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# **Significant Water Management Issues in the Sava River Basin - Interim Overview -**

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# 1 Introduction

Being aware of essential need for cooperation aiming at protection and sustainable use of water resources of the Sava River Basin, the four riparian countries (Croatia, Bosnia and Herzegovina, Serbia and Slovenia: the Parties) have signed the Framework Agreement on the Sava River Basin (FASRB) which entered in force at the end of 2004.

The Parties of the FASRB agreed to work jointly to achieve the following goals:

- Establishment of an international navigation regime on the Sava River and its navigable tributaries;
- Establishment of the sustainable water management;
- Undertaking of the measures to prevent or limit hazards, as well as to reduce and eliminate detrimental effects of floods, ice, droughts and accidents related to emissions of the hazardous substances into the water.

The International Sava River Basin Commission (ISRBC), was established in 2005 under the FASRB aiming to serve as a platform for cross-border cooperation in reaching the above main goals of the FASRB.

The most important and challenging joint effort of the ISRBC member countries towards sustainable water management was the preparation of an integrated Sava River Basin Management Plan (Sava RBMP), in line with the EU Water Framework Directive<sup>1</sup> (WFD), which establishes a legal framework to protect and enhance the status of all waters and protected areas including water dependent ecosystems, prevent their deterioration and to ensure long-term, sustainable use of water resources.

As the first step in that long process the Sava River Basin Analysis (SRBA) report was developed in 2009 and published in 2010. The report provided not only a comprehensive basin-wide analysis in line with the requirements of Article 5 and 6 of the WFD (characterization of transboundary surface and groundwater bodies, identification of their significant anthropogenic pressures/impacts) but also elaborated the issue of water quantity and described status of flood management and navigation in the basin. Thus, the SRBA report addressed all relevant aspects of the integrated river basin management (RBM) and formed a good basis for the further steps aimed to compile the first Sava RBMP, including the Programme of Measures (PoM).

The first Sava RBMP has been developed between 2009 and 2013. In this process, the document on Significant Water Management Issues (SWMIs)<sup>2</sup> has been prepared as the first outline of the Sava RBMP describing its overall scope as well as the approach how to achieve it. The details on its development are provided in the next chapter. After the public consultation process, in spring 2013, the first Sava RBMP was distributed to the Parties and Montenegro<sup>3</sup> for conducting the national procedures for its approval. The process finally ended by approval of the Sava RBMP at the 5<sup>th</sup> Meeting of the Parties held on December 2, 2014 in Zagreb (HR).

This interim overview should set out the key issues affecting the water environment in the Sava River Basin (SRB), as an important step towards preparation of the 2<sup>nd</sup> Sava RBMP. The report builds on the knowledge gained in the process of preparation of the 1<sup>st</sup> Sava RBMP and on additional information on the relevant issues.

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<sup>1</sup> Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy

<sup>2</sup> Available at:

[http://www.savacommission.org/dms/docs/dokumenti/srbmp\\_micro\\_web/backgroundpapers\\_final/no\\_5\\_background\\_per\\_swmis.pdf](http://www.savacommission.org/dms/docs/dokumenti/srbmp_micro_web/backgroundpapers_final/no_5_background_per_swmis.pdf)

<sup>3</sup> Not the Party to the FASRB, but cooperated in preparation of the 1<sup>st</sup> Sava RBMP

## Rationale

Preparation of the 1<sup>st</sup> Sava RBMP was characterized by a number of meetings of the staff of the ISRBC Secretariat as well as the Consortium hired by the European Commission (EC) which had a task of drafting the Sava RBMP, national authorities, research institutions and national and international NGOs. The goal of the meetings was to collect information and data, as well as to discuss issues related to the water management of the basin. The meetings brought up a valuable consultation process through which the stakeholders have contributed to the formulation of the Plan.

Three workshops were held in order to point out important milestones in the development of the Plan. The first one, the Workshop on the SWMIs, was held in Zagreb on September 27-28, 2010. The main objective of the workshop was to bring together all relevant stakeholders to discuss the issues of basin-wide concern, since the whole Sava RBMP preparation concept was based on elaboration of those issues. In addition, the workshop also addressed flood management, hydropower, navigation, sediment management and economic analyses, which were essential for completion of the Sava RBMP.

Based on the analysis of pressures, consultation on the findings with the important stakeholders in the basin and finally on the agreement among the SRB countries, the following issues were included in the first Sava RBMP as SWMIs:

- Organic pollution;
- Nutrient pollution;
- Hazardous substances pollution;
- Hydromorphological alterations and;
- Pressures on groundwater quality,
- Pressures on groundwater quantity.

Other issues that have been analyzed and characterized as “candidate” SWMIs for the next planning cycles are:

- Pressures and impacts on quantity and quality of sediments;
- Invasive alien species and
- Water demand management.

Sava RBMP has responded to all significant pressures in order to achieve the agreed environmental objectives (WFD Article 4) and visions on a basin-wide scale. It builds upon the results of the pressure analysis, the water status assessment and includes the measures of basin-wide importance. The PoM includes the “basic” measures to be implemented in order to achieve the objectives defined for 2015 by the Plan in accordance with Community and/or national laws., “Supplementary” measures have also been introduced, where necessary to support the achievement of environmental objectives.

For the 2<sup>nd</sup> Sava RBMP it is necessary to review the SWMIs identified in the 1<sup>st</sup> Sava RBMP. The main purpose of this document is to overview the SWMIs which need to be addressed in the 2<sup>nd</sup> Sava RBMP taking into account the progress of the implementation of the PoM identified in the 1<sup>st</sup> cycle of RBM planning and a new knowledge on the relevant water management issues.

The document also reflects on the steps taken and progress achieved on different other topics relevant for water management on the basin-wide scale.

## 2 Setting the scene for the 2<sup>nd</sup> Sava RBMP

This chapter defines/reaffirms general principles for setting a common frame for development of the 2<sup>nd</sup> Sava RBMP.

The major strength of the 1<sup>st</sup> Sava RBMP is that it managed to match closely the requirements of WFD and to address all water management (WM) issues which are, by agreement of SRB stakeholders, declared as important for designing the joint PoM, despite the socio-economic and political differences in the Sava countries and their different status regarding the EU integration process. The Plan represents a good starting point for continuation of coordinated RBM planning in the basin.

The ISRBC's Action Plan for RBM for the period 2011 - 2015 identified which actions need to be undertaken in order to further reduce the delay in the WFD implementation in the 2<sup>nd</sup> planning cycle, with the ultimate goal to fit the activities of the ISRBC in RBM into regular 6-year cycles, starting from 2021. In order to achieve that optimistic goal it was planned to shorten timeframe for several activities (or merge them with other actions anticipated by the WFD) for the period from 2009-2015. However, since the 1<sup>st</sup> Plan was accepted only at the end of 2014 the deadlines for certain steps leading to preparation of the 2<sup>nd</sup> Plan have been extended.

