EU Accession Challenges in the Water Supply and Water Pricing Sectors in Croatia

*Marija Vojnović**

UDK 339.923:061.1>(4:497.5)EU
351.79:628(497.5)
Prethodno znanstveno priopćenje (preliminary scientific report)
Primljeno: 23. 8. 2007.
Prihvaćeno: 28. 11. 2007.

Since water is one of the most valuable natural resources, it needs good governance and efficient management. Although Croatia is water rich country, its water sector is facing with major challenges during the EU accession process. Besides legal harmonization with EU *acquis communautaire*, water institutions and water supply companies will need to accept new operating models. This will lead to the integral water management, based on the principles of sustainable development. Water pricing policy in Croatia needs to be re-evaluated and structured according to the Water Framework Directive. This work presents necessary steps that should be undertaken in order to achieve high EU standards in the water sector that has significant social, environmental and economic impact. The improvements in the water sector would have not only national, but also broader regional character, since Croatian water resources are significant part of several river basins.

* Dr. sc. Marija Vojnović, direktorica Euroconsilium d.o.o., Zagreb (director of Euroconsilium Ltd, Zagreb)

Key words: water policy, water pricing policy, accession process, European Union

1. Water

1.1. Introduction

General assembly of the UN declared 2003 as the International Year of Freshwater, in order to increase awareness about global shortage of water resources and their importance. In addition, the UN (resolution AI-RES/58/217), has dedicated the whole period 2005–2015 as a time for action *Water for Life* (UN, 2004). Some may perceive water as oil, but while alternatives for oil exist, there is no alternative for water. At the global level, there are still many questions considering financing models in the water sector, role of the private sector and determination of water prices.

At the moment, 1.4 billion people do not have direct access to the drinking water. With present consumption patterns, two out of every three persons on Earth will live in water-stressed conditions by the year 2025. To meet 2025 water needs, the world must increase primary water supply by 22%. Current worldwide investment in the water sector amounts to $80 bill/year, while further $100 bill/ year are needed to meet 2025 goals. Although the sources of possible water stress in Europe are shown in Figure 1, they can be applied globally (Vojnović, 2005).

Figure 1 The Different factors that cause water stress in Europe

Source: UNDP and EEA (1997)

1.2. Water Pricing in General

Since water is essential for life and usually can be protected by communal action, the provision of water to communities has long been considered a public good – and thus a core responsibility of the government (P.O.V., 2005). The water sector is of significant economic importance and therefore requires good governance. There are three major challenges in the proper water management:

- keeping water resources sustainable,
- supply of drinking water and sanitation at reasonable costs to all,
- balancing water prices.

Concern about the sustainability of current water management practices and the rising cost of water are both in focus of need to allocate water resources efficiently and to operate water services cost-effectively. The pricing system must and can be structured so that every individual has access to clean water for drinking, cooking and washing (OECD, 2004: 7–13, 189–203).

Pricing schemes in most countries often comprise both fixed and variable components. Fixed prices vary greatly across countries, reflecting countries' various objectives in charging for water, different use of subsidies, and the inclusion of pollution taxes (WB, 1997: 1–13).

1.3. Water Pricing Policy in Theory and Practice

Since water is a natural monopoly, (consumers do not have choice between different and competing suppliers, while water supply system cannot be simply duplicated, nor can multiple competing suppliers easily use a common water supply system), price setting must be under the control of a communal, public body. In order to achieve the environmental aims and to include the major economic principles, water-pricing policies must reflect the following costs:

- Financial costs: direct costs including the costs of supply, administration, operation, maintenance and capital costs.
- Environmental costs: cost of the waste caused by water use on the ecosystem (e.g. degradation of productive soils).
- Resource costs: cost of resource depletion leading to the disappearance of certain options for other users.

Each user must bear the cost of consuming water. If pricing is to promote better water-resource use, prices must be directly linked to the amount of water consumed and/or pollution caused.

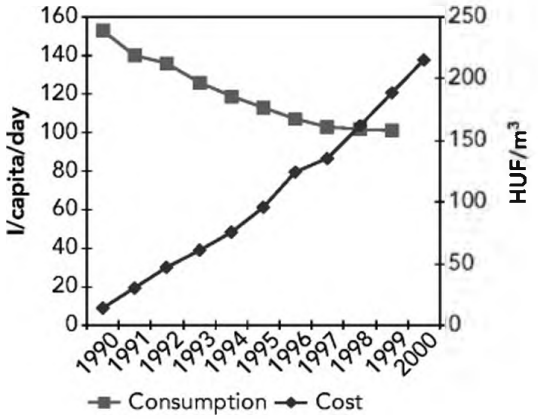
In order to map out a pricing policy, it is necessary to be aware of the following factors: the demand for water, the elasticity of the demand for water compared with its price (impact on public health and hygiene standards), the financial cost of water supply and environmental cost of the resource. Because of the synergy of economic, social and environmental factors, it is very difficult to assess all costs. In addition, it is relevant to incorporate a variable factor (e.g. water quality, pollution level) into pricing structures in order to provide an incentive. Systematic *ex ante* and *ex post* assessment of the effects on demand of any such pricing policies is required.

Implementing economic policy in water pricing is not an easy task. Major issues are how to determine real costs, what if costs cannot be estimated in money terms, who should pay the external costs (externalities appear when the production process generates costs that are not accounted for in the pricing scheme, such as nutrient runoff)?

The conceptual foundation of all cost estimations is the value of the scarce resources to individuals. Cost concepts applied to water pricing use a number of concepts used in the pricing of other goods and services, such as marginal costs vs. average costs, and long run costs vs. short run costs. The concepts of WTP (willingness to pay of individuals to acquire a resource) and WTA (willingness to accept compensation to part a resource) play a critical part in defining any social costing of water.

Considering the price elasticity (sensitivity demand towards price changes), in water management, it is very difficult to isolate the price as the main factor explaining the variation in water use. Water price is difficult to use as a demand management tool. However, increased tariffs are often considered a useful tool to make users more responsible for their water use, but they must be applied in connection with other water conservation advice and techniques (Lallana et al., 2001: 10–18, 30–46). In Europe, water prices have impact on water demand (Hungarian case in Figure 2). However, this influence varies widely between the suppliers of water services, economic sectors, river basins, countries, and time scale (long run vs. short run). Everybody agrees that the factors that explain the magnitude of water prices on water demands should be studied further.

Figure 2 Correlation of household water use and the price of water in Hungary



Source: Hungarian Central Statistical Office (2001). At: http://themes.eea.eu.int

When applying economic instruments (e.g. abstraction charge) to public water supply, the impact on health and hygiene, as well as the affordability to the poorer section of society, need to be taken into account. Such charges generally hit the poorer population proportionately harder than other consumers Introducing economic instruments for water management can have the impact on the wider economy.

