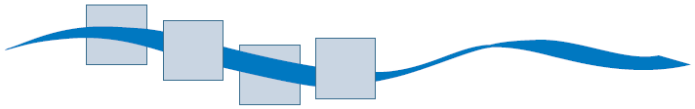

JOINT PLAN OF ACTIONS FOR THE SAVA RIVER BASIN

Bled, 15 June 2017

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ABBREVIATIONS

APSFR – area with potential significant flood risk
BiH – Bosnia and Herzegovina
EIA – Environmental Impact Assessment
EU – European Union
EU DRS – EU Danube Regional Strategy
EU HD – EU Habitats Directive
EU FD – EU Floods Directive
EU WFD – EU Water Framework Directive
FASRB – Framework Agreement on the Sava River Basin
FBiH – Federation of Bosnia and Herzegovina
FFWS – Flood Forecasting, Warning and Alarm System
FiPs – Future Infrastructure Projects
FRMP – Flood Risk Management Plan
ICPDR – International Commission for the Protection of the Danube River
ICPR – International Commission for the Protection of the Rhein
ISRBC – International Commission for the Sava River Basin
JPA SRB – Joint Plan of Actions for the Sava River Basin
PoMs – Programme of Measures
NREAP – National Renewable Energy Action Plans
RBM – River Basin Management
RBMP – River Basin Management Plan
SEA – Strategic Environmental Assessment
SRB – Sava River Basin
SRBA – Sava River Basin Analysis
SWMI – Significant Water Management Issues

1. INTRODUCTION

In 2001, the four riparian countries in the Sava River Basin (SRB), Slovenia, Croatia, Bosnia and Herzegovina, and Yugoslavia (subsequently Serbia & Montenegro, and then Serbia), entered into a process of negotiation that led to the Framework Agreement on the Sava River Basin (FASRB). The FASRB was signed in 2002, was ratified by the Parties in subsequent years and entered into force at the end of 2004.

The key objective of the FASRB is sustainable development of the region through transboundary water cooperation, with particular objectives in establishment of international regime of navigation, sustainable water management and sustainable management of hazards.

In 2014, the 1st Sava River Basin Management Plan[1] (Sava RBMP) including the Programme of Measures (PoMs) and based on Significant Water Management Issues (SWMIs) was adopted by the Parties as the key planning document. By this, framework conditions of sustainable development of the SRB were set. The proposed Joint Plan of Actions for the Sava River Basin (JPA SRB) is an important follow up activity to the provisions of the Declaration adopted on the Sixth Meeting of the Parties to the FASRB (ISRBC, 2016a) and a response of the Sava countries to the invitation of the World Bank as a direct contribution of the Berlin-Vienna-Paris-Trieste process. It contributes to the efforts of the Parties to the FASRB and Montenegro[2] to ensure sustainable economic development and growth of the SRB.

2. COOPERATION IN THE SAVA RIVER BASIN

The FASRB is a unique international agreement, which integrates many aspects of water resources management. Responsibility of implementation of the agreement and achievement of the goals lies with the International Sava River Basin Commission (ISRBC). The executive body of the ISRBC is the permanent ISRBC Secretariat.

The specific feature of the ISRBC in comparison to other European river basin organizations (e.g. International Commission for the Protection of the Danube River - ICPDR, International Commission for the Protection of the Rhine – ICPR etc.) is the integration of navigation and environmental protection within one institution. This provides the ISRBC with the broadest scope of responsibilities among river commissions. The ISRBC has the capacity for making decisions and recommendations with regard to navigation and river basin management in terms of issues of basin–wide importance. It serves also as a coordinating platform for the implementation of, among other European union (EU) water related directives, the EU Water Framework Directive (EU WFD), the EU Floods Directive (EU FD), the EU Habitats Directive (EU HD) in the SRB. In addition to the FASRB, multilateral and bilateral agreements between the Sava countries were established in the SRB.

[1] Approved by the 5th meeting of the Parties to the FASRB (Zagreb, 2 December 2014). Available at: http://www.savacommission.org/srbmp/en/draft

[2] Montenegro is not the Party to the FASRB and cooperates in the fields covered by the FASRB on the basis of the Memorandum of understanding on cooperation between the ISRBC and Montenegro, signed on December 9, 2013 in Belgrade

The specific features of the ISRBC with regard to its multidisciplinary approach ensures appropriate environment to initiate important projects in various economic sectors, in order to support overall socioeconomic development of all Sava countries. However, the economic and political situation differs among the Sava countries, Slovenia, Croatia, Serbia, Bosnia and Herzegovina and Montenegro. Some are facing like large economic debts, low GDPs, relatively high unemployment rates etc.. Economic development is anyway an imperative for all the Sava countries, therefore one of the ISRBC priorities is to seek for development initiation mechanisms.

3. RIVER BASIN MANAGEMENT PLANNING IN THE SAVA RIVER BASIN

The 1st Sava RBMP (2014) has been developed according to the requirements of the EU WFD, which establishes a legal framework for the protection and enhancement of the status of all waters and protected areas including water dependent ecosystems, prevention of their deterioration, and ensuring long-term sustainable use of water resources. The EU WFD sets forth several integrative principles for water management, including integration of economic approaches. It also aims to integrate water protection into other policy areas.

As the first step of the River Basin Management (RBM) process, the Sava River Basin Analysis (SRBA) were conducted and published in 2009. Subsequently, the 1st Sava RBMP was elaborated within the framework of the first RBM cycle according to the EU WFD, which lasted from 2009 until 2015.

The main strength of the 1st Sava RBMP is that it managed to closely match the requirements of the EU WFD and address all water management issues which are, by agreement of the SRB stakeholders, declared as important for the PoMs, despite socio-economic and political differences between the Sava countries and their different status regarding the EU integration process. Implementation of PoMs is a top priority water management related task for all Sava countries thus continuous efforts for searching funding opportunities are necessary. The Sava RBMP represents a baseline document for the continuation of coordinated RBM planning in the basin, therefore it is of the same importance and role also for the JPA SRB.

