Code: WBEC-REG-ENE-01

REGIONAL STRATEGY FOR SUSTAINABLE HYDROPOWER IN THE WESTERN BALKANS

Background Report No. 5

Transboundaryconsiderations

Final Draft 5

November 2017

IPA 2011-WBIF-Infrastructure Project Facility-Technical Assistance 3

EuropeAid/131160/C/SER/MULTI/3C

This project is funded by the European Union

Western Balkans Investment Framework WBIF

MOTT MACDONALD IPF CONSORTIUM

Contents

List of abbreviations and symbols

Abbr. & Symbols	Description / Meaning
ALB	Acronym used for Albania
a.s.l.	Above sea level
BAT	Best available technology
BEP	Best environmental practices
BiH	Acronym used for Bosnia and Herzegovina
BR	Background Report
CIA	Cumulative Impact Assessment
CO2	Carbon Dioxide
CP	Contracting Party
CSO	Civil Society Organisation
DCG	Drin Core Group
DG NEAR	Directorate-General for Neighbourhood and Enlargement Negotiations
DRB	Drin River Basin
EAF	Ecologically Acceptable Flow
EC	European Commission
ECS	Energy Community Secretariat
ECT	Energy Charter Treaty
EIA	Environmental Impact Assessment
ELEM	Elektrani na Makedonija (a power utility of the former Yugoslav Republic of Macedonia)
EnC	Energy Community
EPCG	Elektroprivreda Crne Gore (a power utility of Montenegro)
EP HZHB	Elektroprivreda Hrvatske Zajednice Herceg Bosne (a power utility of Croatian Community of Herceg Bosna)
EPS	Elektroprivreda Srbije (a power utility of the Republic of Serbia)
ERS	Elektroprivreda Republike Srpske (power utility of Republika Srpska)
ESIA	Environmental and Social Impact Assessment
ESMS	Environmental and Social Management System
EU	European Union
FASRB	Framework Agreement on the Sava River Basin
FBiH	Federation of Bosnia and Herzegovina, entity of Bosnia and Herzegovina
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse gases
HEP	Hrvatska elektroprivreda (a power utility of Croatia)
HET	Hidroelektrane na Trebišnjici (a power utility under the mixed holding of ERS)
HPP	Hydro power plant
IBRD	International Bank for Reconstruction and Development
ICJ	International Court of Justice
ICPDR	International Commission for the Protection of the Danube River
ICSID	International Centre for Settlement of Investment Disputes
IDMS	Information and Document Management System
IFC	International Finance Corporation

Abbr. & Symbols	Description / Meaning
IFI	International Financing Institution
IPA	Instrument for Pre-accession
IPF	Infrastructure Project Facility
IPF3	Infrastructure Project Facility - 3rd Technical Assistance Window
IRBM	Integrated River Basin Management
IRC	International River Commission
ISRBC	International Sava River Basin Commission
IUCN	International Union for Conservation of Nature
IWRM	Integrated Water Resources Management
KESH	Korporata Elektroenergjitike Shqiptare (a power utility of Albania)
KOS	Acronym used for Kosovo
MCA	Multi-Criteria Assessment (a methodology used in the sub-project)
MCDA	Multi-Criteria-Decision-Analysis
MKD	Acronym used for the former Yugoslav Republic of Macedonia
MNE	Acronym used for Montenegro
MoU	Memorandum of Understanding
Mott MacDonald-IPF Consortium	The Consortium carrying out the sub-project under WBIF-IPF3
NGO	Non-governmental organisation
NHMS	National Hydro-Meteorology Servise
PECI	Projects of Energy Community Interest
PEEREA	Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects
PSHPP	Pump-storage Hydro Power Plant
RB	River Basin
RBD	River Basin District
RBMP	River Basin Management Plan
RHPP	Reversible Hydro Power Plant
RS	Republika Srpska, Entity of Bosnia and Herzegovina
SAA	Stabilisation and Association Agreement
SFRJ	Social Federal Republic of Yugoslavia
SE	South-East
SEA	Strategic Environmental Assessment
SER	Acronym used for Serbia
TA	Technical Assistance
ToR	Terms of Reference
TWRM	Transboundary Water Resources Management
VEC	Valued ecosystem components
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WBEC-REG-ENE-01	WBIF designation of this sub-project
WBIF	Western Balkans Investment Framework

Abbr. & Symbols	Description / Meaning
WB6	Western Balkans consisting of 6 countries: Albania, Bosnia and Herzegovina, Kosovo, the former Yugoslav Republic of Macedonia, Montenegro and Serbia
WFD	Water Framework Directive (Directive 2000/60/EC)
WMMP	Water Management Master Plan

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0 Preamble

The REGIONAL STRATEGY FOR SUSTAINABLE HYDROPOWER IN THE WESTERN BALKANS[1] — referred to as "the Study" — is a sub-project under the WBIF-IPF3 contract of the IPF Consortium led by Mott MacDonald, with European Commission, DG NEAR D.5, being the Contracting Authority for the WBIF-IPF3 contract.

The six Western Balkans beneficiary countries comprise Albania, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Kosovo*, Montenegro and Serbia - the WB6 region.

The work programme of the Study includes 13 Tasks as stipulated in the Terms of reference (ToR):

- Task 1: Hydropower role (past and future) in the regional and national context;
- Task 2: Assessment of the current situation in the institutional-organisational framework relevant for hydropower development;
- Task 3: Assessment of the current situation in the legal-regulatory framework relevant for hydropower development;
- **Task 4: Assessment of hydrology baseline, water-management by country and by river basin with transboundary issues;**
- Task 5: Grid connection issues in network development context;
- Task 6: Identification of HPP projects and acquiring relevant information for the HPP inventory and investment planning;
- Task 7: Environmental, Biodiversity and Climate Change Analysis on (i) river basin level and (ii) country-level of identified hydropower schemes;
- Task 8: Establishment of the central GIS database;
- Task 9: Development of a web-based GIS application;
- Task 10: Multi-Criteria Assessment (MCA) of prospective hydropower projects;
- Task 11: Drafting of Regional Action Plan on Hydropower Development and compilation of Final report on the Study;
- Task 12: Establishment of IT-supported Information and Document Management System (IDMS);
- Task 13: Training and dissemination of Study results.

The Study deliverables encompass separate Background reports (BR) that focus on specific technical issues in professional areas related with hydropower sector development, e.g.:

- Background report n° 1 (BR-1) – Past, present and future role of hydropower
- Background report n° 2 (BR-2) – Hydrology, integrated water resources management and climate change considerations
- Background report n° 3 (BR-3) – Environment considerations
- Background report n° 4 (BR-4) – Regulatory and institutional guidebook for hydropower development
- **Background report n° 5 (BR-5) – Transboundary considerations**
- Background report n° 6 (BR-6) – Grid connection considerations
- Background report n° 7 (BR-7) – Inventory of planned hydropower plant projects
- Background report n° 8 (BR-8) – Identification of potential sustainable hydropower projects

This Background report no. 5 (BR-5) in the following is the output and deliverable of Task 4.

*This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo Declaration of Independence.

[1] The designated WBIF code of this sub-project is WBEC-REG-EN-01.

Enlargement process

The EU Enlargement process is the accession of new countries to the European Union (EU). It proved to be one of the most successful tools in promoting political, economic and societal reforms, and in consolidating peace, stability and democracy. The EU operates comprehensive approval procedures that ensure new countries will be able to play their part fully as members by complying with all the EU's standards and rules (**the *"EU acquis"***). The conditions of memberships are covered by the Treaty on European Union.

Each country moves **step by step** towards EU **membership as it fulfils its commitment**s to transpose, implement and enforce the Acquis.

The EU relations with the Western Balkans countries take place within a special framework known as the **Stabilisation and Association Process (SAP)** in view of stabilising the region and establishing free-trade agreements. To this end, all WB6 countries have signed contractual relationships (bilateral **Stabilisation and Association Agreements, or SAAs**) which entered into force, depending on the country, between 2004-2016.

The **accession negotiations** are another step in the accession process where the Commission monitors the candidate's progress in meeting its commitments on 35 different policy fields (chapters), such as transport, energy, environment and climate action, etc., each of which is negotiated separately.

At the time of writing (November 2017), there are four WB6 countries that have been granted **Candidate Country** status: the former Yugoslav Republic of Macedonia, Montenegro, Serbia and Albania, while Bosnia and Herzegovina and Kosovo have the status of **Potential Candidate** countries at this date. With two countries, Montenegro and Serbia, the **accession negotiations** have already started and several of the chapters of the EU *acquis* have been opened.

To benefit from EU financing for projects, each country **should respect the EU legislation relevant to that project,** even if the national legislation has not been yet fully harmonised with the EU acquis.

The "Regional Strategy for Sustainable Hydropower in the Western Balkans" aims to set guidelines for a sustainable development of hydropower in the Western Balkans.

EU Acquis relevant to the Study

In the context of this Study, **the most relevant thematic areas are spread mainly over two Acquis Chapters** (15 on Energy and 27 on Environment) relating to water resources, energy, hydropower development and environmental aspects including climate change.

- Chapter 15 Energy Acquis consists of rules and policies, notably regarding competition and state aid (including in the coal sector), the internal energy market (opening up of the electricity and gas markets, promotion of renewable energy sources), energy efficiency, nuclear energy and nuclear safety and radiation protection.
- Chapter 27 relates to 10 sectors / areas: 1 - Horizontal Sector, 2 - Air Quality Sector, 3 - Waste Management Sector, 4 - Water Quality Sector, 5 - Nature Protection Sector, 6 - Industrial Pollution Sector, 7 - Chemicals Sector, 8 - Noise Sector, 9 - Civil Protection Sector, and 10 - Climate Change Sector.

Commission President Juncker said in September 2017 in his State of the Union address that: *"If we want more stability in our neighbourhood, then we must also maintain a credible enlargement perspective for the Western Balkans".* To Serbia and Montenegro, as frontrunner candidates, the perspective was offered that they could be ready to join the EU by 2025. This perspective also applies to all the countries within the region. This timeline also corresponds to the period for preparing such major infrastructures and their lifetime. Consequently, WB6 countries have to demonstrate now that they are and will develop sustainable hydropower according to EU rules.

Relevant pieces of EU legislation and international agreements

Hydropower development should be done while respecting relevant EU legislation and international agreements to which the WB countries are Parties. This includes:

- Renewable Energy (Renewable Energy Directive 2009/28/EC)
- Energy Efficiency Directives (2012/27/EU; 2010/30/EU; 2010/31/EU)
- Environmental Impact Assessment Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) and Strategic Environmental Assessment Directive (Directive 2001/42/EC)

- Water Framework Directive (Directive 2000/60/EC)
- Habitats Directive (Directive 92/43/EEC) & Birds Directive (Directive 2009/147/EC)
- Floods Directive (Directive 2007/60/EC)
- Paris Agreement on climate change
- Aarhus Convention (the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters)
- Espoo Convention (the UNECE Convention on Environmental Impact Assessment in a Transboundary Context)
- Berne Convention (the Berne Convention on the Conservation of European Wildlife and Natural Habitats)

The framework conditions and legal obligations for hydropower development stem from the EU acquis and international obligations, the implementation of which should be supported through the Energy Community Treaty (to which all of the WB6 countries are signatories) as well as International River Basin Organisations.

As **Contracting Parties (CPs) to the Energy Community Treaty (ECT),** the WB6 countries have obligations and deadlines to adopt and implement acquis closely related to the energy sector / market development and environment such as:

- Electricity (Directive concerning common rules for the internal market in electricity (Directive 2009/72/EC); Regulation on conditions for access to the network for cross-border exchanges in electricity (Regulation (EC) 714/2009); Regulation on submission and publication of data in electricity markets (Regulation (EU) 543/2013))
- Security of supply (Directive concerning measures to safeguard security of electricity supply and infrastructure investment (Directive 2005/89/EC)
- Infrastructure (Regulation on guidelines for trans-European energy infrastructure (Regulation (EU) 347/2013)
- Energy Efficiency Directives (2012/27/EU; 2010/30/EU; 2010/31/EU)
- Renewable Energy (Renewable Energy Directive 2009/28/EC)
- EIA Directive (Directive 2001/92/EU);
- SEA Directive (Directive 2001/42/EC);
- Birds Directive (Directive 79/409/EEC);
- Directive on environmental liability with regard to the prevention and remedying of environmental damage (Directive 2004/35/EC as amended by Directive 2006/21/EC, Directive 2009/31/EC)
- Large Combustion Plants Directive 2001/80/EC

Note: We recognise that close coordination between the energy, environment and climate change legislation and policies is necessary in the context of sustainable hydropower development.

However, to avoid duplications in the BRs, issues related to the WFD and Floods Directives are addressed in more detail in BR-2 (Hydrology, integrated water resources management and climate change considerations) and BR-5 (Transboundary considerations), respectively while all other Directives (in addition to the WFD and Floods Directives) comprising the EU environmental legislative package (Habitats, Birds and SEA/EIA) are addressed in more details in BR-3 (Environment considerations),

Small Hydropower Plants in the Regional Strategy for Sustainable Hydropower in the Western Balkans

While the 390 small hydropower plants in the Western Balkans 6 region represent almost 90% of all hydropower plants, they only produce 3-5% of the total hydropower generation and constitute 7% of the total hydropower capacity, most of hydropower energy and capacity in the region being delivered by the large hydropower plants.

This raises the question of the role of small hydro power plants and the pertinence of further developing such infrastructures. Their contribution to the global energy production and security of supply, or to the renewable energy sources targets, is extremely limited. In parallel, their impacts on the environment are severe, as they create multiple interruptions in water flows and fish passages, increase habitat deterioration and require individual

road access and grid connections. Furthermore, while most of these small hydropower plants were commissioned after 2005, when the state-support schemes – mainly feed-in tariffs – which will be phased out after 2020 and hence it is expected that the private sector interest in developing small hydropower plants will diminish significantly.

Due to the large number of small hydropower existing plants and projects, and due to the questions on their role and pertinence, the Regional Strategy for Sustainable Hydropower in the Western Balkans focused on major hydropower contributors to the power system, that is to say large hydropower plants of a capacity above 10 MW. Nevertheless, wherever possible, small hydropower plants have also been addressed in the study.

1 Introduction

1.1 Background to Transboundary Issues

Despite widespread support to the development of hydropower as one of the most significant renewable energy sources, there has been extensive debate on its social acceptability and environmental impacts as basic elements of sustainability. Often, these issues and concerns are resolved in favour of justified hydropower resources development. The recent promotion of HPP development throughout the WB6 region ("the Region"), has initiated renewed interest in the transboundary framework topic.

The main objective of this transboundary topic is to provide an analysis of its impact on HPP planning at several regulatory levels in the Region. This analysis provides the basis for assessing transboundary considerations during both the planning and operation of HPPs. Through the analysis of a number of specific transboundary case examples in the region, the analysis drafts some recommendations to resolve the existing situation. However, the emphasis remains on the proper application of EU legislation related to the environment as a starting point which is necessary for successful transboundary cooperation.

Options for potential private and/or public investment projects in the transboundary-related river systems of the WB6 involve not only new dams and water storage reservoirs for hydropower, but also other water uses such as: developing agricultural irrigation systems, new tourist resorts and various water-related facilities for the urban and industrial water supply. These developments will be implemented in river basins shared between countries, where different socio-economic conditions and therefore different preferences and different objectives prevail. Alternative hydropower options must consider the environmental consequences, impacts on ecosystems and human health, together with financial and social risks, while optimising the development of hydropower potential. The essence of developing a sustainable hydropower strategy lies in balancing the economic benefits and social impacts of HPP development with the need to maintain environmental values.

Despite numerous earlier agreements throughout the Region, some remaining hydropower potential remains to be developed under the new terms set by the EU legislation (but is anyhow limited since most of the best sites for hydropower plants have already been used), while some other HPPs that have been developed are now facing complaints from several transboundary parties. Until now, no satisfactory agreements have been reached during a series of negotiations between several WB6-countries facing transboundary problems. A failure to resolve these issues has resulted in even more complicated relations between nations in a conditionally stable Region.

The final goal in resolving potential water use conflicts is an agreement concerning the sharing of water quantity and hydropower potential between countries or entities. Nowadays, noticeable pollution from one part of river basin, especially after heavy rainfall, can raise tensions in a Region that is highly dependent on irrigated agriculture and hydropower.

The Western Balkans is neighbouring several EU Member States. Therefore, an urgent need for cooperation and the application of European Union (EU) guidelines for Integrated Water Resources Management (IWRM) in the shared river basins of the Region is ever more pressing. The concept of IWRM or Integrated River Basin Management (IRBM) has been defined as a process that promotes the coordinated development and management of water, land and related resources in order to maximize the resultant economic and social welfare (efficiency), in an equitable manner without compromising the sustainability of vital ecosystems.

Despite the usual emphasis on "environmentally sound energy", hydropower with a storage reservoir does have an environmental impact; besides their impact on biodiversity, ecosystems and fluvial morphology, it is well-known that some reservoirs are also emitting CO2 and methane. There is smaller greenhouse effect connected to run-of-river hydro power plants. However, the effect is much bigger in the reservoirs of large dams. Dissolved methane builds up from decayed plants and trees, which remain underwater. Methane, estimated to have between 25 and 85 times[2] the impact on climate change than CO2, is released mostly through the dam turbines.

[2] The factor estimations depend on whether short-term local (25) or long-term global (85) consequences are taken into account.

Climate change, following strong scientific consensus and international political commitments, has become a fact in everyday conversations, in the media, between various experts and between ordinary people. There are many ways to mitigate the rise of greenhouse gases (GHG); the most notable is to minimise the use of fossil fuels. The expanded use of hydropower could be an answer, but some questions arise regarding hydropower and climate change. If hydropower is a renewable resource, that does not automatically mean GHG are not emitted from reservoirs at all, then the question is what is the contribution of reservoirs to climate change emissions and what is the source of those emissions? Seasonal changes in water depth cause a continuous supply of decaying material. This presents a concern to the countries relying heavily on hydropower for the operation in future.

More frequent and intense extreme climate-driven events like floods affect water quality and water infrastructure integrity, and increase fluvial erosion, which on the other hand introduces different properties of pollutants to water resources. One of the most significant consequences of flooding is the intensive sedimentation of reservoirs, which is expected to intensify further in the future due to the still developing climate change. It is believed that the source of GHG lies in the sediments' capacity to develop slime foil.

1.2 Objectives: Principles and Solutions

Worldwide, more than 45% of the land surface is located within international river basins. Unilateral measures by one country concerning natural resources would seldom be effective: it is useless, for example, to provide fish ladders in an upstream country only where there are no downstream fish ladders. It is inefficient to try to develop hydropower in a flat downstream country, or it can be simply impossible to develop HPPs on boundary river stretches. Moreover, unilateral actions by one country, such as changes to the water flow regime can significantly harm other countries and may result in serious international disputes.

Perhaps the biggest problem in sharing an international watershed is its sheer scale and the poor planning of interactions over large distances (both upstream and downstream). Such poor planning may result in unforeseen negative consequences of human interventions (engineering-structural and/or policy measures), which are difficult to correct and may give rise to tensions between riparian countries sharing the water system. The EU Water Framework Directive addresses this issue requiring preparation of integrated River Basin Management Plans (RBMP).

Very often, interests differ within the same shared river basin inside a country. Consequently, riparian countries' administrations may develop diverging policies and plans that are not compatible with the IWRM concept. The prerequisite to do IWRM in WB6 is to fully transpose and implement both the Water Framework and Floods Directives. This represents a sovereignty issue: to what extent may individual countries develop and use resources found within their territories and to what extent do they have to consider interests of other riparian countries, and the common benefits of the river basin as a whole? One of the biggest challenges in sharing international rivers is to identify development strategies whereby all riparian countries eventually gain from an equitable allocation of investments and benefits.

Many principles of transboundary IWRM can be found. Nevertheless, the guiding principles recognised through international conventions, treaties and resolutions are: limited territorial sovereignty, the principle of equitable and reasonable utilisation, a unilateral declaration not to cause significant harm, the principles of cooperation, information exchange, notification and consultation, and the peaceful settlement of disputes.

These principles form the basis of the 1966 Helsinki Rules on the Uses of the Waters of International Rivers and the 1997 UN Convention on Non-Navigational Uses of International Watercourses. The inclusion of these principles in an agreement between two or more countries offers common ground and a window of opportunity to foster coordinated and sustainable water resources development and management. The clarified acceptance and practical application of these principles is a very difficult task, but can greatly facilitate synergy towards an operational water sharing management.

Equitable water sharing between all stakeholders must always be the ultimate goal of IWRM. Coordination across the (international) river basin is a requirement under the EU Water Framework Directive (WFD), while globally the practical application/achievement of equitable water sharing in an international basin necessitates (as a prerequisite) the establishment and operation of a proper International River Commission (IRC) such as the International Commission for the Protection of the Danube River (ICPDR) and the International Sava River Basin Commission (ISRBC). IRCs are formal interstate institutional governing bodies, which will have as a basic task the recommendation (and monitoring upon implementation) of appropriate decisions regarding plans, projects and

policies consistent with IWRM to the policy makers of the participating countries. The establishment of such IRCs should be based on three basic supporting pillars: operational (technical cooperation), political (responsible for an enabling environment) and institutional (responsible for laws and institutions). A prerequisite for the WB6 countries to have IWRM established is that they must operate within a fully transposed and implemented Floods Directive (2007/60/EC) framework, requiring coordination across the river basin, including transboundary coordination.

The operational pillar is central to the success of any IRC tasks. It must support most of the load if one of the two other pillars is not sufficiently effective.

1.3 Activities: Problems Solving and Prerequisites Regarding Transboundary Integrated Water Management

1.3.1 Ways for Achieving Hydropower Consensus

The systematic application of policy and economic instruments addressing the trade-offs and beneficial synergies are the approaches used in achieving consensus on hydropower development (i.e. hydropower use as part of integrated water resource use) within IWRM. In addition to the information-related support for achieving consensus, there are some recent regulatory instruments, such as the establishment of minimum ecological flows, EIA including transboundary issues (on a project proposal basis together with Cumulative Impact Assessment, Section 3.5.2), SEA (on planning or strategic basis) and land use planning, together with some economic instruments. The process of authorisation is further elaborated in BR-4 on “Regulatory and institutional guidebook for hydropower development”.

Consultation processes are required to review the impacts of national and sectorial development strategies, plans, programmes and major projects affecting River Basin scale resources (provided for by some of these instruments) in order to promote inter-sectorial harmonisation. Laws on EIA and SEA have been introduced at the framework level throughout the Region, but in some administrations implementation is not yet complete and is being developed further. The EIA procedures apply at the level of specific HPP project proposals and SEA at the level of planning, and require consultation with other countries if a significant adverse impact affects another country (see details in Section 2.2.2 - EU and International Transboundary Legal Framework).

A rational use of resources, both water and energy, together with the protection of the environment, needs to be established. Most of the countries sharing the river basins in the Region have adopted either the “user pays” or the “beneficiary pays” principles, however energy producers are usually not charged for the water they use.

1.3.2 Infrastructure

Sustainable management of river basin resources requires larger investments in infrastructure and in the proper operation of power plants. Investing in the modernisation of built (grey) infrastructure contributes towards the preservation and protection of the rivers basin’s resources, because no new space is taken. This includes, for example, thermal power plants reducing their water demand for cooling and reducing system losses in energy transmission. Investing in protecting natural (green) infrastructure, such as floodplains, wetlands and forests in the upper watersheds, may be a cost-effective and sustainable solution in many cases and is generally worth exploring further.

Other infrastructure options include ensuring that new water reservoirs (sometimes built with the main objective of hydropower generation) are designed to maximise the benefits to multiple users and to coordinate infrastructure investments such as in hydropower with other potential renewable energy sources. Furthermore, upgrading existing infrastructure may be more advantageous than developing new projects. In the river basins, it is not only the design but also the operation of hydropower infrastructure that requires specific attention as it affects downstream flows of water (and subsequent water users, e.g. irrigation).

1.3.3 Multi-country Coordination and Cooperation in Transboundary Context

While many beneficial actions can be taken at the national level, international coordination and cooperation at basin and regional level offers an additional opportunity for optimisation. The WFD provides this basis, through the preparation of a RBMP and River Basin-orientated institutions like ICPDR or ISRBC. In assessing the river basins from the regional point of view, there is clearly scope to improve the legal basis for cooperation, to clarify the roles and responsibilities of basin institutions and to develop their capacities. Coordination and cooperation is required to provide incentives for institutions which do not yet exist, such as for the Drini/Drim River Basin which is shared by Kosovo, the former Yugoslav Republic of Macedonia and Albania. Indeed, most of the solutions identified are related to knowledge management and the development of integrated planning processes. Among the Sava Basin countries, the gradually harmonising regulation and integrating the energy market.

Improving basin-wide hydrology monitoring, data verification and exchange, and knowledge sharing are often the obvious solutions identified. These include joint monitoring (e.g. water flows and quality), joint forecasting (e.g. weather forecasts, energy demand), as well as the identification of good practices at local and national level, for example in the areas of non-economic valuation of external benefits and costs.

In general, the stakeholders are expecting stronger planning processes being put in force. River basins of the Region, current or planned processes, offer interesting insights, such as the Sava River Basin Management Plan, to coordinate actions between water, energy and agricultural sectors, and the Flood Risk Management Plan of the Sava River Basin to coordinate action around the flood retention areas and wetlands. In the Drina River Basin, coordinating measures have been identified in the areas of climate change adaptation, flood risk management and water quality protection, together with strategic planning for developing hydropower potential through optimising hydropower development taking into account the cumulative effects of multiple hydropower plants.

The only known case at present of inter-basin water transfer in the WB6, is a diversion of upper Radika River into the Vardar River Basin. The water of Radika River is transferred via the Mavrovo Reservoir and hydroelectric scheme into the Vardar River. To compensate Albania for the decrease of the mean discharge of the Drini River, former Yugoslavia permitted Albania to extend the flooding area by a reservoir in the Drini River into the White Drini in Kosovo. This example shows that there are feasible solutions for water transfers, by which beneficiaries of transfers compensate the losses of water in adequate ways. However, the result could be very different once legal instruments such as the WFD and transboundary EIA are applied.

Ideas exist for a further transfer of the Radika River waters into the Mavrovo Reservoir and the Vardar River by pumping water from a point of the Radika River 100-150 meters below the highest level of the Mavrovo Reservoir. This transfer would increase by several cubic metres per second the flow of Vardar River and by the same amount would decrease the mean flow of the lower Radika River, the Black Drini and Drini. Hydropower of the Black Drini between Ohrid Lake and the border with Albania has long been in existence. Both the water and hydroelectric potential of this system would be decreased if such a project is developed.

1.4 Links with Other Tasks of the Study

The declaration of the four Dublin principles, Agenda 21 of the Rio Earth Summit (1992) and the World Summit on Sustainable Development, Johannesburg 2002, are considered milestones towards implementing IWRM, since they established a new approach based on three key strategic objectives: efficiency, equity and environmental sustainability. The statement of the Dublin Conference interprets the term integrated (IWRM) as holistic.

Besides the introduction of sustainability within the IWRM concept, the time dimension is playing a significant role. Sustainability refers directly to natural resource use that can be sustained over time for generations in future.

It is internationally agreed that a River Basin (RB) is the ultimate territorial basis for IWRM process. This definition has been justified on the grounds of the rationale, that a river basin:

(i) corresponds to the principal terrestrial form of the hydrology cycle;

(ii) reflects the interrelationship and interdependence between water uses and users;

(iii) represents the region where water and physical and biotic systems interact; and

(iv) is strongly linked to prevailing socio-economic development of the region.

It is possible to find some criteria for defining IWRM dimensions that differ from the above, which include historical development, cultural and environmental aspects and strategic water uses. Political boundaries, which generally differ from conditions defined by the hydrology cycle, can strongly oppose resource use in the river basins. Political boundaries can even exist between different entities in the same country. Internal aspects within states and external issues between riparian countries regarding water sharing can be reduced by defining IWRM dimensions and by ensuring that there is a comprehensive institutional structure with sufficient power to settle boundary effects.

Some 90% of the territory of South-East (SEE) Europe falls within transboundary river basins, including those of Danube, Drin, Martisa/Meriç/Evros, Vardar/Axios, Neretva, Vjosa/Aoos and others. These and other transboundary rivers of SE Europe flow into the Adriatic, the Aegean, the Ionian and the Black Sea, while WB6 countries are drained into the same seas but from a somewhat smaller territory. More than half of the transboundary basins are shared by three or more riparian states. Shared basins with lakes include Doiran, Ohrid, Prespa and Skadar/Shkoder lakes.

Prior to 1992 there were six major transboundary rivers crossing the sub-Danubian geographical area, which consists of the territories belonging to WB6-region countries. These rivers are the Aoos/Vjosa, Drim, Axios/Vardar, Strymon/Struma, Nestos/Mesta and Evros/Maritza/Meriç. With the emergence of new states (Croatia, Slovenia, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Serbia, Kosovo and Montenegro) in the SE Europe (Balkan) region, the number of transboundary rivers in the area has more than doubled. In fact, several other rivers (e.g. Sava, Kupa/Kolpa, Cetina, Una, Drina, Neretva and Trebišnjica) are now listed as transboundary rivers.

There have been several initiatives regarding cooperation for sharing transboundary waters between SE European countries, but the existing formal agreements are very limited and they are almost exclusively of a bilateral nature. These bilateral agreements do not cover all existing country pairs and some of them are rather problematic in their implementation.

Cooperation between riparian countries is of vital importance, since renewable water resources are 'imported' from upstream to downstream country in numerous transboundary rivers cases in the region. The lack of the necessary functional water agreements between neighbouring negatively affects regional cooperation and the state of the water resources in the respective transboundary basins. In addition, certain existing water-related agreements are either entirely or partly problematic and do not cover certain important issues, such as the protection from flooding.

However, the lack of bilateral agreements in transboundary River Basins is not seen as the only problem in the region. The opportunities offered by RBMPs must also be considered. The WFD requires MS to coordinate with non-MS to the greatest extent possible. If such coordination does not cover all the issues, then the root causes are to be further assessed.

The potential for international disputes because of water scarcity, water quality degradation, or even flooding regarding shared waters poses a risk to stability and development in SE Europe. The international community (including the EU, donor countries, international organisations, inter- and non-governmental organisations) has undertaken a series of initiatives, many of which are complementary. A particular reference is made to the St. Petersburg Process (1998) and the Athens Declaration Process (2003). Regrettably, no sound or formal water-related agreements have yet been drawn up because of the above-mentioned initiatives and processes.

