



**THE REPUBLIC OF SERBIA**  
**THE MINISTRY OF AGRICULTURE AND ENVIRONMENTAL PROTECTION**  
**The Republic Water Directorate**

**SUMMARY REPORT ON STRATEGIC ENVIRONMENTAL  
ASSESSMENT OF THE DANUBE RIVER BASIN  
MANAGEMENT PLAN**



INSTITUTE OF ARCHITECTURE AND URBAN & SPATIAL PLANNING OF SERBIA  
Bulevar kralja Aleksandra 73/II, Beograd, phone: 3370-091, fax: 3370-203, web: [www.iaus.ac.rs](http://www.iaus.ac.rs)

**Belgrade, September 2015**

## SUMMARY

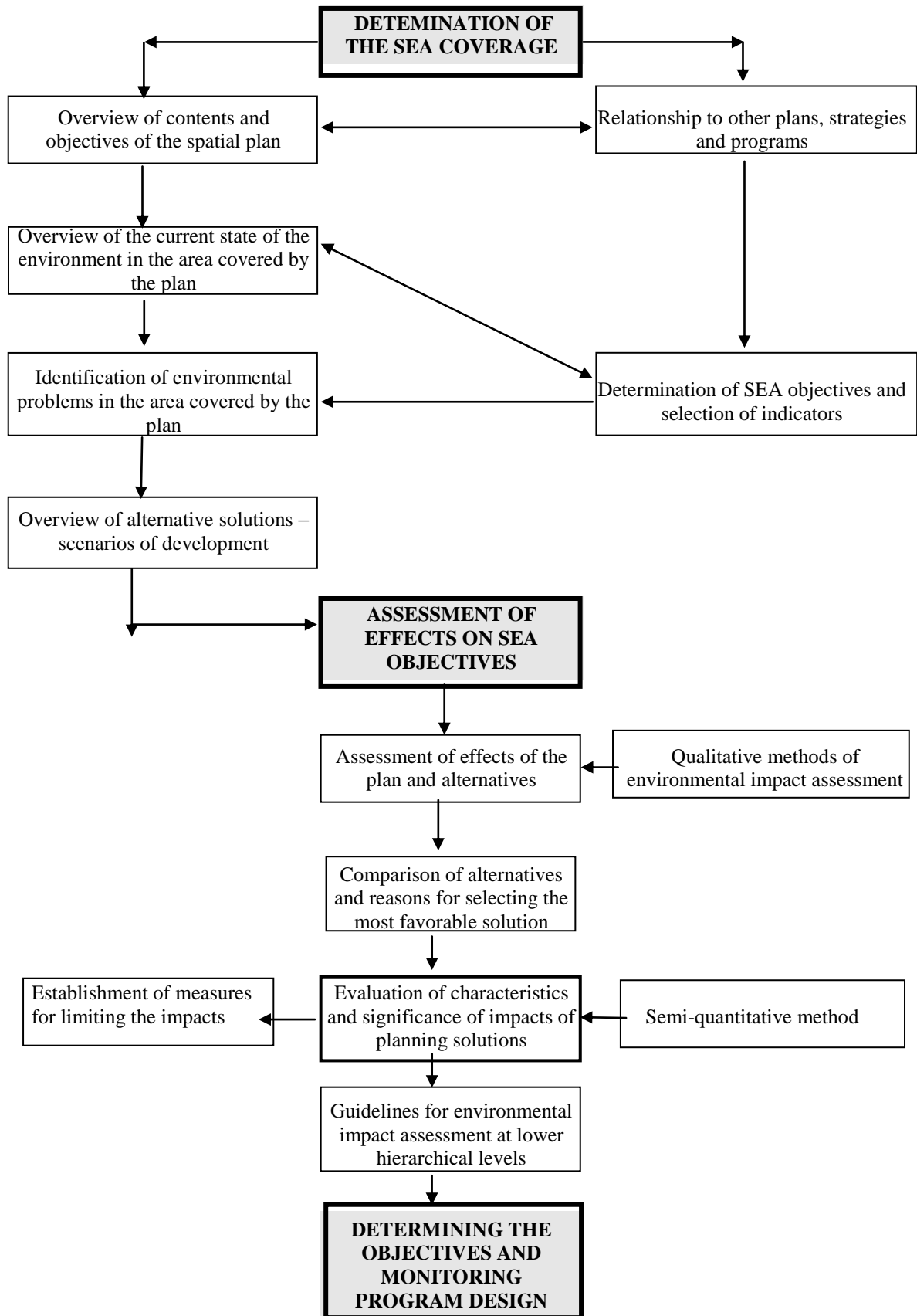
Strategic Environmental Assessment (SEA) is an evaluation of impacts that plans and programmes may have on the environment, and proposal of measures that would prevent, minimise, mitigate, remediate or compensate harmful effects on the environment and the health of population. By implementing SEA in planning it is possible to envisage newly arisen changes in space and take into account the needs of the environment in question. Through SEA, the impact of all the planned activities on the environment are critically assessed, followed by a decision whether to implement the planned activities and under what conditions, or to abandon them.

