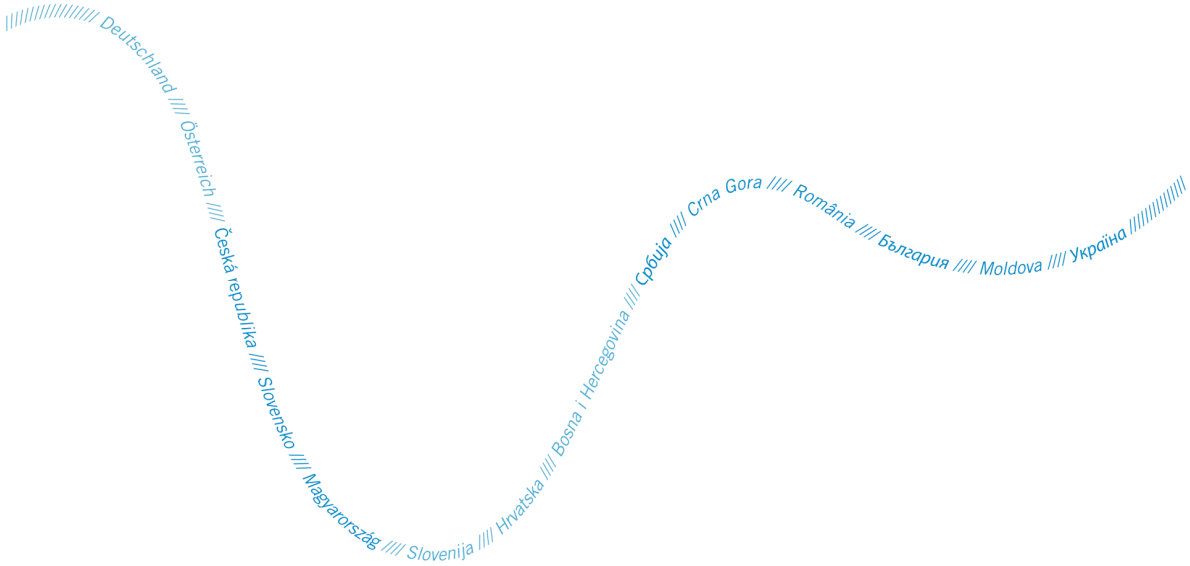
Case studies on the assessment of current levels of cost-recovery in the DRB

Annex 16 of the DRBM Plan



Introduction

The assessment of current levels of cost-recovery for water services is in accordance with Article 9 of the Water Framework Directive. Key elements to be investigated in the economic analysis include the status of water services, the institutional set-up for cost-recovery, the extent of the recovery of costs (financial, environmental and resource costs) of water services and the contribution of key water uses to the costs of these services, as well as the incidence of subsidies.

The presentation of the following case studies aims to highlight parallels and differences across the Danube River Basin (DRB) countries with regard to the varying aspects related to the implementation of economic analysis: **cost-recovery**.

Case study 1: Cost-recovery concerning drinking water supply in Bavaria

In the German DRB, there are regular benchmarking projects assessing cost-recovery of water services. The studies are designed and conducted by private consulting firms. Project partners include council associations, associations of water and wastewater services and state environment agencies and ministries.

One such study assesses efficiency and quality of drinking water supply in Bavarian communities and is conducted every three years.

In the 2006 study, the participating companies accounted for about 30% of all drinking water distributed in Bavaria and included companies with <0.5 to >2.5 million annual water distribution.

The study collected a wide range of information and indicators such as organisational set-up, cost and revenue structures, network properties and losses, water treatment, energy use, personnel, and many others.

With an average rate of around 100% for the participating companies, the study confirmed **full cost-recovery in the German DRB.**

Depreciation and interest accounted for over 30% of total cost; personnel, materials and services procured from third parties for approx. 20% each; taxes, fees etc. together accounted for approx. 7% of costs. On average, the participating companies invested approx. 4000 Euro per km of their total supply pipe length in 2006.

Case study 2: Cost-recovery concerning drinking water supply and wastewater services in Croatia

Case study area: County of Karlovac, 3622 km^2

Population: 141,787 (2001 census), of which 61% are connected to the public water supply, 30% are connected to the public sewerage systems with no wastewater treatment.

Cost-recovery was analysed for four utility companies (Duga Resa, Karlovac, Ogulin, and Slunj) comprising approx. 75% of all water services provided in the study area.

Water supplied: 7.2 million m^3; wastewater collected: 3.9 million m^3.