The two documents that constitute the first steps in the development of the 2nd Sava RBMP are the Significant Water Management Issues in the Sava River Basin – Interim Overview, (ISRBC, 2016b) and the Sava River Basin Analysis (ISRBC, 2017). Both documents are in the final stages of completion. The SWMI document includes also a brief overview of the status of implementation of the measures set forth in the 1st Sava RBMP. Beside these, for the context of integration of the development projects in the river basin planning process, the Background paper No.9 Integration of water protection in developments in the Sava River Basin (Floods, Navigation, Hydropower, Agriculture)[3] (ISRBC, 2013b) is also relevant. It contains recommendations and guidance for integration of development activities and water protection for flood management, navigation, hydropower and agriculture (ISRBC, 2013b).

[3] Available at: http://www.savacommission.org/dms/docs/dokumenti/srbmp_micro_web/backgroundpapers_approved/no_9_background_paper_integration_of_water_protection_in_developments_in_the_sava_rb.pdf

The SWMI document brings forward four management issues to be addressed in the 2nd SRBM by PoMs. For surface waters, recognized SWMIs are organic pollution, nutrient pollution, hazardous substances pollution and hydromorphological alterations, and for each of them visions, management objectives and preliminary identified actions are presented. Likewise, for groundwater, quantity is presented as SWMI. Beside these, candidate SWMIs are introduced, like pressures on groundwater quantity, pressures and impacts on quantity and quality of sediments, invasive alien species and water demand management (ISRBC, 2016b).

4. NATIONAL RIVER BASIN MANAGEMENT PLANS

In Slovenia, the 2nd RBMP together with PoM for the period 2016 – 2021 was adopted in October 2016 after regular WFD based procedure and the execution of the Strategic Environmental Assessment (SEA). The Flood Risk Management Plan (FRMP) is currently in the process of the SEA and is expected to be adopted in late 2017.

In Croatia, the 2nd RBMP and the FRMP for the period 2016 – 2021 were adopted after regular WFD and FD based procedures and the execution of the SEA in July 2016 as one integral document.

The EU WFD has been transposed into Bosnia and Herzegovina (BiH) legislation through the Water Law of the Republika Srpska and the Water Law of the Federation of BiH. The EU-funded project "Capacity Building in the Water Sector in BiH" drafted the first BiH Sava river basin management plans for the Sava for the period 2016 – 2021, comprised of the three plans: for Federation Bosna and Herzegovina (FBiH), Republika Srpska and Brčko District, and at the country level the BiH Roof Report and Program of Measures for the Sava RBMPs. The entities are currently in the process of adopting these documents.

In Serbia, the 2010 Water Law partially transposed the EU water legislation into the domestic legal system. The timeline for full harmonization of the national legislation with the EU water acquis (new Water Law by the end of 2017 and related implementing legislation by the end of 2018) was identified as part of the process of defining Serbia's negotiating position regarding accession to the EU. The Water Management Strategy for the territory of the Republic of Serbia by 2034 was adopted in December 2016. The RBMP for the Danube River in Serbia has been drafted. The plan was to adopt it by the end of the year 2016. Due to long period of adoption of the Strategy, the fact that the Draft RBMP is partially in accordance with WFD and sustainable plan for the production of the new River basin management plan in accordance with WFD requirements, the decision was made not to continue with the formal adoption of the Draft RBMP for the Danube River on the territory of the Republic of Serbia, but to dedicate on the preparation of the River Basin Management Plan for the territory of the Republic of Serbia 2021-2027 fully in accordance with EU water related legislation.

In 2007, Montenegro adopted a Water Law largely consistent with EU legislation. Further harmonization with the EU WFD and other water-related directives was undertaken in 2015. Based on the Water Law, the draft Water Management Strategy of Montenegro was produced in December 2015 and the SEA for the Strategy in May 2016. The Strategy is currently in the final stages of adoption. An EU funded project, titled "Strengthening the capacities for implementation of the Water Framework Directive in Montenegro", was launched at the beginning of 2017.

5. STATUS OF THE DEVELOPMENT SECTORS IN THE SAVA RIVER BASIN

As the main goal of the FASRB is transboundary cooperation for sustainable development of the region, as well as that the main objectives are to establish an international regime of navigation on the Sava River, implement sustainable water management, and prevent or limit hazards in the SRB, it is obvious that the creation of conditions for development projects to be integrated with sustainable development of the region is a matter of primary importance to the ISRBC and the cooperating countries.

In order to achieve the main objectives of the FASRB, in addition to creating and implementing joint plans for the SRB (e.g. RBMP and FRMP), as well as rehabilitating and developing navigation in the SRB, the preparation of SRB development programs is one of the key ISRBC activities. Also, in accordance with its mandate and responsibilities, the ISRBC is a focal point for the identification and implementation of projects on a regional scale, aimed at strengthening cooperation among the Sava countries and facilitating the fulfilment of the FASRB objectives.

ISRBC activities concern, to some extent, numerous sectors, including navigation (its development being one of the primary tasks), flood protection, energetics, agriculture, tourism, nature conservation and ecosystem restoration, and the like. In addition to the development of these sectors, the prevention of adverse effects of the consequent development projects on water, the ecosystem, etc., is a significant task. Also, it is necessary to ensure that sector development and the development projects themselves are climate proofed.

For the purposes of the sustainable cross-sectoral development, beside important sectoral pre-planning mechanisms mentioned later in the chapter, in recent years three nexus assessment processes have been conducted in the SRB, thus forming additional technical assistance for further work on cross-sectoral development issues (EC JRC, 2015; UNECE, 2015; UNECE, 2016).

5.1 Navigation

The break-up of the Socialist Federal Republic of Yugoslavia and the economic downturn in 1990's have caused a sharp decline in transport and navigation on the Sava River. Since then, the Sava River has hardly been used for river transport for a number of reasons, including a lack of fairway maintenance and investment, resulting in low quality of infrastructure (limited draught over a long periods, limited width of the fairway), damaged ports and river infrastructure, and the presence of unexploded ordnance that endangers navigation.

