

# Current and planned activities in the field of water management in Serbia

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## ABSTRACT

Integrated water management in Serbia is regulated by the Water Act, which gives a set of measures and activities aimed at maintaining and improving the water regime, providing the required amounts of water of the required quality for different purposes, protecting waters against pollution and protecting against the harmful effects of water. During the past decade, there has been some progress in improving environmental protection in general, but Serbia still bears the consequences of a heritage of environmental degradation. According to current estimates, significant investments in the future will be necessary to solve the problems of wastewater and water supply. Improvements are expected to the existing regulatory and technical framework in this field, as well as clearer structures in competent institutions.

This paper presents the current and planned activities in the field of water management in Serbia.

**Key words:** water management, wastewater, water supply

Received: 9.2.2015

Accepted: 9.6.2015

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## THE CURRENT STATUS OF WATER MANAGEMENT IN SERBIA

### Water quality and infrastructure facilities

The Republic of Serbia still faces many challenges in terms of water quality. About 43 % of the surface waters samples in the territory of Vojvodina were categorized as 'very bad' and 'bad' water quality. The maximum concentrations and average annual concentrations of certain heavy metals in most of the lakes and reservoirs for water supply are above the allowable limits.

The water supply network consists of 33,228 km of pipes, and about 79 % of the country's population is connected to the public water supply (92 % in Vojvodina). However, water quality in the water supply system suffers large amounts of pollution, with key sources of pollution including untreated industrial and municipal wastewater, drainage water from agriculture, leachate from landfills, and pollution related to river navigation and operation of power plants. There is also a serious problem in AP of Vojvodina with natural arsenic contamination [1].

Although growing, the percentage of households connected to the public sewer network is still small: only 36 % in Central Serbia and 23 % in Vojvodina. According to Comparative Indicators of Serbian and EU environmental protection service levels, only about 66.7 % of urban wastewater is collected and 11.49 % is treated in Serbia in comparing to the average in EU [2].

Wastewater problems are even more alarming in industry and mining. Only 15 % of the total volume of wastewater from point sources is treated by primary treatment, of which 11 % and 3 % then passes through secondary and tertiary treatment. Only 5 % of industrial wastewater passes all recognized stages of processing (mechanical, biological and chemical). Wastewater facilities exist in only 21 municipalities (out of 219 registered in the Republic of Serbia); even the largest cities in the Republic of Serbia (Belgrade, Nis and Novi Sad) discharge their wastewater without treatment into the recipients. As a result, some locations in the Republic of Serbia (eg, The Grand Backa Canal, Ludosko and Palic lake, the wastewater canal in Pancevo) are extremely polluted with untreated industrial and municipal wastewater. Much of the wastewater infrastructure has not been well maintained in recent decades and there is a substantial maintenance backlog.

Agriculture mainly contributes to the pollution of waters from diffuse sources of pollution, which in the watershed of the Danube gives 70 per cent of total nitrogen, 50 per cent of total phosphorous and 90 per cent of faecal and coliform bacteria. The main agriculture sources of water pollution are the uncontrolled effluents of livestock farms, crops, slaughterhouse wastes and chemical fertilizers. The absence of control of water quality used for irrigation may be a cause of water pollution, although only 2 % of agricultural land is equipped for irrigation. However, it is difficult to estimate to what extent agriculture contributes to water pollution in Serbia, because there is no complete nor effective monitoring of ground water quality [3].

## REGULATORY FRAMEWORK

In the field of water protection and management in Serbia, the following regulations are in place: Law on Waters [4], Law on Environmental Protection [5], Law on the Water Regime [6]. In this moment, the Law on Waters is in the revision process. Industrial pollution control and risk management in Serbia are regulated by the Law on Integrated Pollution Prevention and Control [7], which define the conditions and procedures for issuing integrated permits for establishments and activities that may have a negative impact on human health, the environment or material goods; and the types of facility activities, monitoring and other issues of importance in terms of environmental pollution prevention and control.

Transposition of EU directives in the field of water and wastewater is still limited, and can be considered to be in progress. The best results were achieved in the transposition of the Water Framework Directive and Directive on drinking water. Similarly the existing system of flood risk management achieves reasonable compliance with the aims of the Flood Risks Directive, albeit that formal compliance has yet to be fully achieved. Serbia is currently failing to achieve compliance with the main pollution control requirements specified in the Urban Waste Water Treatment Directive and the Nitrates Directive (transposition of these Directives are in progress). This noncompliance results in failure to achieve the environmental objectives of the Water Framework Directive. The Seveso and IED Directives have not yet been fully transposed, although progress has been made. The largest part of the EMAS regulation is still missing.