Preparation of the 2<sup>nd</sup> Plan has to continue respecting the specific conditions of the countries sharing the Sava RB, out of which two are the EU Member States (EU MS) while the others are in different stages of the accession process. This situation also influences the RBM planning at the international level by shifting the implementation deadlines in the Sava countries to different time points making thus the joint coordination more difficult. Preparing the Sava RBMP under such conditions requires an excellent coordination and finding appropriate compromises when processing and evaluating information collected at different implementation stages at the national level.

### 2.1 Basin-wide approach and interrelation among different planning levels

Likewise the 1<sup>st</sup> Plan, the 2<sup>nd</sup> Sava RBMP will take into account following principles of the basin-wide approach:

- Coordination of actions increases effectiveness and efficiency;
- Sharing of experience, information and transformation of relevant issues to the basin-wide scale;
- Sharing of national approaches and improvement of their comparability (e.g. criteria for final HMWB designation, monitoring and status assessment methods, etc.);
- Communication and information flow is improved;
- Joint assessment and management of transboundary water-related problems including lessons learned for other countries in the basin;
- Creating solidarity between the countries sharing the same river basin.

According to the WFD, in the Danube RBD, RBMPs and related programmes of measures are being developed on three scales as follows:

1. The international level (Part A);
2. The national level (Part B) and/or the internationally coordinated sub-basin level (Part B);
3. The sub-unit level (Part C).

From the Part A to Part B and C the information becomes more detailed. According to this concept the Sava RBMP is internationally coordinated at level B. Taking into account the scale of elaboration at the Danube RBD level, the Sava countries agreed upon the following thresholds for elaboration of the basin-wide issues in the SRB:

- For surface waters: the Sava River and its tributaries with catchments larger than 1,000 km<sup>2</sup>, and a few rivers with catchments smaller than 1000 km<sup>2</sup> but which are, for different reasons, declared as rivers of a basin-wide importance (Sotla/Sutla, Lašva and Tinja);
- For groundwater: trans-boundary and national groundwater bodies (GWBs) which are important due to its size (area larger than 1,000 km<sup>2</sup>), or those trans-boundary GWBs with area smaller than 1,000 km<sup>2</sup> but which are important due to various other criteria, e.g. socio-economic importance; uses, impacts, pressures, interaction with aquatic ecosystem.

The above criteria will be also retained in the preparation of the 2<sup>nd</sup> Plan.

## 2.2 WFD environmental objectives, visions and management objectives for the Sava River Basin

The WFD requires the EU MS to implement the necessary measures to prevent the deterioration of the status of all bodies of surface water and that the following environmental objectives should be achieved by 2015:

- Good ecological/chemical status of surface water bodies;
- Good ecological potential and chemical status of heavily modified water bodies (HMWBs) and artificial water bodies (AWBs);
- Good chemical/quantitative status of groundwater bodies.

During the preparation of the 1<sup>st</sup> Sava RBMP visions were defined for all SWMIs in order to ensure a complementary approach at the basin-wide level which can be useful for national planning and implementation. It should have provided guidance for Sava countries with regard to achieving the agreed goals of basin-wide importance and also the assistance in the achievement of the overall WFD environmental objectives. The visions are based on common values and describe the principle objectives for the Sava RB. ***Since the visions represent the principle objectives for the Sava RB with a long-term perspective, no updates of the visions are foreseen for the preparation of the 2<sup>nd</sup> Sava RBMP.***

However, ***regarding management objectives it is expected that for the 2<sup>nd</sup> Sava RBMP a certain updates will be agreed upon for the timeframe to which it refers to (2021).*** For this update, the status of implementation of the measures, the findings from the new SRBA and other recent information from national level will be taken into account.

## 2.3 Programme of Measures

Designing PoM using information impacted by uncertainties and data gaps can be considered as a weakness of the 1<sup>st</sup> Sava RBMP. Future upgrades of the plan require a detailed investigation of the new information as soon as it is available and filling in the existing gaps gradually during the following RBM planning cycles.

PoM for the 2<sup>nd</sup> Sava RBMP should respond to all significant pressures in order to achieve the agreed management objectives on the basin-wide scale. It will be built upon the findings from the 1<sup>st</sup> Plan, findings from the updated SRBA, as well as upon other relevant information gained on the national level.

PoM in the updated Plan will be structured in the same way as in the 1<sup>st</sup> Sava RBMP: according to the SWMIs agreed for the Sava RB. It will also include the measures for other important pressures in the basin which, due to different reasons, cannot be confirmed yet as basin-wide SWMIs.

Generally, likewise in the 1<sup>st</sup> Sava RBMP, the PoM will be based on the national measures, having in mind different levels of the obligations regarding its implementation in the EU and non-EU countries. However, the PoM represents more than a list of national measures as the effect of national measures from the basin-wide perspective has to be estimated. The implementation of the measures of the basin-wide importance should be ensured through their respective

integration into the national programmes of measures of each Sava country. A continuous feedback mechanism from the international to the national level and vice versa is crucial for the achievement of the environmental objectives in the Sava RB.

*Since the interim report on the implementation of the PoM has not been prepared for the Sava basin-wide level, due to the late acceptance of the first Plan, in the next chapter, this document also provides a brief overview of the status of implementation of the measures agreed in the first Plan.*

## 3 Significant Water Management Issues

By definition, the SWMIs are the pressures acting on the water environment which are considered as putting the ability to achieve the environmental objectives of the WFD most at risk.

The WFD requires that environmental priorities, economic considerations and social issues have to be considered and taken into account when setting WM objectives. This should ensure that the WFD is implemented cost-effectively. This approach has been implemented in setting the management objectives for the SRB. This chapter provides details on visions and management objectives for all SWMIs in the SRB and also suggests the visions and management objectives for the candidate SWMIs for which new data are available and new knowledge are achieved.

Visions and management objectives for each SWMI form the basic structure of the PoM in the Sava RBMP.

### 3.1 Surface waters

The concept of visions and measures foreseen pave the way towards achievement of the environmental objectives according to the WFD. It builds on the national measures that are already in place and outlines the actions to be taken in the forthcoming RBM cycles to achieve good water status.

#### 3.1.1 Organic pollution

Organic pollution can cause significant changes in the oxygen balance of surface water. As a consequence, it can impact the composition of aquatic species/populations and therefore also the water status. Organic pollution is mainly caused by the emission of partially treated or untreated wastewater from agglomerations, industry and agriculture.