In line with the Utilities Act and the Water Management Financing Act, Croatia has a complex water price structure reflecting various cost components. The cubic metre (m^3) of water supplied to a final user is burdened with:

- Service price (expressed separately for water supply, wastewater collection and treatment, if provided);
- Water charges (obligatory expenditure set at the national level by the State Government) and development charges (facultative expenditure set at the local level by local government) which are strictly intended for recovering investment costs and the costs of water administration and management related to ensuring water availability and water quality;
- Value added tax (general tax paid to the state budget).

The assessment (see table below) shows cost-recovery of approx. 70% of the total O&M costs of providing water services in the study area (77% for drinking water supply and 45% for wastewater

services). In many cases, service prices do not reflect real costs as local authorities, whose consent is required, pursue an underestimated pricing policy. Usually the gaps are filled by the "commercial" activities of utility companies.

The assessed rate of recovering total financial costs is somewhat lower due to large investments, especially in wastewater infrastructure in the study area. Investments are co-financed from national funds (mainly from revenue from water charges that are collected at the national level and allocated without return into particular local projects according to set criteria reflecting priority and solidarity in the development of water infrastructure across the state).

Results for the study area are not representative of the whole of Croatia. Due to the principle of solidarity, the national scale is the most appropriate scale for analysing cost-recovery of investment and water administration and management costs.

	Income / cost (in 1000s of Croatian kunas)	Water	Wastewater	Total
Incomes (water pricing):				
1.	Service prices (revenue of water company)	29.427	4.789	34.216
2.	Water charges (revenue of Croatian Waters)	5.737	4.927	10.664
3.	Development charges (revenue of local budget)	0	0	0
Subsides (to companies):				
4.	For on-going purposes	0	0	0
5.	For investments			2.357
Costs:				
6.	**O&M costs**	**37.993**	**10.577**	**48.570**
	Payment for concession	605	0	605
	Personal costs	13.688	3.420	17.108
	Materials and Energy	7.510	2.837	10.347
	Maintenance	2.490	430	2.920
	Other running costs	13.700	3.890	17.590
7.	**Capital costs**	**7.334**	**23.028**	**30.362**
	Repayment of loans (by companies)	1.348	0	1.348
	Investments in new waterworks	5.986	23.028	29.014
8.	**Corresponding costs of water administration and management** [1]	**>0**	**>0**	**>0**
Rate of cost-recovery:				
	O&M costs (1. / 6.**):**	**77%**	**45%**	**70%**
	All financial costs ((1.+2.+3.) / (6.+7.+8.**))** [2]	**78%**	**29%**	**57%**

[1] Not analyzed at the study area level.

[2] Costs of water administration and management are missing.

Source of data: "Economic analysis for the Danube River Basin Management Plan" (Economic Institute of Zagreb): evidence from Croatian Waters. Reference year: 2004.

The Water Management Strategy (adopted in 2008) provides for the implementation of reforms and the rationalisation of the water utility sector in Croatia as well as the gradual application of the cost-

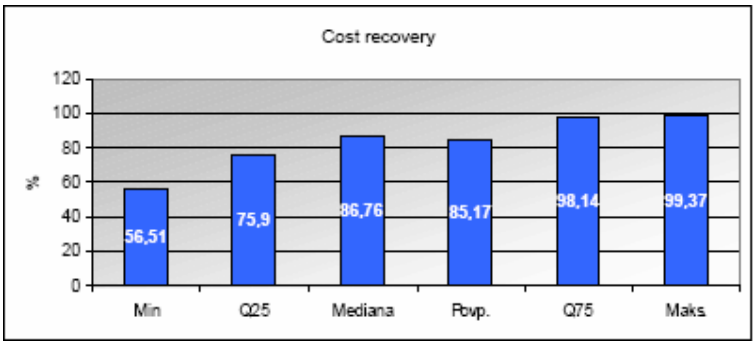
recovery principle by 2015. Local and state authorities, depending on the component of water price for which they are responsible, will develop corresponding pricing schemes, taking into account social affordability of the determined price for the population.