Planning implies development, while a strategy for sustainable development calls for environmental protection. In such context SEA represents an unavoidable instrument for achieving the sustainable development objectives. SEA integrates socio-economic and bio-physical components of the environment; it links, analyses and assesses the activities in different spheres of interest, as well as directs the policies, plans or programmes towards solutions which are primarily proposed in the interest of the environment. It is an instrument which helps in integrating the objectives and principles of sustainable development when making decisions in spatial planning, while at the same time taking into account the necessity to avoid or limit possible negative effects on the environment and on the health or socio-economic status of population.

In the domestic planning practice, SEA is covered by the Law on Environmental Protection ("The Official Gazette of the Republic of Serbia", Nos. 135/2004, 36/09 and 72/09 – 43/11 – The Constitutional Court, Articles 34 and 35). Pursuant to Article 35 of this Law: "Strategic environmental assessment shall be carried out in plans, programmes and principles in the domain of spatial and urban planning or land use, energy, industry, transport, waste management, **water management** and other fields, and shall be an integral part of the plan, programme or principle".

Strategic assessment of the Danube River Basin Management Plan (which specifies the priorities set out in the Republic of Serbia's Water Management Strategy for a six year period) has been used as an examination tool of the current state of the environment, with a particular consideration of the areas threatened by the activities in the water management and water-power supply sectors, of the importance and characteristics of the Plan, of the characteristics of the planned preferential activities and other environmental issues in line with the criteria for determination of possible considerable impacts on the environment. A methodological approach (Figure A) used in SEA is based on defining objectives and indicators of sustainable development and on the multi-criteria quality evaluation of the preferential activities envisaged by the Plan as compared to the defined SEA objectives and their indicators. It is especially important to point out that SEA is the single most important instrument in realisation of principles and objectives of sustainable development in the process of strategic planning and planning in general. It means that in addition to assessing the aspects of the environmental protection, SEA deals with all the other aspects of sustainable development, i.e. socio-economic ones, therefore the objectives of SEA has been determined in such context.

**Figure A.** Procedural and methodological framework for carrying out the SEA



Within SEA, 18 sustainable development objectives and 25 indicators for assessing sustainability of the Plan were defined (Table A).