Transboundary rivers in the geographical SE Europe are shared by a few EU Member States and mostly candidates or potential candidate countries, with the latter still working towards full transposition and implementation of the EU Directives. The WFD is based on a holistic management approach and in the case of international basins requires each of them to be assigned to an international River Basin District (RBD). The Directive further specifies that member countries shall ensure cooperation for producing one single River Basin Management Plan for an international RBD falling within the territories of the EU; however discordant, the Directive at the same time indicates that if one plan for the whole river basin is not prepared, then plans must be set up for the part of the basin falling within each country's own territory. If the basin extends beyond the territories of the EU, the Directive encourages Member States to establish cooperation with non-Member States and, thus, manage the water resource at the entire basin level.

The guidance document "Best Practices in River Basin Management Planning"[3], touches upon international RBDs but does not actually go any further than the Directive in specifying how to designate international RBDs. Thus, the formulations in the WFD may result in multiple interpretations by Member States as to how to implement it. The international dimensions in the WFD are very explicit, potentially requiring Member States to move towards close cooperation in managing shared river basins. Both EIA and SEA procedures also have a strong transboundary component. The strict legal requirements to achieve joint management are not strong. Thus, a prerequisite for implementing IWRM in transboundary rivers, especially within SE Europe, is the formulation of a clear, strict and rational set of binding requirements.

Problems and challenges regarding shared waters in SE Europe include:

(i) surface and ground water quantity/quality;

(ii) navigation;

(iii) balancing conflicting interests to ensure ecosystem/biodiversity conservation; and

(iv) management of flood risk.

All of the above challenges obviously require information networking (process of data exchange) and sharing, but of specific importance to HPP development is the assessment of the water quantity and quality, sediment transport and biota according to the principles of cumulative impact assessment from the upper to the lower river sections, at the border in addition to the EIA and SEA requirements relating to transboundary processes.

This report addresses relevant topics of transboundary management, support to rehabilitation of rivers as well as directions in planning to form a useful basis for the harmonisation of open issues between the involved countries on a case-by-case basis, paving the way for the guidance in other cases. Numerous management problems do occur on a daily basis, like water balance, sediment accumulation, riverbed erosion and endangered biodiversity in flood plains, and these problems are transferred across the borders.

Even though there may be no full resolution of transboundary issues without IWRM/IRBM, some natural resources in HPP development must be shared directly. This is the case with water head, land surface and water volumes / flows. These parameters are described by the difference in height between the upper and lower water table, size of land requirement for reservoirs and discharges. These parameters must be directly agreed upon by stakeholders (countries, entities) accordingly. In order to be agreed in a fair and open manner, some value attributions have to be known or agreed in advance. Head and water quantity have equivalents in energy value, while land surface needed and other external benefits should be assessed using non-market methods.

Different aspects of transboundary issues are considered in the context of this analysis. One of the key aspects is the effect of the mode of operation of the reservoirs positioned in the upper part of watershed on downstream areas. Obviously, the downstream use of the water depends significantly on the release of water from the upper reservoirs. Water quantity balance should be harmonised between stakeholders within a watershed. This is of utmost importance, not only regarding sharing water resources but also for sound hydropower planning in general.

[3] Elements of Good Practice in Integrated River Basin Management *A Practical Resource for implementing the EU Water Framework Directive*; Key issues, lessons learned and 'good practice' examples from the WWF/EC 'Water Seminar Series' 2000/2001

2 Method & Approach Used

2.1 State of the Art of Transboundary Issues

This Background report (BR-5) provides a review of the state-of-the-art in Transboundary Issues regarding organisation and information management. Furthermore, in addition to the general analysis of the subject, it presents lessons-learned from studying a number of specific transboundary cases in river basins of the Region and develops the extent to which those cases support solution management, but does not recommend these cases if they involve high risks due to environmental, social and legal concerns. The subject of this report is to present an approach to the planning and development of transboundary hydropower schemes and to address certain aspects of the existing transboundary issues in the region, many of which emerged during the conflict and transition towards a market-orientated economy.

Transboundary issues and the transboundary authorisation process are covered by EU legal instruments. Specifically, the transboundary process is regulated by three pieces of key EU legislation:

- The SEA Directive with its obligation to consult another country in case of potential transboundary impacts of a program or strategy.
- The WFD Directive with its requirement to adopt (and revise on regular basis) a RBMP in close coordination with other states in the case of a Transboundary River Basin.
- The EIA Directive with its obligation to notify and consult another country in the case where a project is likely to have a negative impact on another country

The Study is aims to stimulate approaches closer to the adaptive management of shared river basins, but not necessarily only those. The focus of Transboundary Issues is usually on the quality and scarcity of water, while this report provides an insight into the sharing of hydropower or hydro potential, which is a pre-requisite to produce renewable energy in the form of electricity.

Adaptive management aims at active learning and continually improving management strategies. The most important part of active learning is the comprehensive gathering of knowledge of the current system and expected changes for the better, resulting from experimentation or simulation. Because current knowledge is not sufficient for future water management, water management strategies in the broadest sense need to be adaptable to cope with evolving and continually changing circumstances.

2.1.1 State-of-the-Art of Transboundary Issues Information Management

Almost half of the land surface of the Earth is covered by international river basins. In the WB6 region, hydropower potential is considered to be shared completely except for small streams, due to the fact that the water regime is changed practically with each storage basin or reservoir. To manage these transboundary river basins effectively, the development and implementation of common strategies is essential. Many activities can be undertaken to support joint river basin management.

Technical cooperation and information exchange form a good base for developing trust and political cooperation between the riparian countries. Involvement of multiple disciplines and sectors can open up a broad playing field with more opportunities for win-win situations and sustainable solutions. Furthermore, involving non-governmental organisations (NGOs) and the public in transboundary management can increase the acceptance of proposed strategies and donors can provide significant support in initiation or financing of transboundary cooperation.

International agreements should be based on voluntary decisions and reflect individual interests and resources as well as the principles of equitable and reasonable use, the obligation not to cause significant harm, and the duty to notify and exchange information. Furthermore, flexibility should be provided and plans should be updated periodically.

2.1.2 Transboundary Cases

The transboundary case studies of the Hydropower Development Study have been prepared to highlight and learn from transboundary problems evident in the WB6 region. These studies include the River Basins (see Section 3) of (1) the Drina River (Montenegro, Bosnia and Herzegovina, Serbia), (2) the Drini River (Kosovo, the former Yugoslav Republic of Macedonia, Albania), (3) the Vardar River (the former Yugoslav Republic of Macedonia, Greece), (4) the Trebišnjica River (Montenegro, Bosnia and Herzegovina, Croatia). Each river basin demonstrates specific issues. In case of the Tara River (Upper Drina River), it is the transfer of water from one basin to another river basin; in the case of the Trebišnjica system it is the sharing of water quantities and water head. Effective and efficient management of these issues requires transboundary cooperation and an appropriate institutional framework.

2.1.3 Analysis of Management Organisation

The transboundary regimes of the basins under study can be characterised by similarities and differences. The most obvious similarity is that, in every basin, some form of structural transboundary cooperation (e.g. a river basin commission) has been established; the ICPDR, the ISRBC, or is under preparation as on the Drini River Basin, or is done by bilateral agreements between the involved countries (like the former Yugoslav Republic of Macedonia and Greece on Axios/Vardar River Basin).

The tasks and responsibilities of the organisations differ considerably because they reflect the individual approach used for each river basin due to specific geographical differences, as well as their functioning and effectiveness in the real situation on the ground. Besides national governments, which have been the main initiating party, international donors are playing very significant role in the initiation and financing of basin organisations. It occurs that in some basins, like Trebišnjica, national governments are less committed and it is harder to develop and implement joint management strategies. Current transboundary cooperation in the WB6 region river basins is therefore mainly directed at building up mutual trust and developing technical and institutional capacity.

The role of informal actors in transboundary water management is generally limited, due to both distrust by governmental actors and limited capacities of the stakeholders.

2.1.4 Analysis Information Management

Beside respecting legal instruments like SEA and EIA which require notification to the downstream party if adverse impacts are significant, and the WFD requirement for monitoring, the interpretation of available data and information will play important role in the planning and authorisation process (see BR-4). Without sufficient information and understanding of transboundary issues, the subject will remain unresolved. Effective and fair resolution of the outstanding water management issues is not achievable without a close relation to information exchange. All agreements concerning transboundary water management provisions have been aimed at facilitating better information exchange or even joint information creation. In the framework of the ICPDR, Drini Corda (Enabling Transboundary Cooperation and Integrated Water Resources Management in the extended Drin River Basin), the ISRBC and several working or expert groups have been established for this purpose. The Information Management and Geographical Information System Expert Group (IMGIS EG) at the ICPDR develops and operates the Danube GIS and supports data collection and maps preparation on the level of the Danube Drainage Basin for ICPDR reports. The IMGIS EG also supports bilateral/multilateral activities related to the harmonisation of national datasets and contributes to information exchange and management.

In practice, however, the preparation of an information database and the exchange of information between formal actors has not been well established in the Morača and Drini River Basin and some others. Dissemination of information to stakeholders and the public is in general even more limited outside the Danube Drainage Basin. The utilisation of information in transboundary decision-making is in many basins very limited, partly because the information-data baseline and exchange of those data are not properly subject of water resources management.

2.1.5 Adaptive Water Management in Transboundary Issues Context

It is common to all river basins that use of water resources is fragmented (per country) and there is a general lack of coordination activities. Currently the Danube Drainage Basin offers the largest potential for adaptive

management, while water resources management proper in the Drina (Sub) River Basin offers only small support to adaptive management. Although establishing institutions for transboundary cooperation has commenced as a first step, implementation of the intended institutional structures is still on-going. As long as the political setting is not ready for a real transition, there will be little support for the development of transboundary water laws and policies.

From the analysis, it can be perceived that cooperation across administrative boundaries and joint information production are often part of the early phases of the transition towards true water resources management and consequently adaptive water management is its key feature. Somewhere in the middle of this transition an appropriate legal framework and financing system would need to be developed, policies would be prepared and implemented and a broad communication including public participation would be established. Requirements for water resources management that are still hardly existent in any of the studied transboundary cases including adaptable legislation, cross-sectorial cooperation, interdisciplinary, cooperation between administrative levels, critical reflection on uncertainties, assumptions and approaches, and utilisation of information.

2.1.6 Final Remarks State of the Art of Transboundary Issues

The activities that could be undertaken to stimulate the transition towards the inclusion of the transboundary concept into the development of hydropower schemes differ across the Region. The transition must be executed step-by-step and might take decades if not supported by international donor organisations. Goals and ambitions should be adjusted to the context of the current situation in order to make sure that they are feasible.

Because the Danube Drainage Basin transboundary approach has already been dealt with to some extent, the remaining activities can be focused on activities like stimulating cooperation among other sectors and disciplines and critical reflection on uncertainties. In the Adriatic Catchment, the development of a more comprehensive framework of law and policy for transboundary river basin management and the actual implementation of strategies are, currently, lagging behind other developments.

The Drini Corda could develop towards a better implementation of the institutional agreements through the strengthening of the sub-regional efforts, intensifying information exchange and the utilisation of information. Furthermore, a stronger legal and financial structure might be developed. As in the Sava River Basin, donors have played a significant role. Commitment of national governments to transboundary cooperation needs to be developed further. In the Axios/Vardar River Basin, the legal framework needs to be improved. Because political support for change of the existing bilateral agreements is presently low, efforts might be better aimed at improving information management, actor networks and the development and implementation of policies. In the Drina River Basin, the road to more adaptive management is still very long. It might be useful to focus on the further development of technical cooperation first, to create adequate technical capacities and mutual confidence.

This report includes the analysis of transboundary issues and regimes based on the somewhat fragmented information that was available. It is recommended that a more detailed analysis of relevant regime elements and information management is performed in the basins studied. By paying more attention to specific elements of the transboundary subject, more valid insights and more recommendations for specific activities supporting the transition towards establishing an operational transboundary platform in a basin could be developed. The relation between states' strategies (in law, policy and information management) and the (lack of) actual implementation is one of the main aspects that require additional attention.

In addition to analysis on the international scale or national scale, it is recommended specific case studies are developed. On smaller scales, it is easier to 'measure' criteria like critical self-reflection about assumptions and explicit consideration of uncertainty.

2.2 Legal Background to Transboundary Issues

Sovereignty is the prevailing aspect linked to the territory of a country. Waters on its territory, regardless of its eventual downstream path and importance, are subject of no lesser sovereignty than the territory itself. It was not that the idea of shared resources requiring shared management did not emerge in the past. Demands that "the ideal of permanent and full sovereignty over resources is destructive and that transboundary resources must be

treated as shared and regulated by norms beyond each state's unilateral measures"[4] have simply been unheard. This leads to conclusions like "the international system of sovereign states as a whole failed to rise to the challenge of collective action to manage shared transboundary resources."[5]

Nevertheless, certain concessions have been given mutually among the countries sharing common water bodies by means of multilateral treaties. A web of conventions, treaties and bilateral agreements govern the use and management of transboundary waters within the WB6 area. Global conventions deal with general principles of transboundary water management, regional conventions address individual (sub)river basins while bilateral (or limited multilateral) agreements may address anything from an individual issue to a complete set of water management procedures among the parties.

Related to transboundary impacts of hydropower development, the international law deals with protection of nature, of animal habitats, of landscapes, and of world heritage, and issues of jurisdiction and access to justice. Particularly the latter may be part of multiple international agreements, creating an interdependent web of concessions and obligations regarding the enforcement of the individual addressees' rights and obligations.

For any transboundary issue, the question of what international law is applicable should be answered by the symmetry of its applicability to any given pair of parties in a dispute. In this section, an outline guide to the major conventions and treaties governing the issues applicable to transboundary impacts of hydropower development is presented.

2.2.1 Relevant International Agreements

From the aspect of their impact on hydropower development in the region, the following Conventions should be applied together with the implementation of the **EU Acquis** containing transboundary aspects (i.e. EIA, SEA and WFD):

- Convention on Environmental Impact Assessment in a Transboundary Context (Espoo 1991);
- Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus 1998);
- Danube River Protection Convention (1998).

Cooperation on use of the resources shared across the border is necessary for most of the WB6 territories in many aspects. Kosovo, due to its legal limitations in becoming a party to many relevant agreements, could have significantly less rights and obligations in this regard than other countries in the region.

EU Member States are responsible for the performance of those obligations resulting from the Espoo Convention not currently covered by Community law and more specifically by the EIA Directive. The Community underlines that the EIA Directive does not cover the application of the Espoo Convention between the Community on the one hand and non-Member States party to the Espoo Convention on the other hand. From this, it follows that the Community, within the limits indicated above, is competent to enter into binding commitments on its own behalf with non-members countries which are Contracting Parties to the Espoo Convention ratified by Albania and accessed by all other countries except Kosovo.

The focus of the **Energy Charter Treaty (ECT)** is cross-border cooperation in the energy industry by addressing the energy trade, energy investments, energy transit, energy efficiency and dispute settlement. On dispute resolution, the ECT provides for jurisdiction in disputes limiting the possible participants to being either two states (both parties to the ECT) or an investor (a national of a party to the ECT) against a state (another party to the ECT).

The ECT and **International River Commission** can support implementation of EU Acquis on transboundary cooperation. Coordination across the (international) river basin is a requirement under the EU Water Framework Directive (WFD), while globally the practical application/achievement of equitable water sharing in an international basin necessitates (as a prerequisite) the establishment and operation of a proper International River Commission (IRC) such as the International Commission for the Protection of the Danube River (ICPDR) and the International

[4] Eyal Benvenisti. 2004. Page 18.

[5] ibidem

Sava River Basin Commission (ISRBC). IRCs are formal interstate institutional governing bodies, which have as their basic task the recommendation (and monitoring upon implementation), of appropriate decisions regarding plans, projects and policies consistent with IWRM to the policy makers of the participating countries. The establishment of such IRCs should be based on three basic supporting pillars: operational (technical cooperation), political (responsible for an enabling environment) and institutional (responsible for laws and institutions). A prerequisite for the WB6 countries to have IWRM established is that they must operate within a fully transposed and implemented Floods Directive (2007/60/EC) framework, requiring coordination across the river basin, including transboundary coordination.

A 'soft law' instrument, the UN/ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki, 1992) is also relevant, but does not substitute the formal agreements sought between countries under the WFD.

Three multilateral agreements address the individual river basins in the region, namely the Danube, the Sava, and the Drin. They all introduce a river basin focused approach to management and use of water with some level of hazard prevention and adverse consequences reduction. The Water Framework Directive is explicitly referred to as a source of law and/or good practice among the parties in Sava and Drin agreements. Today, out of 20 countries sharing the Danube river basin - including all six from the region - 14 are parties to the Danube convention with 2 of the WB6 missing. The Sava River Basin is also shared by all the WB6 territories with only two of them, namely Bosnia and Herzegovina and Serbia, being parties to the Sava framework agreement. All the WB6 countries sharing the Drin river basin are parties to the related Memorandum of Understanding.

In the field of bilateral agreements, our research yielded only a handful with varying degrees of importance and relevance to hydropower development. It appears that very few of the bilateral agreements concluded in the past between former Yugoslavia and other countries have been effectively succeeded and can be today perceived as valid and operative. In relation to hydropower development, there only four bilateral agreements have been found valid, recognised and thus able to effectively govern relations of the sovereign states from the WB6 region and respective counterparties. The pairs of countries they apply to are: Albania and Greece, Bosnia and Herzegovina and Croatia, Montenegro and Croatia, and Albania and Montenegro.

An important move has been made in recent years from agreements based on mutual rights and obligations towards agreements based on the needs of individual countries, as such a principle has been identified as leading to more balanced and just solutions. Therefore, transboundary issues can be addressed only if the parties are willing to understand each other and share a common understanding of the issues at stake.

While many beneficial actions can be taken at the national level, **Multi-country coordination and cooperation** at basin and regional level offers an additional opportunity for optimisation. The WFD provides this basis, through the preparation of a RBMP and River Basin-orientated institutions like ICPDR or ISRBC. In assessing the river basins from the regional point of view, there is clearly scope to improve the legal basis for cooperation, to clarify the roles and responsibilities of basin institutions and to develop their capacities. Coordination and cooperation is required to provide incentives for institutions which do not yet exist, such as for the Drini/Drim River Basin which is shared by Kosovo, the former Yugoslav Republic of Macedonia and Albania. Indeed, most of the solutions identified are related to knowledge management and the development of integrated planning processes. Among the Sava Basin countries, the European Union's acquis communautaire and the Energy Community are gradually harmonising regulation and integrating the energy market.

Improving basin-wide hydrology monitoring, data verification and exchange, and knowledge sharing are often the obvious solutions identified. These include joint monitoring (e.g. water flows and quality), joint forecasting (e.g. weather forecasts, energy demand), as well as the identification of good practices at local and national level, for example in the areas of non-economic valuation of external benefits and costs.

In general, the stakeholders are expecting stronger planning processes are put in force. River basins of the Region, current or planned processes, offer interesting insights, such as the Sava River Basin Management Plan, to coordinate actions between water, energy and agricultural sectors, and the Flood Risk Management Plan of the Sava River Basin to coordinate action around the flood retention areas and wetlands. In the Drina River Basin, coordinating measures have been identified in the areas of climate change adaptation, flood risk management and water quality protection, together with strategic planning for developing hydropower potential through optimising hydropower development considering the cumulative effects of multiple hydropower plants.

2.2.1.1.1 Multilateral Treaties and Conventions

The international agreements represent the basis for major international legal obligations, governing hydropower development. Most of these agreements constitute bilateral rights and obligations among the pairs of parties, limiting their convenience in the era of growing importance of river-basin based water management, particularly in the WB6 region with numerous sovereign territories sharing their respective river-basins.

From the aspect of their impact on hydropower development in the region, the following international agreements predominate:

- Stabilisation and Association Agreements (alongside accession negotiations for those that have already entered them), primarily for establishing the perspective of EU environmental legislation (notably the WFD and Nature Directives) implementation throughout the region,
- The Energy Community Treaty, for its firm focus on the international cooperation in the field of sustainable energy, while environment acquis is part of it,
- The Energy Charter Treaty, for dealing with the issues of international investments in the energy sector,
- The Convention on the Settlement of Investment Disputes Between States and Nationals of Other States, for its widely-adopted dispute resolution services,
- The Convention on Environmental Impact Assessment in a Transboundary Context (Espoo 1991), for its influence in implementation of the EU acquis, and currently, wide applicability in the region,
- The Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus 1998), for its wide involvement of public and granting it access to justice aligned with and leading to implementation of the EU acquis,
- The Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE Water Convention), for introduction of principles of joint water management and wide applicability in the region,
- The Danube River Protection Convention, for its contribution in river-basin based management of the joint water resources in line with the EU acquis and wide applicability in the region, and finally, the
- three Conventions focused on environment protection (Paris 1972, Bonn 1979, and Bern 1979), for setting strong limitations to where and how hydropower objects might be built.

2.2.1.1.2 Stabilisation and Association Agreements

The EU and its Member States[6] have signed individual SAAs (Stabilisation and Association Agreements) with all the WB6 countries. These agreements are a special framework to help countries on the road to EU membership, not least to align their legislation with the EU acquis communautaire.

Presently, of the WB6 candidate countries, Montenegro (signed the SAA in 2007) and Serbia (signed the SAA in 2008) have already entered negotiations on membership, while Albania (signed the SAA in 2006) and the former Yugoslav Republic of Macedonia (signed the SAA in 2004) are candidates waiting on the start of negotiations. Bosnia and Herzegovina (signed the SAA in 2008) and Kosovo (signed the SAA[7] in 2015) are waiting as potential candidates. The current status in the WB6 region, in so much as they have only started harmonisation in the fields relevant to hydropower development, is not a barrier, and we can already witness the applicability of many of the EU acquis communautaire principles throughout the Region. Nevertheless, it appears that no WB6 country has achieved full harmonisation with the EU in the HPP-related fields, but the path forward has been established.

In this political situation, it is important ***that all WB6 have committed to transpose and implement the EU Acquis, especially regarding the environment and climate change dimensions which are crucial when we analyse hydropower potential in the Region.***

[6] The EU Member States did not sign the SAA with Kosovo. This SAA has been signed only by the EU, the EURATOM and Kosovo, while all the other SAAs have been signed also by the individual EU Member States.

[7] Kosovo signed the SAA only with the EU and EURATOM, while all the other SAAs have been signed also with the EU member states.

Within the EU acquis communautaire, a complex structure of legislative acts – of which the WFD[8] and Floods Directive[9], including a number of specific directives regarding certain types of waters, of waste and/or of environment[10] to include within the programmes of measures, are the most prominent – addresses the issues of relevance to this report. Besides the two directives mentioned, the list includes the directive on Strategic Environmental Assessment (SEA)[11] (linked to the WFD by the assessment of the river basin management plans procedure), the directive on Environmental Impact Assessment (as amended)[12], the Birds[13] and Habitats[14] directives, together with the directives on Landfill Waste[15], on Industrial Emissions[16], on Carbon Capture & Storage[17], the so-called Seveso III[18] directive, and the directive on the Promotion of RES[19]. All of these are at a certain point of transposition and implementation into the national legislations of the acceding countries and all of them shall be implemented before conclusion of the negotiations and entering the EU.

2.2.1.1.3 Energy Community Treaty

All the WB6 countries are signatory parties to the Energy Community Treaty and, since their respective ratifications, full members of the Energy Community (EnC) established by the treaty's entry into force on 1 July 2006. The Energy Community is set up to align and harmonise certain topics of the legal system of member countries with the EU, thus most of the obligations to be met by them relate to certain parts of the EU's Acquis Communautaire.

Within the scope of this section and apart from the Energy Community Treaty itself, three sets of rules are of primary interest: the directive 85/337/EEC "on the Assessment of the Effects of Certain Public and Private Projects on the Environment" as adapted by the EnC, taking into account also the directive 2011/92/EU as amended by the directive 2014/52/EU and adapted by the EnC[20], the article 4(2) of the directive 79/409/EEC "on the conservation of wild birds", and the Energy Community Strategy. The first two are of particular interest should the EU's EIA and Water Framework directives not be fully implemented yet and where the rules and principles of certain other conventions, like the Espoo and Aarhus, do not apply. The latter, as a kind of soft-law aiming at future updates of individual national strategies being aligned with it, is important mostly in relation to individual projects that were included in the "List of Projects of Energy Community Interest"[21]; it should be noted that some believe the list is not relevant any more, although no formal repeal has been adopted. Interestingly, the Energy

[8] Directive 2000/60/EC.

[9] Directive 2007/60/EC.

[10] Some are explicitly stated in the Annex VI: Bathing Water Directive (2006/118/EC), Birds Directive (79/409/EEC), Drinking Water Directive (80/778/EEC, 98/83/EC), Major Accidents (Seveso) Directive (96/82/EC), Environmental Impact Assessment Directive (85/337/EEC), Sewage Sludge Directive (86/278/EEC), Urban Waste-water Treatment Directive (91/271/EEC), Plant Protection Products Directive (91/414/EEC), Nitrates Directive (91/676/EEC), and Habitats Directive (92/43/EEC), Integrated Pollution Prevention and Control Directive (2008/1/EC).

Following are examples of other directives referring to the WFD themselves (as they have been adopted after the WFD): Directive on Groundwater (2006/118/EC), Directive on Floods (2007/60/EC), Marine Strategy Framework Directive (2008/56/EC), Directive on Environmental Quality Standards / Priority Substances (2008/105/EC, 2013/39/EU), etc.

[11] Directive 2001/42/EC.

[12] Directives 2011/92/EU and 2014/52/EU.

[13] Directive 2009/147/EC.

[14] Directive 92/43/EEC.

[15] Directive 1999/31/EC.

[16] Directive 2010/75/EU.

[17] Directive 2009/31/EC.

[18] Directive 2012/18/EU.

[19] Directive 2009/28/EC.

[20] The implementation deadlines under the Energy Community Treaty of the directive 2011/92/EU »on the assessment of the effects of certain public and private projects on the environment« and of the amendments to it introduced by the directive 2014/92/EU »amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment« (as adapted by the Energy Community) are 14 October 2016 and 1 January 2019, respectively.

[21] This list was produced under different rules than "regular" PECI list and includes also power generation projects besides network energy transport infrastructure projects.

Community's High Level Reflection Group in its May 2014 report listing the proposed environmental EU acquis communautaire to be considered for extension of the EnC acquis communautaire within the Annex 1, includes no Water Framework Directive-related EU acquis communautaire. Therefore, the Water Framework Directive and its transpositions/implementations remain subject to each individual WB6 country's Stabilisation and Accession Agreements, and accession negotiations.

In the present EU acquis communautaire, the directive 85/337/EEC mentioned above has been assumed into and further elaborated within the newer EIA Directive[22], while it stays part, as amended, of the EnC acquis for the time being. It obliges the country to manage the assessment of the projects likely to have significant effects on the environment in another country simultaneously in all the affected countries and conduct necessary consultations in the framework of bilateral relations. Within the scope of this report, it applies to certain aspects of the energy industry (transmission of electrical energy by overhead lines, installations for hydroelectric energy production) and infrastructure projects (canalisation and flood-relief works, dams and other installations designed to hold water or store it on a long-term basis, installation of long-distance aqueducts).

The Energy Community Strategy is an autonomous EnC act that the EnC refers to as an attempt at early implementation of the regulation 347/2013 "on guidelines for trans-European energy infrastructure". As the said regulation effectively refers to network energy transport infrastructure only, the early implementation process that led to adoption of the PECI (Projects of Energy Community Interest) list in 2013 has stalled in terms of it being continuously updated. Nevertheless, the parties to the EnC Treaty are still bound not to oppose the PECI list in their own national strategies.

Resolving the differing views on the transboundary issues related to a project require involvement of the potential investors and at least two countries. Focusing on the WB6 region, the recently established Dispute Resolution and Negotiation Centre attached to the Legal Unit of the ECS should be mentioned as an interesting option, identified by the Consultant, for facilitation of their resolution.

The treaty established a permanent Energy Community Secretariat, whose tasks include the provision of administrative support to the EnC institutions, reviewing and reporting on implementation of the parties' obligations, reviewing and assisting the donors' activity in the EnC region, and adopting Procedural Acts, but explicitly exclude the power to take measures. It is based in Vienna, Austria.

2.2.1.1.4 Energy Charter Treaty

The Energy Charter Treaty (ECT) was signed in 1994. Its main focus is cross-border cooperation in the energy industry by addressing the energy trade, energy investments, energy transit, energy efficiency and dispute settlement. It promotes transparency and efficiency in both the operation of energy markets and the access to the energy resources, but imposes no specific targets either on development of national energy markets, on opening to foreign investments, on privatisation of state-owned energy companies, on vertical (dis)integration, or on third-party access. One of its very core principles is the one of national sovereignty leaving to the parties to define their own structure and governance of the energy markets and related resources. Today, the parties to the ECT are 52 states and 2 international organisations.

In the field of energy trade, the Trade Amendment of the ECT mainly modifies the original text of the Annexes and incorporates the changes from GATT- to WTO-based rules of the multilateral trading system. Its coverage has also been increased by the addition of related equipment to the energy materials and products, while the related services are still left outside it. It protects direct foreign investments from political risks like discrimination, expropriation, nationalisation, breach of contract, damages due to war, etc. The parties are obliged both to facilitate energy transit across their territories and to secure established transit flows.

The Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects (PEEREA), signed alongside the ECT itself, has taken the finer details linked to the subject of energy efficiency out of the binding scope of the ECT. As a political commitment, it provides the parties with a set of good practices and a forum for the exchange of experiences and political advice.

[22] Directives 2011/92/EU and 2014/52/EU; the first recital states: "Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment has been substantially amended several times. In the interests of clarity and rationality the said Directive should be codified."

On dispute resolution, the ECT provides for jurisdiction in disputes between two states (both parties to the ECT) and an investor (a national of a party to the ECT) against a state (another party to the ECT). It allows for the procedure to be chosen from the set of ICSID's Rules or Additional Facilities Rules, UNCITRAL Ad hoc Rules, and The Arbitration Rules of the Stockholm Chamber of Commerce.

The ECT has been preceded (and foreseen) by a political declaration entitled the European Energy Charter, signed in 1991. It declares the principles for international energy trade, energy investment and energy transit, the topics of intense international interest in the years after the disintegration of the Soviet Union. The modernisation and expansion efforts have brought along a new political declaration, the International Energy Charter signed in 2015. It presents the principles of international energy cooperation, addressing the scope and synergies of numerous multilateral energy-related cooperation activities, the global energy security relations, the role of energy trade, the need for energy sources' and routes' diversification, the regional integration of energy markets, etc.