For the purpose of applying water management law, a set of by-laws were adopted in Serbia during the 2010-2014 period. The release of pollutants from point sources is regulated by the Regulation on emission limit values in waters and deadlines for the achievement thereof [8]. This Regulation sets limit emission values for specific groups or categories of the polluting substances in wastewaters. For the first time, the legislature of the Republic of Serbia has issued all limit values for process wastewaters (by sector) at the facility/unit discharge location, with demands for separating wastewater flows and prohibiting the dilution of these waters in order to achieve the above mentioned values.

The existing facilities, according to this Regulation, will synchronize their emissions with the limit values of pollution emission by 2030/2045 and not later. Legal entities, the entrepreneurs or individuals who discharge their wastewaters in the recipient or the public sewage need to establish deadlines for gradual achievement of pollution limit values. These deadlines should be a part of action plans. For any new facilities being built, the limit values need to be respected immediately. The water quality standards (EQS for water) are regulated in Serbian legislation by the Regulation on limit values of pollutants in surface and ground waters and sediments, and the deadlines for their achievement [9], which transposed the provisions from a number of EU directives regulating this area. The Regulation determines the limit values of polluting substances in the surface and groundwaters, as well as sedi-

ment, along with the deadlines for achieving those values. The limit values are defined for the pollution in the surface waters which present indicators for oxygen, acidity, salinity, nutrient substances, metal organic substances and microorganism indicators content. Additionally, limit values for prioritized and hazard prioritized substances in the surface waters are taken into consideration, defined by the Regulation on limit values of prioritized and hazardous prioritized substances which pollute surface waters and the deadlines for their achievement [10]. This regulation issues quality standards for pollution in surface waters, on which it provides the basis for a 5 class water classification. The classes match ecological status according to the classification given in the regulation which issues the parameters of the ecological and chemical status for surface waters [11].

Defining the limit values of pollution is important for the evaluation of sediment quality, which has also been introduced in the legislature for the first time, in water and environmental management in general. The Regulation issues quality standards for the basic parameters of groundwater quality, providing the basis for monitoring and additional assessment of standards for substances from the minimal list of pollutants of the EU Directive on the protection of groundwater against pollution and deterioration. It issues an obligation to the users of groundwaters, obliging them to perform measurements of the basic (background) level of pollution, ions or natural origin indicators and/or if their presence in the groundwaters is caused by human activity. According to the Regulation, it is prohibited to introduce pollution inside groundwaters if such activity can lead to a worsening of the current state or a deterioration of the current chemical groundwater status respectively, the process being assessed in accordance with the regulations which deal with the water and environmental protection areas. It is forbidden to directly or indirectly release List I and List II pollution into groundwaters.

Significantly, these Regulations present the basis for the new, “combined approach” in water pollution prevention [12]. On the basis of these acts, monitoring of surface and ground water and sediment was carried out in Serbia, which is quite compliant with the requirements of the Water Framework Directive and which is expected to be fully compliant by the end of 2015.

## INSTITUTIONAL ARRANGEMENTS

Water management in the territory of the Republic of Serbia shall be exercised through the Ministry of Agriculture and Environment protection and other relevant ministries, autonomous provinces, local government units and public water management companies. The territory of the Republic of Serbia is a unique area divided into seven river water districts. The main water management institution in Serbia is the Directorate for Water of the Ministry of Agriculture and Environment protection. The Directorate initiates policy, drafts laws and has the bulk of policy responsibilities in the sector. Some competencies in the field of water management were passed to the Government of the Vojvodina

Province. The implementation bodies are two public water management companies (PWMC): “Srbija vode” and “Vode Vojvodine”. The PWMCs are first and foremost responsible for the maintenance of water control measures, including flood protection, drainage and irrigation. Implementation of these activities are carried out through water management companies. A large number (24) of these companies are in the process of transformation and their final status must be resolved by the end of 2015 (transformation began their transition to PWMC and the parallel process of privatization).

In general terms, the new Water Law clearly defines the responsibilities of the relevant institutions. However, some overlaps in institutional responsibilities do exist, particularly in respect of the control of wastewater discharges. Coordination and cooperation between the institutions is moderately good and continues to improve. Considering that the water issues are divided between several ministries and agencies, cooperation between actors in the future is essential for the achievement of a coordinated approach.