Case study 3: Assessing cost-recovery for ensuring sustainable water supply in Slovenia

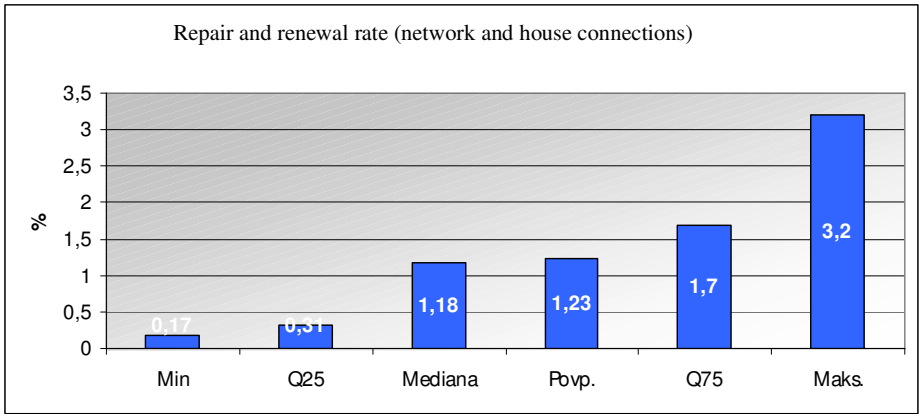
A twinning project with Germany and Austria offered 8 Slovene water supply companies the possibility to participate in a comparison of services (based on 39 indicators) with approx. 80 other companies in the same sector.

The comparison of indicators was based on international standards and included four categories: supply safety; supply quality; supply sustainability and supply efficiency. The methodology for indicator comparison is an appropriate instrument for determining adequate water prices in line with the EU Water Framework Directive (WFD) requirements, since it enables the comparison of performance and determines the potentials for improvement. A comparable methodology has been applied in Germany and Austria since 2003 and is used for the comparison of services of over 500 companies.

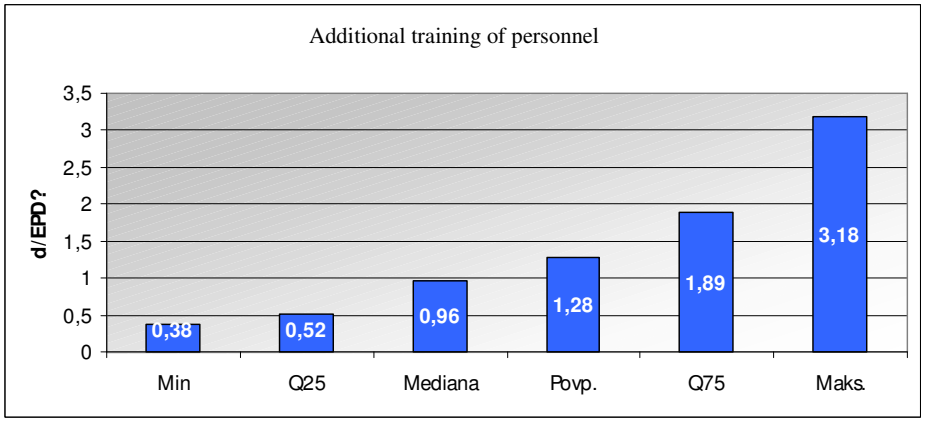
The results of the **supply sustainability** category provide information on cost-recovery analysis within the framework of the project (see diagram below).



Costs have to be covered by revenues to ensure a sustainable water supply in line with the requirements of the WFD. Therefore a **cost-recovery** of 100% has to be aimed at in the middle-term. Values over 100% are also common in Germany and Austria. Among the 8 participating companies, none of them achieved the value of 100%; three companies, however, almost achieved it. There are also companies which are far from the value needed for cost-recovery i.e. they have significant losses in the field of water supply. These companies will need to check the adequacy of their prices and adapt them in line with the requirements of the WFD.



One more indicator was considered in the cost-recovery analysis: the indicator for the **repair and renewal rate** that indicates the maintenance of the so-called technical value. The indicator shows which part of the network (including house connections) was repaired or renewed in the respective year. If, for example, 2% of the network was repaired or renewed each year, the network will be completely repaired or renewed in a period of 50 years. If a relatively long network life-span is taken into account, a long-term renewal rate of 1% to 1.5% is reasonable. This means that a network life-span of 75 to 100 years is considered. The 8 participating companies lie exactly in this range. Regarding the relatively bad network condition (water losses and pipe damages) however, this value is still too low.



The **sustainability** indicator category also allows for the time intended for the **additional training of personnel**. Water supply is a demanding and responsible task which requires highly qualified personnel. The procedures, techniques and requirements in this field develop continuously; therefore additional training of personnel is of key importance for a sustainable and high quality water supply. With only an average 1.3 days of additional training per employee per year, the value of the participating companies lies below the known comparison values in Bavaria and Austria (approx. 2 days per employee per year).

