



Republic of Serbia  
MINISTRY OF AGRICULTURE AND  
ENVIRONMENTAL PROTECTION  
- Water Directorate -  
Belgrade

**Executive Summary**  
**for**  
**the Water Management Strategy**  
**of the territory of the Republic of Serbia**

## Introduction

According to the Water Law (Official Gazette of the Republic of Serbia, nos. 30710 and 93/12), the Water Management Strategy of the territory of the Republic of Serbia (hereafter the Strategy) is a master planning document that will serve as a blueprint for the implementation of water sector reforms through the year 2030, aimed at achieving needed water management standards at the national, regional and local levels, and at fulfilling water management objectives. The Strategy also proposes the structural and non-structural measures required to achieve set objectives and outlines the needed funding, the implementation timetable, and the functions whose proper performance will govern the effective achievement of objectives. Additionally, the Strategy sets forth priority projects.

Given that the Strategy is rather voluminous, this summary document contains a brief assessment of the present state of affairs (including advantages and disadvantages) and addresses the water management concept, the main strategic goal – the achievement of integrated water management in Serbia, the objectives by water sector segment (water use, water pollution control and protection against the adverse effects of water), the needed funding and capacities, and the implementation timeframe.

## Assessment of the present state of affairs

### Advantages

- A water sector track record of more than 200 years;
- More than 90% of Serbia's territory falling within the Danube River Basin;
- Rather extensive water infrastructure;
- A large number of water management companies which, with improved human and material resources, are prepared to continue to carry out water sector activities;
- A high-quality hub in scientific, research, planning, engineering and other fields, as the nucleus for future water sector development;
- Numerous universities providing a satisfactory level of knowledge, but able to perform even better once their curricula and teaching methods are updated, including those related to post-graduate studies.

### Disadvantages

- Considerably reduced water sector spending (some 300-350 million € per annum) over the past 30 years or so, much lower than needed (about 450 million € per annum on development and 550-600 million € on operating expenses) to improve the state of affairs in the water sector.
- Public water supply and sanitation charges (for citizens 0.6 €/m<sup>3</sup> on average) much lower than the economic prices of water and services (1.3 €/m<sup>3</sup> excl. VAT).
- Water fees assessed relative to inflation, not operating requirements, including maintenance. Additionally, for some time now water fees have been used out-of-purpose (outside the water sector).
- Insufficient investment activity (modest number of new capital projects) and lack of capital improvement, resulting in devastation, affecting infrastructure capacities and making the water sector both acutely and chronically threatened in the areas of:
  - protection against the adverse effects of water: lowland river floods, flashfloods, erosion;
  - Quality of water for human consumption and water quality protection,

- o Water shortages, etc.
- Rather lackluster maintenance of infrastructures for years, reflected in all water sector segments (still high water losses in the public water supply, reduced capacities of irrigation/drainage canals, lowered safety levels of protection against the adverse effects of water, and the like).
- In addition to the parent ministry, water sector affairs handled by other ministries, compounded by an unsatisfactory degree of coordination with regard to capital project planning, implementation and funding.
- The capacity of Serbia's Water Directorate insufficient to respond to all legal requirements set forth in the Water Law and other laws, particularly those the Water Directorate will face in the context of needed water sector development and intensified activities associated with accession to the EU.
- Territorial division into jurisdictions of three public water management enterprises and their insufficiently defined status aggravating the already dire circumstances in which these enterprises operate.
- Only a small number of projects prepared in a way that would make it possible to seek funding internationally. Also, virtually no initiative from local administrations to furnish the higher-level design documents needed for project implementation.
- Planning, preparation and implementation of capital projects requiring numerous procedures and many documents. This significantly prolongs project implementation.
- Surface water and groundwater monitoring failing to provide sufficient data for prudent and efficient water management and compliance with EU water legislation. International cooperation, especially with neighboring countries, not satisfactory as there are no bilateral agreements with some of these countries (Bulgaria and former Yugoslav republics). Cooperation with Hungary and Romania based on agreements dating back to 1955.
- Insufficient involvement of scientific and research institutions in areas of special relevance to water management.