The permanent Energy Charter Secretariat is based in Brussels, Belgium.

2.2.1.1.5 Charter of the United Nations

The signing of the Charter of the United Nations and its subsequent ratifications established the United Nations (UN) as an international organisation and includes the Statute of the International Court of Justice (ICJ) as its integral part. Parties to it can be either a signatory party, signing the charter at the United Nations Conference on International Organisation in 1945, or an admitted party, admitted later by the UN General Assembly. Today, it counts 193 sovereign states among its members.

The charter's importance for this report is related mainly to the possibilities of inter-state dispute resolution in front of the ICJ as all of the UN members have, by virtue of their membership, recognised its jurisdiction. Only states may apply to and appear before the ICJ and no international organisation, another collective organisation, or a private person is entitled to institute proceedings before it. In exercising its jurisdiction, the ICJ should decide, in accordance with international law, disputes of a legal nature that are submitted to it by the states.

The UN's headquarters is in New York, United States of America, and the ICJ is based in The Hague, Netherlands.

2.2.1.1.6 Convention on the Settlement of Investment Disputes Between States and Nationals of Other States

The convention has been proposed by the International Bank for Reconstruction and Development (IBRD) to its members and entered into force in 1966. It established the International Centre for Settlement of Investment Disputes (ICSID) tasked with provision of facilities for the conciliation and arbitration of investment disputes. Today, the IBRD and the ICSID are two of five international organisations forming The World Bank Group.

The ICSID offers a wide list of dispute resolution services between states and nationals of other states, like arbitration, conciliations, mediations, assisted negotiations, expert evaluations and fact-finding. Its jurisdiction is limited to any dispute arising directly out of an investment between:

a) a state or its constituent subdivision or its agency, as one party, and
b) a non-state party, that may be either:
   - a natural person, national of another state not also having nationality of the state, party to the dispute, or
   - a juridical person that with nationality either of another state or of the state, party to the dispute, should the parties agree to be treated as foreign because of foreign control.

Currently, the arbitral awards in accordance with the ICSID convention are formally enforced and upheld by 153 sovereign states, including all of the EU and WB6 region.

The ICSID has its seat in Washington, D.C., United States of America.

2.2.1.1.7 Agreement on Succession Issues

After the dissolution of the former Yugoslavia, an agreement has been concluded on succession issues in 2001. There were five original parties to the agreement, of which the Federal Republic of Yugoslavia has been further

fragmented into three parts, namely Serbia, Montenegro and Kosovo. Only Serbia claimed succession to it and so Montenegro and Kosovo are not listed among the parties at all, while the latter states are considered as indirect parties since any other party to the agreement could be able to claim that a particular issue has been / is to be dealt with under this agreement regardless of the other formally being a party or not.

For the purposes of hydropower development, the most important parts of the agreement are its Annexes A (movable and immovable property) and G (private property and acquired rights). It should be noted that until now, the agreement has not been entirely executed and some unsettled matters are connected to the issues addressed in this report.

2.2.1.1.8 UN, UNECE, UNEP and UNESCO Conventions

Besides the two Vienna conventions (signed in 1969 and 1978, respectively) dealing with the law of treaties, namely the "Vienna Convention on the Law of Treaties" and "Vienna Convention on Succession of States in Respect of Treaties", the rest of the conventions concluded under the auspices of either the UN, UNECE, UNEP, or UNESCO, are a selection based on their relevance to the management of transboundary waters and connected projects. The latter have been signed in:

- Ramsar (1971) "on wetlands of international importance especially as waterfowl habitat";
- Paris (1972) "Concerning the Protection of the World Cultural and Natural Heritage";
- Bonn (1979) "on the Conservation of Migratory Species";
- Espoo (1991) "on Environmental Impact Assessment in a Transboundary Context";
- Helsinki (1992) "on the Protection and Use of Transboundary Watercourses and International Lakes";
- New York (1997) "on the Law of the Non-Navigational Uses of International Watercourses"; and
- Aarhus (1998) "on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters".
- Berne Convention (the Berne Convention on the Conservation of European Wildlife and Natural Habitats)

Most of the WB6 countries are to a certain nature and extent currently parties to five of them, while Kosovo, due to its unresolved country status since the UN bodies do not count it among the conventions' party countries, can rely on them only to the extent of their expressing the international custom and the general principles of law (in the absence of bilateral agreement on the individual convention to apply between them).

2.2.1.1.8.1 Vienna Convention on the Law of Treaties (1969)

The (UN) convention defines a treaty as "an international agreement concluded between states in written form and governed by international law" and sets the general rule of every state being able to conclude treaties. Many parts of the convention are widely accepted as a mere restatement of customary international law on the law of treaties and the (semi)constitutional significance of its regime has ensured the uniformity of interpretation framework applicable to the various categories of treaties.

2.2.1.1.8.2 Vienna Convention on Succession of States in Respect of Treaties (1978)

The (UN) convention sets the rules on succession of states, controversially distinguishing between former colonies ("newly independent states") and all other new states. Under the convention, the newly independent state does not inherit the treaty obligations of the colonial power, while all other new states remain bound by the treaty obligations of the state from which they separated. It emphasises the distinction by allowing the newly independent states to join multilateral treaties to which their former colonizers were a party without the consent of the other parties, but all other new states may only join multilateral treaties to which their predecessor states were a part with the consent of the other parties.

2.2.1.1.8.3 Espoo (1991) Convention on Environmental Impact Assessment in a Transboundary Context

The core of the (UNECE) convention is the obligation of the party of origin to ensure the EIA is undertaken for projects likely to cause significant adverse transboundary impacts prior to the decision to authorise or undertake a

project. The process itself requires the timely notification of the other parties, the participation of the public, consultations between the parties, etc. With the 2nd amendment, the transboundary dimension has been introduced to the scoping phase of the EIA itself, requiring the party of origin to give the affected parties the opportunity to participate already at this early stage.

For the purposes of this report, the non-amended convention applies only to the activities involving large dams and reservoirs, while any party may propose (subject to the other party's consent) any individual project to be treated as if it was included on the list. The 2nd amendment adds the transfer of water and overhead electrical power lines of 220 kV and above to the list of activities.

Strategic environmental assessment (SEA) is undertaken much earlier in the decision-making process than the project's environmental impact assessment (EIA). The SEA protocol to the Espoo Convention provides for extensive public participation in government decision-making in numerous development sectors, like, for example, energy, water management, tourism, town and country planning or land use, preceding authorisation procedures either regarding projects on large dams and reservoirs or any other projects requiring an EIA for activities involving transfer of water, overhead electrical power lines either of voltage 220 kV and above or longer than 15 km, industrial installations for the production of electricity, steam and hot water, installations for hydroelectric energy production, canalisation and flood-relief works, (smaller) dams and other installations designed for the holding-back or for the long-term or permanent storage of water, or installations of long-distance aqueducts.

A regional agreement under the Espoo Convention is the Bucharest Agreement signed in 2008. The agreement's main goal is to provide a common EIA procedure regarding major projects with potential adverse trans-boundary effects. It reiterates the requirement to fully implement the convention and stipulates certain procedural obligations on the parties with designations of the competent authority and a single point of contact being the most prominent. It also allows the parties to request English as the language of communication along with securing the right of the affected party to specify the official language therein specified documentation shall be translated into.

It is important to understand that certain provisions of the Bucharest Agreement regarding "joint proposed activity" might have adverse effects on the standards set by the original Espoo convention. The Bucharest Agreement is, in fact, an entirely independent international agreement (it is not an addendum/annex/protocol to the Espoo agreement). It has been concluded between the states in question and constitutes law applicable among them, regardless of whether it potentially affects any of the other agreements in force. It allows for the skipping of practical procedures and arrangements for the disclosure of information, public consultations and communication, the setting and conducting of EIA public consultations and communication according to special (unknown) arrangements[23]. However, it should be maintained that Bucharest Agreement is no substitution for Espoo convention and therefore Espoo standards will prevail.

2.2.1.1.8.4 Aarhus (1998) Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters

The UN Secretary General wrote on the (UNECE) convention: "This treaty's powerful twin protections for the environment and human rights can help us respond to many challenges facing our world, from climate change and the loss of biodiversity to air and water pollution. And the Convention's critical focus on involving the public is helping to keep the governments accountable."[24] It gives the public the rights to environmental information, to participation in all stages of decision-making process on consenting to activities that may have significant effect on the environment, and to effective access to justice by allowing for judicially challenging insufficient access to information, legality of decisions adopted in planning or programming or deciding on specific activity, and any contraventions of national environmental law.

The convention foresees access to all relevant information, early public notice and public participation, the opportunity for the public to comment, due account of public participation to be taken, and prompt public notice on decisions that are to be reasoned. It also requires of the public authorities to actively collect and disseminate

[23] Nataša Đereg. 2011. Page 193.

[24] Ban Ki-moon. 1 July 2011. Secretary-General's message to fourth session of the Meeting of the Parties to the Aarhus Convention. Chisinau (MD): UN Secretary General.

certain types of environmental information: the state of elements of the environment, the factors affecting or likely to affect the elements of environment, and the state of human health and safety, and of the habitat.

2.2.1.1.8.5 New York (1997) Convention on the Law of the Non-Navigational Uses of International Watercourses (UN Watercourses Convention)

The (UN) convention applies to uses of international watercourses[25] and of their waters for purposes other than navigation and to measures of protection, preservation and management related to the uses of those watercourses and their waters. It stipulates equitable and reasonable utilisation and participation in the use of international watercourses accounting for all relevant factors, taking all appropriate measures not to cause significant harm, the general obligation of cooperation between watercourse states, and the protection of ecosystems of international watercourses.

Explicitly, the convention does not affect existing agreements, and, merely as an option, presents the possibilities of the parties both to harmonise the existing agreements with the convention should they be incompatible, and to enter into watercourse-specific agreements.

It requires the watercourse states to regularly exchange available data and information and even provides for the right of the watercourse states to require certain not-readily-available data should it be willing to compensate the state of information for the costs incurred in obtaining the information required. In relation to the planned measures, it contains detailed procedures on notifications, consultations, negotiations and urgent implementations, and deals also with prevention and mitigation of harmful conditions, and with emergency situations.

The convention foresees a possibility of establishment of joint management mechanisms upon entering consultations (obligatory – at the request of any other watercourse state) and invites the watercourse states to consider the establishment of joint mechanisms or commissions as general means of cooperation among them.

2.2.1.1.8.6 Helsinki (1992) Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE Water Convention)

The UNECE Water Convention applies to the transboundary waters[26] to strengthen cooperation and measures for the ecologically-sound management and protection of transboundary surface waters and groundwaters by the implementation of integrated water resources management, in particular the basin approach. It requires the parties to prevent, control and reduce transboundary impact, use transboundary waters in a reasonable and equitable way and ensure their sustainable management.

The convention demands of the parties bordering the same transboundary waters both to cooperate by entering into specific agreements and establishing joint bodies and to revise any existing arrangements and eliminate contradictions with the convention. The joint bodies established are to be tasked, inter alia, with the following: data collection and evaluation, establishment of warning and alarm procedures, participation in implementation of EIAs.

The procedures the parties are to implement involve: prior licensing and monitoring of waste-water discharges, BAT (Best Available Techniques) measures for nutrient inputs from industry and municipal sources, BEP (Best Environmental Practices) measures for diffuse pollution sources, application of EIA procedures, contingency planning, monitoring programmes, research and development, exchange of information, warning and alarm systems, mutual assistance, and publicity of information.

[25] By the definition of the convention a watercourse means a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus; an international watercourse means a watercourse, parts of which are situated in different States.

[26] By the definition of the convention transboundary waters are any surface or ground waters which mark, cross or are located on boundaries between two or more States.

2.2.1.1.8.7 Ramsar (1971) Convention on Wetlands of International Importance Especially as Waterfowl Habitat

The (UNESCO) convention applies to the conservation of wetlands[27] (of international importance especially as waterfowl[28] habitats). Its parties are committed to the designation of suitable wetlands to be listed, the wise use of all their wetlands, and international cooperation on transboundary wetlands.

It introduces the obligation of parties to designate at least one wetland for inclusion in a List of Wetlands of International Importance as early as at signing the convention or when depositing its instrument of ratification or accession and allows for both extensions of the wetlands listed and additional listings. It also allows for restrictions of the boundaries or complete removal of a site already listed due to urgent national interests, but it calls for consideration of the party's international responsibilities for the conservation, management and wise use of migratory stocks of waterfowl in before doing so.

It requires the parties to formulate and implement their planning so as to promote the conservation of the listed wetlands and to use the wetlands in their territory wisely[29]. Monitoring and information services regarding the listed wetlands are also among obligation of the parties.

2.2.1.1.8.8 Paris (1972) Convention for the Protection of the World Cultural and Natural Heritage

The (UNESCO) convention introduces a few concepts of the so-called heritage law by addressing the cultural heritage like monuments, groups of buildings, and sites on the one hand and the natural heritage like natural features, geological and physiographical formations, and natural sites on the other. It recognises the link between nature and culture, and introduces the concept of world heritage as something of particular value to the whole humanity and not to a specific group only.

It should be noted that since its adoption, the internationalisation of heritage has moved away slightly from the concept of sovereignty, otherwise explicitly stated within it. Its practice has evolved in the direction of more international action for the preservation of heritage, an effect that has partly shaken one of the basilar principles of the Convention, but it is consonant with its evolutive interpretation and the current state of affairs of international law in the field.[30] Another important factor for the success of the convention is its World Heritage Committee with authority to evolve the law under the convention itself further by its autonomous procedures. It is another sign of the international law moving away from the strict states-only governance towards somewhat more autonomous international organisations.

The convention requires the states to submit an inventory of property forming part of natural and cultural heritage that is of non-exhaustive nature. The World Heritage Committee shall, should the individual property be inscribed as having outstanding universal values, include it on the World Heritage List.

Any property included in the World Heritage List may, should circumstances so require, be listed on the list of World Heritage in Danger, should assistance be required under the convention in terms of major operations needed to avert serious and specific dangers to it. Among others, the threat of disappearance caused by large-scale public or private projects is explicitly mentioned among these dangers.

2.2.1.1.8.9 Bonn (1979) Convention on the Conservation of Migratory Species

The (UNEP) Bonn Convention has resulted from the recognition of the threats faced by migratory species of animals at the 1972 UN Conference on the Human Environment. It addresses the needs of migratory species that are generally more at risk of becoming endangered than non-migratory ones because their habitat requirements

[27] Within the meaning of this convention wetlands are areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres.

[28] Within the meaning of this convention waterfowl are birds ecologically dependent on wetlands.

[29] The convention defines wise use of wetlands as the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development.

[30] Lucas Lixinski. 2008. Page 391.them

are greater as they need breeding grounds for reproduction and rearing their young and then quite different wintering grounds as well as staging areas along their migration routes.[31]

The Range States[32] have to act in the field of conservation of migratory species by paying special attention to them and their habitats and all the Parties should act in order to avoid any migratory species becoming endangered. The latter includes promotion of research relating to migratory species, endeavours to provide immediate protection for migratory species included in Appendix I (list of migratory species which are endangered) and acting towards conclusion of Agreements covering the conservation and management of migratory species included in Appendix II (list of migratory species which have an unfavourable conservation status and which require international agreements for their conservation and management, as well as those which have a conservation status which would significantly benefit from the international co-operation that could be achieved by an international agreement).

A species may be listed in both Appendix I and Appendix II, with the greater population(s) being listed in one and its(their) particular subset(s) being listed in the other. The Appendices currently list 626 species, of which 153 are listed in Appendix I. There are 334 proposals for amendments (either for inclusion or for removal of a species from a particular list) submitted for future consideration by the Conference of the Parties.

2.2.1.1.9 Council of Europe Conventions

Within more than 210 conventions signed under the auspices of Council of Europe, there are two of greater relevance to this report. The Bern Convention signed in 1979 is considered a key convention as "core Council of Europe treaty"[33], while the Florence Convention signed in 2000 is considered only as an "active convention not considered as key" that might be made more visible and more relevant in the future[34].

2.2.1.1.9.1 Bern (1979) Convention on the Conservation of European Wildlife and Natural Habitats

The Bern convention addresses the protection and conservation of wild plants and animals and their natural habitats, placing particular emphasis on endangered and vulnerable species. The parties are committed to the promotion of national conservation policies, the consideration of the impact of planning and development on the natural environment, the promotion of education and information on conservation, and coordination of research.

With the adoption of Recommendation No. 16 of the Standing Committee to the Bern Convention in 1989, the Emerald network of Areas of Special Conservation Interest has been implemented. Setting-up the Emerald Network at national level is considered as one of the main tools for the Contracting Parties to comply with their obligations under the Bern Convention.

Currently there are no Emerald sites officially adopted in the WB6 region, while 182 sites covering jointly 27,884.22 km^2 are proposed to be included in the network. Individual countries have proposed the following number of sites with the respective joint area: Albania 25 / 5,224.30 km^2, Bosnia and Herzegovina 29 / 2,504.55 km^2, Montenegro 32 / 2,400.77 km^2, the former Yugoslav Republic of Macedonia 35 / 7,543.83 km^2, and Serbia 61 / 10,210.78 km^2.

The European Union, as such, is also a Contracting Party to the Bern Convention. In order to fulfil its obligations arising from the Convention, it produced the Habitats Directive in 1992, and subsequently set up the Natura 2000 network. The Natura 2000 sites are therefore considered as the contribution from the EU Member States to the Emerald Network.

[31] Robert Vagg et al. August 2015. Page 7.

[32] The convention defines Range States in relation to a particular migratory species as any of its Parties that exercise jurisdiction either over any part of the range of that migratory species or over any state flag vessel which are engaged outside national jurisdictional limits in taking (defined by the same convention as: taking, hunting, fishing, capturing, harassing, deliberate killing, or attempting to engage in any such conduct) that migratory species.

[33] Thorbjørn Jagland. 2012. Line 28 and Appendix 1.

[34] Thorbjørn Jagland. 2012. Line 37 and Appendix 3.

2.2.1.1.9.2 Florence (2000) European Landscape Convention

The purpose of the convention is to further the protection, management and planning of European landscapes[35], and to organise European co-operation in this field. It is extremely wide in scope: it applies to the parties' entire territory, covering natural, rural, urban and peri-urban areas (including land, inland water and marine areas). The landscapes comprise numerous interactions between place and people stretching across the natural (flora & fauna, landform, air & climate, geology, soils), the cultural/social (land use, settlement, enclosure), and the perceptual/aesthetic (memories, associations, preferences, touch/feel, smell, sound, sight) dimensions[36].

The convention requires the parties to implement mostly general measures like the recognition of landscapes in law as an essential component of people's surroundings, the establishment and implementation of landscape policies, the establishment of procedures for participation by the general public and authorities of various levels, the integration of landscape into a number of its policies, and European co-operation. These general measures are to be fulfilled by a number of specific measures, like alerting to the value of landscapes, promoting training in numerous landscape-related disciplines and aspects in various administrative, educative and professional environments, defining specific quality objectives for the landscapes, and putting landscape policies into effect.

The convention also provides for the Landscape Award of the Council of Europe recognising policy or measures that the awarded local or regional authorities or non-governmental organisations have adopted to protect, manage and/or plan their landscape, which have proved lastingly effective and which can thus serve as an example to other territorial authorities in Europe. The Award should be an incentive to local bodies to engage in and seek recognition of exemplary landscape management.

2.2.1.1.10 Danube River Protection Convention

The convention was signed in 1994 and entered into force in 1998. Today, out of 20 sovereign territories sharing the Danube River Basin that includes all the WB6; 14 are parties to the convention. In the present political situation of the WB6, Albania and the former Yugoslav Republic of Macedonia are missing from the list, while Kosovo has not yet been invited.

It provides for cooperation of the countries sharing the catchment area of the Danube River[37] to assure the protection of water and ecological resources and their sustainable use in the Danube River basin. It applies primarily to the activities and measures likely to cause transboundary impacts like the discharge of waste waters and/or of heat, inputs of nutrients and of hazardous substances, water construction works and other facilities with an effect on the hydraulic regime, flood control and ice-hazard abatement, hydropower utilisation, water transfer or withdrawal, the operation of hydro technical constructions, ecosystem protection, the handling of hazardous substances, the prevention of accidents, and also pollution caused either by fishery- or by inland navigation-related issues.

An international organisation named the International Commission for the Protection of the Danube River (ICPDR) has been created by the convention in order to implement it, serving its parties as both an implementation coordination forum and a progress reviewing platform. It has its seat in Vienna, Austria.

2.2.1.1.11 Framework Agreement on the Sava River Basin

The Framework Agreement on the Sava River Basin (FASRB) was signed in 2002 and entered into force in 2004. The Sava River Basin is shared by all of the WB6 territories with only two of them, namely Bosnia and Herzegovina and Serbia, being parties to the FASRB.

The objectives of the FASRB address the international regime of navigation, sustainable water management and measures related to prevention/limitation of hazards and reduction/elimination of adverse consequences like

[35] The convention defines landscape as an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.
Side note: the terms like townscape, streetscape, seascape and most other terms generally expressing extensive view or scenery are encompassed within the definition and are not used separately.

[36] Kate Ahern and Lyndis Cole. 2009. Part I, Page 2.

[37] The convention defines the catchment area of the Danube River as its hydrological river basin as far as it is shared by the Contracting Parties.

floods, ice hazards, droughts and incidents involving substances hazardous to water. The cooperation under FASRB focuses on coordination of both the development of joint integrated plans and the establishment of integrated information systems, the preparation and realisation of development programmes and other strategic documents and the promotion of the harmonisation of national regulations with EU legislation. It should be noted that the FASRB explicitly defines the cooperation obligation among the parties subject to the EU Water Framework Directive[38].

The cooperation among the parties is supported by the International Sava River Basin Commission established by the FASRB. It is based in Zagreb, Croatia.

2.2.1.1.12 The Drin: A Strategic Shared Vision MoU

The Drin Memorandum of Understanding, signed in 2011 by the riparian states[39] and/or territories accounting for almost all of the Drin River Basin area, promotes joint action for the coordinated integrated management of the shared water resources in the Drin Basin to safeguard and restore the ecosystems and the services they provide and promotes sustainable development across the Drin Basin. In terms of the status of respective bilateral relationships and rights and obligations of the parties under all international agreements concluded among them, the MoU has no legal effect on the parties. It lists its priority actions in three timeframes, as follows:

- Short Term: elaboration of coordination enhancement mechanisms, enhancement of the knowledge basis about the Drin Basin, improvement of information exchange, cooperation in the field of floods, institutional strengthening in the field of integrated water resources management, and promotion of public participation and stakeholders' engagement;
- Medium Term: achievement of a science based consensus on key transboundary priorities, preparation of an elaborated water balance, establishment of a harmonised monitoring program, making use of the improved information exchange, establishment of basin-wide cooperative management;
- Long Term: Development of a Drin Basin Management Plan.

The WFD is one of the most important drivers for the efforts on every timeframe under the MoU. The WFD and the UNECE Water Convention are both, regardless of the parties to the MoU being obliged to implement them, seen as the best practice examples that are to be followed in every activity under the MoU.

The MoU set-up the Drin Core Group (DCG), comprising nominated representatives of the parties, of Prespa Park Management Committee, of Lake Ohrid Watershed Committee, of Lake Skadar/Shkoder Commission, of UNECE, of GWP-Med[40], and of MIO-ECSDE[41]. GWP-Med serves as the Secretariat of the DCG.

2.2.1.2 Bilateral Agreements

Most of the bilateral international agreements on water management in the WB6 region have been concluded during the times of former Yugoslavia's unity, resulting in the international agreements from that era being possible only with Albania, Greece, Bulgaria, Romania and Hungary. Some have been formally succeeded by newly emerged states like Bosnia and Herzegovina, Croatia and Montenegro and some applied to a certain degree, while very few new agreements have been concluded after the break-up. Our research yielded only a handful of bilateral agreements with a varying degree of importance and relevance to hydropower development, among them the following:

- Agreement Between the Government of the Federal People's Republic of Yugoslavia and the Government of the People's Republic of Albania Concerning Water Economy Questions signed in 1956,

[38] None of the parties has been members of the EU at the time of signing the FASRB and two of them are still not EU members today.

[39] Serbia might de facto be a riparian state, but its area within the Drin River Basin is only marginal in both relative and absolute terms.

[40] GWP-Med, established in 2002, is the Mediterranean partnership of the Global Water Partnership (GWP). It is based in Athens, Greece.

[41] MIO-ECSDE is a non-profit federation of over 130 Mediterranean Non-Governmental Organizations working in the fields of Environment and Development. It is based in Athens, Greece.

- Agreement Between the Government of the Federal People's Republic of Yugoslavia and the Government of the Hungarian People's Republic on Water Management Questions signed in 1955,
- Agreement Concerning Water Economy Questions Between the Government of the Federal People's Republic of Yugoslavia and the Government of the People's Republic of Bulgaria signed in 1958,
- Agreement Between the Federal People's Republic of Yugoslavia and the Kingdom of Greece Concerning Hydro-Economic Questions signed in 1959,
- Agreement Concerning the Study of the Overall Improvement of the Axios/Vardar Basin signed in 1970,
- Agreement on economic, industrial, technical and scientific cooperation between the Governments of the Republic of Greece and the Republic of Albania signed in 1987,
- Treaty between the Government of the Republic of Croatia and the Government of Bosnia and Herzegovina on the establishment of water management relations signed in 1996,
- Agreement between the Government of the Republic of Croatia and the Government of the Republic of Montenegro on Mutual Relations in the Field of Water Management signed in 2007,
- Agreement Between the Ministry of Tourism and Environment of Montenegro and the Ministry of Environment, Forestry and Water administration of Republic of Albania for the Protection and Sustainable Development of Skadar-Shkoder Lake signed in 2008.

As the former Yugoslavia was a unitary state, quite a few authorities were assumed at the federation level, meaning no inter-republic agreements were required in many cases. Nevertheless, a legal framework for signing water compacts between the federal units (republics and autonomous provinces) was developed, but unfortunately this conceptually excellent example of intra-state trans-boundary co-operation was not fully implemented[42]. A more common approach for the implementation of the intra-state trans-boundary projects was their execution by designated state-owned or society-owned enterprises from the respective federal units concluding a commercial agreement following the projects' approval at the federation level being formally endorsed by the respective governments of the federative units. Even if these water compacts, of which at least some explicitly addressed also mutually harmonised hydropower development[43], were effective, there is no formal grounds for their succession by the now-independent states; the Yugoslavian succession agreement includes no provision on upholding these kinds of agreements and they are not treaties in terms of both Vienna conventions.

Most of the abovementioned agreements concluded by Yugoslavia before its dissolution might be subject to the Vienna Convention on Succession of States in respect of Treaties. It defines the succession means and principles in respect to both multilateral and bilateral international agreements, but it should be noted that among the WB6 region and its imminent neighbours, only the countries from within former Yugoslavia are parties to it, save for Kosovo.

Generally, at the international level, the durability of treaties is a function of the doctrine that renders irrelevant all subsequent domestic political developments as factors that can affect a state's international obligations.[44] An example of this doctrine for the purpose of this report is, due to its similarity in both subject matter (i.e. transboundary water resources) and the political circumstances in the countries involved (i.e. communist/socialist regimes concluding agreements, dissolution into several countries), is the Gabcikovo–Nagymaros Project case. In 1997 the International Court of Justice (ICJ) decided in a dispute between Hungary[45] and Slovakia that they are both bound by the international agreement concluded in 1977 between then-communist Czechoslovakia and Hungary. Regardless of both states trying to exit it unilaterally with Hungary claiming a state of ecological necessity due to irreversible consequences not properly considered while concluding the agreement and Slovakia willingly breaching its obligations to allow for an equitable and reasonable share of the river by a construction of a provisional diversion project, the ICJ upheld the agreement and instructed the states to negotiate its

[42] Slavko Bogdanović. 2011. Page 80.

[43] Ibidem.

[44] Eyal Benvenisti. 2004. Page 72.

[45] Hungary at the time has not been a party to the Vienna Convention on Succession of States in Respect of Treaties, as it still is not today.

implementation while taking into account current standards on environmental protection and sustainable development.[46]

It appears that very few of the bilateral agreements concluded in the past between former Yugoslavia and other countries are effectively succeeded and thus perceived as valid and operative. In fact, we found no examples of the bilateral contracts in the fields relevant to this report that would be undisputedly succeeded by at least one of the countries coming out of former Yugoslavia and successfully implemented also by the other country. There are, however, examples of some of the agreements listed above, that appear on the current lists of the bilateral agreements published by now-independent states that derived from Yugoslavia, but it seems that operative implementations do not follow; one such example is the agreement between Yugoslavia and Albania from 1956 that is listed among the bilateral agreements by the foreign ministries of Serbia and Bosnia and Herzegovina.

Therefore, the only bilateral agreements found valid, recognised and thus able to effectively govern relations of the sovereign states from the WB6 region and respective counterparties are the last four form the list above. The pairs of countries they apply to are Albania and Greece, Bosnia and Herzegovina and Croatia, Montenegro and Croatia, and Albania and Montenegro.

2.2.2 EU and International Transboundary Legal Framework[47]

There are two transboundary aspects dealt with in the present report. Firstly, the aspect of water resources management in the case in which the discharge and water head representing hydropower potential is shared between countries and should be divided somehow. This aspect has been elaborated in detail and concerns a great part of the Study. Besides, the Integrated River Basin Management which involves riparian countries and resources use has to be agreed upon accordingly in an IRBMP, meaning that the transboundary process is inherently involved in all cases of water resources planning. Secondly, the aspect of the transboundary process of large-scale infrastructure authorisation must be addressed, which is regulated and important in the phase of project realisation.

Authorising large-scale projects that have significant transboundary adverse effects and subjecting them to an EIA may create additional procedural challenges. These need to ensure compliance with EU environmental legislation and other existing and applicable legal provisions and principles. In these cases, EIAs can be a viable tool for strengthening international cooperation, as they ensure public participation and a transparent decision-making process, raise awareness of the importance of the environment, and address possible conflicting interests. When applying the EIA procedure to large-scale transboundary projects, specific questions may come up on notifying and transmitting information, preparing the environmental documentation, public consultations and access to documents (language capacity), etc.