In most countries, charges are generally not related to the true cost of water and are not the same for all users. In particular, agricultural users are considered to pay very low charges that are not related to the quantity used or the real environmental impact. To be effective in protecting the environment, charges need to reflect the true value of water for the particular aquatic environment taking into account all the uses. The charges therefore need to be site specific or catchments specific. Unfortunately, at present no standard method has been devised to assess the true value of water at different sites (HEAL, 2005).

1.4. Water Charges

Water bills are different in different countries. The components of water bills usually include a part related to the water supply service (e.g. drinking water service, water treatment, and network maintenance) and other parts related to other institutions (e.g. treatment tax, collection system

and other taxes). The main types of tariff structure (excluding the initial connection charge) are: flat-rate tariff, uniform volumetric tariff, two-part or binomial tariff and block tariffs.

There is a trend among the OECD countries of moving away from fixed charges towards tariffs which include both small fixed component that reflect fixed costs such as connection costs (25%), and components that reflect the amount of water consumed (75%). A pricing system based on the amount of water used encourages efficient water use, but metering water consumption is a prerequisite for such systems.

Abstraction charges are in use in almost 50% of all OECD countries. In most cases, abstraction charges were created to raise revenue for administration and management costs. Pollution charges (Polluters Pay Principle) for discharging effluent to natural waters now exist in more than a dozen OECD countries. These charges are often quite high, and they influence the trend of increased in-house water recycling or water treatment in large industries.

Many OECD countries have seen a real increase in household water charges in the recent years (by 2% annually). The factors behind this trend include continuing pollution of water sources (more expensive treatment), combined with additional national legislation and EU Directives that require both higher drinking water standards and higher standards of wastewater treatment. This is accompanied with high environmental concern. This trend towards higher prices is likely to continue (OECD, 2003).

There are several methods available for measuring the affordability of water charges. Macro-affordability indicators are developed by relating average national household water charges to either average household income or average household aggregate expenditure. Micro-affordability indicators disaggregate the former by income groups, family types or regions. Affordability measures can be classified in two main groups: income support measures (address the individual customer's ability to pay) and tariff-related measures (low water bills for certain social groups).

A recent study has shown that most of the customer myths considering water pricing are wrong (e.g., that they want to pay as little as possible). Experience has shown that consumers may have more concerns than just the price of water, and may be willing to pay for a more reliable service, better quality, or greater access to the supply system.

Consumers are also willing to participate in the reform process, and will not oppose the changes if these are logical, and if they produce visible benefits. Reforms must be well explained and managed in transparent way.

In the case of a sensitive commodity such as water, which has large impact on the well-being of whole communities, it is essential to involve all interested stakeholders in the decision-making process (Brocklehurst, 2003).

1.5. The Comparison of Water Prices

Theoretically, the prices should cover the costs of water supply and reflect costs generated by the particular users, tariffs should take into account cost structure and maintenance of capital assets. The summary of factors that should be included in a comparison of water prices is listed below, but at the same time (because of complexity), they interfere direct comparisons:

- *External conditions* (origin of raw water, environment),
- *Level of service* (quality of water, state of the infrastructure),
- *Financial aspects* (state subsidies, taxes and charges, type of depreciation model),
- *Tariff aspects* (average drinking water consumption per capita/ household, consumer classes)
- *Economic aspects* (total employment in the water supply sector, level of water prices in relation to the GDP).

Therefore, price formulation (and following price comparison) cannot be quantified with simple formula:

Costs – Subsidies + Appropriation of Surplus + Taxes and Charges = Prices

The total (macro-economic) costs of water supply are usually not known, at least not environmental and resource costs. Micro-economically speaking, the costs at the firm level can be estimated in a case where there are cost-covering prices, but in most cases, there are subsidies (Kraemer/Piotrowski, 1998).

2. The European Union

2.1. General Background

Water resources (raw water) are under public control in all EU countries and a permit from the relevant authorities is required for water use. Main differences arise over the question who is responsible for providing water

and accompanying services. Generally, the responsibility lies within municipalities. Local government is responsible for supply and distribution of drinking water and sewerage facilities. Local governments in Europe, which are responsible for overall development and growth of local areas, are big public spenders (11.2% of overall GDP). Local public sector is financed through borrowing, fees generated from local public service management, income from local public property assets, and share of local and social security contributions. Directing the costs of public service through the user makes it possible to finance water sector. Weight varies from country to country. In some countries local governments are allowed to set fees independently (to the extent which local public service users can afford), while others rates fees are fixed by the central government. In several new Member States, fees are controlled by the special regulative bodies (Dexia, 2004).

The role of the private sector in water management/services within the EU is very different. According to the French approach, municipalities own the treatment facilities, pipes and reservoirs, and they secure management through a wide range of long-term franchise agreements with private companies. Private companies can bring know-how in the field of technique, usage, R&D, management, finance and customer relations (Haarmeyer, 1992; Laime, 2005: 14–15). England and Wales are an exception to this rule because water supply has been entirely removed from the municipal control to the private sector. Organizational structure of water supply/sewerage services in several EU countries is shown in the Table 1.

Table 1 Different organizational models of water supply sector and sewerage sector in the EU

AUSTRIA	FRANCE
• 7.900 water supply entities • 250 sewerage companies • most services provided by the public sector • private sector as shareholder in 2 water companies which tender serve 6% of population • private holdings in a few pilot wastewater projects • competition for construction of infrastructure	• 3 private companies serve 79% of water supply and 52% of sewerage users • limited term contracts, some by competitive • assets owned by municipalities • remaining (21% / 48%) served by municipalities

NETHERLANDS	GERMANY
• < 20 water supply companies • mainly private law companies • owned by municipalities or provinces • average size: serving 800.000 inhabitants	• approx. 7.000 supply & 7.000 sewerage companies • mix of organisational forms, mainly publicly owned • but current trend towards financial privatisation • competition for construction of infrastructure • competition of organisational forms

Source: Schonback et al. (2004)

The analysis of organisation of all municipal services at European level indicates that the EU does not have a standard model for organisation of municipal services. It varies among the Member States, but concessions prevail.

2.2. Water Demand

The European Union is the only global region where more water is used for the industry (55%) than for the agriculture (31%) or household purposes (14%). Agriculture is, however, the dominant water user in most Mediterranean countries. In CEE, urban demand steadily grew in the 1990s, driven by the rising urban population and increased per capita consumption as the standard of living improved (UNEP, 2000). It is expected that future water demand for public water supply will decline slightly in the EU, not only because of cleaner industries and water re-use, but also as a result of demographic changes. In addition, water losses from leakages in the distribution network (especially in some new members) could be reduced by improved structure of the water distribution network. Average leakage rate is between 10–20%. The percentage of the population connected to public water supply in the EU is significantly higher than 76% in Croatia (e.g. 87.3% in the Czech Republic, 99.20% in France). In addition, 77% of European population is connected to public wastewater treatment plants (Eurostat, 2001). In general, total future demand for water in the EU will remain relatively stable until 2010.