### Concept, strategic goal and starting points

The water management concept is based on the main natural characteristics of the territory of the Republic of Serbia, the present status of water resources and water management, and the need to meet the water demand, protect water resources and ensure protection against the adverse effects of water, keeping in mind the requirement to align with international standards in this field (particularly with those of the European Union), while honoring international commitments.

The water management approach largely depends on the economic strength of the country and available water resources. In this regard, Serbia belongs to the group of countries where development in the field of water management needs to be prioritized.

The consideration and selection of the water management concept are based on the following circumstances:

- The water infrastructure is devastated to an extent that increases the risk of natural disasters, threatens the quality of water used for various purposes, and the like;
- Water governance (capacities, legislative and economic frameworks, functions, etc.) is underestimated and inadequate;
- Water governance needs to be adapted to the higher risks and greater demands, but also to EU requirements relating to the harmonization of legislation, a technoeconomic approach to water management and the establishment of a coherent water sector strategy;
- To improve the state of affairs in the water sector, the turnover needs to be gradually increased from the current 300-350 million € to about 1 billion €, with capital project spending at least five times

greater than at present; however, given the country's high indebtedness, any major borrowing for the water sector is unacceptable.

A proper approach to the selection of the concept needs to ensure the country's ability to respond to sudden natural events (floods, droughts, etc.) and achieve set objectives, including necessary capital projects.

The globally preferred concept is that of integrated water management, defined as "a process which promotes the co-ordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems"<sup>1</sup>. The concept of sustainable development<sup>2</sup> is also endorsed, while adaptive water management is gaining prominence as it aims to adapt water management to changeable natural, social and economic drivers.

Serbia has accepted but not yet implemented the integrated water management concept, such that achieving integrated water management, or a harmonized water regime across Serbia's territory, and ensuring the kind of water management that will maximize economic and social benefits in an equitable and sustainable manner, while honoring international agreements, constitutes a long-term strategic goal that requires considerable time (more than two decades, with a proper approach) and enormous spending (about one billion € annually).

Before integrated water management is fully implemented, given the economic strength of the country and the availability of water resources, Serbia needs to manage water resources in a largely centralized manner and prioritize activities and capital projects. This primarily involves the following:

- Enactment of missing legislation and optimization of capital project preparation;
- Major capacity strengthening of government agencies, local administrations and other institutions responsible for water management (centralized and local levels);
- Increased water sector revenues through gradual introduction of economic water prices and service charges, and involvement of the private sector in investment activities;
- Increased revenues from water fees and their exclusive use within the water sector;
- Improved water management capability, through efficient implementation of day-to-day activities, maintenance and capital projects;
- Increased capacity of technical and scientific institutions and their more extensive networking with the administration and other relevant institutions.

The water management policy is founded upon the following:

- Water is an irreplaceable, renewable resource, a precondition for proper functioning and development of society and a prerequisite for the survival of the natural environment and the entire human community, whereby the management of water resources and water infrastructure constitutes a national interest and an obligation;
- Water resources are natural assets owned by the Republic of Serbia and, as such, cannot be removed from public property, but concessions and usage rights over them may be acquired;
- Water resources must be managed in an integrated manner, based on the principle of sustainable development, with Serbia constituting a single territorial entity for the purposes of water management;
- Public water supply is in the public interest and has priority over all other types of water use;

<sup>1</sup> GWP Technical Advisory Committee, 2000

<sup>2</sup> Development that meets the needs of the present without compromising the ability of future generations to meet their needs.