The Directive on the assessment of the effects of certain public and private projects on the environment, known as the Environmental Impact Assessment-EIA- Directive (2011/92/EU amended 2014/52/EU - see details in BR 7 on Environment and BR 2 on Gap Analysis of the Legal-Regulatory and Institutional-Organisation Framework Relevant for Hydropower Development), includes special provisions for cases in which a project implemented in one Member State is likely to have significant effects on the environment of another Member State. The Convention on Environmental Impact Assessment in a Transboundary Context (UNECE1991), known as the Espoo Convention, introduces specific rules for conducting an EIA of activities located on the territory of one contracting party, defined as the Party of origin, and likely to cause significant adverse transboundary impact in another contracting party, defined as the affected Party.

We believe it would be good to explicitly mention the need to ensure coordination within river basin districts for the transboundary basins. This is normally done by the preparation of national and international RBMPs – and Flood Risk Management Plans

Countries should adopt and revise regularly the RBMP in close coordination with other states in case of shared river Basins. There is a need to ensure coordination within river basin districts for the shared River Basins during

[46] Eyal Benvenisti. 2004. page 136

[47] Adapted in part from: **"Guidance on the Application of the Environmental Impact Assessment Procedure for Large-scale Transboundary Projects,** European Union, 2013

the preparation of national and international RBMPs – and Flood Risk Management Plans. Projects that significantly affect the water regime upstream or downstream should not go ahead unless an agreed solution has been found among the countries concerned.

The environmental impact assessment of transboundary projects has been carried out for many years under the EIA Directive and the Espoo Convention. The most common situation involves two countries - one where the project is situated and another where it may cause significant environmental effects. In recent years, an increasing number of large-scale projects are being realised covering the territory of more country (e.g. water-management, but also typical for roads, transmission lines, etc.). These 'transboundary' projects are likely to have significant environmental effects on each side, and involve many stakeholders (national, regional and local authorities, NGOs, the public).

The countries responsible for authorising such projects often differ in legal systems and EIA procedures and some are not parties to the Espoo Convention. In addition, the environmental and socio-economic impacts of transboundary projects are not limited to project boundaries but rather go beyond physical borders. Multilateral cooperation would be therefore essential.

'Transboundary' projects create challenges for the usual EIA procedures (when applicable) and raise new issues that must be addressed using the existing legal provisions described in the above legal acts, i.e. the UNECE Espoo Convention and the EIA Directive. Other instruments may also be relevant to transboundary projects, but will not be addressed in this guidance document: e.g. Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment, the Protocol on Strategic Environmental Assessment to the UNECE Convention on Environmental Impact Assessment in a Transboundary Context, Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, Directive 2000/60/EC establishing a framework for Community action in the field of water policy.

Similar or more detailed transboundary provisions may be found in other bilateral and multilateral agreements and legal instruments. For instance, the UNECE Aarhus Convention on access to information, public participation in decision-making and access to justice in environmental matters, the Convention on Biological Diversity, etc.

For the time being, there is only limited practical experience in applying the EIA procedure to large-scale 'transboundary' projects in the water-management arena. It has been gained mainly from the HPP development on the Sava River between Slovenia and Croatia.

For large-scale transboundary projects, a straightforward interpretation of the rules of the Espoo Convention and the EIA Directive would be the best starting point of action. It must consider the overall objective of the EIA, namely ensuring that likely significant adverse effects of transboundary projects are assessed before development consent is issued and that they are integrated into project planning and considered in decision-making. This is the reason for preparing joint EIA documentation before any national EIA procedure is started or being carried out. This approach ensures that projects are not split along border lines artificially and that their overall cumulative effect is taken into account possibly by elaborating separate Cumulative Impact Analysis (see Section3.5.2). Finally, learning from the latest law cases of the EU Court of Justice, it is up to the competent authorities to ensure that the overall assessment of a project's effects on the environment is carried out.

In the case of HPPs on the Sava River in Croatia and Slovenia, the interest of both parties was that time schedules were specified as early as possible. The focal points discussed the possible timeframe according to the legislation in both countries, the legislative timeframe for the stages of the procedure, and opportunities to combine steps and prepare time plan to avoid or minimise possible delays by planning at an early stage. The agreed time schedule was also presented to the public. As a time-saving measure, public participation on both sides of the border was organised and harmonised.

In the EU, the European Commission does not participate in the EIA and authorization procedures; these responsibilities lie solely with the EU Member States authorities. Similarly, EIAs required under the Espoo Convention are carried out under the sole responsibility of the concerned parties; the Convention's Secretariat has only an advisory role.

2.2.3 EU Floods Protection Directive and Hydropower

The EU Directive 2007/60/EC on the assessment and management of flood risks (EU Floods Directive) entered force in 2007. The aim was to establish a framework for the assessment and management of flood risks, having

adverse consequences for human health, the environment, cultural heritage and economic activity associated with floods in the EU. In the context of this BR, flood protection is an important benefit of reservoir realisation, therefore EU Floods Directive is considered relevant also from the point of view of Transboundary Issues.

Floods are natural phenomena which cannot be prevented. However, human activity is contributing to an increase of the likelihood and adverse impacts of extreme flood events, like the clearing of forests in the upper catchment area, straightening of rivers and suppression of natural flood plains, as well as inadequate drainage practices.

Two trends point to an increase of flood risk in Europe. Firstly, the magnitude and frequency of floods are likely to increase in the future because of climate change (higher intensity of rainfall as well as rising sea levels). Secondly, there has been an increase in the number of people and assets located in flood risk zones. Hence, the risk of floods will continue to be present and may increase considerably during the coming decades. The challenge is to anticipate these changes now and to protect society and the environment from the negative effects of floods.

The sources as well as impacts of flood events are linked to river basins or sub-basins, not to administrative or political borders. Many countries have already commenced measures at regional and national level, but also in transboundary cooperation in large shared river basins such as the Danube Drainage Basin. Concerted and coordinated action at the level of Europe would bring a considerable added value and improve the overall level of flood protection. Given the potential risk to human life, economic assets and the environment, doing nothing is not an option; Europe is committed to sustainable development and maintaining competitiveness and creation of employment which could be severely compromised if appropriate measures are not taken.

The construction of reservoirs and protection dykes is critical in transboundary flood management, as both change the flood characteristics: reservoirs retain and dykes accelerate the flow, thus both may have transboundary impacts. Downstream effects depend on the situation and the characteristics of the flood. Both types of measures might be necessary within IWRM and flood management, but should be planned in consultation with the other riparian countries. In addition, the integration of water and land management is necessary. Thus, the main aim of the EU Floods Directive is to foster transboundary planning, resulting in action plans such as the examples provided by the Rhine, Elbe and Mosel River Basins. The management of the Sava River Basin is also a typical example for transboundary cooperation and planning.

The Directive is to be implemented in coordination with the EU Water Framework Directive, notably by coordinating flood risk management plans and river basin management plans, but also by coordinating the public participation procedures for preparation of these plans. All assessments, maps and plans prepared are to be made available to the public

Member States and other countries committed to accession must furthermore coordinate their flood risk management practices in transboundary river basins, including with third counties, and should not undertake measures that would “significantly increase flood risks” in neighbouring countries, unless these measures have been coordinated and an agreed solution has been found. Member States should take into consideration long-term environment processes, including climate change, as well as the sustainable land use practices in the flood risk management cycle addressed in the Directive.

The Directive states that “In the interests of solidarity, flood risk management plans established in one Member State shall not include measures which, by their extent and impact, significantly increase flood risks upstream or downstream of other countries in the same river basin or sub-basin unless these measures have been coordinated and an agreed solution has been found among the Member States concerned”.

The Directive stipulates that a preliminary flood risk assessment be made by 22 December 2011 for each river basin district, or unit of management, or the portion of an international river basin district lying within their territory. This should be based on available or readily derivable information about the impacts of climate change on the occurrence of floods.

Furthermore, flood risk management plans should address all aspects of flood risk management, focusing on prevention, protection and preparedness, including flood forecasts and early warning systems. They should also consider the characteristics of the river basin or sub-basin in case.

Food risk management plans may also include the promotion of sustainable land use practices, the improvement of water retention as well as the controlled flooding of certain areas in the case of a flood event.

The flood problems in the Region appear to be caused by deforestation and land use changes, intensive land use and the expansion of settlements in the floodplain aggravated by climate change. Storage reservoirs serving at the same time for hydropower potential exploitation would be one possible option for reducing floods, but maintenance and operation require high-quality and frequent information on flood waves and river morphology. The maintenance of such structural prevention measures of flooding is difficult, expensive and therefore sometimes inadequate, which significantly complicates flood prevention and flood protection measures, but could be adequately supported by another water use like hydropower.

2.2.4 Environmental Impact Assessment in the EU and in EU Accession Countries of the WB6 Region [48]

2.2.4.1 Legal Background

Large-scale projects that have significant transboundary adverse effects may create additional procedural challenges and subjecting them to EIA process would require additional efforts from both authorities and working teams. EIA in transboundary environment can be a viable tool for strengthening international cooperation, as they ensure public participation and a transparent decision-making process, raise awareness of the importance of the environment, and address possible conflicting interests. Specific questions may come up on notifying and exchange of information, public consultations and access to documents, etc.

Transboundary related projects have been carried out under the EIA Directive and the Espoo Convention for many years. Most commonly two countries were involved- one with the project and another being affected by significant environmental effects. Lately, an increasing number of large-scale projects of more countries involved (e.g. water-management, but typical for roads, power transmission lines, etc.) has been noticed. Such 'transboundary' projects would involve many stakeholders (national, regional and local authorities, NGOs, the public).

Administrations authorising such projects could differ in legal systems and EIA procedures, while assessment of the environmental and socio-economic impacts would not remain within project boundaries but rather extend beyond physical borders.

'Transboundary' projects create challenges for the usual EIA procedures (when applicable) and raise new issues that must be addressed using the existing legal provisions described above legal acts, i.e. the UNECE Espoo Convention and the EIA Directive. Other instruments may also be relevant to transboundary projects, e.g.:

- Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive),
- the Protocol on Strategic Environmental Assessment to the UNECE Convention on Environmental Impact Assessment in a Transboundary Context,
- Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats Directive),
- Directive 2000/60/EC establishing a framework for Community action in the field of water policy (Water Framework Directive).

Similar or more detailed transboundary provisions may be found in other bilateral and multilateral agreements and legal instruments between the respective countries. For instance, the UNECE Aarhus Convention on access to information, public participation in decision-making and access to justice in environmental matters, the Convention on Biological Diversity, etc.

The WB6 countries are signatory countries to Espoo Convention except for Kosovo.

For the time being, there is only limited practical experience applying the EIA procedure to large-scale 'transboundary' projects in water-management arena. It has been gained mainly from the HPP development on Sava River between Slovenia and Croatia, which can be regarded as most recent and successful implementation

[48] Adapted in one part from: "Guidance on the Application of the Environmental Impact Assessment Procedure for Large-scale Transboundary Projects, European Union, 2013

of the mentioned transboundary procedures. This project is not significant only for EU, where it is the only hydropower project realised under transboundary conditions, but it is significant for the WB6 Region, because of its position at the brink of the Region where many things are traditionally in common. This is also a case of good practice in the realisation of hydropower maintaining good relations between the countries involved.

2.2.4.2 The Case of HPPs on the Sava River (cross-border project between Slovenia and Croatia)

The implementation of hydropower plants on the Sava River is a project of national importance. From the 5 HPPs initially planned in addition to the one existing formerly, 4 HPPs have been realized in the period from 2002 until 2017. This chain of HPPs is considered not only the biggest energy project but the most significant development project in Slovenia. The Sava HPP chain stretches over 88 kilometres' distance between the towns of Medvode and Mokrice at the border with Croatia.

Table 2.1: Main technical characteristics of the Sava chain HPPs

Parameter / Plant	HPP Boštanj	HPP Blanca	HPP Krško	HPP Brežice	HPP Mokrice
Rated flow	500 m3/s (3 x 166,7 m3/s)	500 m3/s	500 m3/s	500 m3/s	500 m3/s
Head	8,20 m	10,7 m	9,9 m	10,4 m	7,58 m
Rated output	32,5 MW	42,5 MW	39,5 MW	41,5 MW	30,5 MW
Average annual production	115 GWh	160 GWh	149 GWh	161 GWh	135 GWh
Average annual flow	235 m3/s	243 m3/s	247 m3/s	250 m3/s	305 m3/s

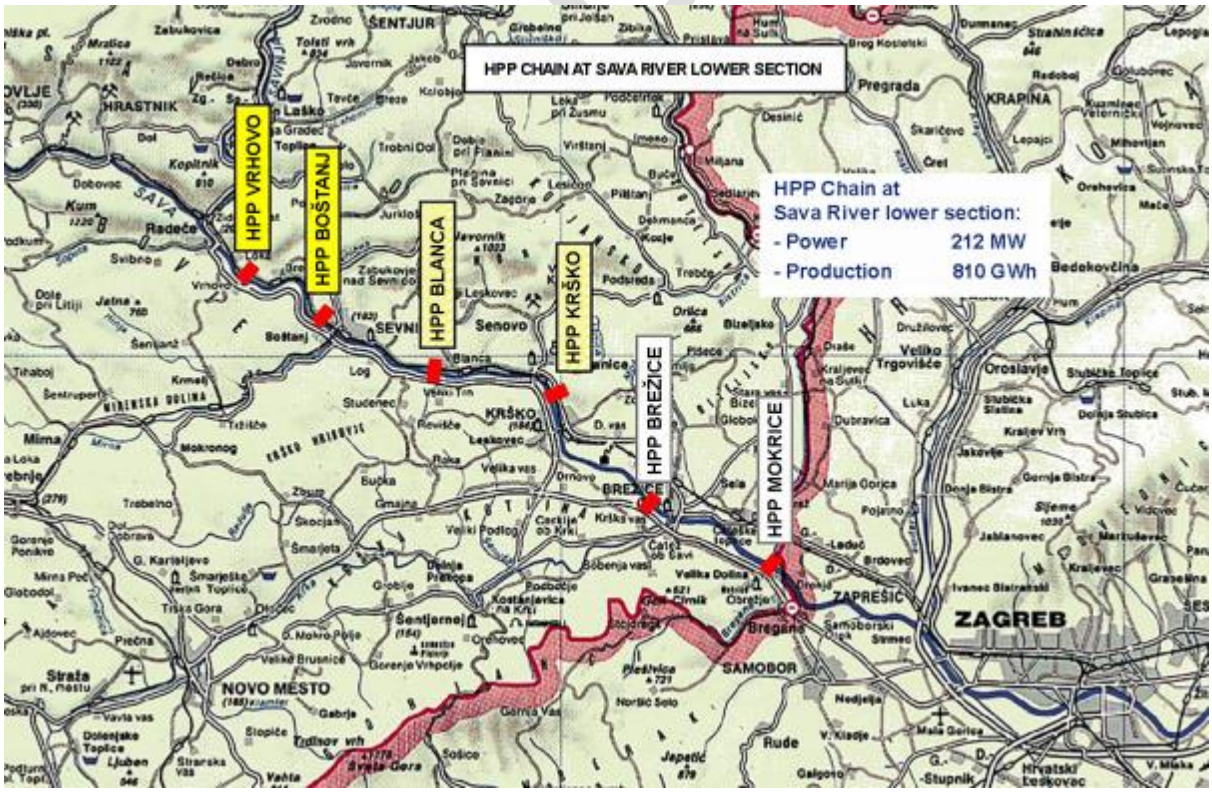

Figure 2.1: Position of the last (6) HPPs in vicinity of the border line between Slovenia and Croatia

The investment was divided into a part of "energy" and a part of "water management". Each part has been financed from its source, so the energy component has been financed by the Utility and the water management component from the State budget. Investment in environmental measures reached around one quarter of the total investment. Environmental mitigation measures are shown in Table 2.3 and Figure 2.2.

Table 2.2: Overview of positive effects of mitigation measures on pSCI (potential Sites of Community Interest) "Sava above Zagreb" and pSCI "Sutla"

Environment medium	Environment Objectives	Criteria	Assessment
Surface water	• Ensure proper sediment-gravel transport • Preventing deep scouring downstream	• The agreed amount of gravel (m3 / year), and the appropriate granulation at the border profile, • Change of river morphology across borders	Impact is not important due to the application of mitigation measures
	• Provision of agreed water regime • Protection against harmful effects of water in the event of a dam breach	• Natural hydrography and flow • The size of the flood waves in the event of dam breach	Impact is not important due to the application of mitigation measures
Nature	• Conservation of the ecologic balance downstream	• The presence of species in the water and coastal area downstream to the state border	Impact is not important due to the application of mitigation measures

However, although positive in general, the effects of the Sava HPP chain on local communities are not exclusively positive as any HPP has irreversible environmental implications – one should consider the inevitable changes in the local population lifestyle and environment. The complexity of the project planning in combination with increasingly demanding EU environmental legislation demanded a very comprehensive approach in all relevant segments, especially regarding cooperation and interaction with riparian communities as well as the two neighbouring countries. Consideration of the environment in the HPPs of such size required the involvement of many institutions. Consents and approvals line up in a complex harmonization of different interests.

The common interest of communities along the Sava river and transboundary issues included flood protection of urban and rural areas, the preservation of surrounding habitats and landscapes, the extended possibilities to develop recreational and other multipurpose areas, the rearrangement of municipal infrastructure, etc. In conclusion, it was agreed and remained as the first priority for the investor country (Slovenia)[49], that a positive agreement with the community is the most important cornerstone which will generally guarantee acceptability on the local level, while consensus with downstream country of Croatia comes second in order of importance.

The approach in conceiving alternatives in river systems differs from other terrestrial projects. The main difference in project alternatives is the location of the river stream which is impossible to relocate, having an influence on the level of complexity. While other infrastructure projects based on the surface could opt for different locations very freely, water-related projects are bound to a physical body of water. Moving outside the natural water body seems to be an impossible and even a senseless action.

Many regulators consider the elaboration of alternatives as the core of the environmental assessment. The best time to analyse alternatives is before any commitment to a development proposal has been made. Without a predetermination of environmental feasibility, the goal of such analysis is to find an option with the least impact on the environment. If such an option also delivers other advantages, all the better. In quite a few instances, it has occurred that coincidences of positive effects have happened at the same time. The most probable explanation of this effect is the internalisation of an external cost (i.e. environmental) in the investment or running cost of the

[49] The major investor in the Sava chain of HPPs is HESS Hidroelektrarne na spodnji Savi, a state-owned hydropower generation utility. However, all non-HPP related infrastructure (e.g. flood protection, relocation of roads, bridges, etc) was financed from the state budget. Consequently, the overall investment costs were shared by the power utility and by the State.

development. This results from another environmental policy guided by “polluter pays” principle, or the principle that damage to third parties should be covered by the benefiting party of the action being implemented. The difference between alternatives would mostly show in the cost of mitigation measures required in alternatives under consideration.

The method of work was: implementation of two SEA transboundary procedures: one for the national plan for HPP Brežice and two for the national plan for HPP Mokrice.

The implementation of the two required EIA transboundary procedures was undertaken sequentially. Firstly, for the project for HPP Brežice and subsequently for the project for HPP Mokrice, both separately. A one-by-one approach was adopted, starting the second only after ending the first, while considering the cumulative effects of the chain in both procedures.

In the Transboundary authorisation process, a step-by-step approach was applied, with following steps:

1) notification,
2) environmental report preparation,
3) consultation with environment authorities,
4) transboundary consultation,
5) public participation,
6) consultation on mitigation measures and their approval,
7) draft final decision, and
8) all steps agreed between the focal points UNECE and focal points for administrative matters, international level of responsibility.

Notification

The Slovenian side (Ministry of Environment and Spatial Planning) notified the responsible Croatian counterpart (Ministry for Environment) on its intention to commence the planning procedure for the two HPPs.

The notification contained all documents and data according to Article 10 of the SEA Protocol:

a.) the draft plan and environmental report including information on its possible transboundary adverse environmental impacts, including health effects;

b.) information regarding the decision-making procedure, including a reasonable time schedule for the transmission of comments.

Croatia responded in the proposed time of one month and sent the confirmation to cooperate in the transboundary SEA procedure supported with reasons, such as care for underground water sources in Zagreb and Samobor, possible effects on the morphology of the river, nature conservation, flood protection and possible risks with the dam.

Screening

In the SEA Protocol, Annex I includes a list of activities that automatically require the application of the Protocol if significant adverse impacts may be effective across a border. According to the fact that energy activities are planned in the two national spatial plans on the transboundary Sava River, the transboundary SEA thus applied. Annex I of the SEA Protocol, referring to paragraph 2 of Article 4, defines large dams and reservoirs.

In the national plan, reservoirs on the Sava River are planned, which flows further to Croatia: thus, the possibility exists for transboundary impacts and transboundary effects could not be ignored.

Transboundary technical consultation

After the EIA report was accepted by the Ministry for Agriculture and the Environment, as the competent authority in Slovenia, it was presented to the Ministry of Environment and Nature Protection of Croatia for comment.

Environmental commissions were established on both sides. These are composed for all transboundary procedures on the Sava River, with the following members: environmental experts, environmental authorities, the project proponent and energy authorities.

In addition, a flood-protection model was prepared; Croatian experts were invited at a very early stage of its

preparation and the model and its conclusion were also presented to the public and at the technical consultation.

The consultation on mitigation measures showed at a very early stage that from the three alternatives of mitigation measures only the alternative with project measures solely on the Slovenian side was acceptable to Croatia, so this alternative went to evaluation.

Consultation with environmental and health authorities

Within the process, each of the responsible environmental authorities consulted the mentioned authorities to reach consensus and common understanding of measures needed for control of transboundary effects.

Consultation on the national plan for HPP Brežice, in which two alternatives were evaluated, showed that the narrow alternative was better for the environment, but in addition all flood-protected areas should be preserved to reduce the impact on Croatia.

In addition, a flood-protection model was prepared; Croatian experts were invited at a very early stage of its preparation and the model and its conclusion were also presented to the public and at the technical consultation.

Consultation on the national plan for HPP Mokrice showed at a very early stage that from the three alternatives only the alternative with project measures solely on the Slovenian side was acceptable to Croatia, so this alternative was proposed for further evaluation.

2.2.4.3 Lessons Learned and Recommendations

Some of lessons learned from this practical experience are the following:

- There was no prior relevant bilateral agreement between the two countries, but only points of contact and focal points accredited for the Espoo Convention and SEA Protocol were designated with their tasks and responsibilities. The cases show that the procedures could be managed successfully via focal points.
- A formal contact has been carried out to meet the legal requirements of the SEA Protocol. The cooperation shows that it is important to activate informal negotiation throughout the process and especially at the: starting, consultation and final stages.
- Experience shows that the negotiations which were conducted between points of contact and responsible authorities within both countries as well as between authorities and NGOs and public on both sides of the borders were essential for the positive outcome of the procedure.
- To manage the process, working groups in Slovenia and in Croatia were organised and cooperated during the entire process until the final decision was taken.

From this case example, we can draw several practical recommendations on the EIA in a regional context for transboundary process that should be followed by the WB6 countries:

- Accept the legal framework and develop administrative capacities,
- Start with notification as early as possible;
- Keep the process on technical level;
- Organise active public participation with public hearing in parallel in both sides of the border;
- Keep process transparent and open and define each stage; insist on strong management;
- Present approach, methods of assessment, discuss alternatives, option without project and mitigation measures and post project analyse;
- Agree on each step beforehand.

For large-scale transboundary projects, a straightforward interpretation of the rules of the Espoo Convention and the EIA Directive would be the best starting point of action. It must consider the overall objective of the EIA, namely ensuring that the likely significant adverse effects of transboundary projects are assessed before development consent is issued and that they are integrated into project planning and considered in decision-making. This is the reason to prepare the joint EIA documentation before any national EIA procedure is started or being carried out. This approach ensures that projects are not split along border lines artificially and that their overall cumulative effect is considered possibly by elaborating separate Cumulative Impact Analysis (see Section3.5.2). Finally, learning from the latest law cases of the EU Court of Justice, it is up to the competent authorities to ensure that the overall assessment of a project's effects on the environment is carried out.

In the case of the HPPs on Sava River in Croatia and Slovenia, the interest of both parties was that time schedules were specified as early as possible. The focal points discussed the possible timeframe according to the legislation in both countries, the legislative timeframe for the stages of the procedure, and opportunities to combine steps and prepare the time plan to avoid or minimise possible delays by planning at an early stage. The agreed time schedule was also presented to the public. As a time-saving measure, public participation on both sides of the border was organised and harmonised.

In the EU, the European Commission does not participate in the EIA and authorization procedures; these responsibilities lie solely with the EU Member States authorities. Similarly, EIAs required under the Espoo Convention are carried out under the sole responsibility of the concerned parties; the Convention's Secretariat has only an advisory role.

There was a success story for this project agreed by both countries, while adaptability on how to deal with new facts was found to be the key reason behind its success, besides:

- During the procedure: Croatia entered the EU so the Natura 2000 European ecological network became a fact;
- Slovenia prepared, in addition, an appropriate assessment to the Croatian Natura 2000 ecological network in line with art.6 of the habitats directive;
- In the implementation process, a new situation appeared, the important aspect being how to deal with and manage it, aimed at the improvement of the environment.
- The importance of the process management is predominately technical.

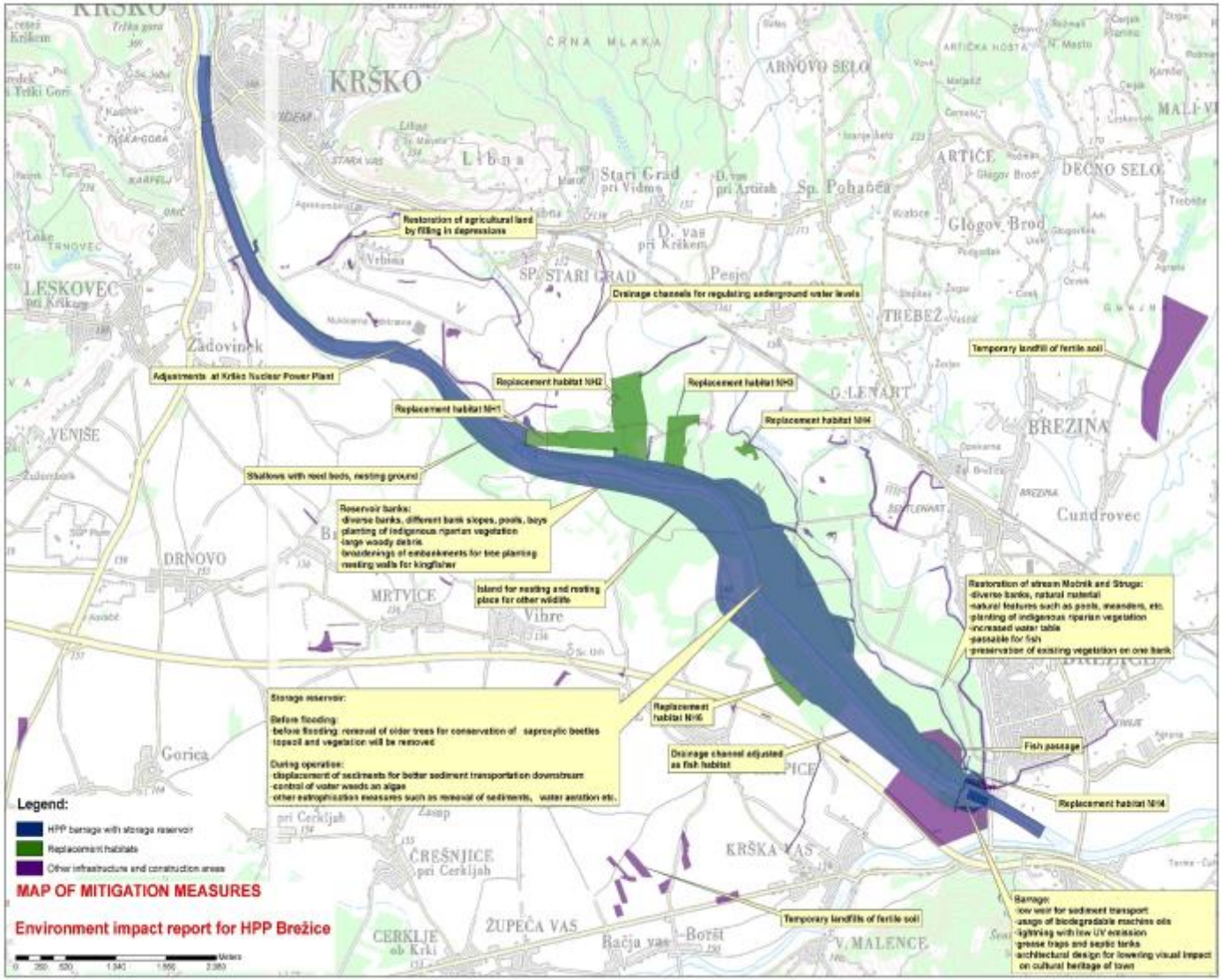

Figure 2.2: Layout of mitigation measures at Hydropower Plant Brežice

2.2.5 Concluding Remarks on International Agreements

From the aspect of their impact on hydropower development in the region, the following Conventions should be applied together with the implementation of EU Acquis containing transboundary aspects (i.e. EIA, SEA and WFD):

- the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo 1991);
- the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus 1998);
- the Danube River Protection Convention (1998).

Cooperation on the use of the resources shared across the border is necessary for most of the WB6 territories in many aspects; Kosovo, due to its limited ability to become party to many of the relevant agreements, has significantly less rights and obligations in this regard than other countries in the region.

EU Member States are responsible for the performance of those obligations resulting from the Espoo Convention not currently covered by Community law and more specifically by EIA Directive. The Community underlines that the EIA Directive does not cover the application of the Espoo Convention between the Community on the one hand and non-Member States party to the Espoo Convention on the other hand. From this, it follows that the Community, within the limits indicated above, is competent to enter into binding commitments on its own behalf with non-members countries which are Contracting Parties to the Espoo Convention ratified by Albania and accessed by all other countries except Kosovo.

Despite the formal acceptance of conventions by the countries in the region, cooperation has not reached the desired level of integrated water management across all the river-basins in a truly inclusive multiparty way, regardless of accepted international obligations that, ideally, could have led to the establishment of river basin commissions. This presents the major gap in the fulfilment of the international legal obligations in relation to transboundary impacts of hydropower development in the region.

An important move has been made in recent years from agreements based on mutual rights and obligations towards agreements based on the needs of individual countries, as such a principle has been identified as leading to more balanced and just solutions. Therefore, transboundary issues can be addressed only if the parties are willing to understand each other and share a common understanding of the issues at stake.

Measures already taken by the Danubian Countries (presently from the region: Serbia, Montenegro and Bosnia and Herzegovina) and on the bilateral and multilateral level of their cooperation as well as the efforts undertaken by the United Nations Economic Commission for Europe and by the European Union to promote cooperation for the prevention and control of transboundary pollution, sustainable water management, and the rational use and conservation of water resources.