Many agglomerations in the Sava RB have no, or have insufficient, wastewater treatment and are therefore key contributors of organic pollution. Direct and indirect discharges of industrial wastewaters are also important. Industrial wastewater is often insufficiently treated, or it is not treated at all, before being discharged into surface water (direct emission) or public sewer systems (indirect emission).

*Vision for organic pollution is no emission of untreated wastewaters into the waters of the Sava River Basin.*

**Management objective for organic pollution** is phasing out all discharges of untreated wastewater from towns with >2,000 population equivalents and from all major industrial and agricultural installations.

#### **Preliminary identification of the actions and coordination requirements for the basin-wide level**

Measures identified in the 1<sup>st</sup> Sava RBMP regarding organic pollution are the following:

- In EU MS (Slovenia and Croatia) the measures should be implemented according to the commitments and deadlines set down in the Accession treaties with the EU. The implementation deadline for Directive 91/271/EC<sup>4</sup> (UWWTD) is 2015 for Slovenia and 2023 for Croatia.

<sup>4</sup> Council Directive 91/271/EEC concerning urban waste-water treatment

- In non-EU countries (Bosnia and Herzegovina, Serbia and Montenegro), the following basic measures should be implemented within a timeframe which is realistic and acceptable by all these countries:
  - Specification of the number of the wastewater collecting systems (connected to respective wastewater treatment plants (WWTPs)) which are planned to be constructed by 2015;
  - Specification of the number of the municipal and industrial WWTPs planned to be constructed by 2015;

The above stated measures for the Baseline scenario regarding organic pollution should result in a considerable reduction of biochemical oxygen demand (BOD<sub>5</sub>) by 26.4% and those of chemical oxygen demand (COD) by 25.6%.

Measures in EU MS are implemented by construction of the sewerage and waste water treatment systems in national operational programmes for the implementation of the UWWTD. The loads from diffuse sources of pollution are decreasing in **Slovenia** due to the implementation of measures on urban waste water treatment. Consequently, the annual volume of treated urban wastewater is increasing. Taking into account only the catchment area of the Sava River and its tributaries in Slovenia, in time period from 2012 till 2014<sup>5</sup> the annual volume of waste water treated in WWTPs has increased by approximately 25 %. The overall capacity of WWTPs with secondary treatment is decreasing (Figure 1) due to transition of large WWTP from secondary to tertiary treatment step. On the other hand the number of WWTPs with secondary waste water treatment step and capacity < 2000 PE is increasing as displayed in Figure 1.

In 2015 Slovenia endorsed new Decree on the discharge and urban waste water<sup>6</sup> treatment. According to that decree the deadlines for measures regarding agglomerations < 2000 PE were extended, except for the agglomerations on which Art. 7 of the UWWTD can be applied and for individual buildings outside of agglomerations. For agglomerations in question where urban waste water is not connected to the collecting systems (sewerage system) and are located in sensitive areas and drinking water protection zones (eutrophic or bathing water) a new deadline is now set and extended until the end of 2021, and for agglomerations in question outside these areas is set until the end of 2023.

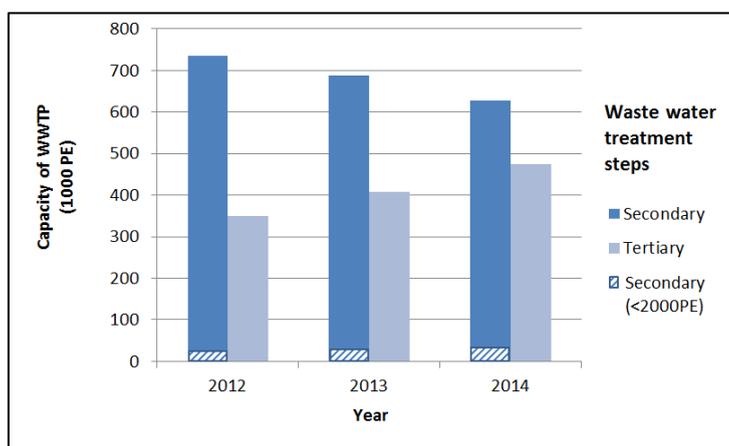


Figure 1: Overall capacity of WWTP located on catchment area of Sava River and its tributaries in Slovenia for time period from 2012 to 2014

In **Croatia** the new Ordinance on emission limit values for wastewater discharges (Official Gazette 80/13, 43/14, 27/15) has been adopted and the deadline for harmonization of all water rights permits for wastewater discharges is the 1<sup>st</sup> January 2017. The public sewerage systems have been harmonized with the defined standards for urban wastewater discharge and 37 projects in the Danube RB in Croatia is under implementation. Until 2015 the wastewater treatment plants in Karlovac and Slavonski Brod have been constructed co-financed by EU funds.

<sup>5</sup> The estimation was calculated from data on operational monitoring of waste water treatment plants (URL: <http://www.arso.gov.si/varstvo%20okolja/onesna%c5%beevaranje%20voda/naprave/> ; date of access 25.1.2016)

<sup>6</sup> Official Gazette of the Republic of Slovenia, no. 98/15

In non-EU countries implementation of measures will be carried out according to the national strategies – taking into consideration reported number of wastewater treatment plants with secondary or more stringent treatment to be constructed by 2015.

Regarding the implementation of the measures for the reduction of organic pollution the situation in **Bosna and Herzegovina** is the following: 2 WWTPs are completed in Odžak and Živinice and 2 more are under construction (in Sarajevo and Bihać) in **Federation of Bosnia and Herzegovina**, while only one WWTP (in Bijeljina) is completed in 2015 in **Republika Srpska**. Preparation of the 1<sup>st</sup> Sava RBMP for Bosnia and Herzegovina is ongoing (IPA 2011) and finalization is expected by the end of 2016.

Regarding implementation of measures for organic pollution reduction **in Serbia**, in the city of Šabac WWTP is under construction (IPA 2008, 8.6 mil Euro, 80,000 PE, Secondary) and for the city of Loznica the project documentation for WWTP is under preparation (IPA 2018/2020, 4.9 mil Euro, 42,000 PE, Secondary). Also, National Water Pollution Protection Plan has been drafted and includes the delineation of agglomerations as per UWWTD as well as the proposal for priorities and scheduling of implementation. The Plan proposes 4 planning periods (2015 to 2020, 2021 to 2027, 2028-2034, 2035-2041). Also, two major planning documents of the water sector are in final phase of the public consultation process: *Water Management Strategy for the Territory of the Republic of Serbia until 2034* and *Danube River Basin Management Plan for the Territory of the Republic of Serbia*. Strategic Environmental Assessment (SEA) was prepared for both documents and showed positive results. Adoption of both documents is expected in 2017. In Serbia, there are about 220 facilities that are subject to IPPC (new Industrial Emissions Directive -IED), about 90 of them are farms, and for now there are 17 issued permits with approved system and deadlines for wastewaters regulation.