The Protocol on the Navigation Regime to the FASRB and ISRBC Decisions 07/11 and 11/12 on Establishment of the Committee for Monitoring and Coordination of Implementation of the Project Rehabilitation and Development of Transport and Navigation on the Sava River Waterway creates a good basis for integrated planning, while taking into account the Joint Statement on Guiding Principles on the Development of Inland Navigation and Environmental Protection in the Danube River Basin (DC, ISRBC, ICPDR, 2007), especially the ecological measures required to achieve and ensure environmental objectives and sustainability.

Initially, significant advances were made in the rehabilitation and development of the Sava River waterway infrastructure. The preliminary documentation has been developed, including a pre-feasibility study (2007) and feasibility study (2008) for the rehabilitation and development of the waterway. The project cost was estimated at 80.7 M EUR for waterway class IV and 86.4 M EUR for class Va.

With regard to the downstream section, from Belgrade (km 0) to Brčko (km 234), in 2012/2013 the BiH Ministry of Communication and Transport awarded contracts for the development of the detail design and environmental impact assessment (EIA) for the rehabilitation of the waterway from Brčko to Belgrade) and made preparations for awarding a contract for demining of the BiH riverbank from Brčko to Sisak (funding from IPA for BiH). At the same time, BiH conducted loan negotiations with the World Bank for the construction activities on the waterway following the development of the design documents, but the negotiations were discontinued in early 2014 as no loan agreement was signed. Soon after the EU cancelled the already agreed IPA funding and BiH terminated the awarded contracts for the development of the design documents for waterway rehabilitation.

With regard to the upstream section of the waterway, from Brčko (km 234) to Sisak (km 594), an EIA has been conducted and was adopted in RH in 2012. It was also made available to BiH for the purposes of obtaining the necessary documents – the procedures have been completed in the Federation of BiH and the Brčko District. The contract for the detail design and other needed documents was awarded and the project was initiated in May 2013 (funding from IPA for Croatia). However, the project activities have been suspended for administrative reasons. In the meantime Croatia, in consultation with BiH, initiated activities aimed at developing the needed documentation for the rehabilitation of the Novi Grad sector (km 320 – km 329), with funding assistance from the Connecting Europe Facility (CEF).

The most extensive critical sector in Serbia is located at the Drina confluence. The other identified sectors include dredging and training works with the aim of deepening of the Sava on the river stretch between the Drina confluence and the Serbian - Croatian border, and downstream of Šabac (km 81 to km 110). The first critical sector which will be regulated is the sector Kamičak (km 87 to km 83) where dredging works will begin in June 2017.

In Slovenia, a cargo river port on the Sava River at Obrežje river section is planned in the Strategy on Spatial Development in Slovenia, and additional touristic one at Brežice river section is under consideration. Furthermore, an amendment on Law on Navigation is planned in close future. It will constitute and categorize all navigable regional waterways on all rivers, where navigation would be feasible in terms of all potentially limiting conditions, e.g. Natura 2000 etc., thus also the waterway from border section between Slovenia and Croatia upstream to the proposed touristic port at Brežice.

In addition to the above, recent activities included work on the renewal of the waterway marking system, the development of a web application for ensuring efficient navigation management – Digital Inland Waterways Activity (DINA), and the implementation of River Information Services (RIS) on the whole international waterway (2016). Still, in order to

ensure sustainable navigation along the Sava River, bottlenecks recognized in the past process should be removed in order the whole rehabilitation project would be restarted.

In general, even though the adverse effects of waterway rehabilitation on the environment are often pointed out, very little attention is being paid to the positive impact on the overall water regime, particularly flood wave attenuation and fewer works needed to protect communities, infrastructure, etc. An integrated planning approach is necessary for the improvement of navigation and rivers protection in the SRB. An interdisciplinary approach must include the environment, water management, transport, river engineering, ecology, spatial planning, tourism, economics, as well as the involvement of stakeholders from the start.

5.2 Flood protection

One of the ultimate goals of the FASRB is regulating the issues of sustainable flood protection in the SRB, by undertaking the measures with the aim to prevent or limit hazard, to reduce flood risk and to reduce or mitigate adverse consequences of floods. Moreover, the Parties agreed to cooperate in the process of the creation and realization of joint plans and development programs of the SRB.

The Parties to the FASRB closely cooperate in all aspects of flood management since the establishment of ISRBC and its expert bodies. By the Protocol on Flood Protection to the FASRB[4] the Parties have precisely defined further common actions in the field of flood management. To fulfil the goals of the Protocol, the Parties committed themselves to cooperate on:

- development of the Sava FRMP, including all steps foreseen by the EU FD,
- establishment of a Flood Forecasting, Warning and Alarm System (Sava FFWS) in the SRB,
- exchange of information relevant to sustainable flood protection as well as
- implementation of other unspecified measures and activities of mutual interest.

The Sava FRMP and Sava FFWS are currently being prepared with the technical assistance provided through the project "Improvement of Joint Actions in Flood Management in the Sava River Basin", funded and implemented by the World Bank, through the Western Balkans Investment Framework (WBIF). Both components shall be finalized in the mid-2018.

The joint Sava FRMP, to be prepared in line with the EU FD, aims to set up common objectives of flood risk management on SRB-scale, based on long-term sustainable approaches, and to ensure a consistent and coordinated approach to flood risk management in the SRB. It is expected that the Sava FRMP will result with sets of measures (structural and non-structural) relevant for the entire river basin. The Sava FRMP shall compile the measures to be implemented by the countries and, the joint Plan shall among other, asses their impact in transboundary context, their spatial distribution, prioritization, timing and modes of implementation. ISRBC shall regularly review progress in

[4] Signed in Gradiška (BiH) in 2010, in force since 27 November 2015. Available at: http://www.savacommission.org/dms/docs/dokumenti/documents_publications/basic_documents/protocols/protocol_on_flood_protection_to_the_fasrb_final_for_signing.pdf

implementation of measures at the national level and collect information for the update of the FRMP in the following 6-year reporting cycle.