**Table A.** Selected environmental objectives and relevant environmental indicators as defined within SEA

<b>Area of SEA</b>	<b>Special objectives of SEA</b>	<b>Indicators</b>
<b>WATER</b>	<ul style="list-style-type: none"> <li>- To reduce pollution of surface and ground waters</li> <li>- To lessen the impact of water-power facilities on hydrological regime</li> </ul>	<ul style="list-style-type: none"> <li>- The change in water quality due to the antropogenic activities in the water management sector</li> <li>- The change in the hydrological regime</li> </ul>
<b>SOIL</b>	<ul style="list-style-type: none"> <li>- To protect forest and agricultural land</li> <li>- To reduce land degradation and erosion</li> </ul>	<ul style="list-style-type: none"> <li>- The change in forest land area (%)</li> <li>- The change in agricultural land area (%)</li> <li>- The share of surfaces degraded due to the activities in the water management sector (%)</li> <li>- The area of land threatened by erosion (ha)</li> </ul>
<b>AIR AND CLIMATIC CHANGES</b>	<ul style="list-style-type: none"> <li>- To reduce the emission of air pollutants to prescribed levels</li> </ul>	<ul style="list-style-type: none"> <li>- The increase in share of renewable energy resources in hydropower balance (%)</li> </ul>
<b>NATURAL VALUES</b>	<ul style="list-style-type: none"> <li>- To protect the area</li> <li>- To protect natural values and landscapes</li> <li>- To preserve biodiversity and geodiversity – especially hydrological and hydrogeological heritage</li> </ul>	<ul style="list-style-type: none"> <li>- The number of water-power facilities that affect the area</li> <li>- The area of protected natural areas that can be affected by the activities in the water management sector</li> <li>- The number of endangered animal and plant species that can be affected by the activities in the water management sector</li> </ul>
<b>CULTURAL AND HISTORIC HERITAGE</b>	<ul style="list-style-type: none"> <li>- To protect cultural heritage, to preserve historic monuments and archeological sites</li> </ul>	<ul style="list-style-type: none"> <li>- The number and significance of immovable cultural monuments that can be affected by the activities in the water management sector</li> </ul>
<b>WASTE</b>	<ul style="list-style-type: none"> <li>- To advance the wastewater treatment</li> </ul>	<ul style="list-style-type: none"> <li>- The increase in the number of sewage water treatment facilities and the increase of the efficiency of wastewater treatment to the required level</li> </ul>
<b>SOCIAL DEVELOPMENT</b>	<ul style="list-style-type: none"> <li>- To lessen the negative impact of the water management activities on the health of the population</li> <li>- To improve the quality of life in the area</li> <li>- To preserve the population in rural areas</li> <li>- To protect the communities from negative effects of water</li> </ul>	<ul style="list-style-type: none"> <li>- The incidence of diseases that can be attributed to the polluted drinking water</li> <li>- The increase in number of households attached to the public water supply system (%)</li> <li>- The increase in number of households attached to the public sewage system (%)</li> <li>- The number of displaced households due to the activities in the water management sector</li> <li>- The number of people potentially threatened by torrents and floods</li> </ul>
<b>INSTITUTIONAL DEVELOPMENT</b>	<ul style="list-style-type: none"> <li>- To improve the environmental protection service, monitoring and control</li> </ul>	<ul style="list-style-type: none"> <li>- Development of water management information system</li> <li>- Strengthening of institutions in the water management sector</li> <li>- The number of measuring locations in the monitoring system</li> </ul>
<b>ECONOMIC DEVELOPMENT</b>	<ul style="list-style-type: none"> <li>- To support economic development</li> <li>- To promote local employment</li> <li>- To reduce the transboundary impact of water-power facilities on the environment</li> </ul>	<ul style="list-style-type: none"> <li>- The number of tourist activities based on using water resources</li> <li>- The percentage of water management sector employees with the income above the average income in the country</li> <li>- The decrease in the number of the unemployed due to their employment in the water management sector (%)</li> <li>- The number of developmental programmes for environmental protection in the water management sector</li> <li>- The number of water-power facilities with transboundary impact</li> </ul>

The indicators shown here have been selected from the basic set of the UN sustainable development indicators, and adapted to the particular needs of the said document. This set of indicators is based on the principle of identifying “cause” and “consequence” and defining “response” which would minimize the problems caused in the environment. The process of multi-criteria evaluation yielded 24 strategic solutions envisaged by the Plan (Table B), assessed by the following sets of criteria:

- the scale of impact,
- the spatial proportion of possible impact, and
- the probability of impact.

**Table B.** Strategic solutions/activities envisaged by the Plan included in the impact assessment

Sectors of the Plan	Planing Solutions
Water usage	<b>Improvement of the public water supply system</b>
	<b>Improvement of water supply in the industrial sector</b>
	<b>Provision of the sufficient amount of and the rational usage of irrigation water</b>
	<b>Sustainable usage of hydropower potential</b>
	<b>Preservation of hydromorphological characteristics of both aquatic and litoral ecosystems in watercourses</b>
	<b>Preservation of water quality and the aquatic ecosystems in pisciculture development</b>
	<b>Supply of drinking water to tourist, sport and recreational centers and preservation of water quality in multipurpose accumulations</b>
Water protection	<b>Prevention of water pollution and water protection management</b>
	<b>Decreasing pollution from concentrated and scattered pollutors</b>
	<b>Designation and usage of protected areas</b>
	<b>Protection of ground waters quality and quantity</b>
	<b>Limiting hydromorphological pressure on natural water bodies and improving the ecologic potential of the affected water bodies</b>
Watercourse regulation and protection from adverse effects of water	<b>Regulation, maintenance and preservation of watercourses</b>
	<b>Protection from floods caused by transboundary watercourses</b>
	<b>Protection from erosion and torrential waters</b>
	<b>Protection from floods caused by inland watercourses (drainage)</b>
	<b>Sustainable management of water resources in drought and water shortage periods</b>
Regional and multipurpose hydrosystems	<b>Optimal usage of multipurpose accumulations, meeting water management objectives and harmonious fitting into ecological and other surroundings</b>
	<b>Development of regional drinking water supply systems</b>
The rest of the factors and measures significant in water management	<b>Development of institutional framework in water management sector</b>
	<b>Development of water management information system</b>

For each and every strategic solution, matrices were formed, in which a multi-criteria evaluation of the defined planning solutions (21 of them) was carried out against the defined objectives/indicators (18 out of 25) and criteria for the impact assessment (15 of them), resulting in a number of graphs. In that way the results were presented in simple and clear way. That was followed by the assessment of potential cumulative and synergetic effects of preferential activities in every area of the strategic assessment.