3 Transboundary Inputs to the Study

Numerous transboundary issues have been identified during the Scoping Phase of the Study already; they have been further researched and explored in collaboration with responsible local stakeholders for the purposes of this report. These examples from the WB6 region serve the purpose of illustration of what form and substance transboundary issues can take and what kind of hydropower potential might be lost – either through a HPP scheme not being developed at all, or being underdeveloped by simply reverting to variants with a lesser transboundary dimension – due only to the increased complexity that such a more integrated transboundary approach might impose.

The analysis of individual projects mentioned in this report is intended for the illustration and extraction of learning points. The aim is to examine potential transboundary issues mentioned in the cases and to review the experience of potential HPP projects that might have been abandoned due to failures in adopting a thorough transboundary approach. The aim is not to make any judgements on the justification of the project's feasibility or sustainability. The protection of the environment is the basic concept, which is further enhanced with the proper application of EU environmental legislation and the support of an environmental management action plan.

However, it is important that transboundary co-operation has been enshrined in legislation. The main planning instrument in this sense is the RBMP and the transboundary EIA. Accordingly, agreements between riparian countries are not considered the key to solving the issue of co-operation, but are certainly useful if well prepared**.** This report is prepared in such a way that a distinction between transboundary processes (such as transboundary EIA) and transboundary issues of resources division between countries is respected and both are presented separately.

These are not recommendations but cases, which could be either re-evaluated through regulated procedures or rejected following the requirements of the EU legislation. The description of the cases is not complete, a fact that was commented upon by Beneficiaries. It has been demonstrated how much has been lost and how much could be potentially gained. These cases are at the beginning of a chain of decisions in water management. The design of the cases is mostly outdated. In terms of the WFD and other EU legislation, the investment cost would be higher due to the mitigation and the feasibility questionable. But the team was not supposed to address this issue.

Figure 3.1: Locations of Planned and Potential HPP Projects with Transboundary Issues Identified During the Scoping Phase

3.1 Key Transboundary Issues and Integrated Water-Management Planning

3.1.1 Key Issue No. 1: Biodiversity

The WB6 is a region of rich biodiversity with significance on the European and global level, including endangered aquatic species of fish and mollusc fauna. Hydropower development schemes in general, and not only in transboundary cases, may represent a significant effect on many river ecosystems. In the past, the decisions on the number, size and locations of new dams for hydropower production were based on maximising energy delivery and rarely respecting compensation measures or mitigation of the negative impacts of hydropower construction.

Damaging intact river habitats is not reversible, and typical ecological compensation / mitigation measures will struggle to restore a full balance with respect to the loss of biodiversity. Furthermore, damage to ecosystems puts them under stress to provide the ecosystem services that benefit the human living environment generally. These factors are nutrient cycling and primary production which underlie the delivery of all the other services but are not directly accessible to people.

Unsustainable and uncoordinated water use for energy production overuses the 'provisioning' services at the expense of the other ecosystem services, and the changes to water quality and hydrological regimes caused by hydropower plants have the potential to undermine all the above. The analysis of planned hydropower developments by the Multi-Criteria Assessment (MCA) presented in BR-8 shows that a number of planned HPPs

will be and are actually located in ecologically valuable areas. The MCA will "eliminate" those not meeting criteria either by pre-conditions or by their eventual rank assignment. High conservation value usually leads to protected areas, which should be avoided, especially in the most critical zones. Uncontrolled HPP development can lead to a high probability of significant damage to river ecosystems. This threat appears to be highest in Albania and Montenegro, in particular due to the fragmentation of still entirely free-flowing rivers. Planning procedures, which have ignored the environmental aspects, focusing predominantly on maximum gains from power production are often criticised by Civil Society Organisations (CSOs).

In Bosnia and Herzegovina, the Vrbas and Bosna Rivers have the potential for realisation of measures to develop HPPs which will avoid canalisation with embankments along chains of hydro power plants. The lower Drina in Serbia - a unique remnant of a meandering large gravel dominated river - might be developed for hydropower schemes without taking into account its river morphology features. Many river valleys such as those along Middle Drina River in Serbia could be turned into chains of hydro power plants if migration corridors for species connectivity are not taken into account. The nearly untouched upper courses of Morača and Tara in Montenegro are the subject of plans, which would disconnect the upper river systems of Morača River towards Skadar/Shkoder Lake and Adriatic Sea without proper conservation measures which include fish passes (also in broader sense passes for water organisms) and corridors. Major dams will segment two large braided rivers in Albania, the Vjosa and Devoll Rivers if not properly compensated or protected at similar locations along the Vjosa/Aoos. The still free-flowing Vardar River in the former Yugoslav Republic of Macedonia could be turned into a hydropower cascade. Dams on lower Velika Morava (Sub)River Basin in Serbia would interrupt large river ecosystems if not planned with bypasses and other mitigation measures.

The river streams and tributaries should be protected to remain biological corridors for the relevant areas of the region, so connectivity is ensured at river source and on flood plains along streams. The Danube, for example, needs a corridor of up to ten kilometres on each side providing habitats and migration corridors for species. A comprehensive solution of the corridor would allow the bypassing of cities or industrial complexes and would include a selected range of remaining habitat patches. The corridor can be broader or narrower, can be split up in different strips or patches having different qualities of connectivity, regarding the needs of different species communities adapted to different habitats. The main river course and riparian zones should have priority for protection and restoration as originally, they hosted the most dynamic elements of habitat and species diversity.

Corridors at smaller rivers can be narrowed along their sides, from up to five kilometres on each side for major Danube tributaries down to 500 or 50 meters respectively for larger and smaller streams.

3.1.2 Key Issue No. 2: Water Resources Sharing and Transboundary Water Balance

With reference to the strategic development documents and assessment of the political situation, expected socio-economic developments in the WB6, like the demand for water and energy, are expected to increase dramatically with growing populations and economic development, particularly associated with increased water demand in newly developing countries. Secure access to water for all riparian countries in a basin is thereby essential and directly linked to water security, which can only be achieved by transboundary cooperation. A water-secure world integrates a concern for the intrinsic value of water together with its full range of uses for human survival and well-being. It means enough, safe, affordable water to lead a clean, healthy and productive life, including flood protection but also environmental protection.

The IWRM approach provides the necessary tools and guidance for achieving the above and in the context of water management; this also means that transboundary cooperation has to go beyond water management and needs to extend into energy, among other issues.

Barriers to progress for achieving water security through governance and establishing functioning IWRM frameworks are often related to: a lack of political will for functioning cooperation, simplistic solutions (i.e., not enough integration), a lack of stakeholder engagement, persistent inequities, a lack of or poor recognition of environmental issues, inadequate and inflexible regulations and a lack of proper implementation of existing adequate regulations.

Changes in flow in regard to a water regime or volumes need to be agreed upon between riparian countries. Excessive abstraction of water from rivers and lakes for irrigation, urban supply, inter-basin transfers, or other consumptive purposes can significantly decrease downstream flow rates and diminish aquifer recharge.

Conversely, large discharges of water from Storage Basins can modify the downstream flow patterns. These, in turn, are bound to modify downstream aquatic ecosystems, leading to the desiccation of wetlands, reduced capacity for digesting wastewater discharges, and lowered water tables. There is an abundance of possibilities for head storage basins in the Region. However, the best reservoir locations – from an engineering point of view - are be found in transboundary environments like Skavica (Albania – the Former Yugoslav Republic of Macedonia) and Buk Bijela (Bosnia and Herzegovina – Montenegro - Serbia). While these locations would be considered good from the technical point of view, there are some questions to be resolved before commencing these projects. For example, in the case of the Buk Bijela, the key question is to what extent the impoundment of the Tara River would be possible, and certainly without flooding any of the protected canyon area. Other less advantageous opportunities are positioned within national boundaries, like Žuti Krš (Montenegro). In principle, head storage basins are beneficial for all downstream water resources users, and in that respect flood protection is of crucial importance on rivers, for example on the Drina River, which is known for notorious flooding, where such a reservoir would enable a higher degree of flood control.

Apart from water abstraction, barriers across rivers for storage or regulation - such as dams for flood control, urban and irrigation water supply and hydropower generation can cause changes in flow patterns, increase stratification, and will impede the movement of aquatic biota. These changes directly impact downstream communities by, for example, reducing the productivity of rivers, lakes and estuaries and reducing fish populations because of changes in breeding cues and changes in physical habitat.

Changes in flow quantities alter water levels in both rivers and lakes with detrimental effects on sensitive riparian areas such as wetlands and floodplains. These changes can alter the hydrodynamics of lakes, affecting water quality and habitat. In rivers; changes in flow velocity can affect the migratory and breeding behaviour of some species, as well as affect sediment transport and deposition.

Flows that are specifically intended to maintain the environmental benefits of river systems are termed environmental flows, rest flow or basic ecology flow. There is growing experience in the countries in the provision of environmental flows, although it remains one of the weaker aspects of integrated water resources management.

To sufficiently control the water balance at transboundary rivers, a reliable measurement of flow has to be put in place. The best locations for discharge gauging stations are provided near state borders, where the cumulative effects of upstream catchments have to be recorded. The acceptance of a level of tolerance between natural and modified run-off flows is a matter for riparian countries to agree upon.

Generally, the effect of seasonal or yearly water quantity transport, which is done for example at the upper river section, is felt all the way downstream. By proper operation of the head reservoir, hydropower is going to benefit tremendously in terms of peaking or energy production security. On the other hand, this presents pressure on habitats and some other water resources users, therefore the issue of storage basins should be planned within river basins and harmonised throughout different state administrations. By such an approach, the opportunity emerges for downstream countries to participate either in investment or some other means of compensation.

3.1.3 Key Issue No. 3: Transboundary Transport of Sediments

Sediments themselves can provide a risk or a benefit to the well-being of a river system, through too much or too little sediment, or through incompatible physical characteristics. For example, sediments in rivers, reservoirs, lakes and impoundments can reduce storage and flow capacity, increase flood risk, damage hydropower installations, degrade habitats, erode river channels downstream of sediment blockages, and undermine the stability of channels and infrastructure (e.g. erosion of bridge piers). Benefits include a sediment supply to the riverbanks environment, the provision or sustenance of wetland and aquatic habitats, sediment extraction for use in building/road industries, and a beneficial effect of capping contaminant levels.

In considering sediments holistically (i.e. at the river basin level) there is a need to consider some contaminant issues. For instance, many riverbanks and flood-banks are highly contaminated with historical industrial waste or even dredged material. During flood events, contaminated sediment deposited on fields may take them out of agricultural use. Nutrients bound to sediments may play an important role in eutrophication, and pesticides and pharmaceuticals bound to sediments may prove to be a long-term problem.

The storage and diversion of water on transboundary rivers has often triggered tensions between countries within a shared watershed. Often, these tensions result in impasse, and there is no outcome in such a situation. As a specific structure for retaining water, dams require constructive multilateral co-operation. Consequently, it increasingly becomes the subject of legal agreement(s) between countries to regulate their mutual interest for effective cooperation.

Changes in land use in watersheds can release large loads of sediments and attached contaminants into waterways and coastal zones. Typically, this arises in the headwaters where steeper upland areas subject to higher rainfall are converted from forestry to agriculture, although any land use conversion, such as urban expansion that removes groundcover, can cause erosion and sedimentation of waterways and can also impact coral reefs in the nearby marine areas. Poor management of agricultural land is another source of sediment in many countries.

Because of this degradation, downstream areas can become blanketed in sediment; the lifespan of reservoirs and the output from hydropower plants may be reduced; water supply pumping equipment can be damaged from abrasion; and aquatic life can be affected through reduced primary production and the loss of important habitats.

If sediments are dredged for relocation or disposal within the water, water legislation applies. Since the WFD has been enacted, the regulation of river sediment management has considerably changed, even though river sediment and dredged material is not highlighted directly in the WFD. Sediment in a river is the main feature of its hydro-morphology and it is thus a natural and essential part of the aquatic environment, having an important role within water legislation. It is obvious that a comprehensive sediment management concept should be part of each river basin management plan, which has to be harmonised over the entire catchment. This plan needs to be updated regularly by each country to fulfil the future WFD in the legal system.

The requirements for a river basin-wide sediment concept will be even more challenging than the actual WFD. It will include inventories of interim sedimentation deposits within the catchment area (underground and surficial mining residues, river-dams, reservoirs), integrated studies on hydro-mechanical, biological and erosion processes, risk assessments on sedimentary benthos organisms and the development of decision tools for sustainable technical measures on a river basin scale including sediment aspects.

Existing international practice shows that the most important option for sediment management is to leave them in the water in an environmentally sound way. However, sediments are mostly accumulated in storage basins if no special features for transferring over the dam have been foreseen. The mitigation measure is to allow most of sediments to continue to travel downstream. This would be achieved for suspended sediments relatively with ease, while coarse sediments will accumulate in the reservoir mainly. Therefore, gravel pit and storage capacity at the torrent tributaries should be developed and operated in a way that some of the quantities collected are transported downstream.

On the topic of sediment transport, an elaboration of sufficient sediment characteristics will be needed. Sediments are usually divided according to granulation: suspended-coarse, and to the level of pollution. One outcome of a proposed management plan will be specification of parameters describing sediment transport, which could be harmonised by the countries concerned. Such know-how will enable negotiations and the further development of water resources considering an example in results obtained.

Nevertheless, if engineering parameters, like management rules are agreed upon in advance, the further development of water resources will be possible from the sediment transportation point of view. The topic of river sediment transportation has been almost at a standstill for a long time and has only recently become the subject of renewed scientific and management research. The issue of sediment transportation in combination with water management activities (such as the construction of hydropower dams) presents a good ground for establishing relations important for the countries involved including the wider regional framework.

3.1.4 Good Practice Case: Trade-off Between Dam Construction and River Sediments: HPP Ashta Drini River Basin in Albania

The Ashta HPP (finished in March 2013) is the fourth and most downstream hydropower on the Drini River Cascade in northern Albania (see Figure 3.18 in Section 3.3.8 below). The HPP was initially developed in the 1970s known as Bushat HPP and some of the structures were built in this period, for example the Spathari Weir.

The project included river diversion through a diversion weir, a headrace canal, an aboveground powerhouse and a tailrace canal discharging to the Buna River, some 4.5 km downstream of its current confluence with Drin River and Shkodra/Skadar Lake (a wildlife designated site shared by both Albania and Montenegro). The authorities and the World Bank (WB/IFC) revised the technical design in 2002-2007 and developed an alternative that addressed the environmental concerns.

The new design envisaged a smaller scale scheme, which avoids both river diversion as well as impacts on the Shkodra/Skadar Lake. An Environmental Impact Assessment was prepared for the project.

There are reports of coastal erosion in the Adriatic Sea close to the Buna River estuary due to a decrease of sediments coming from Drin River. Several larger HPPs erected in the Drini River in the last 50 years have taken their toll. The last solid barrier to sediment flow constructed in the Drin River is the Spathari Weir which stands at +19 m a.s.l. Apart from several HPP dams and the Spathari Weir, the Ashta HPP project area was also the preferred site for gravel extraction since the riverbed at this segment is very wide and has many gravel deposits. The result has been a clear decrease in the flow of sediments towards the sea and coastal erosion near the estuary.

The Ashta HPP has used some of those sediments (mainly gravel) during construction works, but has also stopped gravel extraction activity in the project area. The excavation works in the Drin Riverbed and the Spathari reservoir will increase the amount of the suspended solid discharges. This amount of sediments, and in particular, the lowering of the level of water intake from the reservoir from 19 m to 16.5 m a.s.l. will cause a temporary rise in the amount of the suspended solid discharges of the Drini River. It is estimated to bring some positive impact, due to the larger amount of the suspended solid discharge from the Drini River, and further on from the Buna River.

3.2 Identification of the Bottlenecks Concerning Transboundary Issues

3.2.1 Bottlenecks in the Legal System

From an individual state's point of view, the principles of international law may or may not be applicable to an individual issue at stake, making reliance on international law relatively hard to accomplish. Besides that, the issues of the succession of agreements by the now independent states and territories of former states either concluded by the former states (generally governed by the doctrine of the international law on the durability of treaties and the two Vienna conventions relating to the law of treaties) or between the formally non-independent territories within, appears not to have an undisputed solution.

Another issue that might be seen as relevant in the WB6 region relates to the international status of Kosovo. Kosovo's is an undefined state in some international contexts which makes it difficult for it to be a party to the same set of conventions that its neighbouring countries subscribe to. Obviously, the best solution is that Kosovo acts as if it were party to those conventions, but such behaviour cannot be exclusively unilateral[50] as both rights and obligations regarding Kosovo also have to be recognised by the other party. Generally, for a riparian country to be able to demand a co-riparian country's compliance with the treaties that apply to it and treat its interests equally along the lines of the same set of treaties increases security and legal certainty in both riparian countries.

3.2.2 Bottlenecks in the Administration

The most problematic administrative issues seem to be in Bosnia and Herzegovina. The state's ethnicity-oriented post-war focus and subsequent territorial divisions enshrined by the Dayton Agreement, paid little attention to the issues of water management. It resulted in drawing inter-entity borderlines irrespective of the hydrological

[50] It appears that Kosovo did act as if it was a party to the Espoo convention at least at one occasion. For more information see Section 3.3.1.3 below.

configuration on the one hand and leaving responsibility for both legislation and coordination at the entities' level instead of the states on the other[51].

These decisions left BiH with three more-or-less independent water-related legal systems and four separate water management agencies (the Federation of BiH entity has two, one per drainage basin) who, due to the lack of a mandate on the state level, share no formal grounds for state-wide cooperation. To complicate things even further, the ten individual cantons within the Federation of BiH have the authority to manage water within their borders, while the coordination stipulated in the entity's laws lacks any strict procedural provisions on such coordination.

3.2.3 Bottlenecks in Planning Procedure

Transboundary cooperation regarding the management of basin hydropower resources can generate large economic benefits. But a lack of trust between riparian parties is a serious bottleneck. Cooperative solutions are available and could generate massive economic benefits by enhancing the sustainability of economic activities, reducing the costs of droughts and power cuts, and promoting cross border investments and the development of regional markets for goods, services and labour.

3.3 Detailed Description of Existing Cases in the Region

3.3.1 Drini i Bardhe/White Drin/Beli Drim River System - HPP Zhur (Kosovo – Albania)

Box 3.1: Summary of the Drini i Bardhe/White Drin/Beli Drim River System - HPP Zhur Case

HPP Zhur in Kosovo represents an early development phase of the project (with spatial planning permit and tender for Expression of Interest), the preparatory activities of which were stopped in around 2010. The concept of this hydro potential utilisation is the collection of water from a wider area than the immediate catchment. Consequently, some streams have been left at rest flow (ecological flow) while the remaining water is supposed to be diverted to the two Storage Basins foreseen. Those streams are shared with Albania, which was notified about the entire project, but it seems that Albania was asked only for the approval of rest flow while the water quantity remaining for HPP Zhur was not negotiated successfully.

The countries could be advised to find a common language and negotiate compensation for the water quantity being lost for Albania. This case demonstrates that without prior consent and the notification of the riparian country, the project would fail in realisation. It would be extremely difficult to retrieve trust and get back on the right track. The way forward in this case is to prepare an EIA with the transboundary aspect covered (Espoo Convention), even though Kosovo is not its signatory.

This step is legally covered by the UNECE Water Convention provisions for transboundary rivers that should be respected although Kosovo is not a member of the convention, either as an international best practice or by an explicit bilateral arrangement.

[51] This is an implicit consequence of the Dayton Agreement (and the Constitution within) not assigning these competences explicitly to the state institutions.

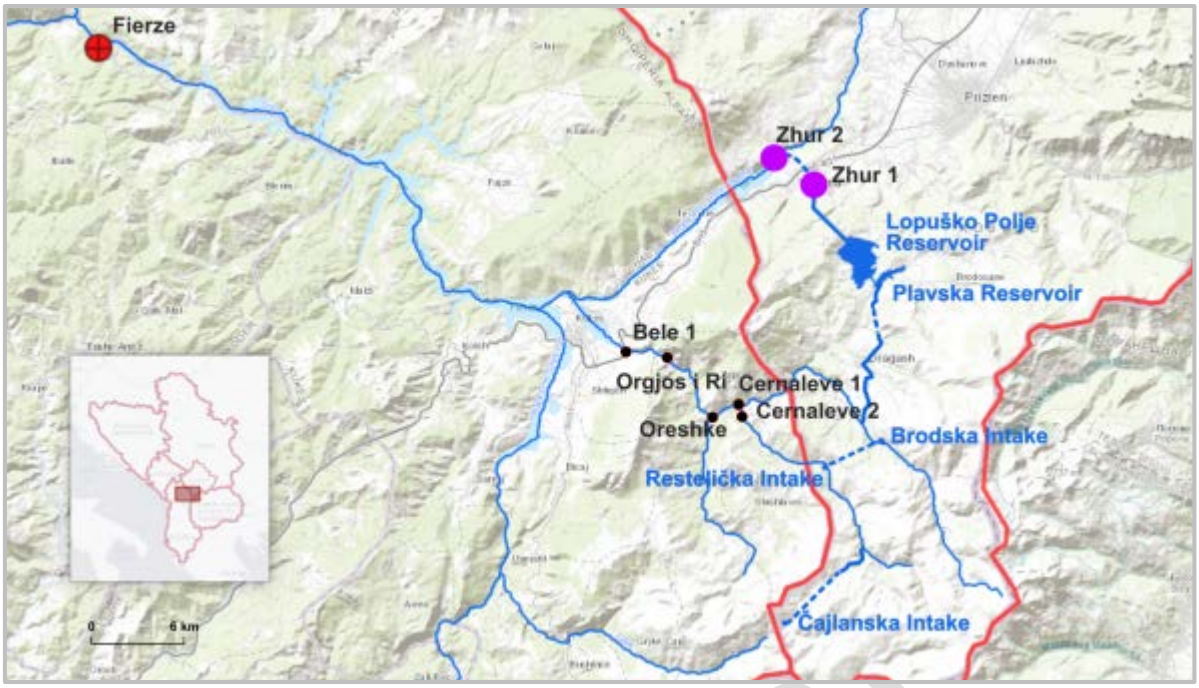

Figure 3.2: Locational Reference of the Planned HPPs Zhur 1 and Zhur 2, the Existing HPP Cascade Fierza, and Several Small HPPs Upstream Luma and Its Tributaries

3.3.1.1 Overview of Transboundary Situation

Kosovo

The Restelic/Restelićka River – its spring is near the village of Restelica (Kosovo), at an altitude of 2,289 m. The basin area is 88.8 km2, and the length of the stream is 24.3 km. It is 18 km long on the Kosovo side before it crosses to the Albanian side as Ljuni i Borjes River. A chain of small HPPs with reservoirs has been realised on the Albanian side by the Albanian power utility (KESH) in recent times, to accumulate sediments from the erosion base of Drini i Bardhe River, thus protecting its larger downstream reservoirs from siltation.

The impact of water diversion for energy purposes on watercourse hydrological properties refers to the following watercourses: Lumi Çaljane, Lumi Restelic, Lumi Brod and a few others which are collected up to the Ecological Flow (biological minimum flow, rest flow, ecologically accepted flow).

Such impact is important and permanent since waters from the watercourses above are directed into the Plavë Reservoir through the conveyance system made of canals and tunnels.

Albania

The impact of water diversion is also significant on the Lumi Plavë River watercourse, where the dam is to be constructed for creation of the Plavë Reservoir. Downstream from the water intake for the Plavë Reservoir, or downstream from the future dam on the Plavë River watercourse, the water flow regimes in the watercourses change. It is planned that downstream from these projects the Ecological Flow is constant. At this design phase, the planned biological minimums are presented in Table 3.2 below.

Table 3.1: Planned Ecological Flow in Lumi Çaljane, Lumi Restelic, Lumi Brod, and Lumi Plavë

River	Planned Ecological Flow
Lumi Çaljane	50 l/s
Lumi Restelic	100 l/s
Lumi Brod	100 l/s
Lumi Plavë	100 l/s

However, the problem of whether the planned Ecological Flow for the said watercourses is sufficient for a stream to be acceptable from an ecological point of view, to provide for the development and preservation of watercourse indigenous biota even after fulfilment of all water demands, remains to be answered in further design phases if it ever comes to that point. The EAF should be agreed between Kosovo and Albania. The open question remains to be how to evaluate flow decrease from the natural one on the existing HPPs on the Albanian side.

3.3.1.2 Background Project Information

A. Location and Environment

Since the available profiles for hydropower utilisation are limited in Kosovo, it is reasonable to assume that every possible reservoir location would be extremely significant. One of the recognised profiles that enables a reservoir for a hydro power plant which would be at the same time financially and technically feasible is the Zhur HPP, which enables power installation of 293 MW, representing 30% of total installed capacity of potential HPPs throughout Kosovo.

The territory of Kosovo is characterised by limited conditions for the utilisation of hydropower potential because of small specific flows, so that even at higher areas of river basins where slopes are steeper, the hydropower potential found there would be relatively low in figures. The Drini i Bardhe (White Drin) River Basin has the greatest hydro potential.

B. Technical Description

The following description is based on a Feasibility Study, prepared by Elektroprojekt d.d. (Croatia) in 2001.

The Zhur HPP system is of a derivation type. The available head is utilized in two steps, i.e. HPP Zhur I by the village of Zhur, and HPP Zhur II on the Drini I Bardhe/Beli Drim/White Drim River on the Kosovo side.

The watercourses to be utilised in this hydropower system flow through Mountain Sharr/Šarplanina massif area, comprising the catchment areas of the Plave/Plavska River and its tributaries (the Lumi Brod/Brodska and the Lumi Restelic/Restelička River being the most important). The Caljane/Čajlanska River catchment area will also be conveyed together with its tributaries. The catchment areas of these rivers are situated in a hilly region. It is interesting that despite the fact water remains in the Drini I Bardhe/Beli Drim River Basin, it is diverted locally in the direction of both reservoirs Plavsko/Plave and Lopuško/Brezina from its natural flow to the Albanian part.

The average annual water discharge from the Čajlanska and the Plavska River catchment areas is 8.70 m^3/s. Waters accumulated in this area will be transported by the common conveyance system of the Čajlanska, the Restelička and the Brodska Rivers to the reservoirs planned on the Plavska River and Lopuško Polje.

The Caljane/Čajlanska River water is conveyed through a gravity tunnel, approximately 5 km long, to the Lumi Restelic/Restelička River, from where a gravity tunnel conveys the waters of both rivers approximately 3,440 m long to the Brod/Brodska River.

The Brod/Brodska River conveyance system, also transporting the waters of the Caljane/Čajlanska and the Lumi Restelic/Restelička Rivers, consists of 8 tunnels approximately 4,900 m long, and 7 canals approximately 7,300 m long.

The water is first transported into the settling basin on the Plave/Plavska River, which will be realised by the construction of an embankment dam in the river canyon between the villages of Belobrod and Plava. The water

from this reservoir flows into the main regulating reservoir in the natural Lopuško Polje valley as the Brezina Storage basin.

The Plave/Plavska River reservoir active storage capacity is approximately 4.9 million m^3, and the Lopuško Polje reservoir active storage capacity is some 112 million m^3.

The Lopuško Polje Brezina Storage basin is the main annual flow-regulating reservoir within the hydropower system thus representing the first-rank structure within the whole system.

The water from the Lopuško Polje reservoir is conveyed through a 3,200m long pressure tunnel and 1,440m penstock to the HPP Zhur I turbines, utilizing maximum gross head of some 576 m.

The water used in HPP Zhur I is conveyed to the HPP Zhur II turbine by a gravity tunnel (approx. 2,050 m long), an open tunnel (approx. 600 m long) and a steel penstock (approx. 170 m long) at maximum gross head of some 107 m.

The Zhur HPP system will be connected to the Kosovo power system through a switchyard (two 220kV transmission lines).

Table 3.2: Basic HPP Zhur Data

	Zhur I	Zhur II
Gross head	589.40 m	94.15 m
Rated discharge	50 m^3/s	50 m^3/s
Installed capacity	2×131 MW	1×43 MW
Annual output (average)	342.20 GWh	55.39 GWh

C. Commercial and Political Circumstances

The idea for HPP Zhur emerged in the early 1950s at 136 MW of installed capacity, to be increased by the end of 1960s to 293 MW. The raising of capacity was on account of working hours of the prospective HPP, which were reduced to a half from the initial 4,000 operating hours per year. The first alternative would be some 22% more economical to develop regarding the energy produced, however the peaking role of the second alternative was not considered in that calculation.

3.3.1.3 Transboundary Legal Framework

According to Sub-section 3.4, and in line with the Espoo Convention (regardless of Kosovo not being a party to it), the competent ministry in Kosovo notified the competent ministry in Albania about the planned HPP Zhur Project. Since water for power generation at HPP Zhur is harnessed from the watercourses shared between Kosovo and Albania, the notification letter highlights the need for the determination of the ecologically (broader sense is determined by the term environmentally) acceptable flow (EAF) in streams downstream from the water intakes. The letter suggested the methodology for the EAF determination, on which the competent Albanian ministry should give its opinion, and set up the working team for cooperation with the Kosovo party.

During the current project planning stage, a contact has been established between the relevant authorities of Kosovo and Albania regarding the transboundary issues. This cooperation is ongoing. The minimum quantities of water that will permanently flow downstream from the intake for this project stage have been envisaged. Since the water quantities defined as "biological minimum" have not been agreed on with Albania, it needs to be done in the future stages of the HPP Zhur Project development. This is a very important point for the determination of hydrological parameters on which the rated discharge of the planned project depends.

The level of compensation for the excessive loss of water quantity (hydro potential) in Albania due to the diversion of water from one sub-basin of Drini i Bardhe/Beli Drim to another one (i.e. from Albania to Kosovo) also remains to be discussed between both sides.

3.3.1.4 Problem Analysis

Measures arise from the International obligations of Kosovo due to the Plavë Reservoir dam planned on the Lumi Plave River because of the collection of waters on the rivers Lumi Çaljane, Lumi Restelic, Lumi Brod, and a few other cases. Water has been conveyed to the Plavë Reservoir instead of its natural flow remaining free towards the Albanian side.

Albania was notified by Kosovo about the planned project, but has still not responded. So far, Albania has only referred to the need for the assessment of the transboundary impacts of the planned project in accordance with the Espoo Convention. The explanation for Albania not responding in accordance with the said convention may be that it does not feel obliged to do so because Kosovo is not a party to it.