In **Montenegro** only 2 WWTPs exist (Mojkovac and Žabljak) while two are under construction (Berane, Plevlja).

The above measures will not ensure the achievement of the WFD environmental objectives at a basin-wide scale as planned in the 1st Sava RBMP. Significant further effort will be needed in the next RBM cycles. The implementation of the UWWTD as well as the IED<sup>7</sup> in the EU MS and similar measures in the non-EU countries will significantly contribute to solving the problem of organic pollution.

For the 2<sup>nd</sup> Sava RBMP further measures to achieve basin-wide vision for organic pollution should be identified and implemented. Ensuring further implementation of the WFD and UWWTD in EU MS and supporting non-EU countries to achieve progress is a challenge in the Sava RB for the next period. For non-EU countries, additional efforts should be made to continuously implement and update BAT in industrial facilities or to develop new ones.

### 3.1.2 Nutrient pollution

Nutrient pollution is a priority challenge for freshwater. This pollution – particularly by nitrogen (N) and phosphorus (P) - can cause eutrophication<sup>8</sup> of surface waters.

Regarding the nutrients, the Sava River discharges into the Danube on average approximately 3.80 kt P<sub>tot</sub>/year and 68.91 kt N<sub>tot</sub>/year (period: 2009 to 2012,<sup>9</sup>).

*Vision for the nutrient pollution is the reduction of nutrient emissions from point and diffuse sources to the waters of the Sava River Basin in order to avoid any negative impacts from eutrophication in the Sava River Basin.*

<sup>7</sup> In 2010 Directive 2010/75/EU of the European Parliament and the Council on industrial emissions (the Industrial Emissions Directive or IED) was adopted. IED directive is based on a Commission proposal recasting 7 previously existing directives (including in particular the IPPC Directive) into a single clear and coherent legislative instrument. The recast includes the IPPC Directive, the Large Combustion Plants Directive, the Waste Incineration Directive, the Solvents Emissions Directive and 3 Directives on Titanium Dioxide

<sup>8</sup> Definition of eutrophication: The enrichment of water by nutrients, especially compounds of nitrogen and/or phosphorus, causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned [Directive 91/271/EEC]

<sup>9</sup> Source of data: HMIS Year books

**Management objective for the nutrient pollution** is reduction of the nutrient loads entering the Sava River and its tributaries to the level consistent with the achievement of good ecological status/potential and good chemical status in the Sava RB.

The main measures contributing to nutrient reduction at the basin-wide level are (i) the basic measures (fulfilling the UWWTD, IPPC Directive and EU Nitrates Directive) for the EU MS (ii) the implementation of the ICPDR Best Agricultural Practices (BAP) Recommendation for non-EU countries and (iii) construction of the agreed number of UWWTPs.

Measures identified in the 1<sup>st</sup> Sava RBMP regarding nutrient pollution are the following:

- In the EU MS (Slovenia and Croatia) measures will be implemented according to the commitments and deadlines set down in the Accession treaties with the EU. The implementation deadline for Directive 91/271/EC is 2015 for Slovenia and 2023 for Croatia.
- In addition, in the EU MS (Slovenia and Croatia) the new EU detergent regulation are implementing applies “Regulation No 259/2012 of the European Parliament and of the Council of 14 March 2012 amending Regulation (EC) No 648/2004 as regards the use of phosphates and other phosphorus compounds in consumer laundry detergents and consumer automatic dishwasher detergents”

In **Slovenia** the number of WWTP with tertiary treatment step is increasing (displayed as the increasing overall capacity of WWTP with tertiary waste water treatment step in Figure 1) because of the implementation of the measures regarding UWWTD. This number will further increase in the year 2016 because new UWWTP will be put into operation (for example: in 2015 a new UWWTP for municipality Zagorje ob Savi with capacity of 11.000 PE was built and put into operation). Regarding the implementation of the EU detergent regulation in Slovenia the use of phosphates and other phosphorous compounds in laundry detergents in households was restricted at 0.5 g per washing cycle. From 1 January 2017 the use of these substances in detergents for dishwashers in households will be limited to 0,3g per dose<sup>10</sup>. Slovenian Government issued a Decree on the implementation of Regulation (EC) of the European Parliament and of the Council on detergents<sup>11</sup>, which determines the competent authority (i.e. Ministry of health, Chemicals Office of the Republic of Slovenia) as sanctioning authority for the violations of that Decree.

In **Croatia** the First Action Programme for Protection of Water from Pollution Caused by Nitrates from Agricultural Sources (Official Gazette 15/2013, 22/2015) is in force and the study entitled “Impact of Pollution from Agriculture on Surface Water and Groundwater” has been prepared and the proposed monitoring is included in the Monitoring Harmonization Programme. The storage vessels for livestock manure on agricultural farms are being harmonized with the standards laid down by the Action Programme for Protection of Water from Pollution Caused by Nitrates from Agricultural Sources and the deadline to construct the appropriate storage vessels for all agricultural farms is 1 July 2017.

- In non-EU countries the following measures are planned in a timeframe which is realistic and acceptable for these countries:
  - Introduction of a maximum limit of 0.2 to 0.5% P weight/weight for the content of total phosphorus in laundry detergents for consumer use;
  - Working towards a market launch of polyphosphate-free dishwasher detergents for consumer use;
  - Definition of basin-wide and/or national quantitative reduction targets (for point and diffuse sources of pollution) taking the respective preconditions and requirements of the Sava countries into account, up to 2015;
  - Specification of number of wastewater collecting systems (connected to respective WWTPs), which are planned to be constructed by 2015;

<sup>10</sup> The restriction applies to detergents, which will be put into circulation in the European Community market after 1 January 2017.

<sup>11</sup> Official Gazette of the Republic of Slovenia, no. 66/05 and 5/15

- Creation of the baseline scenarios for nutrient input taking into account the respective preconditions and requirements of the Sava countries, up to 2015;
- Implementation of the Best Available Techniques and Best Environmental Practices regarding agricultural practices (for EU MS linked to EU Common Agricultural Policy – CAP)

There are two by-laws in the **Federation of Bosnia and Herzegovina** (Fed BA) which define nutrient vulnerable zones (NVZ) and monitoring in these zones. No NVZ have been declared in Fed BA yet. Information on WWTPs construction is provided in organic pollution chapter. The Government of the Federation of Bosnia and Herzegovina has adopted draft Law on Chemicals where the transposition of the EU directive (Regulation 648/2004 of the EU Parliament and of the Council on detergents) relevant for use of detergents is foreseen and the classification, packaging and labeling of detergents are defined. The transposition process of the Nitrate Directive is ongoing in **Republika Srpska**. Regarding the implementation of EU detergent regulation, from June 2015 the use of phosphates and other phosphorous compounds in laundry detergents in households was restricted at 0.5 g per washing cycle. From 30 June 2017, the use of these substances in detergents for dishwashers in households will be limited to 0,3g per dose.