Establishment of a common/compatible flood forecasting and warning system for the SRB shall enable to operationally tackle floods, an emergency which threatens a large portion of the basin and the frequency of which tends to increase as a consequence of climate change. Large monitoring efforts have been made in the recent past, but their effectiveness is reduced by the fact that large portions of the basin under stress are not sufficiently well modeled, the data are not homogeneous and the links among the different organizations do not benefit from a wide availability and exchange of data and models. Sava FFWS shall set up fundamental tools aimed at operationally facing emergencies such as floods and droughts. The project will strongly contribute to strengthening of the organizations responsible for the hydrometeorology and active flood defense in the Sava countries. Beside the direct outputs of the project it will end up with an investment program consisting of a proposal of additional equipment for hydrological and meteorological measurements in the basin (i.e. purchase of new state-of-the-art equipment such as meteorological radars, equipment for measurement of snow cover water content and soil moisture) and other necessary items for strengthening of institutions in charge for flood defense in the basin.

In order to support these processes, ISRBC has developed the Hydrological Information System (Sava HIS) as a tool for collecting storing, analyzing and reporting hydrological and meteorological data. Sava HIS is operational since 2015 and represents a major step in implementation of the Protocol and the Policy on the Exchange of Hydrological and Meteorological Data and Information in the Sava River Basin, prepared by ISRBC in cooperation with the World Meteorological Organization (WMO) and signed in 2014 by relevant organizations of the Parties and Montenegro. Sava GIS geoportal, which was also established to ensure efficient and effective communication channels for the ISRBC community to share and disseminate data and information, including those related to flood management. The Sava GIS geoportal will also be used for collecting national Flood Hazard Maps and Flood Risk Maps, as well as all other information of a common interest.

ISRBC has also invested significant effort in development of a hydrologic model for the entire Sava RB as well as a hydraulic model of the Sava River, with a continuing support of the US Government. These models will be used for different purposes and furtherly upgraded, as needed.

As for national efforts in the sector, the situation varies from country to country, mainly due to their different status in terms of European integration processes.

The EU member countries from the SRB finalized the national FRMPs in compliance with the EU FD. Croatia have completed and adopted the national FRMP which is integrated with the national RBMP ensuring the consistency in the integrated river basin planning, while the Slovenian draft FRMP is under strategic environmental assessment (SEA). Both national FRMPs includes the non-structural and structural measures to manage flood risks, while the summary of structural measures in Croatia is based on Multiannual Programme of Construction of Water Regulation and Protection Facilities and Amelioration Facilities 2013-2017, adopted by the Government of the Republic of Croatia in October 2015, prior to the FRMP development. Croatia is currently preparing a number of projects that will

implement the key measures from the FRMP with the assistance of EU funds and intends to apply for the Council of Europe Development Bank (CEB) loans are estimated to 40 M EUR. Costs for implementation of the non-structural and structural measures in Slovenia are estimated on 600 M EUR. Currently, four large flood risk management projects on selected areas of potential significant flood risk (APSFRs) are under way and intend to be funded by EU Cohesion Funds, Priority Axis 5: Adaptation to Climate Changes. There is also a project in progress Cross-Border Harmonized Slovenian-Croatian Flood Risk Reduction – FRISCO1, which consists of two components for non-structural and structural measures with total budget of 12 M EUR financed by EU through the INTERREG V-A SI HR cross border co-operation. The project, among others, includes two transboundary basins within the SRB, Kolpa/Kupa and Sotla/Sutla. In close future, from the same EU financial programme, FRISCO2.1 and FRISCO2.2 projects are planned. They intend to focus on implementation of structural measures, among others in Kolpa/Kupa and Sotla/Sutla transboundary river basins.

Regarding flood management planning in accordance with the EU FD, non EU members' countries in the SRB are behind the deadlines. In BiH the FHR maps, including the LiDAR data collection, will be prepared through a WBIF (IPF5) project which is already launched, while the project application for the FRMP development is in preparation for the IPA 2016 funds. By the Water Laws of entities, the FRMPs in BiH shall be prepared until 2021. The 2014 floods highlighted certain serious shortfalls of the existing flood protection system, which resulted in the dyke breaches in several locations and enormous damage. After 2014 BiH rehabilitated existing flood protection structures – dykes along the Sava River, and cleaned and updated structures already in place for drainage of floodplains and mountain runoff. Also under way is the development of technical documentation for the construction of a dyke along the Drina River, from its mouth over a total length of 33 km and reconstruction of river banks in town Gorazde and neighboring municipalities. Funding of 24 M USD has been secured from a World Bank loan. Action Plan for Flood Protection and Water Management in BiH 2014-2017 was adopted in January 2015. Resources from IPA 2014 and 2016 were allocated for the implementation of measures identified by the Action Plan. In the entity of FBiH, major structural flood protection measures are envisaged for river reaches through densely populated urban areas and nearby industrial zones, financed from different sources, while the entity of Republika Srpska in the next years expects for considerable spending on the protection against the adverse effects of water, particularly the rehabilitation of existing and construction of new structural flood protection measures financed through 55 million Euro EIB loan.

Serbia has prepared the FHR maps, through the IPA project – Study of flood prone areas in Serbia (SoFPAS). Process of the FRMP development, prepared in period 2015-2017, was not completed and it was terminated, due to the new Water Law and transposition of the EU FD, so the FRMP will be considered preliminary and not be published. As a part of the EU harmonization process, the new FRMP will be finalized by 2021. The flood in May 2014 hit Serbia also and caused considerable damage to structural flood protection measures. International aid and loans from the EBRD, the World Bank and other institutions were used to repair the damage to some extent. One of the primary tasks set forth in the new Water Management Strategy is flood risk mitigation across Serbia and top priority is given to the improvement of flood protection in so called significant damage centers, as well as measures on transboundary watercourses. The following priority projects have been

identified in the SRB: reconstruction of existing and construction of new flood protection structures in Belgrade, Bogatić, Loznica and Sremska Mitrovica.

Problems related to fluvial and flash flood protection are also present in the part of Montenegro that belongs to the SRB. The Water Law envisages the preparation of the FRMP but there is no systematic preparation of FRMP. The FRMP shall be prepared for areas which are at significant risks of flooding.

The program "Technical Assistance for the Preparation of GEF-SCCF Western Balkan Drina River Basin Management" (WBDRBM) has defined a pilot project titled "Flood prevention and irrigation in the Lim River Basin" aimed at mitigating the impact of climate change. A funding of 0.35 M USD for this project has been secured by GEF IW and SCCF. A national FRMP for the Montenegrin part of the Danube River Basin will be developed under a project to be launched in early 2018 and funded from IPA.

