the profit, were not willing to join W&WW companies with other municipalities in the region that had money-losing systems
- Transformation projects were to be prepared by the W&WW utilities and the cost to develop the project was borne by these state-owned companies
- Transformation process was based upon a voluntary approach without a final schedule
- Municipalities were reluctant to receive facilities under construction due to a lack of finances, as the Government did not allocate resources for completion
- In addition, municipalities were reluctant to take over the services due to unclear future development in tax, price, insurance and depreciation policies.

According to the new Water Works Utilities Act (2002), any physical or legal person could be owner and/or operator of water services.

6.1.2 Lines of Business

WW utilities are purely W&WW service providers, and do not engage in any other business lines. They might probably provide some commercial services, for example activities related to civic and mechanical works, laboratory analyses, consultancy services. These activities are not mandatory and are provided in individual cases. It is not allowed to include these costs of providing these commercial services into the production costs for calculation of maximum prices.

6.2 MU Service Areas and Service Provided

W&WW services were (till 2002) provided by 5 W&WW utilities that were subdivided into 47 small operation units (odstepne zavody - OZ). These W&WW utilities are being decentralized (transferred) into municipal water companies. The decentralization of state-owned W&WW utilities were scheduled to be completed at the end of 2003 but it is not yet possible to precisely describe the service areas.

For example, original East Slovakian W&WW utility is being split into two water companies: East Slovakian Water Company and Podtatranska Water Company. Both are a successor of the state-owned W&WW utility.

The West W&WW utilities are spilt already into 3 successors` municipal water companies. Municipalities that are serviced by these companies have shares based upon the size of their population. The general rule is that responsibilities and costs (investment and operating) will fall into new municipal water companies that will be allowed to enter public-private partnerships. However, the service monopoly in the service area of any given company will persist.

In addition, a few water companies have been established in the period of 1996–1998, when the process of decentralization was launched.

6.3 Population Served by the MUs

In 2001, about 83.6 % of the population is provided with drinking water, but only 55.2 % of the population is connected to the public sewage system. The common problem is that there are differences in connection of inhabitants depending on the region. While in Bratislava, the connection (both to drinking water and sewer system) reaches almost 100%, there are regions of low (less than 20%) of connections.

6.4 Special Obligations

Payment discipline of household accounts is very high. There are exceptional cases, where households' consumers did not pay the bill and the W&WW utility for limited period stopped providing water services. A more sensitive situation occurs in the case of the unpaid water and wastewater bill of schools, hospitals and other public institutions. According to the statistic record of the Ministry of Soil Management, in 2001 the unpaid claims of W&WW utilities reached 2 158 mill. SK due to the insolvency of clients. As a consequence, these operation units end up with debts. The Table 11 shows claims and debts of W&WW utilities and SWME.

Table 11 Claims and Debts (mill SK) in 2000, 2001

Parameter	Year	WW utilities	SWME
Accounts receivable	2000	2054.5	1137.3
	2001	2158.5	1120.7
Accounts receivable past due	2000	1088.2	679.7
	2001	1175.9	718.9
Debts of operator	2000	926.6	299.9
	2001	1103.1	287.8
Debts of operator past due	2000	374.7	92.2
	2001	288.1	85.7

Source: Green Report, 2002

6.5 Financial Conditions

W&WW utilities keep accounts. Some are publicly available.

In the past financial plans were developed at the level of big regional W&WW utilities and investments were undertaken based upon the decision and capacities of the Ministry of Soil Management (and the Government). In general, it is reported that deep under-financing of water sector brought the W&WW services to its critical situation. Project preparation and planning was not realistic and usually ended up with the "wish list" of never implemented projects.

7 Regulatory Units

7.1 National, Basin and Local Planning and Permitting

National planning of development of water infrastructure is under the Ministry of Soil Management. It developed Water Management Policy till 2005 (Koncepcia vodohospodarskej politiky do roku 2005). According to this plan, the following estimates are provided:

- Investment Programme for the development of public drinking water supply system 6.95 bill. SK that includes an increase the level of water supply from 82.6 % to 85 % of the Slovak population by 2005.
- Investment Programme for the development of sewage network and treatment 36 billion SK by 2005 of which 2.9 bill. Sk is needed to complete the construction and upgrade of existing sewage systems and WWTPs. It is planned that the connection rate will be 57% of population by 2005.

At the national level, planning is limited to "annual" budgeting, and the support for future investments (with respect to the commitment to meet the EU directives) is only politically declared. Existing national plans lack the concrete steps and mechanisms how and from what sources will these expenditures be financed (the Water Management Policy refers to ISPA, Phare and other EU funds, commercial loans, municipal budgets, and support of the Government in a very general sense). Recently, the Strategy on the Implementation of EU Water Framework Directive was adopted (December 2003), that refers to the implementation of new requirements related to the transposition of the EU Water Framework Directive. It does not deal with investment plans to provide W&WW services.