2.3. Current Water Prices

There are several stakeholders in the water pricing policy. The state has the main role in water pricing policy, since it creates legislation, provides expertise and takes into consideration social and environmental issues. Municipalities on the field also have an important role in water prices regulation. Consumers have different roles in different countries: in the Netherlands and France, they participate in definition and control of water prices. The resulting water price should be accepted by the population and by consumers' willingness to pay (especially in the new EU member states). There is a generally accepted rule that water bills should not exceed 4-5% of the minimal household income. The price should enable water supply companies to cover the production costs, operate with justifiable profitability, and comply with quality and safe requirements. Some additional price influencing factors are supplying network, the magnitude of service area, age, and the type and capacity of equipment.

Since in water pricing policy all factors (technical, socio-economic and institutional) should be considered, there is a large diversity in water prices in the EU (both in terms of price structure and price levels). Water prices for domestic consumers in Western Europe vary from 52/year per family in Rome to 287/year per family in Brussels. Water charges in Central European cities are lower (e.g. 20–20.5/year per family in Bucharest).

Industry tends to be price sensitive to water supply and treatment costs. Consequently, higher water prices are leading to reduced water use through water-saving technology and re-use of water in the industrial sector. Agriculture, which is still heavily subsidized, pays lower prices than in other sectors.

Most of the new Member States need huge investment in the water sector, in order to build the infrastructure and to achieve high EU environmental standards (gradual growth of prices is expected). Each country has its own taxes, environmental charges and different institutional framework. However, there is a difference in prices, even within one country. Most countries use tariffs with fixed and volumetric component.

Because of water complexity, it is hard simply to compare water prices that should be paid by citizens for potable water and wastewater at international scale. Therefore, International Water Service Association (IWSA) plans to prepare the system of Performance Indicators (PI) for water supply services, which can be used as independent management tool. PI system will contain a large number of indicators, such as total water losses

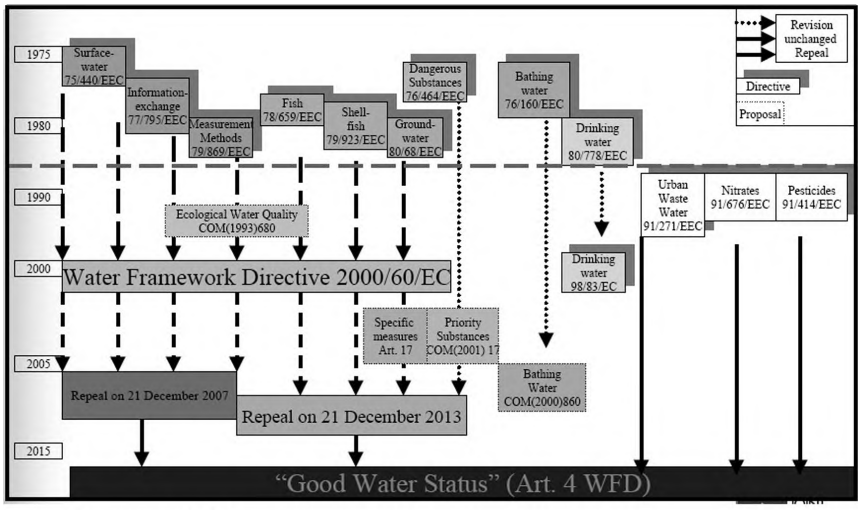
(m^3/connection/year), and financial indicators such as unit running costs (US$/m3) (Bode/Lemmel, 2001: 85–93).

2.4. Water Framework Directive

Although there is no prediction of rapid water demand growth until 2010, EU members are aware of the fact that water is the most important strategic resource in the 21 century. The DPSIR Framework (drivers-pressures-state-impact-responses) indicates that other factors like climate changes, drought, ecological status and agricultural policy will have a significant impact on water resources in the on-going century. Therefore, they give special attention to the water management, which is supported with strong institutional framework and with large investments.

The development of the EU water policy is shown in Figure 3. While in the 1970s major issues in water policy were connected with the public health issues, the 1990s introduced environmental concerns and ecological concepts that have become the core elements of water management.

Figure 3 The development of the EU water policy



Source: Boymanns (2001)

Directive 2000/60/EC of the European Parliament and of the Council from 23 October 2000 (*Water Framework Directive or WFD*), established framework for Community action in the field of water policy. All EU members have to harmonize their institutional and legislative frameworks ac-

cording to the provisions of the Water Framework Directive. The organization of water management in all EU members must be done according to the unique concept, which includes integration of all water management activities according to the concept of integral water management and sustainable development. The Water Framework Directive clearly states that water is not a commercial product like others, but heritage that should be preserved, protected and managed in a sustainable way. In addition, the water pricing policy is given special importance.

In order to implement the Water Framework Directive in all EU national policies, active instruments of the WFD include:

- River Basin Management Plans (Art. 13, Annex VII)
- Programme of measures (Art. 11)
- Combined approach (Art. 10)
- Strategies against pollution of water (Art. 16)
- Monitoring of water status and protected areas (Art. 8)
- Recovery of costs for water services (Art. 9)
- Reporting (Art. 15)
- Economic analysis (Art. 5)
- Penalties (Art. 23)
- Technical adaptations to the Directive (Art. 20)
- Administrative arrangements (Art. 3)
- Regulatory committee (Art. 21).

Article 9 of the Water Framework Directive obliges the Member States to ensure that water-pricing policies recover the costs of water services by 2010. It also provides adequate incentives for the sustainable use of water resources and contributes to the environmental objectives of the Directive. Full-cost recovery will be a significant move towards sustainable use of water resources. This mechanism aims to improve the efficiency of water use and the effectiveness of environmental provisions, by ensuring that the price of water reflects the economic costs involved. The costs include services for water users (abstraction and distribution of water, collection and treatment of wastewater, pollution prevention and control measures), environmental costs and resource depletion costs. The latter include the costs of environmental damage caused to other users/society as a whole because of the depletion of a resource beyond its natural rate of recharge. This Directive on adoption will be an instrument for the full implementation of polluter-pays principle.

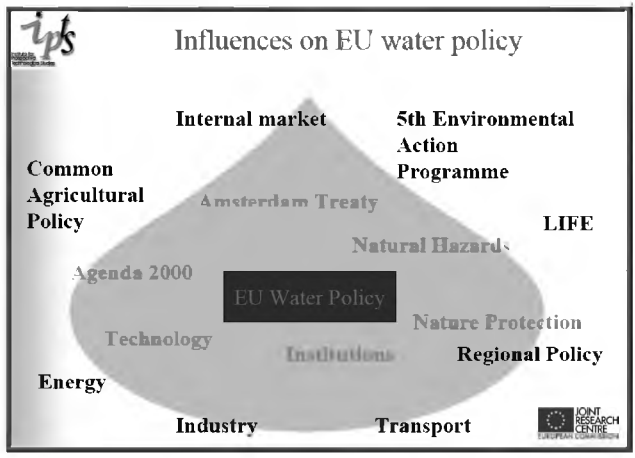
In addition, Article 4 requires Member States to reach *good status* for all their waters, and Article 5 requires economic analysis of water use to support application of Article 9.