Regardless of the fact that neither Albania nor Kosovo are parties to the Vienna convention on succession of treaties, the durability of treaties doctrine of international law might have its effects in regard to the agreement between the former SFR of Yugoslavia and the Republic of Albania of 1956 and subsequent protocols of the commission established on its basis. The planners should be aware that the protocol of 27 June 1962 established that there is no intake of waters from the Lumi Çaljane River in July and August for the purposes of the planned HPP Zhur, but instead the water is discharged to Albania. The agreement is to ensure about 1.25 million m^3 (0.46 m^3/s) of water in the Lumi Plavë bed in July, or about 2.5 million m^3 (0.93 m^3/s) in August.

3.3.1.5 Consultant's Conclusions

Both Kosovo and Albania are signatory parties of the MoU titled The Drin: A Strategic Shared Vision, and even if there is no joint river basin commission for the Drini River Basin yet, bilateral agreements between some of the riparian countries concern flood forecasting, reporting and warning, rest flow, etc. In this case, the establishment of minimum required flows and the possibility of their revision under drought circumstances, as well as the increase of communication and data exchange between countries and flexibility in the application of measures during droughts is recommended to be subject of a bilateral treaty between Kosovo and Albania in the case the plan will be carried out one day.

We would recommend the two countries follow[52] the UNECE Water Convention's example that includes, among other obligations of the parties involved, the obligation of the "Riparian Parties" (i.e. those sharing transboundary waters directly) to cooperate more closely based on equality and reciprocity, in particular by entering into specific bilateral or multilateral agreements, which promote the creation of joint bodies for transboundary cooperation on water.

Key learning points:

- A technically clear division of water resources between the parties, evaluated in monetary terms or otherwise enabling trade-offs, will improve the transparency of the negotiation process and the probability of agreeing a sound deal will increase.
- The project was not put on hold for environmental reasons, but due to the redirection of water used at the existing HPPs in one country, to a plant in another country. Loss of potential from the decreased discharge at the existing HPP could be compensated through higher production of the plant foreseen or in monetary terms.
- Integrated water resource planning would increase the probability of successful HPP realisation by resolving resources sharing issues at an early stage.

3.3.1.6 Guidelines and Recommendations

The most recent review of the HPP Zhur feasibility was funded by the World Bank and finalised in June 2009, but no tangible progress has been made to move the project forward since then.

[52] Kosovo is not a party to the UNECE Water Convention; therefore, we propose the two countries follow its example as an international best practice.

In mid-2010, the bids were submitted for a construction tender, and within the period of two months, three companies/consortiums were short-listed. In 2011, the Ministry of Economic Development of Kosovo suspended the tendering process, arguing that the project's feasibility study needed additional review. A year later, the project's feasibility was reconfirmed but the tendering process was not resumed.

Differences in opinion between Prishtina and Tirana regarding the project may account for the reason why the project has thus far not been given the green light. Kosovo and Albania need to harmonize their relations regarding cross-border waters and bring them in line with international treaties and practice.

Discussions between the two countries on these issues were supposed to have started in 2010, in parallel to the tendering process. But due to the unexpected lack of interest of the Government of Kosovo in this hydropower project, the cross-border water issues have not been prioritised and addressed as needed.

Meanwhile, in Albania construction on several mini hydro power plants that will be supplied with water from the rivers that were supposed to fill two reservoirs foreseen for the Zhur HPP has been finalised. This situation complicates the process and could have been avoided had the Government of Kosovo proceeded without interruption in the bidding process for the Zhur HPP and agreed on open issues with the riparian country. Sensitive and high-level negotiations between Kosovo and Albania would now be needed to manage all these concerns, especially regarding the rights to tributary and cross-border waters. Even though Kosovo is not a signatory of Espoo Convention, it is recommended to prepare an EIA with a transboundary component to have a proper environment assessment of its impacts (both nationally and trans-nationally) in order to facilitate an agreement.

3.3.2 Trebišnjica Hydropower Scheme – HPP Dubrovnik 2 (Croatia, Bosnia and Herzegovina, Montenegro)

Box 3.2: Summary of the Trebišnjica Hydropower Scheme – HPP Dubrovnik 2 Case

The Trebišnjica River Basin in BiH provides water for the Bileča Lake that is located in Republika Srpska, BiH, with a minor part being in Montenegro. The lake supplies water to the existing HPPs: Trebinje 1, Trebinje 2 (both in Republika Srpska, BiH) and Dubrovnik 1 (Croatia), while, according to the investment agreement from the 1960s (former SFRJ), the power production of the initial two generators at Trebinje 1 and of the two generators at Dubrovnik 1 should be attributed 78% for Hidroelektrane na Trebišnjici (HET, today in Republika Srpska, BiH) and 22% for the Croatian power utility (HEP, today in Croatia). However, since 1994 the actual attribution ratio has been estimated to be closer to 65% for HET and 35% for HEP, leading to potential claims of financial compensation by successors of that investment agreement in BiH. Should that not be resolved, the second phase of an attractive hydropower scheme (HPP Dubrovnik 2, 200 MW of additional installed capacity, 170 million EUR), that could be beneficial for both sides will be wasted.

Related to HPP Dubrovnik 2, there are a series of transboundary issues of various kinds, related to the environment, that must be properly studied by the involved countries (BiH and Croatia) by following the required "integrated water management" concept of the EU Water Framework Directive in the impacted Neretva and Trebišnjica River Basins. Among the other issues at stake are: the water lacking for production at RHPP Čapljina (Federation BiH) that would be further aggravated by water transfer towards Dubrovnik 2, the demands of the Federation BiH to improve regulation of high waters upstream Trebišnjica to stop flooding at Popovo Polje, and the demands of Montenegro to have its share of water in the Bileča Lake attributed to it for the purposes of diversion towards prospective HPP Risan in Montenegro.

Consequently, there are three countries and two entities within BiH involved, which would make the resolution of multi-faced issues (sharing of hydropower potential, cross-RB environmental impacts, resolution of previous debts and obligations etc.) particularly difficult.

Figure 3.3: Locational Reference of the Planned HPPs Dubrovnik 2 and Risan, and of the Existing HPPs Dubrovnik 1, Trebinje 1 and Trebinje 2 and of the Existing RHPP Čapljina

3.3.2.1 Overview of Transboundary Situation

Croatia

The Trebišnjica hydropower system comprised by Bileča Lake, HPP Trebinje I and II, HPP Dubrovnik and RHPP Čapljina has the biggest influence in the water resources of the River Basin. Today, attention is focused on the upper part of the basin, while in Croatia the major threats are related to possible impacts regarding the Neretva River hydrology.

The most critical problems are:

- Coincidence of the construction of the hydro power plant on the Ombla River in the vicinity of HPP Dubrovnik at the coast (Croatia);
- Absence of suitable construction waste disposal possibilities in the Dubrovnik area, so waste disposal has been located near the Trebišnjica River;
- Changes of underground water quality and quantity due to unsatisfactory treatment of wastewater in the impacted area.

Bosnia and Herzegovina

The most critical ecological problems are:

- Wastewater generated by 90% of the population (Trebinje and neighbouring settlements) despite being treated presently, was discharged directly, without prior treatment into karst sinks, which has no self-purification capacity and is connected directly to the underground flow of water; it is not clear when accumulated pollution is going to wash away;

- Water supply systems cannot meet the needs of the consumers during the dry season due to a combination of water scarcity and presently insufficient capacity of the infrastructure, which is forecasting a shortage for HPP Dubrovnik;
- Dumping sites where solid waste and excess materials are disposed are found near the river, and in most cases protective measures do not exist. Therefore, before using waters at HPP Dubrovnik, the quality of water must improve by taking appropriate environmental measures.

The issue of flooding of Popovo polje (located at the end of Trebišnjica concrete channel in the Federation BiH) is another related problem. In times of high waters, the quantities to be diverted via the concrete channel are significant and the Federation BiH believes that HET could manage the waters better. With HPP Dubrovnik 2 it certainly could, as it would be able to drain additional 120 m3/s towards the Adriatic.

The issue of RHPP Čapljina is somewhat awkward because for its production it partially utilises the water remaining after the diversion towards Dubrovnik at Trebinje sent to it via the Trebišnjica concrete channel. Since the Dayton agreement provided for it to belong to EP HZHB of the Federation BiH, this has become an issue between the two entities and their respective companies (i.e. with HET on the Republika Srpska side). EP HZHB claims HET unfairly withholds the water volumes RHPP Čapljina was built for, making it far less economically efficient than it should have been, while HET claims the water is theirs to manage and they see no reason to route more water towards RHPP Čapljina than they need to manage the quantities in their system as economically as possible – at least as long as they have no economic benefit from doing so. The Federation BiH is concerned about the HPP Dubrovnik 2 project because it would further aggravate the issue of too low quantities of remaining water being sent along the channel toward RHPP Čapljina. HET also claims there is a 40% loss in efficiency of water utilisation between using it in HPP Dubrovnik 1 and in RHPP Čapljina, but would be willing to take that loss for a fair share of the energy produced in RHPP Čapljina, including performing regular maintenance work on their part of the concrete channel that is presently omitted.

Since the Federation BiH should give their consent to the project as the headrace tunnel goes through their territory, alongside the concerns stated above, they intend to request the performance of both a Strategic Environmental Assessment and an Environmental Impact Assessment, primarily based on several Karst-related questions that have not been answered so far, among them whether:

- the additional water taken from the Trebišnjica River would adversely affect the Neretva River;
- the headrace tunnel would affect the Vjetrenica cave and its connected systems.

Montenegro

Montenegro comes into play regarding HPP Dubrovnik 2 with its HPP Risan project. It is a project of multiple variants that all share one key aspect – the water for it is to be taken from the Bileča Lake, the very same water that appears to be intended for HPP Dubrovnik 2 and potentially also RHPP Čapljina. Montenegro believes that their claims are well-founded because they should be given certain rights to the water quantities in the lake that is partly flooding their territory and benefits substantially from the precipitation in Montenegro. At the time of project initialisation, the consent to the investors on behalf of Montenegro was given at the federation level, promising only drinking water for its South-west region in return for the land flooded and the water flowing in the lake from their territory, which is what they would like to rectify now, for the purposes of either building HPP Risan on its own or get a fair participation share in HPP Dubrovnik 2.

3.3.2.2 Background project information

A. Location and Environment

The Trebišnjica River Basin (according to some classifications also a sub-basin) of 4,926 km² is located in the southeast of the Republika Srpska (BiH), i.e. eastern Herzegovina. The Trebišnjica River takes rise in the form of a strong karst source near Bileča town (330 m a.s.l.) and flows south, then northwest to Trebinje town (30,000 inhabitants) and along the Dinaric Coast Mountains.

According to the natural conditions starting at Trebinje, the Trebišnjica River water drains into a karst underground catchment. At high water, however, the capacity of the abyss is insufficient, and the river flow extends up to the end of Popovo polje, with continuous drainage into the underground. During a flood, when the

underground cannot take up all water, an impoundment starts and extends upstream. Part of the water quantity in this River Basin drains directly across the Croatian border to the Adriatic Sea.

Today, the Trebišnjica River regime is totally changed after the construction of the hydro-energetic system: River waters are kept in Bileča and Trebinje Reservoirs, from where a significant part of the water goes to the Adriatic Sea by a tunnel (capacity: 90 m3/s) up to the hydro power plant of the coastal town of Dubrovnik (44,000 inhabitants; located outside of the River Basin) in Croatia. The other part of the reservoir waters and additional inflow are directed downstream to the Reversible Hydro Power Plant (RHPP) Čapljina (located in Federation BiH, BiH).

While Trebinje has a wastewater treatment plant, other smaller settlements discharge their wastewater directly into the river. Nevertheless, HET is reported to claim that water of Trebišnjica River in Trebinje is of excellent quality chemically, physically and biologically.

The Neretva and Trebišnjica River Basins are a transboundary basin shared by BiH and Croatia, covering approximately 10,000 km2. The Neretva and Trebišnjica rivers are hydraulically and naturally connected, despite Trebišnjica being treated as separate River Basin in the Study. Both River Basins are major water resources for BiH and play an important role in neighbouring Croatia and Montenegro. Both rivers are crucial for the local economy as they provide transport, recreation, fisheries, tourism, drinking water, irrigation, and energy production.

The completed Management Plan for reservoirs and hydro power plants[53] represents a basis for managing the system's hydropower facilities which are expected to produce maximum hydropower with maximum benefit for water users in the basin with minimum downstream effects of floods or minimum water levels, sudden changes in flow, reduction of sediment transport, etc. Apart from contributing to the improvement of transboundary cooperation in general, the system is an important step for the management of ecosystems and natural resources of the Trebišnjica River Basin.

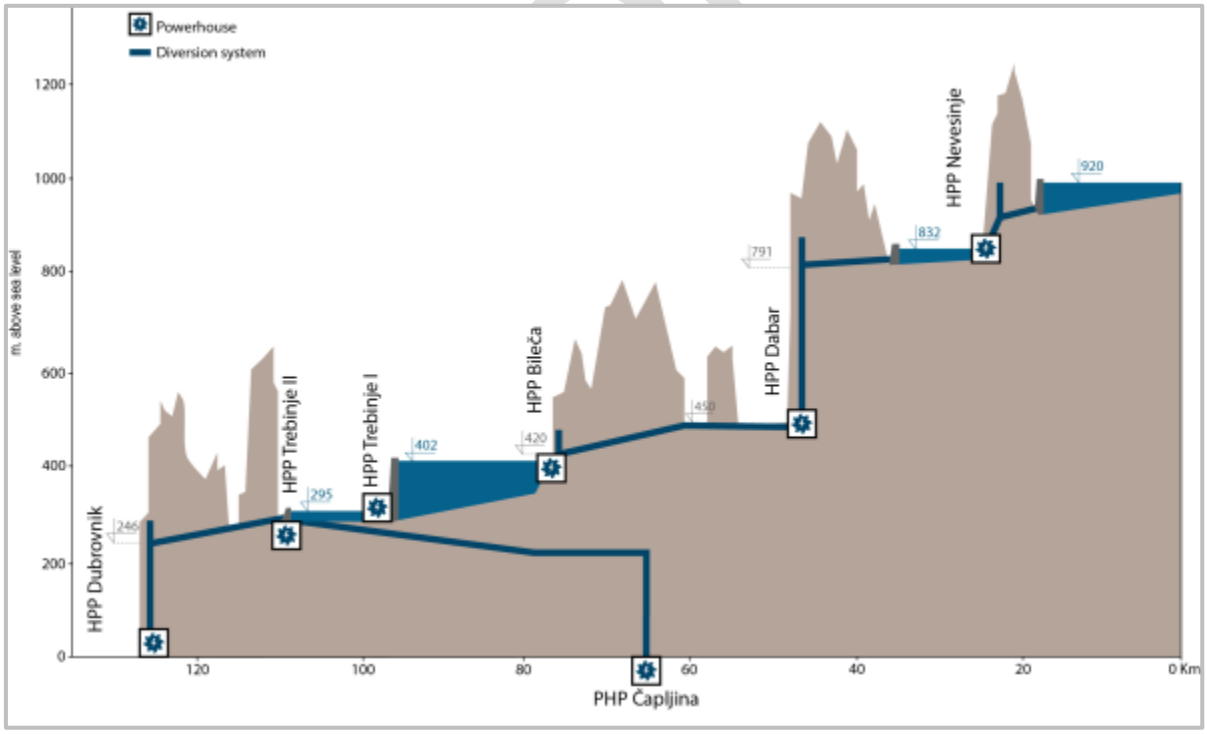

Figure 3.4: Longitudinal Profile of Trebišnjica and the Rivers Above It

This system provides water supply for the Municipalities of Bileća, Trebinje, Herceg Novi and a part of the Municipality of Dubrovnik; in the future, the water supply is expected to increase by many more inhabitants.

[53] GEF. 2015.

The system has also secured the protection of the karst fields, Popovo polje and Trebinjsko polje against flooding, and provided irrigation water, so today significant agricultural activity has been on these fields.

Flood protection for Gatačko polje, Nevesinjsko polje, Dabarsko polje, Fatničko polje and Bilećko polje will be realised in the future, where agriculture is also expected to develop.

B. Technical Description

HPP Dubrovnik 1 is a storage-type HPP. The powerhouse is located near the township of Plat (Croatia), at 550 m from the sea coast, some 15 km southeast of Dubrovnik. HPP Dubrovnik 1 is the last HPP of the Trebišnjica River Basin, and is located in two countries: Bosnia and Herzegovina and Croatia, with the dam, an artificial lake and part of the headrace tunnel in BiH (majority in Republika Srpska with the tunnel partly in the Federation BiH), while a part of the tunnel and powerhouse are located in Croatia. HPP Dubrovnik 1 uses water from the river Trebišnjica reservoir Bileča, created by the Grančarevo large gravity arch dam, while a dam at Gorica, which creates a compensation basin, has enabled the intake of water for HPP Dubrovnik 1.

Gorica Reservoir has an active accumulation of the active volume of 9 million m3, and the Bileča Storage Reservoir has the volume of 1,100 million m3. HPP Dubrovnik 1 has an installed capacity of 216 MW (2x108 MW), while today one turbine is connected to the 110 KV grid in Croatia and the other on 220 kV grid in Bosnia and Herzegovina.

The average annual production of HPP Dubrovnik 1 is 1,321 GWh, a record production was achieved in 1978 when it produced 1,654 GWh. Since the war in Bosnia and Herzegovina, one water turbine produces electricity for Croatia, and the other for Bosnia and Herzegovina, so its production in Croatia was 786 GWh in 2010, and 685.7 GWh in 2009.

A few years ago, the powerhouse had a case of flooding when the generators were almost completely submerged, but fortunately there were no casualties and the time was sufficient to turn-off both power units so that the damage was finally put under control. A rehabilitation-refurbishment of both power units consisting of a water turbine and generator is planned, while a long-term plan is to realise the second phase of the plant (i.e. HPP Dubrovnik 2), which would increase installed capacity by an additional approx. 200 MW.

The powerhouse of HPP Dubrovnik 2 would be built on Croatian territory, with the installed capacity of 200 MW, and it would produce additional 300 GWh of electricity annually.

The basic idea of the project HPP Dubrovnik 2 is to increase the existing HPP Dubrovnik 1 installed discharge from current 90 m^3/s to 210 m^3/s. It includes the construction of a new headrace tunnel having length of 16.5 km, out of which 16 km would belong to the territories of the Republic of Bosnia and Herzegovina. The remaining 0.5 km would belong to the Republic of Croatia, together with a new surge tank, penstock, tailrace tunnel and complete equipment in the powerhouse and switchyard.

Water overflow at the Gorica dam, as well as additional water flooding the Dabarsko polje (plain) and the Fatničko polje (plain), being evacuated through already constructed hydro-technical tunnels Dabar – Fatnica and the Fatničko polje – Bileča reservoir, would be used in this way.

It has to be noted that the realisation of the HPP Dubrovnik 2 construction would make the project within the hydro system on the Trebišnjica River Basin complete. The Grančarevo dam and HPP Trebišnjica 1 have both been planned taking HPP Dubrovnik 2 into account with their respective capacities well beyond 200 m^3/s, equalling the combined capacity of the two headrace tunnels towards HPPs Dubrovnik 1 and 2.

C. Commercial and Political Circumstances

Croatia and the Republika Srpska would like to jointly build a 170 million EUR HPP Dubrovnik 2. That was agreed on the 13 July 2012 in Banja Luka between the first Deputy Prime Minister of Croatia and the Prime Minister of Republika Srpska. The cost of building the power plant should be borne in equal parts by both parties; construction should have been completed by 2015. The agreement on the construction of the HPP Dubrovnik 2 can be considered the first fruit of the announced energy cooperation between both sides involved.

The two electric power utilities, namely the Power utility of Republika Srpska (ERS) and the Croatian power utility (HEP) signed a Memorandum of Understanding (MoU): Construction of HPP Dubrovnik 2 in the year 2014. The MoU defines cooperation in building the HPP Dubrovnik 2, which was scheduled to begin within a year of its signature. The signing of the MoU ended the uncertainty about the project (initiated 47 years ago) which has

governmental and regional transboundary significance. This document expressed the common interest in this project implementation and the intention of both electric power utilities to continue negotiations to reach a solution with the institutional, organisational, ownership, and energy issues regarding the use of HPP Dubrovnik 2.

The pre-disintegration (of SFRJ) agreement is said to determine the electricity division between the parties in the ratio of 78/22 – larger part belonging to HET – while it appears that HEP wishes not to recognise this since there is no written agreement in existence and the only written source claiming it is an informal memo. According to ERS, the owner of HPP Dubrovnik 1 (HEP) has been using electricity in part, for which it was not authorized, since November 1994. Until now, the Croatian side has been continually taking more generated electricity from HPP Dubrovnik 1 than was agreed initially. The power produced by water from Trebišnjica River has been used in the Croatian HPP Dubrovnik (2 units per 108 MW) and ERS is claiming the part of the power production for their purposes. The abovementioned ratio allegedly applies to the production of the initial two generators at Trebinje 1 and of the two generators at Dubrovnik 1. However, since 1994 the actual attribution ratio has been estimated to be closer to 65% for HET and 35% for HEP, when HEP connected one of two power generation units directly to the Croatian power grid system (note: before both units were connected to the Trebinje power system). According to HET, HEP has one-sidedly abandoned the pre-disintegration (of SFRJ) agreement with the former Power utility of the Socialist Republic of BiH – the exact agreement for which ERS considers itself a legal successor on the BiH side, while there appears to be no agreement on the matter within BiH on that matter.

3.3.2.3 Transboundary Legal Framework

Under the previous Water law (1998), in the Federation of BiH the Ministry of Agriculture, Water management and Forestry (MoAWF) laid the main responsibility for the preparation of the strategic decision and planning to the two Public Companies of Watershed Areas, one for the River Sava (based in Sarajevo) and the other for the Adriatic Sea (based in Mostar). The Republika Srpska has set up a single authority in charge of both river basins. There have since been new laws adopted, namely the Water Act of 2006 and the Law on Water Protection, based on WFD, that calls for a river basin approach in water administration and establishes new bodies responsible for water protection based on river basins.

The conditions for development are that the feasibility study and the environmental impact study show that the project is feasible, economically viable, and environmentally acceptable, with a special emphasis on the impact on the Neretva River Basin. It was defined that the investment between the two power utilities is shared in half, but that baseline studies would specify all issues regarding the implementation of the project, from the value to the beginning of implementation and other issues.

Regarding the international agreements that might be applicable, the three countries involved (Bosnia and Herzegovina, Montenegro, and Croatia) are parties to all but the UN Watercourse convention (that only Montenegro is a party to), the Bonn convention on migratory species (that Bosnia and Herzegovina is a non-party with limited participation, while the other two are full parties), and the Bucharest Agreement (that again only Montenegro is a party to). A special case is the Agreement on Succession issues that Montenegro is an indirect party with apparently no active rights and obligations related to it as it has a separate agreement on the rights and obligations with Serbia, which appears to be the sole successor to the agreement itself. The two river-basin related agreements that all three are parties to, namely the Danube River Protection Convention and the Framework Agreement on the Sava River Basin, do not apply to this case.

3.3.2.4 Problem Analysis

Due to the breakup from one to a few smaller administration units, the project concept suddenly failed to fulfil interest of each and every newly emerged state. The division of water quantity in a River Basin like Trebišnjica is a complex task by itself; however, considering the karst geography, the comprehension of water reality in quantity terms would be even harder. In such circumstances, stakeholders would start competing for water under the newly emerged circumstances. The scheme is functioning now, albeit not in an optimum way. However, it is not sustainable and will not go forever, on the one hand for technical reasons like the absence of Water-Management or lack of maintenance in some parts of the system, and on the other due to constant conditioning of other related projects.

3.3.2.5 Consultant's Conclusions

The conclusions would not be complete without an insight into the past events. The hydropower scheme on the Trebišnjica River was jointly built by the former power utilities of Croatia and BiH in the former SFRJ, while the power utility of Montenegro (EPCG) is also claiming ownership rights to a certain extent. However, the project was realised predominately based on a central government decree. HPP Dubrovnik 1 is a part of the hydro power plant scheme together with Trebinje 1 and Trebinje 2 on the Trebišnjica River in BiH. Presently the ERS requires HEP to compensate it for the electricity they produced and used under unauthorised conditions in excess of what has been bilaterally agreed on the sharing of electricity produced at this particular HPP system.

HPP Dubrovnik 2 is considered a highly efficient project of its kind in Mediterranean Europe, but its realisation has been blocked for years because of the dispute that emerged between the power utilities of Croatia and the Republika Srpska with respect to shared production in HPP Dubrovnik 1, where HET claims larger share than it received after 1994. On the other side, HEP claims a share in the electricity generated in the thermal power plant Gacko (located in BiH), whose construction was co-financed by Croatia in the 1980s. The agreement on the Special Purpose Vehicle for joint development of HPP Dubrovnik 2 is therefore the first step in resolving these disputes.

However, despite the undisputable and favourable financial feasibility of the construction of HPP Dubrovnik 2, doubts exist about the environmental implications of the project. The Ecological Association of Bosnia and Herzegovina have repeatedly warned about any intervention in the underground basin of the Trebišnjica River, which seems unavoidable for the realisation of HPP Dubrovnik 2, and which might impact the drainage basin of the Neretva River and could cause the ecological devastation of the Neretva Valley. As part of the preparation of environmental impact studies, investors must prove acceptability of impacts and find an answer to resolve this situation.

The state authorities in Sarajevo are supposed to be responsible for assisting the entities in resolving this dispute by concluding an agreement on the division of the hydropower potential of the Trebišnjica River. If both electric power utilities do not agree on a settlement of the debts of HEP to HET (or another legal successor of the agreement that has been breached), the issue will most likely be settled by arbitration, but reaching an agreement would obviously be the preferred option.

HPP Dubrovnik 1's development plan represents a good practice in the case of hydropower sharing and resolved transboundary issues, which existed in the Region in the pre-conflict period in the former SFRJ. However, during and after the conflict, it is well-known that many aspects of the agreement were ignored and if those are not resolved, new developments will most likely not go forward.

It has been noticed that a considerable quantity of water is transferred from one River Basin to another: from Trebišnjica to Neretva River. Should their impact be found ecologically and socially acceptable, such a transfer of water offers opportunities not only for hydropower but also multipurpose use elsewhere in the region and those cases could be reassessed in the framework of Integrated Water Resources Management by comparing positive and adverse consequences for all parties involved.

Key learning points:

- Mixing third, non-project-relevant issues which are open between the parties in a negotiation will very likely cause a halt in HPP development. Either both sides involved agree on a holistic approach or they go together on a project by project basis.
- Support of the state administration in providing the correct consents. If these consents are missing, it will cause obvious difficulties in HPP realisation.
- Agreements for hydropower potential utilisation became outdated under successions of administration. They should be checked and if needed re-negotiated under new terms.

3.3.2.6 Guidelines and Recommendations

The Agreement for the realisation of HPP Dubrovnik 1 was a valid act, which was respected by the stakeholders until the Balkan conflict. However, during and after the conflict the situation remained the same, and the pre-conflict agreement about the share of electricity produced to be divided accordingly was not respected.

Unfortunately, this open issue is used to block the development of the new scheme at HPP Dubrovnik 2 unless settlement is achieved.

Despite clear rules about the division of electricity produced, the choice of a particular negotiation approach is always subject to political considerations and controversy. Preferences depend on the balance of power among the transboundary stakeholders, in this case three states and two entities.

A good compromise nearing a win-win solution as soon as possible would result in positive benefits for all (3 or even 5, if the entities are treated individually) parties involved and would consist of the best negotiated trade-off between current alternative solutions. Anyhow, the past and not yet totally resolved events as discussed above should not be used as an instrument to condition other important development initiatives, such as Dubrovnik 2, aiming at proceeding to / completing the still pending project preparatory activities (e.g. high quality environmental studies and project documentation etc.) for the launching of a commercially sound HPP scheme. The two issues should be consistently treated separately, if the development of new hydropower capacity about which all parties have agreed is beneficial to the states concerned.

3.3.3 HPP Buk Bijela (Bosnia and Herzegovina – Montenegro – Serbia)

Box 3.3: Summary of the HPP Buk Bijela Case

HPP Buk Bijela, with a reservoir of seasonal balance capacity, was planned to be built on the Drina River in Republika Srpska, BiH, but a part of the accumulation would impact 10 km of the Piva River and 12 km of the Tara River in upstream flows, the latter being on the UNESCO List of World Biosphere Reserves under the "Man and Biosphere" Programme (UNESCO MAB Programme), since 1976. At the same time, that part of the Tara River which would be submerged and would become the storage basin of HPP Buk Bijela, is located near to the borders of National Park "Durmitor", which has been on the UNESCO List of World Natural Heritage since 1980. These plans provoked a strong reaction in the Montenegrin population against the decision to construct HPP Buk Bijela.

By agreeing on a lower water level table in the Buk Bijela reservoir during the recent concession conditions, the formation of an impoundment in Montenegro was avoided, but the benefit of balancing winter and summer flows in the reservoir was lost, while considerably lowering electricity production. Also, the hydropower potential on Tara and Piva was lost. In essence this case idea is the following: if the concept of reservoir capacity was considered on a pro and con basis within Integrated River Basin Planning and in a transboundary framework including Montenegro taking into account environmental aspects, a valuable regulating discharge reservoir at the whole Drina River section until its confluence with Sava River could be re-established.