At regional (river basin) level, there is so called Master plan that is revised biannually. It focuses more on the description of the situation rather than planning. No links are made to national or local planning documents.

Besides national planning, municipalities themselves establish development plans that include all public infrastructure. Approximately half of the municipalities have detailed engineering plans to construct wastewater facilities; few of them have already been constructed.

Municipalities usually requested the financing from the Slovak Environmental Fund (it was cancelled in 2001 and grants are available from the Ministry of Environment). Actually, they saw the SEF grants as the only source of water infrastructure financing. Several reasons were cited:

- the SEF allocated grants: that means free of interest or principle payments
- the SEF did not requested any "detailed" economic analysis (assessment) of the project
- the SEF did not analyzed any "environmental improvements" of implemented project
- the SEF did not requested co-financing from other sources.

The allocation of grants was not coordinated with the pre-accession funds that focused on large infrastructure projects. The SEF allocations were politically popular as they dealt with small-scale water projects. Table 12 shows the allocation of grants to water infrastructure projects.

Table 12 SEF Expenditures in mill SK (1996 – 2002)

Parameter	1996	1997	1998	1999	2000	2001	2002
Water supply	221.9	189.3	263.7	0	153.5	160.5	186.5
Sewage and treatment	398.2	326.9	408.1	2.5	547.7	635.1	847.0
Other water projects	29.7	16.9	33.3	16.9	-	-	-

Source: SEF report, 2003

At the level of W&WW service operators, there is not a clear picture how to prioritize the future investments. Financial demands clearly exceed internal capabilities of operators and range from recovery of water losses, reconstruction of facilities that are obsolete, new investments to meet stricter environmental limits, and new connection of inhabitants to public W&WW services.

7.2 Economic Regulations and Limitations

Economic regulation is from 2003 at the National Office for Regulation of Network Sectors (NRO). Each provider of W&WW services (more than 50 inhabitants or daily water production more than 10 m^3) must apply for the permit to charge "households" and "other service users" in a given year. The NRO issues the decision for each individual provider that is available to the public (details on regulation and setting the maximum tariffs are described in the Chapter 2.4.). The NRO was established originally for the regulation of natural monopolies (such as electricity, gas), and embraced the water services when the decentralization of state own water companies was launched. While in the case of regulation of electricity and gas tariffs the Office has a mandate to issue the penalty (in case of violation of the decisions granted by the Office) this is not a case for the water services. Therefore, the NRO as it is designed currently, has very symbolic functions over the regulation of water services.

7.3 Environmental Regulations and Restrictions

The Water Act (2003) requires each discharger to treat water prior to the discharge to the surface or ground waters. The implementing regulations set emission limits and effluent charges. The details are described at the Chapter 2.4. The Water Act transposed all water related directives of the EU including the Directive on Urban Wastewater Treatment that requires all municipal treatment plants to install the secondary treatment step at minimum. This requires heavy investments and it is anticipated that majority of environmental financial support from the EU funds will be spent for the (re)construction of WWTPs in Slovakia.

8 Service Users

8.1 MU Customers

MU customers are households (approximately 60 % of drinking water and 50% of wastewater services) and industries. Operators in general differentiate between large industries (conducting heavy industrial activities) and small industries (small enterprises and commercial agencies that have similar to household wastewater production) due to different tariffs applied. Also, there are other service users similar to household entities; such as student hostels, orphanages, retirement houses; for which the regulated household tariffs apply. It should be noted, that this group with "lower" water tariff can not conduct any commercial activity that would generate a profit.

8.2 Self-Supply Users

Self suppliers consists of households mainly in rural areas, although there are few in cities with more than 10 000 inhabitants without sewage systems so they have to "self-supply" sewerage services. This is not the case for drinking water supply; all inhabitants of the larger communities are served.

15% of the population obtains drinking water from personal wells. There is no monitoring of the quality or quantity of these withdrawals.

Many households are not connected to sewage system - 44% of households dispose wastewater in septic systems. Most are holding tanks and the content is regularly (minimum once per year) removed and taken to wastewater treatment plant. Municipal office might undertake inspection to assure that the holding tank was emptied by an authorized sewerage collection truck. No record would prove that the municipalities conduct the inspection.

If the self-service user would like to discharge the wastewater into soil, they need to have a permit from the district environmental office. However, direct discharge without the pretreatment is not allowed. There is no information on how many users built individual small treatment facilities.