The results of the multi-criteria evaluation show that the implementation of the Plan produces a considerable number of strategically significant clearly positive implications in space and

the environment. That was contributed by the determination that the stress in the Plan be on the environmental protection and its important factor – water resources.

Certain negative effect identified within the Plan are not great in their intensity or spatial proportion, therefore they are deemed strategically insignificant. The identified small-scale negative effects are the inevitable consequence of development and usage of hydropower potential in the Republic of Serbia.

As compared to the objectives of strategic assessment, the negative effects were perceived as a consequence of implementation of the following strategic solutions:

- Sustainable usage of hydropower potential. Although the word “sustainable” is used in the formulation of this strategic solution, denoting that in the usage of water-power potential a special attention is given to the aspect of environmental protection, it is undeniable that such anthropogenic activities on bodies of water could have negative effects on hydrological regime, benthic organisms, biodiversity and the ecological status of aquatic ecosystems, etc. Bearing in mind the formulation of this strategic solution, its operative objectives and measures for reaching them as defined in the Plan, these negative effects are not considered significant in either their intensity or spatial proportion. This is certainly contributed by the commitment that in the process of carrying out the hydropower projects, the water management sector be included in all the activities connected to the usage of hydropower potential of watercourses, starting from strategic acts and plans in the energy sector, to the realisation of projects and management of water-power facilities so as to secure harmonisation of various aspects of water usage, water and environmental protection, and protection from riparian waters. However, such impacts should not be disregarded, especially not because of their transboundary potential in case of border watercourses, i. e. they should be prevented by implementing measures envisaged in the Plan as well as by following guidelines defined in the said strategic environmental assessment impact;
- Supply of drinking water to tourist, sport and recreational centres and preservation of water quality in multipurpose accumulations. An increase in anthropogenic activity in certain area leads to the possible increase in pressure on all natural resources in the said area. Bearing that in mind, the development of tourism represents a threat to water resources, especially when the touristic potential of an area is predominantly based on the usage of water resources. As proposed in the previous strategic solution, it is necessary here as well to determine guidelines to be followed in order to prevent or minimise the negative effects;
- Regulation, maintenance and preservation of watercourses. Negative effects that may result from this strategic solution are perceived solely during works on regulation, maintenance and preservation of a watercourse, and therefore the identified minor negative effects of this strategic solution are considered insignificant in their effect and character.

On the other hand, the whole array of strategically significant positive impacts of the Plan is perceived in all the aspects of sustainable development:

- As for the environmental quality, positive impacts are: the reduction in water pollution due to the whole set of strategic solutions (technical, planning, organisational, institutional, legal – which among others imply transposition of EU directives in the water management sector) dominantly based on prevention, maintenance and

development of facilities intended for water usage, water protection and the protection from water; the protection of land, natural and cultural heritage, and biodiversity, as a result of implementation of most solutions proposed by the Plan.

- As for the socio-economic development, positive impacts are: creating preconditions for developing tourist potential in order to promote economic growth and create possibilities for employing more people in the water management sector due to its development and the optimisation of professional capacities necessary for good and effective functioning of the Republic of Serbia's water management system; improving quality of life of the population by increasing the availability of high-quality drinking water; the protection of lives, property etc. from detrimental effect of water.

A special attention is drawn to possible transboundary impacts, since they surpass the territory covered by the Plan.

In the context of possible transboundary impacts, the Republic of Serbia, as a signee of the Espoo Convention and the Kiev Protocol, is obliged to inform other countries of its projects with potential transboundary impacts. Under the Espoo Convention provisions on the impact assessment, transboundary impact is defined as “any impact, not exclusively of a global nature, within an area under the jurisdiction of a Party caused by a proposed activity the physical origin of which is situated wholly or in part within the area under the jurisdiction of another Party”. As the Convention envisages, if an activity is likely to cause a significant adverse transboundary impact, the Party (country) of origin shall, for the purpose of ensuring adequate and effective consultations, notify any Party (country) which it considers may be an affected Party as early as possible, and no later than when informing its own public about that proposed activity. The solutions envisaged by the Plan do not include any facilities that could have any significant impact on the neighbouring countries, with the exceptions of the systems planned in the areas of middle and lower Drina. Those systems belong both to the Republic of Serbia and Bosnia and Herzegovina (Republika Srpska) and therefore both countries are obliged to cooperatively and jointly take measures for smooth incorporation of those systems in the surrounding. A beneficial circumstance is that the realisation of those systems coincide with the goals of flood protection, river basin regulation, stabilisation of the currently unstable river banks and riverbed of the lower Drina and with the management of the water regimes in the riverine flood plains. Other identified possible negative transboundary impacts are considered strategically insignificant since they do not considerably infringe on the capacity of space.