Several European countries (Denmark, Germany, the Netherlands, Sweden, and UK) have implemented the full cost recovery principle for wastewater collection and treatment, as well as for fresh water abstraction and distribution throughout their economy (or are on the way to do so). Other countries introduced partial cost recovery, like Belgium, France, Italy, Austria, etc. Therefore, the implementation of the WFD would probably lead to the increased water prices for consumers in these countries. However, the Directive states: each country must consider its social, economic and ecological aspects in determination of proper water pricing. Concerning the environmental costs and resource depletion costs, they are already implemented in several EU Member States (e.g. Belgium, Denmark, Germany, and France) mainly through taxes and charges for water pollution and abstraction.

In addition, the economic price of water should provide most revenues for management and further development of water issues. Water tariffs can be a source of financing (and continuous revenues) for water supply, wastewater treatment, flood protection, and the building of water infrastructure. This harmonized approach to water pricing is needed in order to avoid any distortions arising from uneven application of economic principles on the internal EU market (Krinner et al., 1999: 5–29, 61–82).

Furthermore, water-pricing policy must be combined with other measures in order to solve the qualitative and quantitative problems of water resource management. It must ensure synergy between water pricing policy and other European Union's policies like Common agricultural policy or Structural and cohesion policies that must provide incentives for better use of water. In the 5th Environmental Action Programme, the European Community discusses and encourages broadening of the range of policy instruments beyond environmental legislation. This includes increased use of market-based instruments, such as environment taxes, aiming to internalize external environmental costs and thereby stimulate both producers and consumers towards limited environmental pressure and towards responsible use of natural resources. The correlation of different EU policies on water policy is shown in Figure 4.

Figure 4 Correlation of different policies with EU water policy



Source: Boymanns (2001)

The WFD does not specifically encourage privatization in the water supply/sewerage sector, nor gives any favourable opinion about the involvement of the private sector.

2.5. Water Pricing after the WFD

There has been a general trend in Europe towards higher water prices, even before the implementation of the WFD, since the EU increased requirements for drinking water quality (Directive 98/83/EC on the quality of water for human consumption) and wastewater (Directive 91/271/EEC concerning urban wastewater treatment). It has already been emphasized that the implementation of the WFD is likely to lead to further increase in water prices for consumers in some countries. Besides regulations, water companies are faced with public expectations for high water quality. Therefore, water companies have to use complicated and high technology treatment plants to supplement simple, natural processes for treating drinking water. For example, in Germany investments of water companies have roughly doubled in the last 25 years. Municipal water-supply systems are capital-intensive enterprises that require ongoing capital investment and maintenance programs. There is a special problem in the new member states where many publicly owned water supply utilities are

confronted with deteriorating and leaking systems, deferred capital investment and maintenance, water-supply reliability problems and financial inability to meet drinking water standards. Therefore, water management in those states is faced with great challenges.

In general, increased water prices are likely to produce better effects on water use where supply is metered (still insufficient at total EU level), where prices are high in relation to income, where exploration of water is higher and where public supply presents a high percentage of water supplies.

2.6. First Stage in the Implementation of the WFD

In 2007, the European Commission issued the report *Towards sustainable water management in the European Union – First stage in the implementation of the Water Framework Directive 2000/60/EC* COM (2007) 128, based on the results provided by the Member States concerning application of the WFD. This document indicates considerable risk that several Member States will fail to meet the targets set out in the WFD. The main reasons for that are physical deterioration of aquatic systems, over-exploitation of water resources, and huge levels of pollution from diffuse sources. In addition, several states are missing deadlines for incorporating the WFD in the national laws, with actual transposition problems.

The Commission also reports that there are huge differences in the quality of environmental and economic assessment made with respect to the river basins and economic analysis. In general, this document indicates that implementation of the WFD in practice is not a simple process. Therefore, the EC offers a number of recommendations to the Member States in order to integrate sustainable water management into other national policies, and to strengthen public participation. It also announces future Commission's plans in the European water management policy.

3. Croatia

3.1. General Background

General policy in Croatian water management can be summarized as follows: water is a common good essential for life and work, under special protection of the Republic of Croatia and rational usage of water is a

precondition for sustainable development. Considering water resources, Croatia is a relatively rich country. The amount of national water quantity is 8 740 m^3/per capita/year (16 700 m^3/per capita/year if we include international waters). National water amounts to 26.07 bill m^3 (the Adriatic river basin, the Black Sea river basin, renewable ground waters), while permanent ground water reserves are estimated between 95–250 bill m^3. Water resources have different regional character, related to quality, landscape and time distribution. There is a widespread need for investments in municipal and environmental infrastructure in Croatia.

In 2001, Croatia signed the Stabilization and Association Agreement with the EU, which represented the first formal step in the process of association with the EU. In June 2004, Croatia became a candidate country, with possibility to become a full EU member. In 2005, Croatia and the EU opened the negotiation process during which Croatia has to fulfil *Community Acquis* and harmonize its legal framework with EU requirements. Although Croatia has a long tradition of integral water management, which includes structural (engineering activities) and non-structural (hydrological, sociological, economic) measures, its water sector is facing major challenges during the accession process.

3.2. Water Supply System

Public water supply (PWS) includes a wide range of users, e.g. households, industry, agriculture and public service. There is a slow trend in growth of water supply network, but still only 76% of the population is connected to the water supply system. The degree of connection varies in different regions.

The quality of raw water for supply system is different and therefore the process of water purification varies. Water supply companies provide drinking water of relatively good quality, but surface water and groundwater are endangered by human activities and industry. More than 50% of households are not connected to the sewerage network. In addition, only 20% of wastewater (both municipal and industry) undergoes the water treatment process before being discharged into the water flows.

Croatian water supply system has huge water losses: from 15% to 50%. These are among the highest losses in Europe. Such huge losses are the result of the old water supply network, which does not satisfy the technical requirements, insufficient network maintenance, as well as lack of measuring devices in the systems (Hrvatske vode, 2005).

3.3. Water Consumption

Generally, communal consumption of water in most countries includes households, commercial, industrial, and public users. In Croatia, 54% of the population live in urban areas, while in settlements with less than 2000 people live 19% of inhabitants. Different industries have different influence on water resources with specific degree of usage and environmental issues. Water usage and consumption in agriculture has a different role than in the EU countries (e.g. intensive irrigation in southern Europe). In Croatia, irrigated areas represent only 0.1% of all agricultural areas. Total water consumption in 2003 was approx. 1000 mil m^3.

3.4. General Framework for Water Sector Organization

The central government retains overall responsibility for the organizational arrangements, regulation and supervision of the water utility operations. The central control over water resources is justified by the situation of water stress in some parts of Croatia, requiring careful allocation and use of relatively scarce water resources. Water Act and Water Management Financing Act regulate the state water sector and water management in the matters of water usage, protection of water resources, water regimes, flood protection, concessions, as well as state investment in the water management and municipal water sector.