9 Policy Issues

The principle of costs recovery for water services is expressed in the Water Framework Directive. Specifically, the Directive requires ensuring that the price charged for services related to water reflects the true economic costs of providing the service. Current water tariffs and pollution charges are not determined on the basis of cost-recovery. This has a historical roots ranging from legal, institutional and technical reasons.

Inherited problems:

- Past central budget allocations were for construction and equipment. This provided an incentive to over-design (substitute fixed capital for operating expenses like labor and materials).
- Budget allocation based on political influence provided as much as (more than?) needed and led to an unbalanced portfolio of plant and equipment in the various communities. A physical legacy but a behavioral legacy as well.
- Lack of management skills due to limited training and experience. Current MU staff never before had responsibility to do investment and tariff planning for the system.

9.1 Legal and Institutional Issues

Transformation (and privatization) allows for provision and responsibility of water services at local (municipal) level. This is a good signal that the central government will have a "regulatory" rather than "provider" function.

From 2003, the transformed W&WW service companies are being established and municipal water companies provide W&WW services to several municipalities. Municipalities (by the decision of Municipal Boards) might delegate maintenance and operation to a municipal or private company. Also, it might be the case that municipal boards could decide to sell bonds to a private company (this option has not been tested, yet). Except few cases, there is not any experience on what will be, in practice, the relationship between municipal boards and operators. On one hand, municipalities welcome transformation of assets as they increase the total assets of municipalities. On the other hand, municipalities are reluctant to take over the responsibilities as they declare that the Government did not allocate any financial sources to maintain existing facilities. The main problem is that the allocation of shares was done based upon the size of municipality, regardless of the actual service provided. Also, those municipalities that did not have any service received the shares in newly established municipal water companies. An additional problem is that those municipalities that operated their own water services are under the pressure to give up the operation and transfer the assets into a large municipal water company.

There are several other problems:

- Municipal authorities are not trained to make contracts and to deal with private companies
- Municipalities are not ready to plan new investments due to the lack of expertise and will rely on operators` proposals
- Municipalities do not have a tradition of, or practice in, working in partnership with each other. They usually regard each other as economic competitors and this is amplified by the fact that representatives of different and competing national political parties are often in charge of municipal affairs.
- Municipalities are not aware of environmental requirements, as they were not part of legislative process of EU accession.

Till now, municipalities and municipal governments have been "passive" players in the transformation process. Old W&WW utilities were turned into municipal water companies without any assessment

and review of their economic portfolio and performance. Anticipated problems will come when new investments should be done and clearly, municipalities are not prepared to make informed and experienced decisions.

Proposal to resolve problems:

- establish a clear (unambiguous) responsibility of Municipal Boards
- develop clear contracting conditions between municipalities and operators
- establish transparent organization structure of operators and management

9.2 Tariffs Structure

In the past, the tariffs for Households were limited and uniformly applied by the Resolution of the Ministry of Finance. Other user's tariffs were set by negotiations conducted between the operator and commercial customer. This resulted in several problems:

- production costs of operators exceeded the maximum prices of households. Operators used their market power (as monopoly suppliers of municipal water) to negotiate higher tariffs with other customers so that total costs were balanced.
- production costs of operators in technical or hydrological unfavorable localities exceeded total costs and were balanced by cross subsidies of other localities served by the state-owned regional water company.
- production costs for drinking water supply were cross subsidized by the revenues from wastewater treatment services
- annual governmental subsidies did not encourage the economic efficiency of operators or improve the water infrastructure. Now the central government is itself short of resources and annual assistance (subsidies) has declined and practically stopped.

Currently, the National Office of Regulation of Network Sectors has regulatory oversight over gas, electricity, and water utilities. It has a regulatory task to establish tariffs for both Households and Other Users. However, distortion between Households and Other Users still persists. In some localities (service areas where the share of Household users is higher than Other Users) the difference between water prices for Households and Other Users is magnified in order to cover costs..

The water tariff structure is based on volumetric tariff system without any “fixed” or “connection” charge. Recently, new clients are obliged to pay a “one-time” installation charge.

The response of users is to reduce or save water consumption that is provided by the public operators and, in extreme cases, to switch water sources and wastewater services (withdrawal of water individual wells or surface water, construction of own WWTPs). Pollution load of users (those using public water services) is not specifically addressed in the final calculation of the tariffs. Their pollution load probably should be considered and there are a few examples, where the W&WW operator designed tariffs for Other Users based upon the pollution entering the public WWTP.

The operator does not have substantial incentive to reduce internal operation costs. The main reasons are:

- Households tariffs are indexed and calculated based upon the previous year basis regardless of production costs and the rest of production cost must be recovered from Other Users
- Tariffs (both for drinking water and sewage water) are calculated in a way that a final tariff includes 10 – 15% net revenue of the water company. Improved effectiveness (and thus reduction of operation costs) would lead to a decrease of this accounting profit since it is calculated as a percentage of cost. This discourages cost control at the MWWU.
- Violation of the decision granted by the National Regulatory Office is not a subject of penalty.