In **Serbia** the analysis of nutrient vulnerable zones (NVZ) as per Nitrate Directive has been carried out and a proposal for the delineation of NVZ has been prepared, although the amendments on the Law on water are still not adopted what is preventing further development of NVZ. The process of decision on the approach to be taken regarding NVZ (whole country or delineation of NVZ) is ongoing.

Data regarding construction of WWTPs are given in the chapter regarding organic pollution, as well as info about general planning documents of the RS. Regarding phosphates in laundry and dishwasher detergents, national legislation is harmonized with all transposable EU legal acts on this matter. The ban for phosphorus content in laundry detergents is in force starting from 31<sup>st</sup> December, 2015<sup>12</sup>.

In **Montenegro**, according to the Water law, the regulations on the criteria for identifying vulnerable areas, the method of implementation for the monitoring of the concentration of nitrates from agricultural sources in fresh surface water and groundwater and monitoring of the eutrophication of the fresh surface waters, estuarial and coastal waters is under development.

The estimated effects of the implementation of national measures on a basin-wide scale indicate a high potential to reduce  $N_{tot}$  and  $P_{tot}$  emissions by treating generated pollution load in the wastewater treatment plants. The implementation of all proposed scenarios would lead to a total reduction of nitrogen emissions by 10.7 kt and of phosphorus emissions by 3.1 kt with an overall reduction of 56.1% and 61.2% respectively, when compared to the reference year 2007.

### **Preliminary identification of actions and coordination requirements for the basin-wide level**

The three scenarios applied for the 1<sup>st</sup> Sava RBMP PoM were the first ever coordinated basin-wide analyses of nutrient pollution of the Sava River and they represent an important step forward in RBM planning. As the applied models and methodologies showed certain discrepancies, further refinement of a joint approach in nutrient pollution assessment & policy planning will be needed.

For the next planning period it is recommended to:

- Further test the application of the MONERIS model in the Sava RB in cooperation with the ICPDR;
- Refine the methodologies used for the scenario calculation;
- Prepare the scientific and policy basis for efficient nutrient management: further

<sup>12</sup> Regulation on detergents, Official Gazette of the Republic of Serbia no 25/2015, article 22, paragraph 4 allows trade of detergents with phosphorous content higher than 0,5 g for a standard laundry cycle until the end of 2016.

evaluation and enforcement of the most cost effective measures, evaluation and visualization of the impact on the Sava River;

- Consider effect of the climate change on agricultural practices and the effect of agricultural measures on the climate change;
- Consider costs and timeframe associated with investments in agricultural and land use measures.

### 3.1.3 Hazardous substances pollution

Hazardous substances include man-made chemicals, naturally occurring metals, oil and its compounds and numerous emerging substances, e.g. endocrine disruptors, personal care products and pharmaceuticals.

Sources of hazardous substances are primarily industrial effluents, storm water overflow, pesticides and other chemicals applied in agriculture as well as discharges from mining operations and accidental pollution. Atmospheric deposition may also be of significance for some substances.

SRB is characterized by various industrial activities, including energy production (thermal and hydro power plants-HPP), mining (coal, lead, zinc, bauxite), production of aluminum oxide, metallurgy, engineering, glass production, chemical industry, pharmaceutical, textile, pulp and paper industry, tannery and leather industries, in addition to animal breeding and the food industry – dairies, breweries, etc. Leaching from the large number of communal and industrial waste dumps in the SRB can also contaminate surface and groundwater.

*Vision for hazardous substances pollution is no risk or threat to human health and the aquatic ecosystem of the waters in the Sava River Basin.*

The management objective set by the 1<sup>st</sup> Plan was the elimination/reduction of the total amount of the hazardous substances entering the Sava and its tributaries to levels consistent with good chemical status.

#### **Preliminary identification of actions and coordination of the requirements for the basin-wide level**

Measures identified in the 1<sup>st</sup> Sava RBM Plan regarding hazardous substances pollution are the following:

- In the EU MS (Slovenia and Croatia) these measures include the implementation of the Directive on industrial emissions – IED (2010/75/EC) which also relate to the Dangerous Substances Directive 2006/11/EC<sup>13</sup>, Directive 2008/105/EC on priority substances and environmental quality standards for water policy which was last amended by Directive 2013/39/EU. The implementation deadline for Directive 2013/39/EU for Slovenia and Croatia was 2015.

The results of transposition of the IED **in Slovenia** are new requirements for environmental permit owners regarding monitoring of groundwater and soil. The main provisions introduced by IED are laid down in a new Decree on activities and installations causing large-scale of the environmental pollution<sup>14</sup> and in other national acts which cover different pressures on water environment.

In **Croatia** new or reconstructed IED plants cannot (unless derogation has been granted) start operating, including testing operation, if they don't comply with the best available techniques (BAT). For the existing plants for which transitional periods were granted the harmonization hasn't been completed yet. Monitoring and control of whether the harmonization deadlines are being met is carried out by the competent inspection service.

- Given the specific situation in the non-EU countries, the following measures are to be implemented according to a timeframe which is realistic and acceptable to all non-EU countries:

<sup>13</sup> The Directive is repealed by the Water Framework Directive as from 22 December 2013.

<sup>14</sup> Official Gazette of the Republic of Slovenia, no. 57/15

- Implementation of BAT and Best Environmental Practices (BEP), including the further improvement of the treatment efficiency, treatment level and/or substitution;
- Exploration of the possibility to set down quantitative reduction objectives for pesticide emission in the Sava RB

In the **Federation of Bosnia and Herzegovina** there is by-law on hazardous substances (2014.) related to Directive 2008/105/EC. Monitoring is performed for 21 hazardous substances due to the lack of adequate equipment for other HS. In **Republika Srpska** there were no specific activities regarding hazardous substances pollution reduction. Within regular surface water monitoring, in average 30 priority substances from the revised list of substances in Environmental Quality Standards Directive (EQS)<sup>15</sup>, was monitored per year. Monitoring of priority substances was performed on less than 10% of identified Water Bodies.

In **Serbia** no specific activities regarding hazardous substances pollution reduction has been performed besides activities specified in the chapter regarding organic pollution. Regarding the improvement of the hazardous substances management and data collection, currently, there is 12 IPA ongoing projects through which technical capacities of Serbian Environmental Protection Agency will be increased, among other to provide for adequate monitoring of hazardous substances in surface waters. So far, RS is monitoring 38 of the revised list of substances in EQS directive. Also, the Rulebook that will further regulate the reporting on waste water emission and collection of data on emission of hazardous substances into water is in the procedure of adoption.