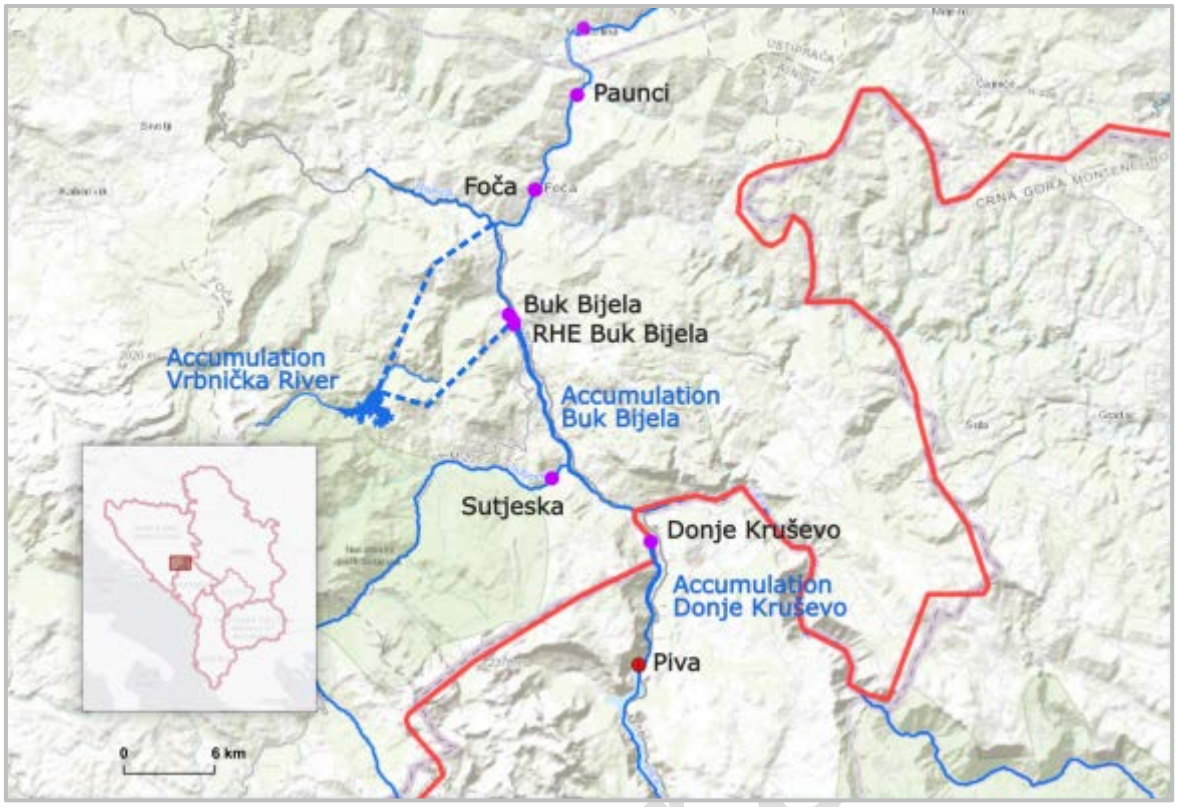

Figure 3.5: Locational Reference of the Existing HPP Piva and the Planned HPPs on Upper Drina and Piva Rivers

3.3.3.1 Overview of Transboundary Situation

In April 2004, the Government of Montenegro considered and adopted the Agreement on Cooperation between the BiH Republika Srpska and the Republic of Montenegro on the construction and shared use of HPP Buk Bijela. The Agreement was scheduled for signing by both prime ministers and ratification by both Parliaments. However, the signing was cancelled, because certain conditions of the Agreement were not met.

Later in May 2004, the Montenegrin NGO community raised an initiative, which opposed and protested the realisation of the project HPP Buk Bijela. The public campaign went by the slogan "I do not want a puddle, I want a river - Tara". A strong response went out to the announcement of the intention to build HPP Buk Bijela which would, due to the size of the storage basin, submerge the lower section of the Tara River where the canyon opens into a wide valley, the lower section of the Piva River and the Sutjeska River Canyon. This strong response was exacerbated because the government appeared to have withheld information on the HPP development plans from the public. In this regard, the authorities in Montenegro expressed their willingness to reassess the existing Environmental Impact Assessment Report. However, no answer was provided from BiH.

In order to obtain a comprehensive analysis of the problem, the UNESCO World Heritage Center was consulted to identify experts that would be engaged in professional discussions about the EIA. UNESCO was concerned that the planned HPP development activities could significantly impact the National Park "Durmitor", which is on the list of World Cultural and Natural Heritage. They expressed their willingness to provide a review of the EIA by experts of the International Union for Conservation of Nature - IUCN.

It could be assumed that existing EIA Report did not properly address all the environmental impacts of the project. Despite efforts, the existing EIA from 2000 was not obtained from the Republika Srpska, neither was the proposal of the World Bank to prepare a new EIA Report accepted.

In October 2004, a UNESCO mission was invited to Montenegro to conduct an on-site technical review of the planned HPP and to assess possible environmental impacts. Concluding that it would be beneficial for UNESCO experts to get a broad insight into the open issues at this stage, they were given the EIA from the year 2000 for consultations.

The NGO community continued campaigning. Their most important achievement, the "Declaration on the Protection of the Tara River" should be highlighted, which was submitted to the Assembly of Montenegro. More than 10,000 citizens supported the declaration. The Parliament of Montenegro adopted the "Declaration on the Protection of the Tara River". This Declaration prevents the construction of facilities which would damage the Tara River Canyon.

The combined UNESCO-IUCN Expert Mission submitted their report to the Ministry in March 2005, sharing their opinion regarding the "Durmitor" National Park and specifically that further activities to develop HPP Buk Bijela could threaten the UNESCO status of the park. The mission stressed their concerns that interested parties did not assess that scheme properly in a transboundary context: Bosnia and Herzegovina, Serbia and Montenegro as well as UNESCO. The mission particularly stressed that both Montenegro and BiH are Parties to the Convention on the World Heritage, and that Article 6.3 of the Convention applies to this specific case: "Each Member State to this Convention is obliged not to take any deliberate actions that would directly or indirectly damage cultural and natural heritage ... located on the territory of another Member State to this Convention".

The mission noted in the same report that the EIA Report (2000), which was officially presented to the Mission, could not be accepted. The Mission commented that to them it seems that the study was a copy of previous assessments done for hydroelectric power plant proposals during 1970s and 1980s. The EIA Report repeated mistakes that lacked scientific basis regarding biodiversity. Examination of maps showed that a section of the protected Tara River would be submerged, close to the border of the National Park "Durmitor". The Biosphere Reserve section of the Tara River (which coincides with the border) would also be flooded.

In response, the Government of Montenegro asked for an EIA, which would be harmonised with the EU standards and which would determine the impact that the planned HPP Buk Bijela could have on the Tara River and the NP "Durmitor". After that, all activities were stopped, because there was no agreement from the RS side on how to proceed.

With this background, it is unlikely that HPP Buk Bijela in its maximum proposal would proceed.

3.3.3.2 Background Project Information

A. Location and Environment

The Drina River Basin comprises the central part of the Dinaric Alps, including a fraction in Albania and ending in the Pannonia. The Drina River is the largest right tributary of the Sava River, with its mouth in the Sava River and the total course length to Šćepan Polje in Montenegro of 346 km. The springs of the Piva and Tara source rivers of the Drina are in Montenegro, and the confluence with the Sava River is at elevation 74.4 m. The total difference in elevation from Šćepan Polje to the mouth is 366 m, so that the average river bed inclination is roughly 1.06 m/km. The total length of Drina River together with Tara River is 496 km. The discharge at the mouth is 371 m^3/s.

The basin is also known for both floods and droughts, which increasingly need to be mitigated, as climate change has become a fact. The Drina RB has experienced major floods with the loss of lives in the past decade, and most lately in 2010, in all three riparian countries, possibly due to inadequate flood protection and preparedness. The absence of cooperation between two dominant water-using sectors in the basin, namely water management and energy generation, was found to be one of the weaknesses for the implementation of flood protection and control activities. At the same time, many areas in the basin also experience recurrent seasonal droughts. This affects biodiversity and fisheries, water supply from groundwater (the groundwater levels being affected by the draw-down of hydropower reservoirs, especially in summer), and agriculture.

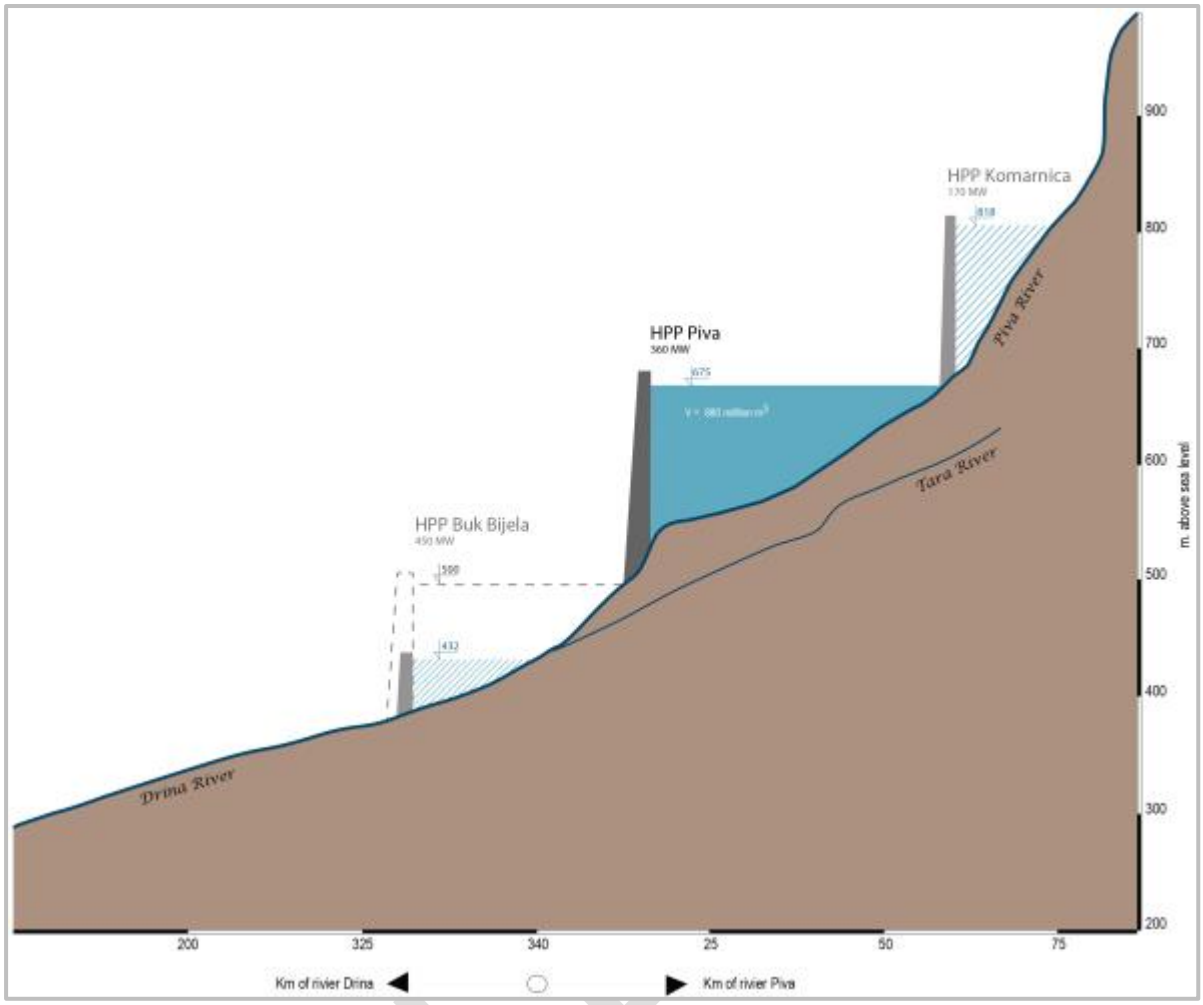

Figure 3.6: Longitudinal Diagram of Usage of the Rivers Piva and Tara Above the HPP Buk Bijela Site

The use of hydropower potential of the Drina River has been the subject of interest of government bodies and various scientific and professional circles as well as communities existing in its river basin for over several decades. It is worth noting that the construction of HPP Buk Bijela, about 10 km upstream from Foča (Srbinje) (Republika Srpska), began in the 1970s, and in 1974 the works were stopped and the building preserved because of the lack of acceptance by wider public and of expert public (over 500 scientists from all around the world and also the World Geographers Congress in Edinburgh 1984 were against this project because of the catastrophic consequences on the natural environment).

HPP Buk Bijela was planned to be built on the Drina River in Bosnia and Herzegovina, Republika Srpska, but a part of the accumulation was also supposed to impact 10 km of the Piva River and 12 km of the Tara River, the latter on the UNESCO List of World Biosphere Reserves under the "Man and Biosphere" Programme (UNESCO MAB Programme) since 1976. At the same time, that part of the Tara River, which would be submerged and become the storage basin of HPP "Buk Bijela", is located near the borders of National Park "Durmitor", which has been on the UNESCO List of World Natural Heritage since 1980. Plans provoked reaction in Montenegrin population against the decision on construction of HPP Buk Bijela.

B. Technical Description

The HPP Buk Bijela Final Design was verified and approved by the World Bank in 1987. Construction and equipping of the Buk Bijela hydro power plant on the Drina river is to be located slightly downstream from its confluence with the Piva and Tara rivers. It comprises a rock fill dam with clay core, spillways, intakes and pressure tunnels, and a cavern-type powerhouse containing four 112.5 MW turbo-generator units.

The Buk Bijela reservoir and Foča compensating reservoir would flood a relatively small area of 1,360 ha of land, comprising 562 ha of forest, 416 ha cultivated land and 382 ha of unfertile land. About 136 houses with 610 inhabitants would need to be relocated, or compensated if the owners so wished. At the time of appraisal, fair agreements on indemnifications (i.e. to provide a former owner with about the same economic situation prior to the flooding of his property) had been reached with the majority of the owners at that time. Provisions appear to be adequate, financially as well as otherwise, displaced persons will have employment priority in the area (including the Project itself), children will have scholarship priority, and assistance will be provided by the Foča community for buying plots of land suitable for agricultural development, construction of new houses, and relocation of some public buildings.

The ecological effects of the Project were originally expected to be acceptable. However, neither for similar existing storage basins, nor for planned projects – including Buk Bijela – has an analysis been made of the problems for the fish populations resulting from the series of dams proposed on the various rivers. In about the same period, the Elektroprivreda undertook a study of the fish in the portion of the Drina River within Bosnia-Herzegovina, assisted by consultants approved by the World Bank and in accordance with terms of reference acceptable to the Bank. Their results were discussed with the Bank. This study was carried out within the context of a separate study covering the entire Drina River Basin.

The technical solution of the system HPP Buk Bijela (and HPP Foča) was based on seasonal and peak operation of HPP Buk Bijela and the utilisation of the reservoir and HPP Foča as a discharge-regulating reservoir. In compliance with the adopted mode of operation, HPP Buk Bijela was to operate with frequent and sudden flow changes (from 0 to 600 m3/s) within few hours' time periods.

HPP Buk Bijela included the construction of a concrete arch gravity dam with spillway and chute over the machine hall. Flood discharge was to be performed through five spillway bays equipped with radial gates. Flood discharge is to be enabled through three spillway bays and stilled in the concrete apron.

The powerhouse with assembling bay is to be located at the left section of the river profile, adjoining the downstream side of the dam. The space between the arch dam and the powerhouse is where the transformer, diesel power unit and switchgear were designed to be positioned.

In accordance with the Project Documentation and Works Performed, besides the positive judgment of the project given by the World Bank experts in Washington, the following works were realised during preparations for construction of HPP Buk Bijela:

- Complete investigation works and all preliminary and probationary tests of material and mechanical components,
- 80% of expropriation of grounds and buildings in the reservoir area.

The Final Designs, which were not dependent on the equipment suppliers, had been revised and adopted: Final Design for the Dam, Final Design for the Spillway with the Chute, and Final Design for the Cascade with the Auxiliary Upstream Cofferdam. Suspension of the project begun in the year 2000, when an Updated Preliminary Design, Final Design for Civil works, Environment Assessment Study and Tender documents for hydro mechanical, electro mechanical and monitoring equipment were prepared. While tendering for the concession assignment for construction, operation and utilisation of HPP Buk Bijela and HPP Foča was under way, the Montenegrin Parliament adopted the Declaration on the Tara River Protection on 14 December 2004, which meant the end of this project. By that time, the invested funds in HPP Buk Bijela amounted up to 26.4 million USD.

A new project conception followed the examination of Project status in June 2007, when the Republika Srpska Government adopted a conclusion to re-launch the project and to intensify activities on the realisation, preparation of design and construction of hydro power plants in the upper reaches of the Drina River. The project HPP Buk Bijela & HPP Foča has been renamed to "HPPs Upper Drina".

The Ministry of Economy, Energy and Development of the Republika Srpska and Mixed holding company Power Utility of the Republika Srpska were assigned to prepare the documentation and preparatory work plan regarding this project and a joint Expert team has been set up.

As a result of coordinated efforts and the preparation done by the Expert team, the following documents were prepared and submitted for approval:

1. Terms of reference for preparation of investment-technical documentation named "Utilisation of Hydro Power Potential of the Upper Drina and Sutjeska River within the Republika Srpska territory - Conceptual Design and Prefeasibility Study";
2. Memorandum of Understanding;
3. Memorandum of Association of Joint Venture Company named "HPPs Upper Drina" LLC.

At the Expert team meeting, held in Belgrade on November 15, 2007, the Terms of Reference were approved. The fundamental principle accepted in this Project Programme is to have a maximum water level at elevation not above 432.4 m a.s.l., which means all the reservoir will remain within Republika Srpska.

Generally, the following two alternatives are to be considered:

1. Cascade variant of HPP Buk Bijela - HPP Foča. A recommendation is given for keeping damming sites of HPP Buk Bijela and HPP Foča from the previous designs for which complete investigation works, and complete testing of material and mechanical components has been carried out.
2. An alternative with a new dam site and reservoir with greater capacity. In this case, the necessity of the regulating reservoir Foča should be reconsidered.

Besides the HPPs on the Drina River, the possibilities of utilisation of hydropower potential of the Sutjeska River are to be analysed. Suggested alternatives are:

- Construction of HPP Sutjeska with maximum water level 500 m a.s.l. The damming site is to be positioned upstream from the banked-up water level on the Drina.
- Cascade HPPs from the banked-up water level on the Drina up to the National park level.

Based on the Terms of Reference, a Public Invitation to Tender was issued for a procurement of services - preparation of (Pre-) Feasibility Study documentation named:

> "Utilisation of Hydro Power Potential of the Upper Drina and Sutjeska River within the Republic of Srpska territory - Conceptual Design and Pre-feasibility Study".

Before the Tender Return Date three bids were submitted. Project realisation is expected to take 12 months for preparation and another five years for the construction.

C. Commercial and Political Circumstances

The Government of the Republika Srpska signed an agreement with a consortium organised by the state-owned utility Elektroprivreda Republike Srpske (ERS) and its subsidiary Hidroelektrane na Drini from Višegrad, for the construction and operation of HPP Buk Bijela.

HPP Buk Bijela refers to the construction of a plant with a production of 1,345 GW per year. The project would be realised in an arrangement in which the concessionaire would be responsible for the construction, financing, operation and maintenance of the hydropower facility. The concessionaire would operate the plant for a certain time, during which the power utilities of Montenegro (EPCG) and the Republika Srpska (ERS) would buy the whole electricity produced at a tariff established in advance – two-thirds of the output to ERS and one third to EPCG. The concession would be granted for 30 years. After 30 years, the ownership of HPP Buk Bijela would be divided in the same way.

The project comprises the construction of the Buk Bijela HPP on the Drina River, consisting of a rockfill dam with clay core, spillways, intakes and pressure tunnels, a cavern-type powerhouse with four 112.5-MW turbo-generators and accessory equipment and a switchyard. A compensating reservoir with a concrete dam would be constructed about 10 km downstream to regulate discharge waters. Consulting services would be provided for assistance with administration, accounting and training, and for special engineering studies, if needed.

3.3.3.3 Transboundary Legal Framework

Bosnia and Herzegovina (and its entities: Federation BiH and Republika Srpska)

Integrated water resources management, in BiH, is regulated through a legal framework at the level of Entities (Federation BiH and Republika Srpska). Specific jurisdictions are assigned to the BiH Ministry of Foreign Trade and Economic Relations (MOFTER) over the protection of the environment under the Law on Ministries and other administrative bodies of BiH.

In Republika Srpska, water resource management is the jurisdiction of the Ministry of Agriculture, Forestry and Water Management, as an institution that implements the Law on Waters ("OG of RS", No. 50/06, 92/09, 121/12) and bylaws. In addition to integrated water management, the purpose of this Law is the achievement of good water status and the prevention of its degradation, achievement of sustainable water use and ensuring equal rights in access to water.

The water management framework in the FBiH is set by the Law on Waters ("OG of FBiH", No. 70/06). This Law strived to transpose the Water Framework Directive, and has been assessed as mostly compliant. The Law on Waters regulates water management within the territory of the FBiH, which includes among other areas also water use.

Water laws concerning both entities prescribe the adoption of planning documents for water management. The Framework Plan for Water Management in Republika Srpska has been developed and it defines the strategic objectives of developing in the water sector. It describes the current situation of water management infrastructure and the necessary conditions and criteria including restrictions for the further development of water management and the entire water sector. The Water Management Strategy of FBiH is the key document with the planning horizon being 2022.

Montenegro

The main legal act regulating water management is the Law on Waters ("OG of MNE", No. 27/07, 32/11, 47/11, 48/15 from 2015). The Law on Waters regulates the legal status and the method of IWRM, water and coastal land and water facilities, the conditions and method of exercising water activity and other issues of significance for water.

The Water Management Master Plan (WMMP) of Montenegro represents the long-term national programme of water management, and sets the elements of water management in the context of the water area of the river basin. If the WMMP implementation cannot be ensured through water management plans, the Government, upon the Ministry's proposal, adopts a special water management plan for individual waterway categories or for individual water management issues.

The harmonisation of regulations with EU regulations regarding water management has not been completed. The newly adopted Law on Waters has been aligned with the WFD. However, full harmonisation will be achieved by the adoption of water management plans, and improvement of the monitoring system expected by 2021.

Serbia

The central legal act that regulates water management in the Republic of Serbia is the Law on Water ("OG OF RSRB", no 30/10 and 93/12). Various regulations have been passed in accordance with this Law. Other regulations encompass different aspects of water management and integrated river basin management; among them the most important are in the field of environmental protection (e.g. pollution, waste management), energy sector (particularly renewable sources of energy, i.e. hydro energy) and water transport.

The Law on Water regulates the legal status of water resources, IWRM, water facilities and river basin land management, sources and means of financing water resources management.

The Law adopted in 2012 aimed at harmonisation with the EU Water Framework Directive and other EU legislation. Approximately three quarters of the WFD is transposed in the regulations of the Republic of Serbia, and full harmonisation is expected by 2018. Certain challenges expected with the implementation of the WFD in the Republic of Serbia are due to due to the lack of necessary data on monitoring, as well as the capacity in institutions that directly implement the WFD.

3.3.3.4 Problem Analysis

With regard to the zone in which Buk Bijela has been foreseen on the Drina River, it would be important to re-assess the misconceptions which circulated during the initial project discussions. Among the groups opposing implementation of the HPP Buk Bijela system, were some (in addition to the NGOs) whose main concern was that the hydro potential has not been divided fairly (1/3 to 2/3) between Montenegro and BiH. Addressing the well-known environmental concerns has been attempted, but the important question of how to share the hydropower potential of the river in the case where the larger part of the storage basin is in one state, and the power plant is in another state, was side-lined. A wrong conceptualisation of this subject has led to a claim that as much as 80% of the potential of the Buk Bijela belongs to Montenegro, because of heavy rainfall / precipitation in Montenegro's territory and because its territory creates a major part of the catchment flow of both the Tara and Piva Rivers.

The cooperation in the Drina RB is observed to be relatively weak between the different users/sectors, between the three countries, and between different stakeholders, such as local governments, tourists and anglers. The absence of a workable cooperation framework between the riparian countries means that flood and drought conditions in the short-term are not well mitigated and managed, but also forms a major impediment to the formulation of longer-term development scenarios and medium-term investment plans that address the trade-offs between different water uses. This, in turn, affects other regional strategies such as those for hydropower, nature conservation, tourism, and "green growth".

Green growth strategies aim at management and investment (in agriculture, energy, land use, etc.) to reduce the carbon footprint of the region, enhance the resilience against climate variability through adaptation, and promote development that is environmentally sustainable. Such strategies are compatible with the longer-term objectives of EU policies.

The need for integrated water management and convergence with EU Water Directives is evident. While all water using sectors (municipalities, hydropower, nature parks, etc.) have prepared their own development plans, much work is now required to integrate these sectorial plans, as well as the water management plans, with the economic development and land use plans. This needs to be done simultaneously at different levels:

- per sub-basin (tributary), because many interventions have only local impacts and serve only local interests),
- for each country (and in BiH, for each entity), because each has either sovereign or certain autonomous rights and national/entity development priorities, and because of the differences in the national/entity legal frameworks, and the need to harmonise, and
- at the aggregate level of the Drina RB.

Such integration would help prioritise investments based on the identification of the common points between different proposals – either at local or at regional scale – that can be of competitive or synergistic nature. Thus, some investment or management proposals may be mutually exclusive, requiring a proper trade-off analysis, or they may, when taken together, help achieve economies of scale, mutual benefit, or possibly create win-win situations. The investment and management prioritisation needs to be guided by economic development and land use strategies, while such strategies in turn should keep account of water availability. The flood and drought management strategies that are at the core of the proposed study depend very much on land use, and on adaptation of the other infrastructure works in the Drina RB.

The water management, and its integration, will need to become increasingly consistent with the EU waters-related directives and policies, such as the Water Framework Directive, the Floods Directive, the Nitrate Directive, etc. The three countries are in varying stages of partnership with the EU, however, the transposition of the EU Acquis is a key objective and policy driver in each country.

3.3.3.5 Consultant's Conclusions

Following the decision of the Montenegro Government to abandon the project of HPP Buk Bijela in its maximum water level alternative, which would flood parts of the Piva and Tara Rivers, the BiH Republika Srpska in 2007-8 developed a new project for the realisation of a considerably-revised system with its backflow ending at the level of Šćepan Polje, right up to the border with Montenegro. Such a new scheme is considered legally correct from

the international water law point of view, because it does not affect in any sense water resources in Montenegro. However, the outstanding performance and economic results of the initial scheme proposal have been considerably reduced. The realisation of such a project would be detrimental not only regarding integral development of water resources but would also practically prevent Montenegro from using its remaining potential on the lower course of the Piva. Despite the declared protection of both rivers in Montenegro, the plan of HPP on the Piva River still exists. But the idea of a hydro power plant on the lower course of Piva would be impractical to realise (as HPP Donje Kruševo), if HPP Buk Bijela was rejected in its maximum alternative water table conception.

The conservation of the lower stretches of Piva and Tara Rivers is raising a complex issue of the acceptable legal flow (basic minimum flow) and its maintenance downstream from the existing HPP Piva. In the current operational regime, no discharge is released to Piva River when HPP Piva is not operating during stand-by periods. An advantageous mitigation measure for basic flow would be realisation of the HPP Buk Bijela reservoir, with nominal water table at elevation 500 m a.s.l. or alternatively lower Buk Bijela with Donje Kruševo. The practice of drying streams is being phased out worldwide. It is unacceptable and environmentally incorrect to dry out an entire river section. From the point of view of sound river basin management and the principles of water resources sharing, there needs to be a response to this question realised very soon at Piva River. Installing separate smaller turbines to feed an environmentally acceptable flow seems hard to realise technically. These very important facts were not considered openly before abandoning the HPP Buk Bijela scheme. Currently, the design of the scheme appears outdated and needs to be updated to present day standards, mainly from the point of view of the implementation of environmental measures.

Key learning points:

- The phasing of project development must be clear from the beginning. Possible bottlenecks should be anticipated and a response position accordingly prepared. This includes the preparation of all relevant documentation which is based on real data gathered. Data collection comes at a risk to the investor, because there is no assurance that such a data baseline will automatically provide consent or approval of the project plan.
- A key source of problems in development of HPP and reservoirs is the exclusion of representatives from the general public and the non-government sector. Public hearings must be held and the views expressed considered.
- The business model will play a major role in the case of several countries participating. This model should reflect each and every country's interest and advantage points, concerning the HPP development endeavour.

3.3.3.6 Guidelines and Recommendations

Here again, proper environmental assessment including public consultations are required not only from the legal point of view but mostly for quality planning of hydropower. Many examples in the region are found that have proved the importance of a high quality EIA for technical improvements of hydropower projects, also through the proper consultation with local communities and environmentalists. This point is even more valid in transboundary conditions of hydropower development. Consequently, the EIA is an investment in the effectiveness of realisation rather than merely additional cost.

In international practice, certain rules about hydro potential sharing have been established. Regarding issues such as the area where the precipitation is considerable, where it is negligible, how the run-off is formed in the upstream part or from which part of the catchment riparian countries are receiving water, these are ***not considered relevant*** in the case of resources allocation. The potential is shared by the agreement of interested parties (countries) in the development of the facility. A key criterion for the division of hydro potential is line potential (the product of flow and head per kilometre of stream), which is the potential calculated along the water stream exclusively pertaining to the stretch of river where the hydroelectric facility will be realised (zone of the backflow and pertaining water head). If a hydropower facility in its entirety, with infrastructure like: powerhouse, storage basin and dam falls in the territory of one state (i.e. the territory of another country is not involved) – then the overall potential belongs only to that country. If the backflow enters the area of another country (see Fig 3.9), then the starting point on the division of hydro potential is based in how much line potential is found on both sides.

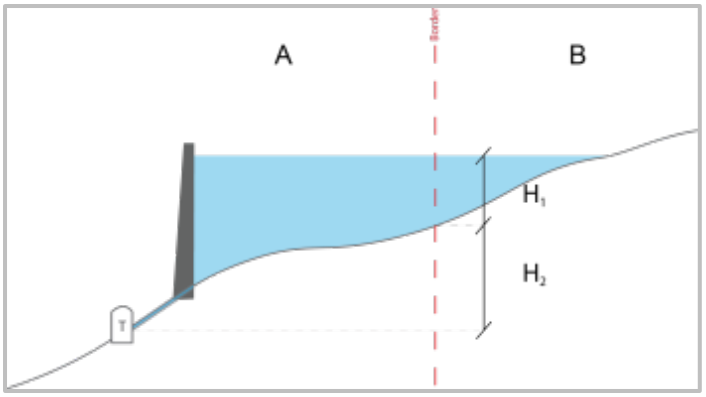

Figure 3.7: Match Line Potential

A certain modification of this approach will be needed regarding the division of hydro potential if the valuation of sites suitable for powerhouse, storage basin etc. is found in more than one country, like in the case of a derivation type of hydropower scheme. Therefore, in the case of the storage reservoir being located in one country and the powerhouse in another, the hydro potential will be divided according to following principle: water belongs to the country of reservoir location, so the contribution of water quantity in the energy formula (E= constant*Q*H) would be attributed to the country of reservoir origin B, while the Head would be divided between the countries in whatever proportion comes out of Head levelling H1 for country B and H2 for a country A (see Fig 3.10).