Case study 4: Investigating cost-recovery at the Podtatranska Water Company in Slovakia

Prior to presenting a summary of results for the case study realised at the Podtatranska Water Company in Slovakia, the table below shows figures outlining overall cost-recovery for the Slovakian DRB in recent years:

	Cost-recovery in %		
	2004	**2005**	**2006**
Drinking water supply:	97.27	103.53	98.81
Wastewater collection and treatment	104.92	105.99	89.66

The figures represent public water companies, the major providers of drinking water supply and wastewater treatment services (W&WW services).

There are strong indications that the current status of the cost-recovery level in Slovakian water companies has being continuously lowered. The economical pressure on water companies has, on the one hand, increased due to the growing requirements for the development of public water supply, wastewater collection and treatment, as well as the improvement of the quality of services. On the other hand, economic pressure is increased by the need to undertake the reconstruction, renovation and maintenance of infrastructure.

The Podtatranska Water Company (PWC) case study is an adaptation of a case study investigated within the UNDP/GEF Danube Regional Project in 2005, implemented in close cooperation with the ICPDR. The investigations were undertaken at the PWC, which was established in May 2003 as a share holding company. The service area is located in northeast Slovakia, in a broad mountain valley, where the main activities are tourism, engineering, chemical and food industries. The area of the PWC consists of the following settlements:

- Poprad district (includes Poprad city and 7 surrounding villages): 72,241 inhabitants; several industrial activities such as: heating/cooking equipment production, kitchen/washing machine production, automatic machines for hot and cold drinks and a brewery and canning plant. Inhabitants are connected to the drinking water supply and an old (and obsolete) wastewater treatment plant (WWTP). Industry uses the water and sewerage system to support manufacturing and non-manufacturing facilities. Prior to discharge into the public sewerage system, industrial wastewater customers must ensure that the quality of wastewater will not upset the operation of the public W&WW system. However, some industrial facilities also use private water sources for some processing activities.
- Industrial agglomeration of Svit: 9174 inhabitants (also includes one small neighbouring village). Job opportunities are in chemical and textile companies (viscose fibre and engineering production and textile production). Although the inhabitants of Svit are connected to the sewerage system, the wastewaters are discharged without treatment directly into a recipient water body. Over 90% of inhabitants are connected to the drinking water supply.
- Agglomeration of three tourist villages at Smokovce: a total of 4509 inhabitants; with several hotels, camping bungalows and motels. It is estimated that 1500 tourists per day (!) visit this area during the winter season. The agglomeration is connected to the drinking water supply; only a minor proportion of wastewater is collected and discharged directly into the recipient water body, the rest is disposed of in holding tanks.
- Agglomeration of three smaller tourist villages at Strba, located at the foot of the mountains: 7549 inhabitants with an additional 10,000 tourists per day in the tourist season. Most employment is in the tourist industry. This agglomeration is connected to a WWTP that requires replacement.

All agglomerations are connected to the drinking water supply system (connection rate is 86 - 100%) and sewerage and wastewater treatment systems (55 - 92%).

For the purposes of the case study the following groupings were made:

- *Large industry* (some 10 large factories) served by W&WW services but prior to discharge, industrial waters are pre-treated. Besides the public W&WW service, some industries have their own W&WW system for certain activities.

- *Small industry* (comprises some infrastructure enterprises and institutions - commercial offices, schools, hospital, restaurants, local brewery, meat industry, canning industry etc.).

The maximum water tariff for households in this district for 2003 was set at 16.07 SK/m^3 (including VAT) for drinking water and 10.15 SK/m^3 (including VAT) for wastewater collection and treatment.

Industrial users have individual contracts, and in 2003, the maximum tariff was set at 36.48 SK/m^3 (drinking water) and 26.22 SK/m^3 (wastewater collection and treatment).

However in Slovakia, beginning in 2006, there are now no differences in price for households and industrial users for drinking water, and from 2007, the same applies for wastewater collection and treatment (see the table below).