In **Montenegro** only Regulations on water quality parameters for irrigation of agricultural land ("Official Gazette of Montenegro, No. 76/2015") has been adopted so far.

The implementation of the Dangerous Substances Directive, the IED, the UWWT Directive and the widespread application of BAT/BEP will improve, but not solve the problem of hazardous substances. It is expected that the management objectives and WFD environmental objectives concerning hazardous substances will not be achieved by 2015 and that there is a need to collect additional monitoring data on hazardous substances, as well as additional information on their sources and relevant pathways.

Further measures which need to be taken are the appropriate treatment of priority substances from industrial discharges and further strengthening of prevention and safety measures at contaminated sites. Despite the hazardous substances removal should be primarily focused on industrial polluters and regulation in application of pesticides in agriculture, the continued upgrade of WWTPs to include biological treatment (which results in some hazardous substances accumulating in the sewage sludge) as well as increases in the number of WWTPs which will contribute to reducing the load of hazardous substances. Finally, additional reduction by product related measures should be considered.

The present lack of knowledge on the sources, pathways, discharges and losses of hazardous substances has to be reduced by upgrading the monitoring programmes and an in-depth investigation on the emissions and pathways of hazardous substances including future reporting to E-PRTR. Inventory and registration of the pesticide application should be carried out including creation of the national central registers of applied pesticides. In **Slovenia** the competent authority for central register of applied pesticides is Ministry of agriculture, forestry and food, Administration of the Republic of Slovenia for Food Safety, Veterinary Sector and Plant Protection.

### 3.1.4 Hydromorphological alterations

Hydromorphological alterations are divided in three main groups of alteration– hydrological alteration, continuity interruption and morphological alteration. Hydrological alterations refer to pressures resulting from impoundment, water abstraction and hydropeaking/altered flow regime. Hydrological alterations are of local importance and do not necessarily result in basin-

<sup>15</sup> Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council

wide trans-boundary effects. However, the cumulative effect of water abstractions may become significant in a trans-boundary context. Continuity interruptions refer to weirs, dams and other lateral objects that disable fish migration and sediment transport, while morphological alterations refer to river engineering works (i.e. strengthening and deepening of rivers, building of embankments, river bank reinforcement etc.) due to different driving forces.

Main driving force in the SRB causing hydrological alterations is hydropower. The key driving forces causing river and habitat continuity interruption in the Sava RB are primarily hydropower (78%), water supply (10%), and flood protection (6%), while main driving forces for morphological alteration are flood protection, navigation, hydropower and urbanization.

*Vision for hydromorphological alterations is the balanced management of past, ongoing and future structural changes of the riverine environment, so that the aquatic ecosystems of the Sava River Basin functions holistically and all native species are present.*

### **Preliminary identification of the actions and coordination requirements for the basin-wide level**

Measures identified in the 1<sup>st</sup> Sava RBMP are the following:

***Measures addressing interruption of the river and habitat continuity***

The following measures are to be implemented according to a timeframe which is realistic and acceptable to all Sava countries:

- Specification of the numbers and locations, funding needs and funding sources for building of the fish migration aids and other measures to achieve/improve river continuity which are intended to be implemented by 2021/2027 by the Sava countries (the 2015 deadline applies to Slovenia and Croatia as an EU MS with the possibility to extend the deadline through mechanism of exemptions till 2021/2027);
- Specification of the locations, extent and measure type, funding needs and funding sources for restoration, conservation and improvements of habitats which are intended to be implemented by 2021/2027 by the Sava countries (the 2015 deadline applies to Slovenia and Croatia as an EU MS with the possibility to extend the deadline through mechanism of exemptions till 2021/2027).
- Construction of the fish migration aids and/or other measures to achieve/improve river continuity in the Sava River and its tributaries to safeguard reproduction and the self-sustaining of migratory species;
- Restoration, conservation and improvements of the habitats and their continuity for migratory species in the Sava River and its tributaries.

***Measures addressing hydrological alterations***

The elaboration of an analysis of the hydrological alterations in the Sava RB and the definition of operational management objectives is foreseen for Slovenia and Croatia by 2015 with the possibility to extend the deadline through mechanism of exemptions till 2021/2027. In non-EU countries the measures are foreseen to be implemented in a timeframe which is realistic and acceptable to all non-EU countries.

***Measures addressing morphological alterations***

The restoration of natural river morphology where possible and, if it is not possible implementation of the “no net-loss” principle, is foreseen for Slovenia and Croatia by 2015 with the possibility to extend the deadline through mechanism of exemptions till 2021/2027. In non-EU countries the measures are foreseen to be implemented in a timeframe which is realistic and acceptable to all non-EU countries. In **Slovenia** objectives for 5 surface water bodies have been extended to the year 2027 in regard to hydrological and/or morphological alterations.

As of 2010, there are 38 (40) interruptions of river and habitat continuity in all SRB countries – 14 in Slovenia, 7 in Croatia, 9 in Bosnia and Herzegovina, 8 in Serbia and 2 in Montenegro.

In **Slovenia** by 2015, two fish passes - on the HPP Krško and HPP Arto Blanca on the Sava River were constructed. One fish pass was reconstructed - on the Krško dam (at nuclear power plant). In the 1<sup>st</sup> Sava RBMP it was also foreseen that fish aid will be built on the HPP Boštanj, while for HPP Mavčiče and HPP Vrhovo (Sava River, Slovenia) it was foreseen that interruptions will be equipped with the "fish catch and transport" facility. However, since the beginning of the operation of these two HPPs the fish hatcheries have been built which are managed by the local fishing families. These measures will be furtherly revised.

No measures were proposed in the 1<sup>st</sup> Sava RBMP for the remaining interruptions in other countries. It is obvious that most of the measures addressing river and habitat continuity are planned to be implemented during the next cycle of WFD implementation.

Regarding the measures addressing hydrological alterations in **Slovenia**, the measures for mitigation of hydrological alterations were proposed.. Measures are in the initial phase of project documentation preparation. There were no measures proposed in other Sava countries.

Water level fluctuation upstream and downstream of dams, excessive water abstraction and varying water flow preventing good ecological conditions are the key challenges to be addressed during the next cycles of WFD implementation. Specific measures should be defined in the next planning cycle with emphasize on ecosystem restorations and natural based measures.

Similar for the hydrological alterations, there were also measures for morphological alterations proposed in **Slovenia** which are in the initial phase of project documentation preparation. There were no measures proposed in other Sava countries.

River bank and bottom erosions, improvements of morphological conditions and reconnection of the river floodplains are as well key challenges for next cycles of WFD implementation.