Croatia has 429 municipalities, 126 towns, 20 counties plus the City of Zagreb (Act on the Territory of the Counties, Towns, and Municipalities). Local government (towns and municipalities) and regional government (counties) can establish public institutions or other legal entities (municipal public service company or service plant) for the provision of communal services. Those legal entities perform activities according to the special provisions in the Act on Local and Regional Self-Government, and Budget Act, which define the system of local and regional self-government in Croatia. The Act on Local and Regional Self-Government was the result of the adoption of the European Charter of Local Self-Government (OG, International Agreements 14/97) (see also Sarvan, 2007).

In general, local government is responsible for performing the activities of local interest, especially in the municipal services. Typically, municipal public service companies are owned by the town or municipalities whose territory they serve. The decisions on annual budgets, capital investments, and policy matters are made by the companies' management boards,

which in most cases consist of the mayors of parent municipalities. All communal services in Croatia represent eleven activities and contribute with 2% in the total revenues of Croatian economy. In addition to the established legal entities, municipal service can be performed by a legal entity or person that has signed a concession agreement (data of the Croatian Chamber of Commerce, 2007).

3.5. Administrative Framework

Water administration in Croatia has a layered structure that covers a wide area of legislative, monitoring and operational activities. In general, the actors in water management system are Parliament, the National Water Council, the Government, ministries and other public administration bodies, local/regional self-governments, municipal public companies, and Croatian Waters. The Ministry of Agriculture, Forestry and Water Management has overall responsibility for most activities in the water management sector that include the preparation of legislative acts, inspection, regulation of watercourses, irrigation, protection of water from pollution, use of hydropower, national planning and coordination of the development/construction of public supply systems and wastewater systems, etc. Although major responsibilities are within the mentioned Ministry, several other ministries also have influence on different water issues (Ministry of Physical Planning, Construction and Environmental Protection, Ministry of Sea, Tourism, Transport and Development, Ministry of Culture, Ministry of Health).

Croatian Waters, as a legal entity for water management, has to ensure permanent delivery of public services and to achieve other tasks related to the water management (decided at national level). Croatian Waters operates within financial limits of its revenues and decides on issues such as the preparation of water master plans, maintenance of water related structures, water use and protection, management of water related estate, provision of management and engineering know-how in the construction of water related structures and collection of funds for financing their work. Since Croatian Waters provides a substantial part of capital investment funding, it exercises considerable influence over the investment identification and approval. Besides Zagreb, there are five water management departments in other Croatian regions.

Investments in water infrastructure are funded by service charges (with tariffs set by the elected local councils), municipal surcharges, local self-

government budgets, and other local revenues. The reforms permit private sector investment (operating concessions), tariff setting flexibility and rebates of national surcharges (such as those levied by Croatian Waters) to utilities for capital investment or debt servicing. While local governments have the autonomy in their revenue generation and expenditure decisions, the main obstacles they are facing now are lack of experience with financial management and local funding of the municipal infrastructure and the absence of stable sources of long-term capital financing. Although municipal capital improvement should mainly be financed from user charges and other local sources, in practice, revenue generated by the utilities is insufficient.

3.6. Legal Basis for Water Pricing

Regulations that influence water price in Croatia are wide and include Water Management Financing Act, Act on the Amendments to the Water Management Financing Act, Communal Act, Decree on the Level of the Water User Charge, Decree on the Level of the Water Protection Charge, etc. In addition, decision on the municipal service price, determined by the assembly of the municipal company and other company decisions are also very important. They are connected with the development of municipal infrastructure and local unit's financial situation.

3.7. Household Tariff Structure

Current water price in Croatia is structured from nine components. In practice, one cubic metre of water is charged with minimally five components (Table 2).

Table 2 Water tariff structure in Croatia

Component	Revenue	Act	Character	Type of revenue	Purpose	Level of collection	Spending level
Concession charge for water catchments	State budget	Water Act	obligatory	Public charge	different	Republic of Croatia	different
Price of water supply communal service	Service provider	Communal Act	obligatory	price	Operation & management of water infrastructure	Service area	Service area

Price for sewerage service	Service provider	Communal Act	obligatory	price	Operation & management of water infrastructure	Service area	Service area
Price of water treatment communal service	Service provider	Communal Act	obligatory	price	Operation & management of water infrastructure	Service area	Service area
Maintenance & financing of construction	local counties	Communal Act	facultative	Public charge	Development of water infrastructure (operation & management)	Area of local community	Area of local community
Charge for protection of water sources	local counties	Water Act	facultative	Public charge	Water quality protection, development of water infrastructure	Area of local community	Area of local community
Water protection charge	Croatian Waters	Water Management Financing Act	obligators	Public charge	Water quality protection, development of water infrastructure	Republic of Croatia	Service area
Water usage charge	Croatian Waters	Water Management Financing Act	obligatory	Public charge	Provision of water resources quantity, development of water infrastructure	Republic of Croatia	Service area
VAT (tax)	State budget	VAT Act	obligatory	Public charge	different	Republic of Croatia	different

Source: Draft Strategy of Water Management (2007)

One cubic meter of water is charged by the components 2–4 or *commercial components* and by components 5–9 or *public charges*. Commercial components are prices of municipal services that can be collected only if they are delivered to the final consumers. Municipal service price should also include maintenance costs (both fixed and variable costs).

At the moment, most local self-government units have policy of underestimated water tariff, which is a result of fragmented service areas, donation at national level, level of social acceptance, etc. This policy is not sustai-

nable, since water systems are not properly maintained, the equipment is old, and water losses are significant. Therefore, Croatia's strategic goal should be to create water price in order to secure availability and protection of water resources, as well as to secure sustainable development of water infrastructure.

3.8. Organization of Payments of Water Charge

The price of municipal service is paid to the service provider in monthly bills. Water use charge is set by Croatian Waters for one year or shorter. Croatian Waters also charges entities that abstract water directly from natural sources. Concession charges are fixed by special concession agreement, which can be concluded with the State Water Directorate (Ministry of Water Management) or with Croatian Waters, and thus paid to either state or county budgets. As in most countries, there is a difference in tariffs for households, industry, and agriculture.

3.9. Household water pricing

Croatian households have been faced with constant increase of water prices in the last few years. The range of prices has been between 0.28–0.82 $/m3. As a result of socialistic era when tariffs were low, the public was not included in the pricing decisions. For the same reason (low tariffs), most communal companies have low level of communal service and insufficient financial sources for their further development.

3.10. Industrial Water Pricing

If a business has its own intake, the industry tariff structure includes both water management and concession charges. Croatian Waters estimates those charges for each contract, but in general, a company pays based on the volume of abstracted water. If the supply goes via public water supply system, the average price for the total industry tariff is approximately 0.91 $/m3. Prices range from 0.58 to 1.4 $/m3.