For the Public Utility Companies, the great “institutional” constraint is the capacity of the companies which are responsible for the provision of water services. Water services are provided by Public Utility Companies, which are established on municipal administrative divisions. With the exception of the cities, where there tend to be “water services only” Public Utility Companies of a reasonable size, most (>120) of the 152 Public Utility Companies with responsibility for water also have other responsibilities (including solid waste management, street cleaning...) and are of a relatively small scale.

Many Public Utility Companies do not achieve cost recovery for the water services that they provide, partly as a result of the relatively low tariffs that are charged and partly because of lower than optimal scales of operation and non-specialized operational practices with a lower degree of efficiency [13].

## PLANNING DOCUMENTS OF WATER MANAGEMENT

According to [4], planning documents for water management are: the strategy for water management in the territory of the Republic of Serbia, a water management plan, an annual program of water management plans governing the protection against harmful effects of water (plan of flood risk management, and general operating plan for flood protection and plans governing the protection of water, protection plan for water pollution control and monitoring program). These plans are separate but harmonised and entail planning on the basis of both administratively appropriate and hydrologically derived boundaries. The use of administrative boundaries is crucial since all plans must be harmonised with land use plans, which are adopted by local administrations. Of all the above mentioned plans, the general operating plan for flood protection was adopted, but the methodology used during its preparation did not involve risk maps.

## THE CHALLENGES OF WATER MANAGEMENT IN SERBIA

The Republic of Serbia needs a big investment program for wastewater management and improvement of drinking water quality. It is estimated that the total cost of meeting the requirements of the EU environmental Acquis will be around €10.6 billion (between now and 2030), the most demanding sectors being water (€ 5.6 billion), waste (€2.8 billion) and industrial pollution (€1.3 billion). An important part of the costs are operational ones, which cannot be covered by international sources and will have to be financed from public budgets, private sources or fees [2].

Future activities include the development of the “Strategy for Water Management in the Republic of Serbia” that will establish a long-term direction for water management. This strategy will be followed by the adoption of water management plans. Several water management plans are to be enacted, including a water management plan for the Danube River Basin. This plan will be prepared by the Ministry of Agriculture and Environmental Protection and the Water Directorate, while the others must be prepared by PWMC “Srbija vode” and “Vode Vojvodine” for river basin districts within their jurisdiction. The plans to implement the Directive on Urban Waste Water Treatment and the Nitrates Directive, as well as plan for water pollution and plan for flood risk management are expected also. The importance of Plan to protect water from pollution should be highlighted, because of the implementation of a Regulation on ELVs and the preservation of water quality generally.

According to [14], the instruments of importance to regional cooperation, such as the support of the IPA cross-border and transnational cooperation programs, will be provided for those activities in which there are obvious advantages to a regional approach. In the context of regional priorities in which the IPA are engaged in the environmental sector, the Republic of Serbia supports those relating to the preparation and implementation of investment projects under the Investment Fund for the Western Balkans. In order to complement national efforts, the emphasis is on infrastructure investments related to water management and improving water quality with regional impact on the environment.

The Republic of Serbia is able to finance additional regional projects in the field of climate change and the inclusion of climate change considerations within different projects through the “window” for climate change. Areas for intervention within the cross-border and transnational cooperation program include support for the improvement of water supply; reducing leakages and losses and improved wastewater treatment. IPA cross-border cooperation can also be used to support the development of cross-border environmental protection plans, risk assessments and plans for monitoring in selected transboundary areas. The activities proposed for the implementation of Pillar II Strategy EU Danube Region in the field of environmental protection will directly contribute to the objectives of Europe 2020. These activities relate to the objectives of addressing the challenges of climate change, developing sustainable use of resources (which includes water), as well as ensuring the quality of life, which requires a regional approach to water management.

The overall strategy of Serbia in the water sector is to continue to determine its own priorities, principally those that contribute to socio-economic welfare, whilst continuing to honour its commitments under international agreements and make continued progress towards compliance with EU legislation. In the long-term the key objectives can be summarised as: fully compliant and affordable centralised public water supply to at least 93 % of the inhabitants of Serbia; provision of affordable wastewater collection and appropriate treatment to all agglomerations over 2,000 population equivalent. The achievement of these objectives entails a number of choices in respect of specific aspects of approximation for the short and medium term.

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