### **Future infrastructure projects**

The Sava RBMP provided a list of future infrastructure projects, most of them dealing with the hydropower plants. But first, the further upgrade of the list of the national inventories of future infrastructure projects has to be prepared. For any future infrastructure projects, it is of particular importance that environmental impacts and requirements are considered as an integral part of the planning and implementation process from its beginning and that guidelines are developed for cooperation with different sectors. Such a process has already been initiated in the navigation sector by the ICPDR in cooperation with the ISRBC and the Danube Commission to reduce and prevent the negative effects of new projects and also maintenance work. Similar approaches for cooperation with other sectors are currently underway as part of the ICPDR (e.g. BEP/BAT for hydropower generation) and the Sava countries together with the ISRBC shall participate in these activities.

## **3.2 Groundwater**

### **3.2.1 Groundwater quality**

Groundwater in the SRB is of significant importance, mostly as a source of public water supply for population and industry, however the impacts to the groundwater dependent terrestrial ecosystems must be taken into account as well. Indication of pollution of groundwater in the urban as well as agricultural areas is evident. 30 % of the important GWBs are assessed to be in poor chemical status or at possible risk of failure to achieve good chemical status, mostly due to the influence from urban zones (settlements with no sewerage system and leakages from waste disposal sites) and agriculture activities.

*Vision for groundwater quality is that the emissions of polluting substances do not cause any deterioration of groundwater quality in the Sava River Basin, also taking in consideration the potential impacts of climate change in future. Where groundwater is already polluted, restoration to good quality will be the goal.*

**Management objectives for the groundwater quality** are the following:

- Prevention of pollution in order to avoid a deterioration of groundwater quality and to attain a good chemical status in GWBs;

- Elimination/reduction of the amount of hazardous substances and nitrates entering groundwater bodies in the SRB to prevent the deterioration of groundwater quality and to prevent any significant and sustained increase in the concentrations of pollutants in the groundwater;
- Reduction of pesticide/biocides emissions into the SRB;
- Increase of wastewater treatment efficiency in order to avoid groundwater pollution from urban and industrial pollutions sources.

### **Preliminary identification of the actions and coordination requirements for the basin-wide level**

Measures identified in the 1<sup>st</sup> Sava RBMP:

The implementation of the following directives is foreseen for which the implementation deadline is set down in the Accession treaties for Slovenia and Croatia:

- o Implementation of the prevention/limitation of pollutants inputs into groundwater according to the EU Groundwater Directive (GWD, 2006/118/EC);
- o Implementation of the EU Nitrates Directive (91/676/EEC);
- o Implementation of the Plant Protection Directive (91/414/EEC)<sup>16</sup> and the Biocides Directive (98/8/EC)<sup>17</sup>;
- o Implementation of the Urban Wastewater Treatment Directive (91/271/EEC);

Implementation of the Directive on industrial emissions - IED (2010/75/EC) also relates to the Dangerous Substances Directive 2006/11/EC<sup>18</sup> and to Directive 2008/105/EC on priority substances and environmental quality standards for water policy which was last amended by Directive 2013/39/EU.

In **Croatia** the new Ordinance on emission limit values for wastewater discharges (Official Gazette 80/13, 43/14, 27/15) explicitly prohibits direct discharge of untreated wastewater into groundwater while indirect discharge of treated wastewater into groundwater is permitted only in exceptional cases.

Given the specific situation in the non-EU countries, these management objectives are to be implemented according to the timeframe which is realistic and acceptable for these countries.

In the **Federation of Bosnia and Herzegovina** there is by-law dealing with groundwater monitoring (2014). No specific activities regarding groundwater quality improvement have been performed, except WWTPs construction referred in organic pollution chapter. In **Republika Srpska** no additional activities regarding groundwater quality improvements have been performed.

In **Serbia** no specific activities regarding groundwater quality improvements have been performed besides general activities regarding adoption of the major planning documents for water sector, and implementation activities specified in chapters regarding organic and nutrient pollution. Some preliminary activities regarding establishment of the monitoring network for deeper aquifers have been started.

As for the surface water, the main measures addressing the nutrient reduction at the basin-wide level are the basic measures listed in Annex VI, Part A of WFD (or in the corresponding national acts). These basic measures required to meet the environmental objectives for groundwater (set down in the Art. 4 of WFD) are also required for achieving the objectives for reducing pollution by nutrient and by organic and hazardous substances.

To prevent the pollution of GWBs by hazardous substances from point sources, an effective regulatory framework has to be put in place ensuring the prohibition of the direct discharge of pollutants into groundwater and the definition of all necessary measures.

<sup>16</sup> New legislation regulating the sale and supply of pesticide active substances (replacing Directive 91/414/EEC) has been adopted in 2009. The Plant Protection Products Regulation (Regulation EC 1107/2009) came into force on 14 December 2009, and applied from 14 June 2011.

<sup>17</sup> New legislation regulating the biocidal products (replacing Directive 98/8/EC) has been adopted in 2012. The European Biocidal Products Regulation (Regulation EC 528/2012) came into force on 1 September 2013.

<sup>18</sup> The Directive is repealed by the Water Framework Directive as from 22 December 2013.

For some GWBs only risk assessment is available, which is not verified by the results of groundwater monitoring. This may influence the effectiveness of the proposed measures. Therefore, it is essential to establish the appropriate monitoring programmes to verify risk assessment results.

### 3.2.2 Groundwater quantity

*Vision for groundwater quantity is that water use is appropriately balanced and does not exceed the available groundwater resources in the Sava River Basin, taking into consideration the potential impacts of future climate change.*

#### **Preliminary identification of the actions and coordination requirements for the basin-wide level**

##### **Measures identified in the 1<sup>st</sup> Sava RBMP:**

The countries have foreseen to implement following measures:

- Over-abstraction from GWBs within the Sava RB will be avoided by sound groundwater management;
- Implementation of WFD requirements in order to prevent groundwater resources to be depleted by the long-term annual average rate of abstraction.

In the EU MS (**Slovenia** and **Croatia**) these measures will be implemented according to the requirements set down in the WFD. Given the specific situation in non-EU countries, these measures are to be implemented according to a timeframe which is realistic and acceptable for these countries.

In **Serbia** some preliminary activities regarding establishment of monitoring network for deeper aquifers has started.

## 4 Other pressures and impacts

Due to the complexity of the issues listed below and a number of open questions it was not recommended to include them as SWMIs in the 1<sup>st</sup> RBMP. The issues have, however, remained in focus of further data collection and research in order to be reconsidered in the next RBM planning cycles.

For the 2<sup>nd</sup> Sava RBM planning cycle some new data are collected for the sediment issues and invasive species while there is no new information available for the others “candidate” SWMIs (e.g. pressures and impacts to groundwater quantity and water demand management).