5.3 Agriculture

Even though water use for irrigation represents the largest consumptive use of water on a global scale, it accounts for only about 12% of the overall water use in the SRB. This is a result of insufficient irrigation in all Sava countries, despite it being one of the most effective ways of ensuring efficient and stable agricultural production. Furthermore, the potential impact of climate change could have an adverse effect on agriculture, in terms of both increased water demand and prevention of extreme events, here droughts.

Farmland constitutes about 42% of the entire SRB. Unfortunately, in nearly all the Sava countries only a few percent of arable land is irrigated. Due to various problems (transition processes, transformation of ownership, and the like), agriculture in the Sava countries contributes only 2-10% to the GDP, even though the share of agriculture in employment is much higher (10-25%). Fragmentation of farmland in the SRB hinders the expansion of irrigation, given that more than 85% of the land is owned by small farmers.

With regard to agricultural production, the SRB is divided into two parts. The northern part belongs to the Pannonian Plain, which is characterized by lowland, often flooded in the past, where extensive hydraulic engineering undertakings have created conditions for intensive farming, but where climate conditions are such that additional water needs to be delivered during the growing season of certain crops (e.g. maize). Significant irrigation systems had been planned in the former Yugoslavia; however, even though they have been built in places, they were mostly devastated during the transition process. In the semi-mountainous part of the SRB, agriculture is generally of a different nature and largely focuses on vegetables and similar produce, where the additional water demand is met by small systems (if available), which generally rely on spring water or wells.

In view of the fact that the availability of water in most of the SRB is significantly above average, there is a sound basis for expecting a considerable increase in water use for irrigation, to ensure a higher stability of agricultural production in greater yields. This should especially be kept in mind given the potential negative impact of climate change on agriculture. Of course, any irrigation expansion in the SRB needs to be harmonized with the potential of the area in question and care should be taken to reduce the adverse effects of land use for intensive farming on water resources (with regard to both quantity and

quality). In the 1st Sava RMBP special attention was devoted to the fact that the measures recommended for the SRB to tackle the adverse effects of agriculture need to include enforcement of legislation, changes to common practices, introduction of water metering and tariffs, awareness raising, promotion of education, application of codes of good practice, etc. Best agricultural practices need to be implemented on a priority basis.

All the Sava countries intend to expand irrigation but this is addressed in national planning documents (spatial plans, water-related strategies, etc.), which are largely of a general nature and provide only rough estimates of the potential expansion of irrigation. Based on existing national plans, the 1st Sava RMBP includes an assessment of the increase in irrigation water demand in the Sava countries, but the confidence level is low due to rapidly changing political and economic circumstances. The available data led to the conclusion that an increase in water use for irrigation is probable but will depend on the general economic situation in the region.

The World Bank is presently developing a study to define potential contribution of agriculture to employment and growth and to economic development. The study looks at socioeconomic interfaces, agro-processing and the potential for jobs and growth, and includes an input/output analysis. The study is expected to be completed by the end of June 2017. The preliminary results related to agro-processing seem to indicate: similarity compared to EU firms in terms of size, large number of firms with little differentiation, often undercapitalized, and potential for development in specialized niche products in particular.

5.4 Hydropower

In economic terms, the use of hydropower in the SRB is currently one of the most significant water uses. However, the 1st SRBMP also identifies it as one of the biggest pressures on the status of water, particularly from the viewpoint of hydromorphological alterations.

To date, 20 hydroelectric power plants (HPPs) with installed capacity over 10 MW have been built in the SRB. Their total installed power is about 2.500 MW and the annual output about 6.250 GWh. This represents about 27% of total technical potential (WBIF 2017), which is below European average (29%), however significantly lower than in some other European countries, e.g. Switzerland – 88%, France – 68%. Austria – 54%, Italy – 45%, etc.. (WEC Survey of Energy Resources 2007, IEA Renewables Information 2010, 2008 data).

In addition, there is a large number of small HPPs, especially in hilly pre-alpine and alpine parts of the SRB in Slovenia. Their number is not large in the other Sava countries but has recently begun to increase because of granted concessions and incentives to increase the share of “green energy” in the total national energy output. All the countries intend to build large hydropower facilities, but the development of related plans is at different stages of completion.

However, this also has significant adverse effects on water and the environment in general, so increasing efforts are being made to ensure harmonized hydropower development and minimize the negative environmental impact. Given that the problem is rather complex and that it also affects other countries in the Danube River Basin, the ICPDR has prepared

Guiding Principles on Sustainable Hydropower Development in the Danube Basin[5] (ICPDR, 2013), which provides guidelines for future development of the hydropower potential, rehabilitation of existing facilities, and strategic planning approaches for new HPPs.

A project funded by WBIF and implemented by IPF3 consortium, titled Regional Strategy for Sustainable Hydropower in the Western Balkans., is currently under way. The beneficiaries are six Western Balkan countries. The study provides a potential means for the Western Balkans region to the 2020 Renewable Energy Sources targets which all countries adhered to when they adopted their individual National Renewable Energy Action Plans (NREAP). The purpose is to develop a regional strategy, including a list of hydro power project (HPP) development priorities by: (i) river basins; (ii) individual WB6-country; and (iii) type of planned HPP facilities (storage, run-of-river, reversible), through which the remaining hydro-power potential in the region will be evaluated. In addition, rehabilitation of the existing HPPs is also analyzed in this study. Since activities on development of hydro potential are one of the most important development activities in the SRB, a close link with activities on preparation of Regional Hydro Master-Plan has been established.