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## Executive Summary for the Water Management Strategy of the Republic of Serbia

- Protection of water resources and protected areas is in the public interest and a national priority, such that it needs to be implemented under the scrutiny of relevant national institutions;
- The risk of adverse effects of water cannot be eliminated but can be reduced to a socially and economically acceptable level, while the mindset associated with protection against the adverse effects of water needs to change, in terms of delineation of social and individual responsibilities;
- The institutional framework needs to enable water management with clearly delineated responsibilities of different government agencies and other stakeholders, with mandatory coordination of planning and capital project implementation activities;
- Steady funding (permanent sources, projected extent, procurement, up-to-date payer databases, revenue collection mechanisms; economic pricing of water based on full cost recovery and the "user pays" and "polluter pays" principles, and the like), and self-funded operations, are expected to make the water sector less dependent on government funding;
- Construction of water infrastructure needs to be funded from different sources (water funds, revenues of local administrations, water prices, IPA and other funds, project owner's resources and loans); the proportions will depend on the significance, size and purpose of the project in question;
- Capital projects relevant to the state, region and/or local administration, especially those funded from public revenues, can be implemented more efficiently via *special capital project implementation centers* (a new or existing regional development agency, provided that their technical capacity is strengthened);
- Water infrastructure maintenance is an obligation and needs to comply with technical standards and norms;
- Citizens are entitled to information and direct participation in the creation of water management plans for water districts, to which the National Water Conference needs to contribute;
- More effective and prudent water management requires a higher level of cooperation with scientific and research organizations and institutions (above all Jaroslav Černi Institute for the Development of Water Resources), and ongoing and programmed efforts to improve engineering, construction, service and other capacities at government and local levels, and the creation of a better material and information base for their operations.

### Improving water management

#### Objectives by water sector segment

Objectives have been defined for each water sector segment, which need to be achieved during the planning period in order to fulfill the main strategic goal of water management.

#### Water user: Public water supply

- Increased public water supply coverage from the current 81% to 93% at the end of the planning period;
- Steady water supply and compliant water quality, along with a reduced risk of interruptions in extreme or emergency situations;
- Reduced proportion of unbilled water in public water supply systems to about 25%;
- Efficient water use, along with a gradual water price increase to economic levels;
- Protection of water supply sources (establishment of sanitary protection zones), exploration, protection and conservation of water resources.

***Water use: Irrigation:***

- Sufficient amounts of water for irrigating 250,000 to 350,000 ha of farmland from Development Group I and part of Development Group II by the end of the planning period (revitalization of existing systems on about 100,000 ha and construction of new systems on 150,000 to 250,000 ha);
- Efficient water use ensured by appropriate irrigation depths by crop type and farmer awareness raising about modern irrigation technologies; protection from drought; associations; and market placement of products.

***Water pollution control (water protection):***

- Establishment and implementation oversight of restrictions on wastewater discharges containing pollutants in excess of stipulated levels;
- Establishment and implementation of a Water Pollution Control Plan and setting up of surface water and groundwater monitoring based on suitable programs and applicable regulations;
- Development of municipal infrastructures and wastewater treatment plants (reconstruction of existing and building of new plants) in agglomerations greater than 2,000 PE (85% population coverage);
- Reduced pollutant discharges from industrial facilities through wastewater pretreatment to prescribed levels;
- Removal of illegal solid waste dumps, primarily from protected areas, riparian lands with an unfavorable hydrological regime and the like, and rehabilitation of existing and construction of new landfills per applicable strategic and planning documents;
- Reduced pollutant discharges from diffuse sources, such as farmland, forest land, roads and agglomerations smaller than 2,000 PE;
- Reduced pressures on groundwater quality, through the establishment, monitoring and maintenance of sanitary protection zones of drinking water supply sources;
- Conservation and achievement of good quantitative status of groundwater, to ensure sufficient amounts of water of satisfactory quality, to respond to present and future demands of all legitimate users;
- Establishment of comprehensive monitoring of chemical and quantitative status of groundwater and systematic observation of pollutants in large rivers (the Sava, the Danube, the Tisa and the Velika Morava), and of groundwater sources of the bank filtration type in the alluvial aquifers of these rivers.