3.11. The Level of Cost Recovery

The key question in Croatia, just as in other countries, is: what is the real water price and whom do water revenues belong to? According to the

Croatian Constitution, water is goods of interest to the Republic of Croatia. Therefore, all benefits should go to all citizens and everybody should have the right to water usage. In theory, the prices of water in urban areas should completely cover costs of water supply and sewerage, including the wastewater treatment plants. However, in practice, the revenues from water and sewerage costs do not fully cover the costs of these activities. Large-scale activities are usually financed by local self-government, while the central government participates in major projects. Although Croatia already applies Polluter Pay Principle (clearly defined in the EU Member States), there is a great difference between the existing pollution charge tariff and the real costs of cleaning polluted water (Lukšić/Ostojić, 2000: 27–33).

3.12. Investment costs

The analysis of development projects/infrastructure measures indicates that financial resources required for development are significantly higher than the annual revenues of Croatian Waters and local municipal companies. For the projects of national interest, central budget can also be used, but this is an exception and not a constant source of revenues.

In order to increase the population coverage in the public water supply sector to 85–90% by 2023, Croatia should invest approximately 10 bill kn. Croatian Waters should provide 530 M kn annually, and the rest should be secured by the municipal companies. In general, on each m^3 of supplied water, 1.4 kn should be planned for infrastructure development. Since the wastewater treatment sector is legging behind the water supply sector, investment costs are even higher and amount to approx. 11.5 bill kn. Croatian Waters should provide 620 M kn annually (1.8 kn/m^3 of delivered water), while municipal companies (and their establishers) need to invest approx. 350 M kn/annually (Strategy of Water Management).

Since the investment analysis has indicated modest rate of water projects development by 2023, other financial resources should be included in the development plans as well (IFI, donations, grants, EU funds, loans).

4. Conclusion

Adequate water management is essential for the economic development of Croatia. It is necessary to ensure a safe and adequate supply of water for domestic consumption (trend of migration to urban centres), tourism

and industry (increased consumption and discharge), while Croatia's natural water sources must be protected from pollution, particularly along the Adriatic coast and islands.

Although the present reports indicate that national legislation in the water sector is in good correlation with the *basic principles* of the EU Water Directives, further improvements should be done in the water protection sector, sea sector and water ecosystems. Considering water pricing policy, *Article 9* of the WFD (full cost recovery principle) is still insufficient in Croatia.

Considering legislative activities, after an intensive consultation process with relevant stakeholders and interested parties, the Water Management Strategy has been prepared and is in the Parliament procedure. This Strategy is the main national document for the water sector reform at national level and is the basis for legal harmonization with the EU in the water sector. Part of the Strategy is already implemented in practice through the Act on the Amendments to the Water Act and Act on the Amendments to the Water Management Financing Act. In addition, series of secondary legislation is under development (related to the sanitary zones, water classification, water quality, dissemination of information and public participation, dangerous substances in water, etc).

There are several ongoing CARDS projects supported by the European Commission (Harmonization of national water legislation with EU water laws – Implementation of Urban Wastewater Directive, Capacity building and development of Guidelines for the Water Framework Directive). The aim of these projects is to analyse the status of the current legal transposition, to develop strategies and action plans, to strengthen capacities for implementation of the WFD at national, regional and local levels, etc. (MFAEI, 2007).

By the end of 2008, Croatian legal framework should be completely harmonized with the EU water Directives. More specifically, new Water Act and new Water Management Financing Act, as well as several pieces of secondary legislation related to nitrate pollution from agriculture, water bathing quality, municipal wastewater, dangerous substances, and shellfish water should be prepared and adopted.

Considering the Communal Act, current legal framework is well defined for the situations where service area/distribution area of municipal service provider is the territory of one town or municipality, which is rare in practice. Some authors argue that this fragmentation of the Croatian municipal system is an advantage, since it makes Croatia less attractive to the foreign private investors and thus discourage possible privatization.

The situation is much more complicated when service area covers several towns and/or municipalities. In practice, there are several decisions on approval of water tariffs, development infrastructure programmes, development fees, etc. There is also a potential problem when concession decision is made. Although this decision should be made by town/municipal council where the plant is to be located, all towns/municipalities decide on development fee that is to be paid to the concessionaire. The Water Management Strategy discusses several other issues that are not clearly defined and elaborated in the Communal Act and are related to the decision-making process for maintenance and development programmes (councils vs. departments), and development of concept of over-municipal or inter-municipal services, such as water supply and sewerage sectors.

Considering concessions, the Concession Act from 1992 (and 40 other pieces of sectoral regulations – acts and decrees contain different provisions for specific sector areas) is not in accordance with EU practice, it is fragmented and not fully transparent (MFAEI, 2007). A new Concession Act is being prepared and is to be adopted in 2008. In the water sector, current legislation recognizes two types of concessions:

- Concessions on *water resources* (based on the Water Act and other regulations that include water catchments for public water supply; decision is made by the central government; direct privatization is excluded by the Constitution).
- Concession on *service practice or operative concessions* (based on the Communal Act, decision is made by local self-government; the concession right might also include infrastructure financing). According to Article 11, the private sector can obtain concession for provision of water supply, sewerage services or/and wastewater treatment after a public tender procedure or through offer collection. Communal Act does not contain any provisions on municipal infrastructure ownership. In practice, some infrastructure is e owned by towns/municipalities or by municipal companies. In addition, the Act does not legally prohibit privatization of water infrastructure, either by buy-out or by privatization of municipal companies. Although Article 7 stipulates that major stakeholders in municipal companies are towns/municipalities (local government) with 50% plus 1 share, none of the Articles prohibits privatization of municipal companies above 50% threshold. If this happens in practice, the company would not be municipal any more, but the concession right would be unchanged. Therefore, Water Management Strategy proposes that the issue of indirect

privatization of water resources right should be further elaborated. In general, concessions on water catchments for public water supply should be given to local self-government exclusively on the service area, and not to the municipal service provider/operator.

In addition, Croatian water sector is challenged with the following issues:

a) Financial Sustainability and Efficient Financing Mechanisms. The sector has so far relied, primarily on financing from the central government and Croatian Waters (water use and pollution fees), with little contribution from the municipal water companies responsible for delivering the service. Most municipal companies suffer from overstaffing and inefficient operation. It is a great challenge to increase the financial resources available for the sector through a dedicated and sustained effort in:

(i) Improving the productivity, efficiency, and financial performance of water and wastewater utilities

(ii) Establishing efficient and transparent mechanisms to channel the central government and external financial support.