5.5 Sustainable river tourism

Sustainable river tourism remains one of potentially very prosperous economic branches in the SRB. The region is recognized in a broad international context as a still very preserved one, with relatively low level of human intervention, furthermore also as a region of a high cultural value. Still, despite the fact that the Sava River is one of the most interesting rivers in the region and beyond to be utilized for the purposes of sustainable tourism, a lot of potentials remains not developed or under developed. Ecotourism, nautical and recreational tourism, e.g. cycling, rafting, kayaking etc., are promising tourism branches in the region. However, tourist capacities are not integrated among themselves and along the regional course of the river and usually appear only sporadically. The ISRBC played an active role in development of the first Nautical and Tourist Guide for the Sava River in cooperation with the Zagreb Chamber and the County of Sisak, Slavonski Brod, Vukovar and other chambers from Slovenia, BiH and Serbia. The document is an informative and promotional publication which promotes nautical tourism and the Sava River as a tourist destination.

Ecotourism within the SRB is limited by the lack of organized tourist destinations. However, at the local level, tourism pockets continue to develop and expand. Today, these tourism pockets are focused on localized points of interest even though the ecotourism may desire multiple, interconnected attractions at regional destinations of ecological and cultural significance. Notably, the tourism sector is not organized to market itself as a regional destination and ecotourism is currently not a primary focus (ISRBC, 2012). The ISRBC has in collaboration with international, regional, and local stakeholders developed three considerations for ecotourism development, a shared goal for protecting the environment and encouraging sustainable development, a desire to create a green economy offering green jobs to generate economic growth, and transboundary cooperation. The guidelines aim to create a foundation for moving forward; implementing ecologically and culturally sound, long-lasting eco-tourism projects within the SRB. They have been adopted by the ISRBC as a recommendation to the Parties to take them into

[5] Available at: https://www.icpdr.org/main/sites/default/files/nodes/documents/icpdr_hydropower_final.pdf

account in their further activities in the field of the sustainable river tourism, particularly in the development of strategic documents and the implementation of related projects.

Along many rivers world-wide and in last years especially in EU countries transnational bike lanes were developed, e.g. along Rhine, Elbe, Danube, Drava and Mura rivers etc., what brought surprisingly high growth of local and regional economies with significant positive impact on sustainable development of the regions. Along the Sava River, from its source in Zelenci in Slovenia, to the mouth in Belgrade in Serbia many fragmented bike lines already exist. Biking from source to mouth, in approximate total length of more than 900 km is possible already at present. In fact, every year on 1st of June, as a part of celebrations of the International Sava Day, the Sava River bike lane is promoted by Sava Bike Tour. However, a strong financial, planning and investment push would be needed in order to integrate the bike lines into one transnational bike lane, built under all well recognized infrastructure, traffic, safety and environmental standards. It would connect the cultures, gastronomy, environments, capitols Ljubljana, Zagreb Belgrade and indirectly also Sarajevo in one of the most diverse regions in Europe.

Development of ecotourism (ISRBC, 2012), nautical tourism (ISRBC, 2011) and integration of existing bike lanes into one transnational master Sava River bike lane would significantly integrate tourism sector among countries and would boost growth of all kinds of tourist and other development activities and infrastructure.

In order to improve the development of sustainable tourism in the SRB, and by recognition of the need for the enhancement of the regional cooperation on further development of sustainable tourism in the basin, the FASRB Parties will sign the Joint statement on regional cooperation on development of sustainable tourism in the Sava River Basin on June 15, 2017 in Bled, Slovenia. With the joint statement the Parties will confirm the necessity to include the development of sustainable tourism in the SRB in plans and strategic documents of the countries sharing the basin in a mutually coordinated manner.

5.6 Nature protection and ecosystem restoration

The SRB is of significance due to its outstanding biological and landscape diversity. It hosts the largest complexes of alluvial riparian hardwood forests not only in Europe but of the entire Western Palearctic. A large portion of these floodplains are still intact and support flood alleviation and biodiversity. Wetlands are cradles of biological diversity, providing the water and primary productivity upon which countless species of plants and animals depend on survival. They support high concentrations of birds, mammals, reptiles, amphibians, fish and invertebrate species. Wetlands are also important storehouses of plant genetic material. These functions, values and attributes can only be maintained if the ecological processes of wetlands are allowed to continue functioning. This performs also a variety of ecosystem services of vital importance to people. Unfortunately, and in spite of important progress made in recent decades, wetlands continue to be among the most threatened ecosystems, owing mainly to ongoing drainage, conversion, pollution, and over-exploitation of their resources (ISRBC, 2012).

In the SRB, 7 Ramsar Sites were designated under the Ramsar Convention, Lake Cerknica and its surroundings in Slovenia, Lonjsko polje and Mokro Polje in Croatia, Bardača Wetland in BiH, and Obedska Bara, Zasavica and Peštersko polje in Serbia. Ramsar sites are

recognized as focal points for ecotourism development. Suitably managed, they can be boosters of local and regional economies on one hand and on protection of ecologically sensitive areas (ISRBC, 2012).

Protected areas and ecosystem services of the SRB were for the first time in an integral way presented in the 1st Sava RBMP (ISRBC, 2013a), by an overview of protected areas, inventory of nature conservation areas, main pressures caused on protected areas and an information on water dependent ecosystem services. In order to ensure the sustainability of the JPA SRB development projects, activities in the field of nature protection and ecosystem restoration should be continued and brought to higher levels. The SRB is mainly lacking systematical planning of green infrastructure development and monitoring of protected areas. Issues are not considered at all or are considered only on national levels. Areas of Natura 2000 and other areas of higher level of nature preservation should be recognized and reintegrated in one single system. Furthermore, ecosystem services of the SRB shall be defined and recognized also by the development sector, as intrinsic values of the SRB and a basic supportive element to sustainable development. Ecosystem restoration should be considered as a regional development issue rather than a frustrating element of regional development.

6. PRIORITY AREAS OF COOPERATION AND RELATED ACTIONS

The key objective of FASRB is transboundary cooperation for sustainable development of the region corresponding to the SRB and the main goals are: establishment of an international regime of navigation on the Sava River and its navigable tributaries; establishment of a sustainable water management in the SRB, and prevention/limitation of hazards in the basin (i.e. floods, droughts, ice, accidents) and elimination/reduction of related consequences.

By involving all aspects of water resources management and addressing both development and sustainability issues, and thus linking the navigation development and the environmental protection, the FASRB provides to the ISRBC the broadest scope of work among river basin organizations. Nevertheless, the FASRB implementation is responsibility of the national institutions, officially nominated by the Parties, and responsibility of the ISRBC is to provide a platform for coordination of the activities.