***River training***

- River engineering consistent with environmental criteria, i.e. minimal hydromorphological alterations;
- Excavation of river sediments from water lands primarily aimed at conserving and/or improving the water regime, with rates of extraction conditional upon minimal disturbances to aquatic and riparian ecosystems, along with mandatory rehabilitation of gravel pits.

***Protection against the adverse effects of water: River floods, erosion and flashfloods***

- Mitigation of flood risk and flood damage through:
  - Completion, extension, reconstruction and regular maintenance of existing flood defenses on lowland rivers and construction of new flood defenses based on the flood cell approach;
  - Active protection measures (flood wave attenuation) and prevention of rapid runoff from rural and urban areas along small and medium rivers, as well as local protection measures relating to individual structures or groups of structures;

- o Proper use of water-land and flood-risk areas;
- o Introduction of new building principles and methods in floodplains and flood risk areas;
- o Locating away from risk areas all highly sensitive structures, facilities and installations relevant to public safety, defense and maintenance of public order, or whose destruction would threaten the population;
- Efficient and coordinated active flood defense, including protection from ice and ice-floods;
- Continual monitoring and forecasting of hydrometeorological phenomena and upgrading of flood forecasting and early warning systems in drainage areas devoid of flood protection;
- Improved legal framework for enhancing erosion control and flashflood protection;
- Improved conditions for erosion management and flashflood protection through preventative, technical and biological measures, updating of land registries, improving the efficiency of inspectorates and other competent bodies, public awareness raising, and the like.

### Drainage

- Maintenance of inland water regimes within drained areas;
- Completion, extension, reconstruction and regular maintenance of structures for the protection against water-logging and construction of new systems, beginning with soils of Drainage Class I.

### Needed funding, capacities and timeframe

The implementation of the development projects needed to improve the state of affairs in the water sector over the 20-year planning period will require funding to the tune of 9 billion € (some 450 million € per annum, on average), which can be procured from various sources (Table 1). Operating expenses amount to 550 to 600 million € per annum, on average. The total is therefore about 1 billion €, or several times the current extent of water sector allocations.

Table 1. Funding needed and sources of funding for water sector development by segment

Segment	Water sector capital project funding needed and sources of funding, in mil. €							
	State and AP	PUs (water price)	Other sources	IPA and other funds	Local admin.	Project owner's sources	Total	% share
Water use	600	300	350	600	350	674.5	2,874.5	31.7
Water protection	1,000	300	1,400	1,150	950	600	5,400.0	59.5
Protection against the adverse effects of water	420			150	160	70	800.0	8.8
<b>Total</b>	<b>2,020</b>	<b>600</b>	<b>1,750</b>	<b>1,900</b>	<b>1,460</b>	<b>1,344.5</b>	<b>9,074.5</b>	<b>100.0</b>
	22.26%	6.61%	19.28%	20.94%	16.09%	14.82%	100.00%	

The rate of water sector development will not be uniform over the years (Figure 1); instead, capital projects will be implemented depending on the creation of needed social and economic conditions, including financial resources and professional human resources. Development spending in the first year of the planning period is not expected to exceed 200 million €, but will progressively increase to some 500 million € per annum at the end of the first 10-year period. Thereafter, spending is expected to be relatively uniform (500-600 million € per year), through to the end of the planning period, at which time the state of affairs in the water sector should be satisfactory.

Table 2. Engineering capacities needed to implement development projects

Period	Funding mil. €/year (average)	Engineers* (annual average)		
		Planning and design	Construction	Total
Up to year 5	240	200	400	2,600
Years 6-10	480	500	1,000	2,500
After 11 years	550	500	1,000	3,200

\*Including domestic and international experts on a project basis.

The needed engineering human resources include those available at scientific, professional, educational and other institutions, whose potential is significant and which can support government agencies in development project planning and implementation.