Through the EU pre-accession programmes or EU technical assistance, Croatian municipal companies can widen their knowledge of efficient management in the water sector.

b) Strengthening the efficiency of utility companies. Most Croatian water and wastewater utilities have many opportunities to improve their productivity and thus reduce the costs of management and operations. Improving the productivity of water supply and wastewater utilities would reduce administrative costs, and increase resource mobilization and investment capacity. This effort should be based on a policy of full cost recovery of operation, maintenance and capital costs in the water supply sector.

c) Strengthening the capacity of public administration. In order to implement new regulations and fulfil the EU accession requirements, Croatia needs an efficient and educated public administration (at national, regional and local levels) with entrepreneurial skills as a pre-requisite for successful operation within complex and demanding water framework (Bađun, 2005).

d) Clarifying and streamlining present institutional and regulatory relationships and financing mechanisms. In Croatia, municipal governments tend to micromanage their utilities and do not provide utility management with the entrepreneurial freedom and incentives that are necessary for dynamic and responsible management in the key areas of the utility business, par-

ticularly for tariff setting and investment selection. To encourage management accountability and responsibility, the government should give priority to adjusting/clarifying regulatory framework that governs the relationship between utilities and municipal governments in order to increase utility autonomy and accountability.

e) Water user/protection fees. Water user fee (calculation based on prices set by the Government, the quantity of water used and a series of correction factors that reflect the intended use of water), has not been changed in real terms over the last 15 years. The water protection fee for one cubic meter of discharged wastewater (based on the basic fee, the volume of water discharged, and correction coefficients) also has not been changed in real terms over the last 15 years. For the protection of water from pollution, the fee for water protection should not be lower than the costs of wastewater treatment. However, the assessment of Croatian Waters has indicated that the present fee is four times lower than the actual costs of wastewater treatment. Therefore, the polluter is motivated to maintain the status quo, rather than invest in the treatment plants. Neither of the existing fees (user/polluter) is sufficient for ensuring sustainable use of water resources (Lukšić/Ostojić, 2000) and they need to be adjusted. In addition, one of the 'novel' measures can be to transfer the water user tariff to the municipal service operator in order to achieve rational water usage and to decrease water losses. Although Polluter Pays Principle is a strong economic instrument in the water management, it is practical that a possible increase in fee follows increase in the general economy.

f) Water billing/Collection rate. In order to influence proper water billing (both in terms of water consumption and cost recovery), Croatia should increase the metering penetration in households connected to the public water supply. The equipment for metering the water delivered to households exists in less then 50% of Croatian municipalities that have registered service companies for water supply and wastewater. Currently, Croatia is facing with insufficiently high collection rate. Collection efficiency at the state level (households) is around 70% and this should be increased. The collection rate is also insufficient in the agricultural sector.

g) Full cost recovery. In general, full cost recovery in the water sector cannot be implemented quickly, because of the current problems in the water sector, current disproportional income level in Croatia, and because the use of standard EU technologies in water management requires certain period of implementation. Therefore, water prices should be increased parallel with the increase of income and economy in the following years.

There are several steps that should be taken during the modification of pricing policy:

- Improvement of transparency and information available to consumers, users, and taxpayers (who uses and pollutes, what is the real cost);
- Enhancing interaction and collaboration between different public administrative bodies, which have different interest in water resources (e.g. tourism, agriculture, environment, health);
- Including consumers and users in the design of new pricing policy, understanding their quality rating of water services, investigating their willingness to pay (possible problem in small municipalities);
- Beginning with pilot projects for the new pricing policy (e.g. participation in the EU pre-accession programmes).

It is very important to understand that pricing policy is not a static, but a dynamic issue and it needs to be reviewed and adopted over time, since it is accompanied by changes in economic, hydrological and social conditions.

Additional challenges. Water Management Strategy discusses several other steps that would emphasize water resources and investments in water systems as areas of strategic national interest:

o Introduce regulator of water service at national level in order to act as arbiter between service operators and local self-governments.

Some may argue that since water is a natural monopoly and one of the network industries, water prices should be controlled by a regulatory agency, like in the electricity or gas sector. So far, England and Wales (with fully privatized water sector) are the only EU state where regulatory agency Ofwat sets maximum charges on water prices in the five-year cycle. Although the main idea was to create more efficient companies that can finance themselves by earning a reasonable rate of return on capital, there are many complex and time-consuming factors that influence the proper determination of price caps. Some of these factors are lack of good database for price determination, water companies' monopoly over information, definition of price adjustment factors, choosing the method of asset valuation, and even political interference in the regulatory process. In addition, if the price cap is generous, water utilities do not have the incentive to reduce operating costs. Therefore, this model still should be approved in practice, because the

first English and Welsh regulatory cycle was only partially successful (van der Berg, 1997).

- Define water supply sector and sewerage sector as inter-municipal services (services of several towns/municipalities) in order to achieve technical, technological and economic sustainability. This would require a major effort in legislative, institutional and operational framework, with special emphasis on:
  - Introduction of the principle 'from water resource to user' and 'from user to the discharge in surface water';
  - Establishment of service areas;
  - Association of municipal operators in order to achieve one service provider on particular service area;
  - Separate municipal operators in water supply, sewerage and wastewater treatment from other municipal activities (restriction on one business activity);
  - Maintain legal possibility forgiving concession for *operative function* to the entrepreneurs in the municipal water sector, with some restrictions. As a result, two possible models can be accepted:
    - *En affermage* model that implies investment in maintenance costs,
    - *En concession* model that allows development investments, but only in water treatment plants, which requires expertise, managerial skills, etc.,
    - Both models would require approval at the central level, not only because the central budget is the major co-financier of water municipal infrastructure, but also to approve economy, consumption level, and the purpose of water treatment plants. In general, all concession agreements should contain models where management costs are decreased;
  - Apply 'polluter pays principle' and 'users pays principle' by inclusion of dispersed pollution sources;
  - Public consultation and public participation in all municipal water issues (defining the needs, development plan, budget).

Since water management, water supply system and wastewater treatment systems are faced with significant institutional, economic, and financial challenges during the EU accession process, these measures require upfront commitment of utilities, local and national government to address

the key issues in the water reform and to enable the conditions for sustainable municipal and environmental services (as well as private investment). Croatian Waters, as the national executive agency, needs to actively participate in this demanding process, not only with its engineering expertise, but also with managerial expertise and financial provisions.

Benefits

Regardless of high accession costs and necessary changes that would lead to the high EU environmental, health, economic, and administrative standards, there are numerous benefits besides commercialization and corporisation of municipal service provision and application of polluter pays principle through cost recoverable tariff. Some of the benefits are:

- Decentralization of municipal and environmental infrastructure provision (encourages municipalities and utilities to assume service responsibilities effectively and become accountable to their local political constituencies; encourages a shift in attitudes from reliance on government grants towards financial self-sufficiency;
- Improvement of municipal water and wastewater infrastructure and relating services would stimulate the development of municipal companies;
- Improving of resident's living conditions would increase public confidence in local self-government;
- Environmental improvement (public health, surface water and groundwater protection, natural resource conservation).

Although most water and wastewater projects fall under municipal mandates, the impact of improving water conditions, particularly with respect to wastewater treatment, would result in the long-term regional benefits through downstream improvements of the Adriatic and Black Seas, as well as for the Danube and other key river basins.