The JPA SRB is an action plan towards the realization of the PoMs of the Sava RBMP and the water management or water related development projects in the SRB. Development projects, which are subject of the JPA SRB, are those related to straightening the river basin planning, navigation, flood protection, sustainable tourism, protected areas and river corridor restoration as well as surface and groundwater protection. Though not all of the Sava countries are members of the EU, the JPA SRB is framed within the Europe 2020 Strategy, the EU Danube Regional Strategy (EU DRS) and the subjected EU directives.

The aim of the JPA SRB is to develop a framework that would enable close link between the overall improvement of environmental and socio-economic status of the SRB region that would go hand in hand with the implementation of measures of broader interest for all FASRB parties. According to needs and gaps recognized so far in the SRB, and also according to the experiences form similar processes in other international river basins, the priority areas of a medium term action are:

- Priority Area 1: Strengthening the Sava river basin planning to accelerate economic integration and investments,
- Priority Area 2: Improving the navigability of the Sava water way,
- Priority Area 3: Improving flood management and monitoring,
- Priority Area 4: Developing sustainable river tourism,
- Priority Area 5: Protecting environment and adapting to climate change.

6.1 PA1: Strengthening the Sava river basin planning to accelerate economic integration and investments

- **Action 1.1:** Preparation of the 2nd Sava RBMP aimed at linking water resources and river basin management with the integrated and sustainable socioeconomic development of the riparian countries. Plan has to be prepared in line with the EU WFD. Adequate financial support for the preparation of the 2nd Sava RBMP is of a crucial importance.
- **Action 1.2**: Implementation of the PoMs on the fields of organic pollution, nutrient pollution, hazardous substances pollution and hydromorphological alterations, originating from SWIMIs. In order to ensure solid grounds for integrated sustainable development by application of sectoral development projects, baseline water management related PoMs from the Sava RBMP should be at least on the way of implementation, if not implemented. Visions, management objectives and preliminary actions should be supported by financial mechanisms and investments.
- **Action 1.3**: Implementation of sectoral development projects in the transport, agricultural, hydropower, and tourism sectors with the support of EU, based on solid trade-offs and scenario analyses, public consultations, and environmental and social assessments. This platform would facilitate the dialogue on critical investment decisions related to the sustainable expansion of the navigation, hydropower, agriculture and tourism sectors while enhancing and protecting the environment, and it will lower up-front resistance to large investments.
- **Action 1.4**: Integrated water-related investments planning at a regional scale in order to create socio-economic benefits, reduce the risks associated to periods of low flows and flood events and to ensure environmental protection and enhancement. Implementation of these multi-purpose investment plans, based on participatory planning and stakeholder engagement might include reservoirs for the development of hydropower, irrigated agriculture, flood management and environmental restoration and protection.
- **Action 1.5**: Consolidation of the knowledge development and data sharing platform to mainstream transboundary collaboration and inform investments decisions and negotiations under the umbrella of the ISRBC.

6.2 PA2: Improving the navigability of the Sava water way

- **Action 2.1**: Urgent start with the activities on removing the most critical bottlenecks on the Sava River waterway
- **Action 2.2**:Restarting rehabilitation and development of the whole Sava River waterway as a part of the EU TEN-T core network (update of existing documentation and development of the design documentation for the rehabilitation and development to a class IV and Va and start of works thereafter)
- **Action 2.3**: Establishment of a system for collection, treatment and disposal of hazardous and ship waste on the Sava River.

6.3 PA3: Improving flood management and monitoring

- **Action 3.1**: Preparation of a Sava FRMP in line with the EU FD, including structural and non-structural measures to mitigate flood risks in the basin, especially along the Sava main river course. The Sava FRMP will comprise works that will be coordinated with the Sava Waterway program to optimize investments and economic impacts on both transportation and flood protection.
- **Action 3.2:** Implementation of a Flood and Drought Forecasting and Data Management will be further developed, building on the existing programs, including upgrade of Sava GIS/HIS as well as strengthening of national forecasting centres.
- **Action 3.**3: Measures to achieve the designed level of protection along the whole stretch of the Sava River and its important tributaries, with priority given to protection of the cities
- **Action 3.4:** Monitoring and restoration of existing retentions and natural floodplains and creation of new retention capacities along the Sava River, wherever possible.
- **Action 3.4**: Assessment of current and potential reservoir capacity on the southern tributaries to mitigate floods and drought risks, and to improve hydropower generation.
- **Action 3.5**: Identification and control of erosion process, development of sediment transport infrastructure. Assessment of management rules, implementation of sediment quality and quantity management measures, including torrent control and forest management practices.

6.4 PA4: Developing sustainable river tourism

- **Action 4.1**: Development of a Sava River Nautical Way from Brežice in Slovenia to Belgrade in Serbia. Branding. Preparation of a master plan for transnational Sava River Nautical Way, based on multimodal concept of ports and traffic junctions (boat – bike – train) and with respect to integration of the Sava River Nautical Way, transnational Sava River Bike Lane and railway infrastructure along the Sava river corridor into one multimodal transport system. Establishment or improvement of nautical touristic infrastructure on transnational Sava River Nautical Way in order to enable safe navigation and docking. Development of ports and other infrastructure facilities for touristic and recreational purposes. Promotion of transnational Sava River Nautical Way.
- **Action 4.2**: Development of Transnational Sava River Bike Lane. Branding. Preparation of a master plan for Transnational Sava Bike Lane with respect to integration of the transnational Sava River Bike Lane, Sava River Nautical Way and railway infrastructure along the Sava river corridor into one multimodal transport system. Integration of existing bike lanes along the Sava River and development of missing sections. Development of infrastructural equipment of the Transnational Sava River Bike Lane, daily sections, resting places, biking hotels and inns, services. Promotion of transnational Sava River Bike Lane in the context of comparative advantages to other bike lanes, e.g. the Danube, the Mura, the Drava, the Elbe, the Rhine bike lane and others.
- **Action 4.3**: Promotion of eco-tourism in the Sava River Ramsar sites and other protected areas. Development and preparation of a Sava River eco-tourism brand. Development of sustainable eco-tourism infrastructure in the Sava River Ramsar sites and other protected areas along the Sava River, according to well established

international standards and in the frame of developed brand. Promotion of Sava River Eco-Tourism brand.