### 4.1 Quantity and quality aspects of sediments

Following the provisions of the FASRB, the ISRBC has initiated the activities towards the sustainable sediment management (SSM) aiming at implementing good governance practices into coping with sediment management issues covering policy framework, institutional framework, operational measures, stakeholder involvement based on scientific knowledge and practical experiences. For that purposes the ISRBC has coordinated the process to develop a “*Protocol on sediment management to the FASRB*”. This Protocol serves as a basic legal document for future cooperation of the Parties to the FASRB in this particular field. The Protocol entered into force in October 8, 2017. It obliges the Parties to cooperate on development of the “Sediment Management Plan for the Sava River Basin”. The Protocol highlights comparable guiding principles to SSM as those endorsed by ISI and SedNet.

According to the Protocol the Parties in the Sava RB shall cooperate in order to achieve sustainable sediment management in the Sava RB by:

- Respecting the natural processes;
- Respecting the water regime;
- Recognizing the sediment, considering its quality and quantity, as resource;
- Providing the balance between socio-economic and environmental values of sediment;

- Planning and executing measures to reduce up- or downstream impacts;
- Providing the integrated river-sediment-soil-groundwater solutions;
- Supporting and increasing the cooperation with stakeholders.

Within the project *Estimation of Sediment Balance for the Sava River* the following future activities have been foreseen:

- The currently monitored sediment-balance related parameters in all hydrologic stations along the Sava River main channel and in its major tributaries should be compiled into a joint Sediment Database, available on-line for free;
- The effort towards the harmonization of monitored sediment data by applying the same technical international standards should be made;
- The monitoring network should be made denser with additional new hydrologic stations to be taken into operation in the years to come;
- The sediment monitoring should integrate regular cross-section measurements in selected cross sections along the Sava River main channel and the main tributaries;
- A numerical modelling of sediment transport in the Sava River main channel based on reliable sediment data to validate the model should be performed.

## 4.2 Invasive alien species

Alien (non-indigenous, exotic species) are all those taxa which are non-native for particular region and which are introduced by human actions. Alien species are considered to be any live specimens of species, subspecies or lower taxon of animals, plants, fungi or micro-organisms introduced outside its natural past or present distribution; it includes any part, gametes, seeds, eggs, or propagules of such species, as well as any hybrids, varieties or breeds that might survive and subsequently reproduce. Invasive alien species (IAS) are species that are established and spread in their new location to an extent that they have a negative impact on biodiversity, human health and economy. The process of introduction, establishment and further spread of IAS in recipient areas is considered as biological invasion. Biocontamination is used to describe the introduction of alien species which may or may not result in noticeable or measurable effects.

Recently, IAS has become an emerging issue in environmental management, including water management. Therefore, the subject should be properly included in important water management documents at all spatial scales, including the RBM planning.

The Sava River has been defined as a branch of Southern Invasive Corridor, which underline that the river might be under the invasive pressure. Based on the number of IAS recorded within the SRB, it could be concluded that the pressure of biological invasions might be considerable.

*Vision for invasive alien species is to establish a coordinated basin-wide policy and management framework to minimize the risk of invasive alien species to the environment, economy and society. This will include a commitment to not knowingly introduce high-risk invasive alien species into the Sava River Basin.*

### Preliminary identification of the measures:

The consequent activities on RBM planning should take into the consideration the subject of the IAS, in order to select proper assessment system, assess the level of the pressure of biological invasions and to select appropriate mitigation measures.

## 4.3 Water demand management

The first SRBA Report concluded that it is to expect that the water use could not be considered as SWMI in the Sava RB until 2015. However, it is of common opinion of water managers in the basin that the water demand is an important issue and should be dealt with in the follow up RBM planning cycle after 2015.

*Vision for the water demand management is that the water use in the Sava River Basin is appropriately balanced and does not exceed the available water resources.*

## 4.4 Other issues

The topic of **unregulated solid & mining waste disposal** is related to other issues, such as hazardous substances pollution and flood protection and therefore it was not recommended either as SWMI or candidate SWMI.

Nevertheless, it is expected that the implemented measures will lead to zero impacts to human health and aquatic ecosystems in the Sava RB from waste produced by industrial activities including mining.

This could be achieved via implementation of the following basin-wide management objectives:

- Elaboration of a basin-wide inventory of potential accident risk spots;
- Estimation of the real risk at a particular site including assessment of an accidental pollution risk from the operational mines using checklists based on the related products of the ICPDR and the provisions of the EU Seveso II Directive and the UN/ECE Convention on the Transboundary Effects of Industrial Accidents;
- Elaboration of inventory of abandoned sites contaminated by waste disposal and by former industrial activities including abandoned tailing deposits with a special attention given to risk of flooding or leaking.

Within the public consultation for the 1<sup>st</sup> Sava RBMP the issue on the **lowland riparian forests** has been raised. Water and water regime in and on the forest floor establish basic conditions for the emergence, functioning and survival of lowland riparian forest. Lowlands, forests and water should always be respected together. Every change in the water regime impacts directly or indirectly the functioning of the forest lowlands. On the opposite the improper handling of the forests changes the water regime. Certain negative effects have been noticed due to the changed hydrological conditions. The risk of stress due to the drought is increased, especially for young plants which develop their roots at the soil surface. It reduces the forest root-soil system, the possibility of fructification, and as a result disables natural regeneration. This problem needs to be carefully addressed in the 2<sup>nd</sup> Sava RBMP.

## 5 Summary

This document provides an outline of the 2<sup>nd</sup> Sava RBMP structured according to the SWMIs and the other issues of potential relevance still pending agreement by the Parties to the FASRB.

The proposed visions and identified activities in the 1<sup>st</sup> Sava RBMP concerning the SWMIs should pave the way towards a commonly agreed PoM in the Sava RB. Their implementation should lead to achieving the WFD environmental objectives. The document pays attention also to other issues which, due to their complexity and lack of information, have not been recommended as SWMIs in the 1<sup>st</sup> Sava RBMP. It has been decided that these issues should, however, remain in focus of the further data collection and research in order to be reconsidered in the next RBM planning cycles. New data and information are available for sediment issues and invasive species, while for the others (i.e. water demand management, unregulated solid and mining waste disposal and lowland riparian forest) no new information has been collected so far. In the process of further development of the 2<sup>nd</sup> Sava RBMP, depending on available resources, additional data and information will be collected and analyzed.

The document provides an overview of the SWMIs which need to be addresses in the 2<sup>nd</sup> Sava RBMP taking into account the progress of implementation of the PoM identified in the 1<sup>st</sup> Sava RBM Plan. It also reflects new data and knowledge on other issues which might be included in the process of development of the 2<sup>nd</sup> Sava RBMP if they will be recognized as SWMIs on the basin-wide scale.