References

Badun, Marijana (2005) The Quality of the Governance and Economic Growth in Croatia. *Financial Theory and Practice*, No. 29 (4), pp. 279–308

van den Berg, Caroline (1997) Water Privatization and Regulation in England and Wales. Public policy for the private sector. Note No. 115, pp. 1–4, http://rru.worldbank.org

Bode, H., P. Lemmel (2001) International product cost comparison in the field of water management. *Water Science and Technology*, No. 2–3, pp. 85–93

Boymanns, D. (2001) EU water policy and directives – How will they support the management of waters in the new national park? In: The role of conservation science in national parks: An international Symposium with national relevance, ORA 62076, Glasgow: University of Glasgow, http://susproc.jrc.es

Brocklehurst, Clarissa (2003) Reaching Out to Consumers: Making Sure We Know what People Really Think and Want, and Acting Upon It, http://www.worldbank.org

Commission of the European Communities, CEC (2007) Towards sustainable water management in the European Union. First Stage in the implementation of the Water Framework Directive 2000/60/EC, http://eur-lex.europa.eu

Dexia (2004) Local Finance in the European Union. Economic Outlook, Trends 1999–2004, www.dexia-clf.fr

Draft Strategy of Water Management (2007) http://www.duv.hr

European Parliament, EP (2000) Water Framework Directive European Union 2000/60/EC. Official Journal, http://eur-lex.europa.eu

Eurostat (2001) Waste water in European countries. Statistics in focus – Environment and Energy (Report), No. 8–14, pp. 1–8, http://europa.eu.int

Haarmeyer, D. (1992) Privatizing Infrastructure: Options for Municipal Water Supply System. Policy study No. 151, Reason Foundation, http://www.reason.org

Health and Environment Alliance, HEAL (2005) Europe's water law: stronghold against commercialisation, http://www.env-health.org

Hrvatske vode (2005) Internal documentation, data and interviews. Some data are available at: http://www.voda.hr

Kraemer A., R. Piotrowski (1998) Comparison of the Water Prices in Europe. Ecologic, centre for International and European Environmental Research, Berlin, http://www.ecologic.de

Krinner, W., C. Lallana, T. Estrella, S. Nixon, T. Zabel, L. Laffon, G. Rees, G. Cole (1999) Sustainable water use in Europe. Part 1: Sectorial use of water. *Environmental assessment report*, No. 1. European Environmental Agency (EEA), Copenhagen, pp. 5–29, 61–82, http://reports.eea.eu.int

Laime, M. (2005) Dossier: Water – Privatization of the Municipal Companies. *Le Monde Diplomatique*, No. 3, pp. 14–15

Lallana, C., Krinner, W., Estrela, T., Nixon, S., Leonard J., Berland, J. M. (2001) Sustainable Water Use in Europe, Part 2: Demand Management (Report). Environmental Issues Report No. 19. European Environmental Agency (EEA), Copenhagen, pp. 10–18, 30–46, http://reports.eea.europa.eu

Lukšić, M., Ž. Ostojić (2000) Summary of water pricing policies in Croatia. Economic Instruments and Water Policies in Central and Eastern Europe: Issues and Options. *Conference Proceedings, Szentendre,* September 28–29, 2000, pp, 27–33, http://www.rec.org

Ministry of Foreign Affairs and European Integration of the Republic of Croatia, MFAEI (2007) *National Programme of the Republic of Croatia for EU Accession for 2007*, http://www.mvpei.hr

OECD (2003) Social issues in the provision and pricing of water services, http://www.oecd.org

OECD (2004) Competition and Regulation in the Water Sector, http://www.oecd.org

P.O.V. (2005). The new economy of water. Based on *The New Economy: The Risks and Benefits of Globalization and Privatization of Fresh Water* by the Pacific Institute, http://www.pbs.org

Schonback, W., G. Oppolzer, R. A Kraemer, W. Hansen, N. Herbke (2004) International Comparison of Water Sectors. Comparison of Systems against Background of Europe and Economic Policy. Informationen zur Umweltpolitik, Nr. 153/6, Vienna, http://wien.arbeiterkammer.at

Servan Desa (2007) Communal companies and institution in the ownership of local and regional governance. *Novi informator*, Zagreb, No. 5561, pp. 4–6

United Nations, UN (2004) Resolution adopted by the General Assembly A/RES/58/217, 9 Feb 2004. International Decade for Action *Water for life*, 2005–2015, http://www.unesco.org

United Nations Development Programme and European Environment Agency, UNDP and EEA (1997) Press release: Water Stress in Europe, http://org.eea.int

United Nations Environment Programme, UNEP (1999) Global Environment Outlook 2000 – Freshwater, http://www.unep.org

Vojnović, Marija (2005) *Water Policy in the Accession Process of Croatia with European Union.* MBA Thesis, International Graduate Business School Zagreb.

World Bank, WB (1997) Water Pricing Experiences: an International Perspective. World Bank Technical Paper, No. 386, pp. 1–13, edited by A. Dinar, A. Subramanian, http://www-wds.worldbank.org

EU ACCESSION CHALLENGES IN THE WATER SUPPLY AND WATER PRICING SECTORS IN CROATIA

Summary

Since water is one of the most valuable natural resources, it needs good governance and efficient management. Although Croatia is water rich country, its water sector is facing with major challenges during the EU accession process. Besides legal harmonization with EU acquis communautaire, *water institutions and water supply companies will need to accept new operating models. This will lead*

to the integral water management, based on the principles of sustainable development. Water pricing policy in Croatia needs to be re-evaluated and structured according to the Water Framework Directive. This work presents necessary steps that should be undertaken in order to achieve high EU standards in the water sector that has significant social, environmental and economic impact. The improvements in the water sector would have not only national, but also broader regional character, since Croatian water resources are significant part of several river basins.

Key words: *water policy, water pricing policy, accession process, European Union*

IZAZOVI PRIDRUŽIVANJA EUROPSKOJ UNIJI U SEKTORIMA VODOOPSKRBE I ODREĐIVANJA CIJENA U HRVATSKOJ

Sažetak

*Budući da je voda jedan od najvažnijih prirodnih resursa, potrebno je njome dobro i učinkovito upravljati. Premda je Hrvatska bogata vodom, sektor vodoopskrbe i odvodnje suočava se s velikim izazovima pristupanja Europskoj uniji. Uz usklađivanje pravnih propisa s pravnom stečevinom Unije (*acquis communautaire*), institucije i tvrtke koje se bave vodoopskrbom i odvodnjom morat će prihvatiti nove načine poslovanja. To će dovesti do integriranog upravljanja vodom, temeljenog na načelima održivog razvoja. Potrebno je revidirati politiku određivanja cijena vode u Hrvatskoj i oblikovati ju prema Okvirnoj direktivi o vodama Europske unije. U radu se navode koraci koje je potrebno poduzeti kako bi se ostvarili visoki standardi Unije u sektoru vodoopskrbe, koji ima značajan društveni, ekološki i gospodarski utjecaj. Poboljšanja u sektoru vodoopskrbe i odvodnje ne utječu samo na Hrvatsku, već i na cijelu regiju, budući da su hrvatski vodni resursi dio nekoliko riječnih slivova.*

Ključne riječi: *vodna politika, politika određivanja cijena vode, proces pridruživanja EU, Europska unija*