In order to keep the positive impacts of the planned solutions within the estimated values that will not jeopardise the capacity of the space, as well as to minimise and/or prevent the possible negative impacts of the solutions planned, certain environmental protection guidelines are determined, which are necessary to follow. Separate monitoring systems for different environmental factors are developed as well, as an instrument for following the implementation of the planned activities and monitoring the current condition of the environment.

## **General conclusion**

The Danube River Basin Management Plan serves as the means of identification of priority activities defined in the Republic of Serbia's Water Management Strategy for a six years' period. The solutions envisaged by the Plan treat the territory of the water basin of the river

Danube in Serbia as a single water management space. The suggested solutions for development of water management infrastructure and the planned activities which should follow its development have the following features:

- The solution envisages a harmonious development in phases of integral water management system which meets all the country's needs for water usage, management and protection. The term "integral" refers to the multipurpose system smoothly incorporated in the environment, in line with all the other developmental components of the country, in terms of its economic, social, urban, infrastructural and ecological development. Bearing in mind such an approach to planning, that document is, after the Spatial Plan of the Republic of Serbia, the most important state document on regulation and protection of the country's territory (its water supply, regulation and sanitation of its settlements, the water supply for industrial and other systems, flood prevention and control, protection and regulation of land for the purpose of intensive agriculture, regulation and management of water regimes of surface and underground waters, creating conditions for urban development of settlements, protection and improvement of biodiversity, etc). The significance of this document is that, in addition to pointing to the development of the water management sector, it points to the conditions of development of all the other systems in space, which when planned should take into the account the availability of water, the development of areas to be used by the water management sector (water springs and their protected zones, the areas of potential accumulations and protection facilities), as well as the exposure of land to flooding.
- In the course of evaluation of the Plan's significance, the suggested solutions and the dynamics of the water management systems development, some important facts should be taken into consideration.
  - The development or the stagnation of the water management sector directly affects the state and development of all the other systems. Because of that it is justly globally believed that the development of water management infrastructure is the driving force for the development of all the other systems. Many countries, therefore, have sought the solutions for their great crises and have tried to create conditions for starting new economic and social development cycles through large-scale projects in the water management sector.
  - In line with the basic principles of sustainable development, there is the tightest connection and positive correlation between country's development and its environmental protection. The utterance of some insufficiently informed conservative ecological circles which oppose the development of key water facilities (accumulations, water power plants), that the best strategy for the environment is "do nothing", is completely wrong. Such strategy leads the country to backsliding and poverty, and poverty is the single greatest enemy of the environment. Such conservative approach is now abandoned, coming from the period when anthropogenic influences were small, with insignificant impacts to ecosystems. The only reasonable approach today is to help ecosystems by active management and improvement of conditions for their survival and growth. The only facilities helpful to ecosystems are water accumulations, as the only means of redistribution of water in space and time and improvement of water regimes, especially in hydrological and ecological crises which could lead to the destruction of water ecosystems.



- Parts of the Plan dealing with measures necessary for the realisation of envisaged planned solutions are acceptable. The evaluation of priorities and necessary investment is realistic.
- This SEA evaluates, compares and contrasts the development scenario in case the Plan is implemented (variant B) to the scenario in case the current development trends are continued (variant A), and their impacts to the environment, based on current stagnation trends in the water management sector due to small investment in it. Based on the impact importance evaluation (the synthesis of which is shown in Table 3.9), it can be concluded that the implementation of solutions envisaged by the Plan would lead to strategically important positive shift in space development and environment promotion. The commitment of the Plan's creators to accentuation of the environment protection and its highly important factor – water resources, contributes to it. Possible negative impacts of the planned activities and systems could be eliminated, significantly reduced or compensated by considerably greater positive impacts on other components of the environment.

Bearing in mind all the aforesaid, it can be concluded that the Danube River Basin Management Plan for the territory of the Republic of Serbia offers solutions with highly positive impacts on the environment, both on the territory of the Republic of Serbia and the territories of the surrounding countries. By means of adequate planning, certain negative impacts can be considerably reduced or compensated by other beneficial impacts. In terms of its impact on the environment, this document can be considered fully acceptable.