The simple computer models dealing with economic assessment (already developed at ICPDR, OECD and other international programs) exist and would be in benefit of operators (and the National Regulatory Office). However, these models are not tested at operator levels at the scale that would give a better understanding to efficiency options. It is important to make a clear transparency of the cost-income structure of the operator. In other words, many international projects resulted in development of models to assess tariffs, charges. But results were never tested in a real water companies. Operators are obliged to break down cost items for accounting purposes, but never for internal use to see the structure of costs and revenues or to model different scenarios (for example for the future investments).

In addition to regular annual increases in prices, households are faced to an increase of the VAT that is attached to the water price. The VAT increased from 10 to 14% (from 2004 it will be 19%) over the last 5 years.

Proposal to resolve the problem:

- removal of indexing of Households tariffs and application of actual production costs at each MWWU as the basis for tariffs for service users that are households.
- Shift the NRO function to economic regulation of natural monopolies rather than calculation of maximum Household and Other User tariffs.

9.3 Effluent Charges

As described above, the effluent charges have neither incentive nor revenue raising functions. In addition, formulas used for the calculation of pollution load are designed to produce more (probably diluted) wastewater rather than increase the efficiency of treatment. Plans to amend the Regulation on Effluent Charges (that dates from 1979) have been delayed. There is an attempt by a few research institutes to investigate the impact of pollution abatement cost and pollution charge per unit.

Two dimensions of effluent charges might be considered:

- Effluent charges ***paid by W&WW operators*** *are too low* to produce an effective incentive for the W&WW operator to invest into abatement technologies. New, more stringent emission limits however may help encourage W&WW operators to reduce pollution loads.
- Effluent charge to be ***paid by industry using W&WW service***; in general, the tariff of wastewater does not address the specific pollution load. The industry is obliged to pre-treat wastewaters prior to the discharge into the public sewage system to meet the requirements of Sewage Order. This is signed between operator and the industry and might be inspected by the environmental authority. There are some cases that specific industry pollution (for example food and chemical industries that discharge pollution that might upset the operation of the public WWTP) is considered when the tariff is negotiated. However, the main driving force to increase the tariff of industry users is to recover the deficit caused by limited tariffs of Household users.

Proposal to resolve the problems:

- effluent charge should address two aspects:
    - pollution load of discharged wastewater
    - efficiency of treatment
- in setting wastewater tariffs, operators of W&WW services should incorporate pollution load from industrial clients based upon the quality of pollution (in the case that operation costs are higher due to an upset of public WWTP, for example caused by bulking sludge as a result of starchy waters from a food industry, etc.)
- enforcement of effluent charges should be improved. There should not be so much latitude for interpretation of the Regulation, allowing for reductions in the calculated final effluent charge
- there might be an incentive to delay effluent charge in the case of investment that leads to the reduction of final pollution load.

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– Collection of effluent charges should be documented and reported to the public.

Efficiency of the policy proposal should be tested at the national level. It is suggested to open a public discussion with respect to issues of efficiency, equity and benefits commensurate with the costs. The following table highlights the important advantages and limitations of the strategy proposals.

Strategy Name	Strategy description	Comments/Concerns
Revision of legal and institutional arrangement	Establish a clear (unambiguous) responsibility of Municipal Boards Develop clear contracting conditions between municipalities and operators Establish transparent organization structure of operators and management	Training of municipal representatives needed
Introduction of regulation over monopolies	Revisiting the role of National Office for Regulation of Network Sectors Examination of individual constituents of costs and tariffs Clear description of cost items including depreciation and future savings Removal of indexing HH tariffs Independent auditing Allow for increasing/decreasing block tariffs Informing the public about future rising costs	Time consuming legislative process Needs to improve enforcement
Introduction of cost center	Examination of individual constituents of costs and tariffs Examination of two-part tariff structure Clear description of cost items including depreciation and future savings Development and use of costing models	Increase costs in a short-term Unwillingness of operator to introduce a cost center with the argument of an additional burden to "reporting" requirements Unwillingness of municipal boards to be involved in examination with the argument of highly specialized issue to deal with at political level High willingness of industry to participate
Revision of pollution charges	Examination of unit cost of pollution reduction Allow for payment holidays in case of mitigation investments Allow for increasing/decreasing tariff depending on input pollution load (mainly valid for industry) Public assess to information on pollution charges	Needs to improve enforcement and monitoring of polluters Transaction costs with respect to monitoring and public assess

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