6.5 PA5: Protecting environment and adapting to climate change

- **Action 5.1**: Development of a long-term Sava River corridor green infrastructure development master plan. Design specific interventions to protect, restore and create retention areas and floodplains and hereby create the basis for increased river tourism and eco-tourism such as near the mouth of the Bosut River on the Croatian-Serbian border, would create synergies by allowing a cheaper dike system while restoring the deteriorating Morović wetland forest.
- **Action 5.2**: Climate change adaptation process. Development of a strategy and an action plan for the climate change adaptation in the SRB. Mitigation of the impact of the rise of water demands associated to the growth of the economy and the need of enhancing environmental quality and to meet the EU WFD and EU HD guidelines.
- **Action 5.3**: Monitoring and development of protected areas along the Sava river corridor to protect regional biodiversity, the health of the aquatic ecosystems and water bodies.
- **Action 5.4**: Improvement of knowledge regarding alluvial groundwater sources in the SRB, to reduce the investments in maintenance of existing groundwater sources and to provide better knowledge for the opening of the new ones.

7. INTEGRATION OF THE SRB DEVELOPMENT PROJECTS IN THE 2nd SAVA RIVER BASIN MANAGEMENT PLAN

Development projects, recognized in the JPA SRB process should, under pre-agreed environmental protection limiting factors, be integrated in the 2nd SRBMP under the chapter Future Infrastructure Projects. By ensuring this, the Future Infrastructure Project chapter of the 2nd Sava RBMP would also mirror the consensus of the FASRB countries about the JPA SRB development projects.

In case of potential deterioration of water status due to the realization of development project(s), an exemption(s) under the 4.7 article of the EU WFD should be provided in national RBMP of FASRB Party or in national RBMPs of countries of origin of the development project.

In case when development projects of large economic, social and environmental importance for the development of the SRB with realization foreseen beyond the planning period of the 2nd SRBMP would appear, they should also be mentioned in the Integration chapter. In such a case, the Integration chapter should provide a clear guidance and recommendations for such projects in order they would be able to enter the planning period of the 3rd SRBMP fully prepared. List of such project would not be binding for any of the Parties of the ISRBC.

8. CONCLUSIONS

JPA SRB is a plan, intended to support the regional economic, social and environmental integration of the SRB in close future. Thus it motivates the investment needed in the SRB in a sustainable way. By doing this, it takes into consideration a balanced sustainable development approach by utilization of development potentials on one hand and preservation of environmental and natural values of the SRB on the other hand. The already recognized projects in JPA SRB as well as other future development projects should:

- respect the provisions of the WFD, FD and HD and be climate-change proof,
- be built upon the consideration of green infrastructure network,
- be cohesive for the region with clear cross-border impact and cooperation framework,
- be multifunctional and shall provide cross-sectoral considerations and win-win solutions by utilization of nexus assessment processes,
- provide sound basis for further socio-economic development,
- have well defined intervention logic,
- be feasible, considering national implementation procedures,
- utilize good practices in participatory water management planning,
- be acceptable by stakeholders in national and international aspects, vertical and horizontal structures, planning, programming, implementation and operation stage, and
- have recognized added value and positive long-term macroeconomic impact.

In the SRB, some good practice examples of cross-sectoral and multifunctional development project already exists, e.g. the lower Sava river hydropower chain in Slovenia. Here hydropower, navigation and tourism are co-existing in one large realized infrastructural project, which was firstly very strongly supported by local communities, later applied by established democratic way through the Parliament of the Republic of Slovenia and by a special Law on Lower Sava.

The creation of a distinct platform for the implementation of development projects in the SRB will lead to improved economic circumstances in the entire region – GDP growth in all the Sava countries, both EU and non-EU member states. A higher rate of investment will result in the creation of new jobs, which will be especially important for the young population and will create conditions for reducing migration and preventing brain drain.
One of the important results of the activities will be improved communications in the region and rapid conveyance of goods and services.

For example, the Feasibility Study and Project Documentation for the Rehabilitation and Development of Transport and Navigation on the Sava River Waterway (ISRBC, PCI, 2008) showed that as soon as the Sava river is upgraded to SCC class IV or V, larger vessels can be used, moreover, the water depth will be more stable during the year, resulting in higher load capacity and better accessibility throughout the year, also in dry periods. As a result, a significant modal shift effects are expected after the rehabilitation/upgrade of river Sava. Transports will shift from road to inland navigation in order to profit from lower transport costs (savings in transport costs is expected in amount between 16 and 48 M EUR and in external costs between 12,6 and 17,1 M EUR per year, depending on traffic volume, in 2028). Ports along the Sava will also strongly extent their position in terms of their logistic catchment area and will be provided with favorable waterway conditions that will also result in a growth of local activities. The availability of good transport options and logistic

services is one of the key assets that support regional development. Existing companies are therefore expected to increase their activities after the Sava is well accessible and a reliable waterway. Also the ports will become more attractive for new companies and industries to settle in Sava ports or close to them. A 'snowball ' effect can be the result, because if the ports grow better logistics facilities and services will become available and this will again attract business extensions.

In addition, the development of irrigation will help improve the status of the rural population and bring down unfavorable rural-to-urban migration trends. Future hydropower development will secure the electrical supply in the region, enable the economic development and contribute to the GHG emission reduction, and produce multiple macroeconomic benefits.

Development of sustainable tourism in recognized branches will contribute to the economic development of the whole region and will bring new opportunities for employment by creation of niche oriented jobs. Furthermore, the sustainable tourism will develop hand in hand with nature protection related activities and project enabling synergies among those two sectors.

New investments in the region will also improve the status of domestic companies, from research and engineering through to construction and manufacturing, and prevent their further devastation. Overall diminishing of tensions in the region is also expected to be an outcome of all these efforts aimed at general enhancement of prosperity in the SRB. According to its constitution, mission, competences, reputation and references, ISRBC is the suitable platform to execute the JPA SRB.

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