Development of water tariffs (including VAT) in the PWC (SK)

Year		1996	1998	2001	2003	2004	2005	2006	2007
Drinking water	Households	5.00	8.00	11.50	16.07	21.69	28.95	37.44	37.44
	Others	15.80	21.20	25.30	36.48	36.48	37.44	37.44	37.44
Sewage water	Households	3.00	4.00	7.50	10.15	13.19	17.59	22.87	29.25
	Others	10.80	15.90	18.70	26.22	26.22	29.25	29.25	29.25

Cost-recovery analysis

Based on ASTEC (Account Simulations for Tariffs and Effluent Charges Model), several scenarios were calculated, of which one scenario allowed for varying strategies for setting tariffs to cover costs. It is assumed that the tariff changes in order to reach full cost-recovery (FCR) by selected users at the minimum tariffs necessary to provide revenues that just cover costs. With an increase in pollution charges (from 8.3 million SK to 60.7 million SK), the operator runs the system at a net revenue of - 20 million SK (when 2003 tariffs are applied).

The results of the analysis are:

- The new user charge for drinking water supply will significantly impact the operator's costs (operation cost represents almost 50% of total cost of drinking water service);
- The new pollution charge has a significant impact on the increase of total costs for wastewater services. The pollution charge previously contributed to the total costs of wastewater services by 7%; after the increase, it represents 30%.

The construction of new WWTP in 2015 will bring additional costs and the operator will run the system at a net revenue of –26.5 million SK. Based upon the analysis, it can be shown that:

- Pollution charges will be lower (from 60.7 to 48.3 mill SK) but the total costs to treat wastewater will increase from 200 million SK to 222.2 million SK;
- Pollution load into the recipient body will increase due to a larger volume of wastewater collected from new clients.

The Poprad unit of the Podtatranska Water Company has a plan to complete an investment in a new WWTP and to extend the collection network for wastewater.

Results of the modelling show that to attain cost-recovery the tariffs for households should increase slightly, but industry would fare better with tariffs at almost half of the current rates.

Case study 5: Cost-benefit and institutional analysis concerning the extension and rehabilitation of water and wastewater systems in the Cluj / Salaj counties of Romania (December 2007)

The weighted average tariff of the regional operating company for water and wastewater (ROC) in 2006 was 1.38 RON/m^3 for water and 0.62 RON/m^3 for wastewater. In real terms, the tariffs in force in the project region of Cluj-Salaj in January 2007 had increased by 52% since January 2004.

The current tariff plan foresees the introduction of a unique tariff for the total service area of the ROC, which from October 2007 shall be 1.83 RON/m^3 for water supply and 0.82 RON/m^3 for wastewater. A further increase in the water tariff to 1.93 RON/m^3 was foreseen for the end of 2008.

In the *with-project* scenario, the plan proposes a real increase of tariffs in 6 steps between 2007 and 2013, two of which are already foreseen in the current tariff plan. (Tariff increases in the years 2007 and 2008 are already foreseen in the ROC's tariff plan and have remained unchanged.)

In a first step, the average tariffs are increased to achieve full recovery of the DPC-S (dynamic prime cost of the total system (existing and new infrastructure)) related to Operation and Maintenance (OM&A) by 2011.

In the case of the water tariff, this requirement is already fulfilled at present. However, the wastewater tariff will need to be notably increased to achieve the required level of cost coverage. This is mainly a consequence of the low-level of the present wastewater tariff and the relatively high amount of investments foreseen in the wastewater sector, especially the refurbishment and the extension of existing WWTPs which will generate additional OM&A costs. As a reference, the wastewater tariff presently does not even cover the DPC-S for OM&A generated by the existing and planned infrastructure. Real increases in the wastewater tariff in 2009 and 2011 are +29% and +52% in real terms (respectively), after which the tariff will achieve full recovery of the DPC-S related to OM&A. For the total tariff, this results in a real increase of +10% and +19%. A further increase of the wastewater tariff of around +6% and +20% follows in 2012 and 2013, after which all WWTP are to be completed and put into operation (total tariff increase: +3.4% and +10%).

Expressed in percentage of the DPC-S related to investments, the water tariffs proposed from 2013 onwards will cover 58%, while the wastewater tariff will cover only 27%. In the case of the total tariff (water + wastewater), the recovery of the DPC-S for investment will reach 38% in 2013. The main reason for the relatively low DPC-S recovery is the significant investment costs foreseen by the project, especially in the wastewater sector. The partial recovery of the DPC-S however does not affect the financial sustainability of the ROC, as by far the greatest part of the project investments are financed through non-reimbursable grants.

However, by the end of 2013, the determined tariffs will fully recover the DPC (equivalent to 0.03 RON/m^3 for water and 1.08 RON/m^3 for wastewater). In the case of the water tariff, a very limited increase is required to recover the additional cost generated by the project. This is because a great part of the investment cost is covered by the long-term cost savings achieved by the project investments.