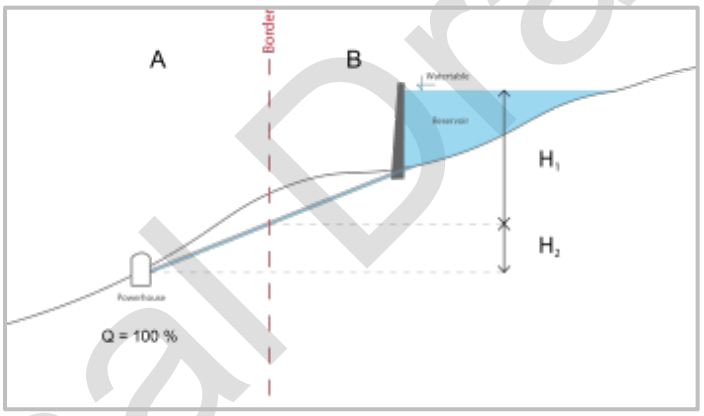

Figure 3.8: Head Levelling

If water enters from the area of one country to the area of a neighbouring country and the state boundary is in the middle of the river for some distance (Fig 3.11), then its potential can be shared corresponding to the Head, which is represented by the water table difference between both side entries of the border at points A and B in a river, on a half-half basis.

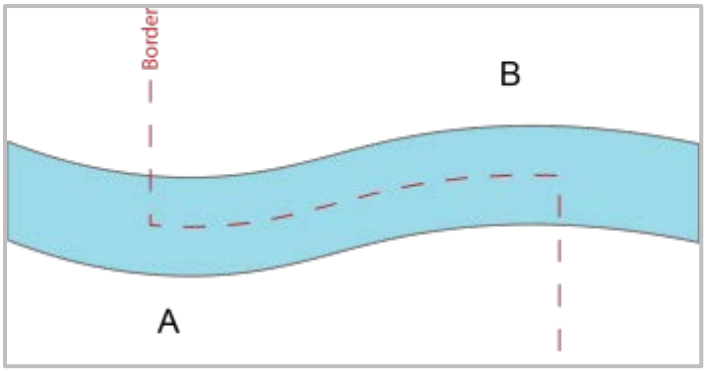

Figure 3.9: Head Between the Border Points

3.3.4 Drina River Basin - HPP Koštanica (Montenegro – Bosnia and Herzegovina – Serbia)

Box 3.4: Summary of the Drina River Basin - HPP Koštanica Case

HPP Koštanica represents a project planned in an engineering detail, which was slowed down in implementation so that discussion could take place on a foreseen water transfer from the Tara River to the Morača River (i.e. from the Black Sea to the Adriatic Drainage Basin). Strategic planning of such a HPP would typically be a long-term one. The planning process for HPP Koštanica is iterative, as the plan is to be reviewed every few years for the implementation of the next variant of the plan, incorporating new data and taking into account new needs and future developments. When such infrastructure is of a transboundary nature, taking the decision to implement it can be particularly sensitive for cooperation between the involved countries. Obtaining a consensus on such a development project would be the result of a significant process of cooperation between countries and a meaningful political and economic integration point in the region which is the message provided from this case. The case is also the opportunity to draw conclusions on the importance of a business model.

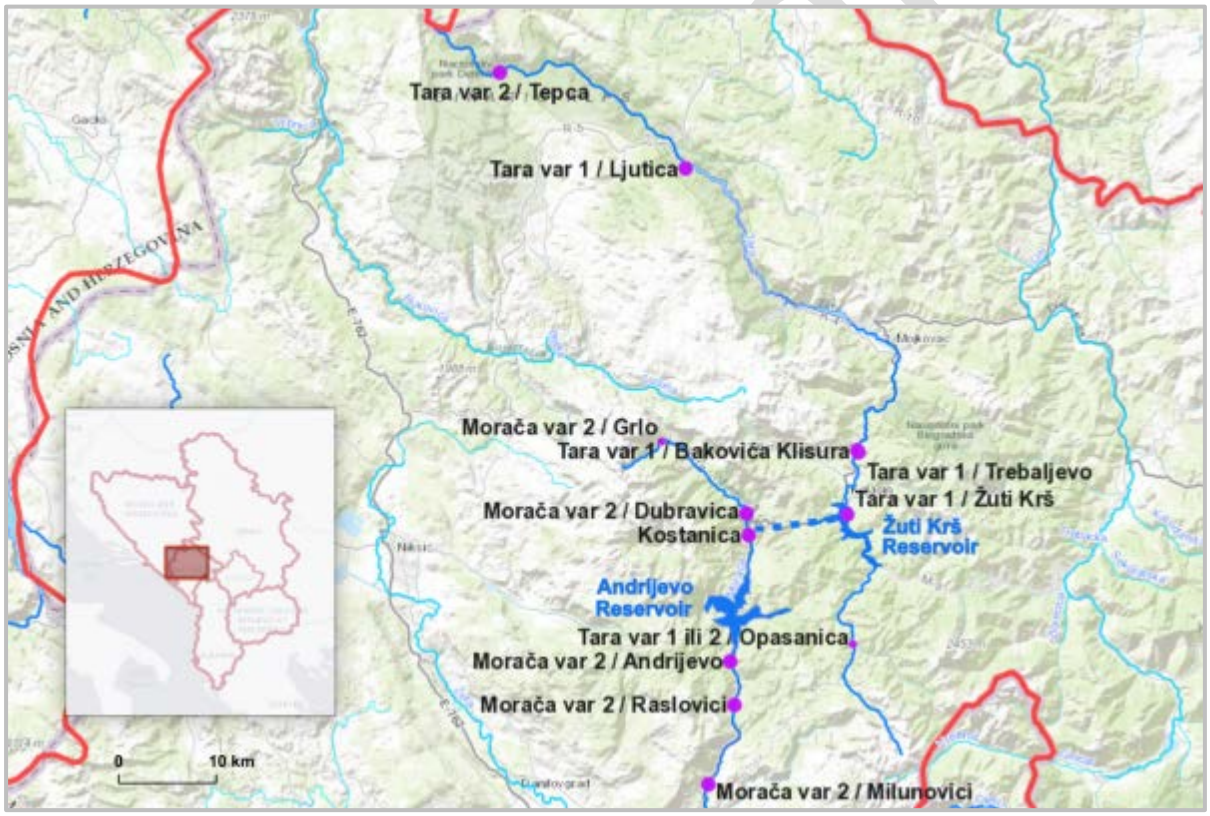

Figure 3.10: Locational Reference of the Planned HPPs and SHPPs on the Tara and Morača Rivers

3.3.4.1 Background Project Information

A. Location and Environment

The Tara River Basin (Black Sea drainage basin) is mainly on the territory of Montenegro, except for only a small part at the most downstream section, where the river is the border line with Bosnia and Herzegovina. Part of the

catchment on the slopes of Obzir Mountain and Ljubišnja surface of 125 km2 is located in the Republika Srpska, BiH.

Endowed with natural, hydrological and morphological characteristics, the hydropower potential of the Tara River is found to be the most promising among all rivers of Montenegro, with an average hydropower capacity amounting to 257 MW, and the theoretical hydropower potential of about 2,225 GWh yearly. However, this river is the most complex in terms of planning, because of very strong nature conservation measures, which express requirements for water management planning and environmental limitations in general.

In the upper river section, from the source down to about Mojkovac, the river basin is highly non-symmetrical, since the course of the Tara River is in very close proximity to the watershed of the Morača River (Adriatic drainage basin). This is very important from the point of view of hydropower potential use, because the waterflows of the Tara and Morača are only about 5 km apart, with an altitude displacement of about 700 m from the elevation of the Tara to the Morača, which would in case of water diversion allow for the very rational construction of a headrace tunnel and penstock at a given fall.

B. Technical Description

The Tara-Morača hydropower system would be one of the most effective hydropower production systems in the whole WB6 region from the point of view of hydropower generation yield in terms of energy and the favourable economics of the potential HPP. The scheme consists of: the reservoir Žuti Krš with an estimated top water level at 1,000 m a.s.l., the compensating basin, Bakovića klisura at 932 m, the water tunnel down to the Morača River and the HPP Koštanica powerhouse with the foreseen installed power of around 550 MW. The expected average annual generation of HPP Koštanica would be 1,120 GWh/year giving a plant capacity factor of about 23%. The average energy loss on the Drina River based on the discharge transfer to Adriatic was estimated at 353 GWh/year.

The subsequent expansion of the plant has also been envisaged in terms of an alternative technical concept for the HPP Koštanica as a reversible unit. Preliminary documentation for the Koštanica HPP was prepared in the early 1970s, a feasibility study was conducted in the mid-1970s, and an update of the earlier studies was contracted in 2004 and finalised a year later.

In order to secure effective realisation of the project – bearing in mind that transferring part of the water discharge of the Tara River to the Morača River was highly unlikely to be met with approval by the downstream republics in the 1980s – all considerations of the hydropower system on the Tara River were prepared for two alternatives:

a) use of the river in the direction of its natural flow, and
b) use of the river under water transfer conditions, of which variants for two discharge cases were made:
    1) transfer of 15.2 m^3/s, only with natural inflow to the point of HPP Koštanica powerhouse upstream of Kolašin; and
    2) transferring 22.2 m^3/s, which included the pumping portion of the water flow from the part of the basin downstream of Kolašin.

During the hot season of the year, HPP Koštanica would not be energetically used, not even in the role of operational reserve in the power system. It would serve ecological purposes exclusively, supporting ecological land tourism of the protected Tara River[54] canyon downstream, by the optimal regulation of the water quantity and temperature regimes. A selective water intake at Koštanica would enable management, enabling the achievement of the most favourable temperatures and contents of oxygen on the downstream part of the Tara, which would have been an extraordinary contribution to the improvement of biodiversity on the river.

[54] The canyon stretch is protected as a part of Durmitor National Park and is a UNESCO World Heritage Site. The Tara River cuts through the canyon.

The key problem of the Drina River downstream in BiH, after the confluence of the Tara and the Piva Rivers, is not its average water flow of almost 400 m³/s at the confluence of the Drina and Sava Rivers, but rather at the extremes of the flow regimes. Much of the water balance of the Drina River is composed by floods, causing severe damage to property and lives, followed by long periods of dry (minimal) flow, when there is not sufficient water available for water users in the natural flow regime. Therefore, key strategic objectives of any technical solution regarding the Drina River are:

1) large head accumulations enabling annual flow regulation,
2) storage of flood water wave volume, and
3) significant increase in low discharge waters in the middle and lower courses of the Drina.

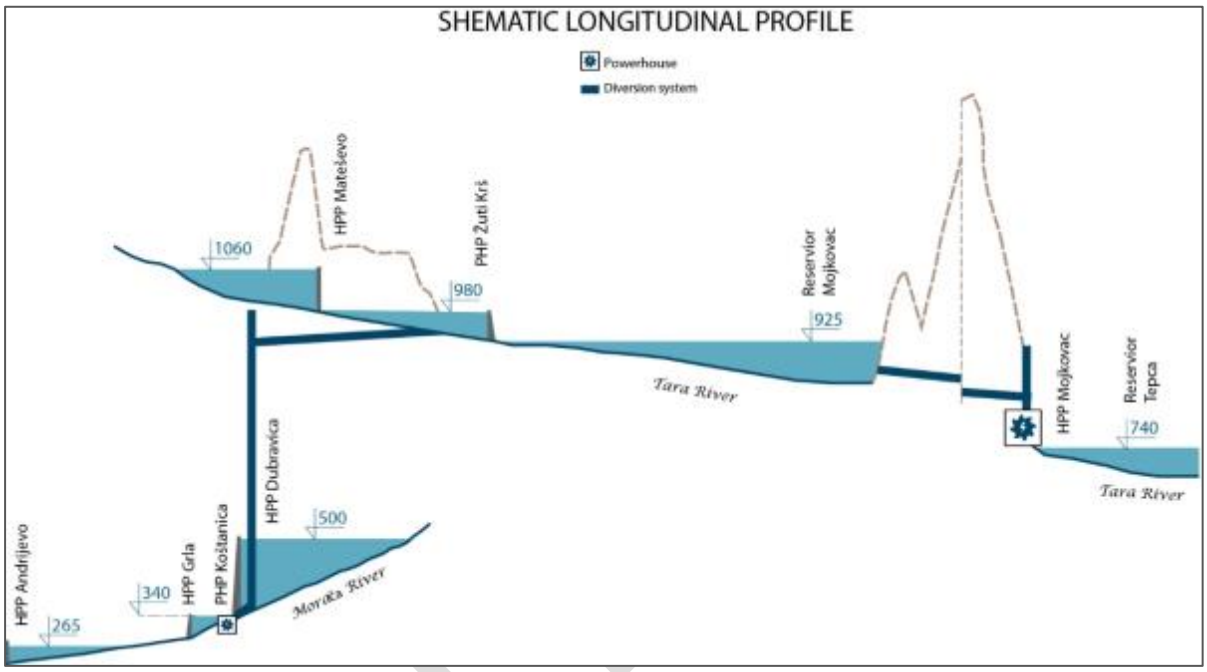

Figure 3.11: Longitudinal Section of planned HPP Koštanica – alternative 2

HPP Koštanica (as presented as alternative 1 in the Water-management plan), which is a key facility through which the transfer of the Tara River is effected, has been designed as an underground reversible hydro power plant with four-turbine generators. As shown in Figure 3.13, water would be transferred from Tara to Morača River from elevation 980 m a.s.l. at reservoir Žuti Krš to elevation of 340 m a.s.l. at HPP Grla. The first phase of HPP realisation would be carried out as an electricity generating powerhouse. Once the natural flow of water in the Tara and Drina Rivers is re-established, upgrades with pumping units would follow as the second phase of realisation. The initial electricity generating power plant would be refurbished into a reversible (pumping) hydro power plant, so that the balance of water flow on Tara and Drina will be returned to its natural flow average. The second phase would bring a significant advantage in the integrated water management of the Drina River Basin as the already built storage basins at Žuti Krš and Baković Gorge would allow for a yearly regulation of the water flow, especially important with regard to the possibility of increasing the river flow throughout the downstream course of the Drina River during dry periods.

An extensive storage reservoir development at Tepca village, which is situated in the strictly protected Tara Canyon and under the scrutiny of the world public, is not likely to be built. Undoubtedly, the significant hydropower and water management performance of this facility, especially considering its very large storage capacity (1,050 million m3), is ultimately unrealistic in view of the protection status of the Tara Canyon as an exceptionally valid aquatic ecosystem and biodiversity case with a superb landscape. The realisation of this facility would require the construction of an access road from the top of the canyon to the construction site, which would be in itself an unacceptable degradation of the canyon. All these arguments render future considerations of the HPP Tepca as a possible candidate project meaningless. In another alternative, there is certain advantage to HPP Ljutica replacing HPP Tepca, due to its location downstream and outside of the canyon.

C. Commercial and Political Circumstances

Transfer of any water quantity from one river basin to another has to be consented by all the countries concerned (in the case of Tara – Morača transfer these would concern at least BiH, Montenegro, and Serbia), but predominately those countries which are below the acceptable point of water discharge. In the period of initial decision-making on the issues of Tara – Morača water transfer, these countries were actually all republics of former Yugoslavia. At that time, it was expected that consent was provided automatically without fair compensation, but still some republics took the liberty of objecting to such a possibility due to the loss of potential hydropower, which was already planned for exploitation in the reservoirs while other positive effects, like the increase of minimum discharge, were not considered properly. The prevailing water-management concept at that time was based on an "average flow" principle, which was decreased in this concrete case. Therefore, due to a lack of integral planning and the consideration of effects in respect of a single economy (i.e. not per republics) of that period, the case of transferring water to Morača over HPP Koštanica, failed.

Most tributaries of the Tara River are characterised by extremely difficult access in the canyons with a very steep longitudinal inclination, developed karst hydrography and biodiversity significance (each of these mountain rivers represents a unique ecosystem), which significantly decreases the possibility of their use for small hydro power plants. This is an important counter-argument to some environmentalists' proposals for Montenegro avoiding the development of large hydro power plants through an intensified realisation of a larger number of power plants of smaller capacity. The fundamental misconception behind this idea is the fact that a large number of small hydro power plants are much less under control after summing up their impact on the environment. It is a well-established fact that a large number of small HPPs is environmentally less acceptable than a small number of large HPPs of the same capacity. Regarding large hydro power plants, the measures for compensation of impacts and their integration into the environment are well-known, technically feasible and economically affordable, while this is not the case with many small hydro power plants, particularly when it comes to actually implemented measures; this may be due to many reasons, such as their ad-hoc manner of construction, deficiencies in the planning process and considerations of the sensitive environment of their micro-locations, etc.

In most small watercourses, effective hydropower exploitation can be achieved only by both the concentration of fall (water level difference) and the realisation of a long tunnel derivation. This is considered a dubious approach from an environmental point of view due to the impact of low water flow remaining (if at all) in the section between water uptake and its point of release back to river bed. Therefore, securing the basic minimum flow (guaranteed ecological flow), that would provide for the same water environment after the realisation of power plant projects remains the central question.

3.3.4.2 Transboundary Legal Framework

International relations have become so complex that alternative dispute resolution means have become tremendously important in managing or resolving inter-societal conflicts which has been illustrated by the present case as well. The search for alternatives to legal institutions in the arbitration of disputes has been prompted not only by the fulfilment of the legal mandates, but also by increasing the number of litigation and confrontation processes. Mediation as a form of dialogue between disputants aided by a neutral third party, whose informed judgment is respected, has become a viable alternative to adversarial processes. The whole range of issues, such as adjudication, arbitration, mediation, conciliation and even principled negotiation, expresses various alternative processes of dispute resolution. However, criticisms have also been made as to whether such processes can compensate for inequitable power relations and whether they can provide incentives for compliance with or acknowledgment of the third-party decision when there is no resource to legal sanctions.

Given such considerations and strong socio-political divisions, there are three responses that should be considered:

(i) Improve efforts toward the utilisation of co-operation in terms of understanding alternative dispute resolution and conflict management efforts to transboundary water resources;

(ii) Recognise again the river basin approach as a co-operative mechanism and authority, one that is much more sensitive to ecosystem interdependencies; and

(iii) Place particular emphasis on integrated water resources management (including the building of more robust water resources institutions).

There is a forty-year long discussion about the transfer of water from one river basin to another. In the meantime, many positive water management effects have been lost downstream in the Drina and Morača Rivers. One such lost effect is the high economic performance of HPP Koštanica, which could use water discharge at a head of around 700 m, while such a head downstream in the Drina River could only be realised via a series of reservoirs. The surplus of total energy production gained by transfer of water discharge, including production on the Morača River HPP chain and the (hypothetical) loss at the Drina River, is roughly 353 GWh per year, which is not so impressive per se; however considering the relatively low expected investment cost, it would present water transfer specifically as a very rational solution. The transfer of water has not been analysed in detail so far. Should the consequences and effects of water transfer be studied, the results would improve the understanding of this question to an extent allowing for decision.

The transfer of water from the Drina to Morača River Basin amounts to roughly 5% of the total water balance at the lower Drina River where the average discharge is 390 m^3/s. Additional benefits obtained by water storage capacity in the Žuti Krš Reservoir at upstream Tara River with respect to flood protection of an area downstream which is to a great extent prone to flooding, could easily surpass the benefits of energy production[55]. The capacity of the Žuti Krš Reservoir is around 200 million m^3, enabling the regulation of the flow regarding low and high discharge extremes, and raising the value of the water resource utilisation through rafting, flood protection, water use etc.

3.3.4.3 Overview of Transboundary Situation

By transferring the water flow between two natural watercourses, the extraction from one river and release to another happens, so the remaining discharge would lack some quantity. This water quantity represents a loss and a gain of hydropower at the same time. It is suggested that the energy not produced in this way is a measure of compensation to the area, which has been deprived of it. In the case of HPP Koštanica, this means that loss of water quantity could be compensated either directly in monetary terms, or by enabling capital and the organisational participation of justified stakeholders in the investment process.

Potentially, the organisational model through which this idea could be realised is a joint venture realisation approach. It is very important to secure the equal participation of all eventual Partners in the implementation of the project, taking into account the following facts:

- The project is part of an overall programme of utilisation of water in the River Basins Tara-Morača;
- Planning and implementation phases on the Tara and Morača are inseparable in terms of energy potential utilisation;
- The agreement must recognise the existing power plants that have been deployed in the territory of states pertaining to watersheds of the Drina (inclusive of Tara River) and Morača River.

3.3.4.4 Problem Analysis

The basic principle on which the analysis of the possible joint development effort and business model is based, is the principle of equality between partners (in this case countries sharing potential) entering a deal from a legal and financial point of view. Furthermore, in each alternative option, each partner is separately considered from the point of view of its traditions and performance.

The proposed joint venture models have been analysed from the point of view of the following aspects:

- Feasibility - given the technical dependence of different planning and construction phases of hydro power plant schemes on Tara-Morača system;
- The consequences and legal security for each partner stakeholder;

[55] It is estimated that the 2014 floods of rivers Bosna, Drina, Una, Sava, Sana, and Vrbas in Bosnia and Herzegovina cost more than 2,000 mio EUR in damages and losses. Costs in Republika Srpska (almost 1,000 mio EUR) roughly equalled its entire yearly budget.

- The long-term functioning of the proposed business model;
- The benefits of financing and possible risks, legal regulations in stakeholder countries and EU Directives governing the conditions and process of providing energy services and obtaining energy permits.

The following business models (organisational or functional) are possible for establishing a joint-venture enterprise:

- Model 1 without the establishment of new organisational forms (SPV-Special Purpose Vehicle), the project will be enabled by a leading utility which will fund the development of the project; the criteria for distribution of jointly produced electricity are regulated separately by a special contract;
- Model 2 without the establishment of new organisational forms where several utilities are participating in the investment in the project in equal shares. Here the electricity generated is divided into justified proportions with the production cost covered;
- Model 3, in which utilities jointly establish a new company (legal entity) for the purpose of the realisation, operation and maintenance of the project with equal shares. Electricity produced in the facilities of HPP Koštanica are shared in a proportion to the share of each partner in the investment.

Models are distinguished under two variants of energy pricing:

a) The price of electricity produced in HPP Koštanica is determined by the market price. Company partners participate in sharing of profits of the SPV. The founders take over the electricity produced in specified proportions, and according to the market price;

b) The price of electricity produced in HPP Koštanica is determined by the costing principle, that is, the price includes accountable costs of HPP Koštanica. Company partners participate in sharing of the profits of the Company in the agreed proportions.

3.3.4.5 Consultant's Conclusions

A decision on the transfer of water from one River Basin to another needs to be proposed and agreed upon based on argumentation. If water transfer is advantageous, and the project gains outweigh losses there are good chances that it would be consensually agreed by the authorities found in the same river basin.

Controlling water-related risks like floods, droughts, and pollution has become more relevant than ever in a context of climate change that is most probably going to aggravate the occurrence of extreme events. The actions taken to mitigate these risks, e.g. protection, should be part of strategic planning on the scale of the transboundary basin. Once again, stakeholder participation and public consultations are needed. Flood control is part of the IWRM concept. The slowing down of flooding dynamics in natural overflow channels (floodplains and wetlands) is effective and sustainable, including the protection of riparian countries. The flood control of human settlements in flood-prone areas could be also a beneficial outcome.

The case of water transfer from Tara to Morača could be reopened under the supposition that the sum of benefits outweighs the damages. The possibility of water transfer has been never assessed by experts regarding the WFD and Habitats Directive, neither has it been declared completely against the legal requirements banning such action. By the renegotiation of the conditions and terms by respective riparian countries, supported by the environmental, economic and societal analysis of the effects of water transfer, this idea could be tested by the proper means following the current integrated approach to water resource planning.

Key learning points:

- Transfer of water from one river basin to another is one of the most difficult problems to resolve. Due to the unforeseeable impacts on biota this possibility should be studied in detail, once the process has developed sufficiently to justify such a study.
- Even the best technical locations, with obvious advantages, must obtain consent from the environment point of view. In this case, the environmental argument prevailed, which could only be rationalised by detailed ecological studies, which would present a high risk for the potential investor.
- Agreement of the riparian countries must be accomplished at both at the river basin side where water is extracted from and on the side where it is released.

3.3.4.6 Guidelines and Recommendations

In cases like the presented Žuti Krš Reservoir example, the storage capacity can be increased over the volume required for energy production, for the purpose of downstream flood protection. Compensation mechanisms for the upstream 'storage' countries can then be negotiated with the protected downstream countries. Protective measures involving the realisation of dikes in flood prone areas are not recommended because, in addition to their limited effectiveness and their strong impact on the environment, they only transfer the problem from one to another downstream location.

The strategic planning of (R)HPP Koštanica has been developed over a long-term period, thus priority actions are to be dealt with in a short-term action plan (a few years). The implementation process should be gradual since existing plans have been overtaken by newly emerging environmental, technical and legal circumstances. Due to permanently changing conditions, planning documentation should be periodically reviewed, incorporating new data and taking into account new results and future developments.

When an infrastructure is transboundary in nature, the decision to proceed with implementation can be particularly sensitive in terms of mutual relations leading to cooperation between the countries. Obtaining a consensus among countries over this installation would be essential first step. In case of a positive outcome, the inter-country cooperation and political and economic integration in the region would benefit further phases of realisation tremendously. In the phase of acquiring consensus on environmental and social impacts of this proposal, impacts should be assessed according to the valid EU standards.

3.3.5 Ćehotina River Basin - HPP Chain on the Ćehotina River (Montenegro – Bosnia and Herzegovina)

Box 3.5: Summary of the Ćehotina River Basin - HPP Chain on Ćehotina River Case

HPPs on the Ćehotina River are at the very start of the planning process. The project is at an early stage, which should be facilitated firstly by a transboundary agreement and thereafter by a Water Management Plan and Spatial Plan. This case provided an insight into the need for the development of political willingness to cooperate on transboundary waters where clear and precise action objectives in the agreement are needed.

No obvious obstacles to the development of hydropower schemes were found relating to sharing water resources. Regardless, priority action is required to reduce pollution in the river and to ensure adequate protection of biodiversity in the future Emerald site. Studies or projects jointly carried out by several riparian countries in a specific area can favour basin level transboundary cooperation.

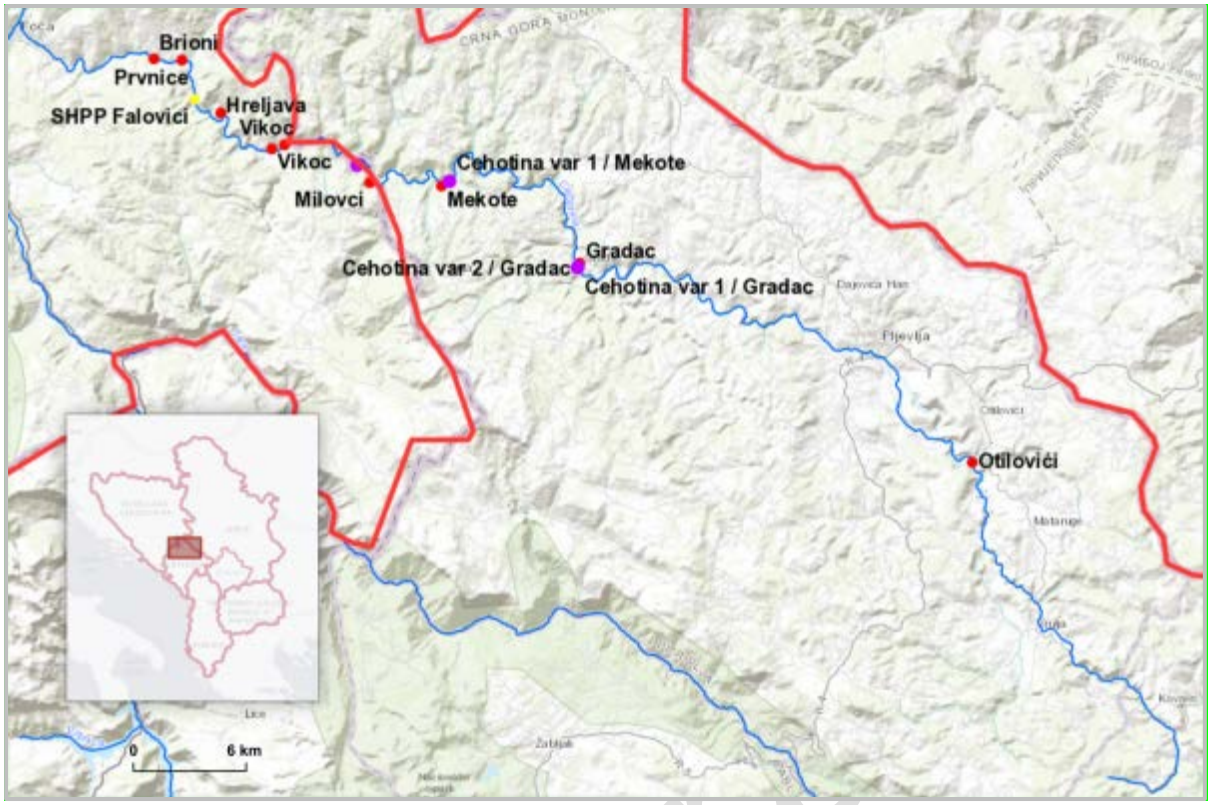

Figure 3.12: Locational Reference of the Planned HPPs Milovci, Mekote and Gradac and of the Existing SHPPs on the Ćehotina River, Including Small HPP Falovići (Currently Under Construction)

3.3.5.1 Background Project Information

A. Location and Environment

The Ćehotina River originates from the two streams in the Montenegrin region of Donji Kolašin, near the border with Serbia. It flows to the northwest, with many bends and curves, as it flows through a valley surrounded by high mountains. The river valley is sparsely populated and has almost no settlements (except for the village of Vrulje). It flows through the Pljevlja coal basin and the city of Pljevlja itself, and continues to the region of Podgora, and the small town of Gradac. Along its flow, the river forms the border between Montenegro and Bosnia and Herzegovina for a few kilometres. It continues to some villages before it empties into the Drina. The City of Foča is built at the site of the Ćehotina confluence with the Drina River.

The Ćehotina River flows for 100 km in Montenegro, and 25 km in Bosnia and Herzegovina. It has no major tributaries, most important smaller tributary being the Voloder. The river has considerable hydropower potential (463 GWh yearly), but except for a few sHPPs nothing has been so far developed. It belongs to the Black Sea Drainage Basin, its own drainage area covers 1,237 km^2.

The water quality of most of Montenegro's rivers is generally within the required level during most of the year. However, there are “hot spots” of water pollution. The Ćehotina River is recognised to be among the most polluted water bodies in Montenegro, primarily due to the heavy industry near Pljevlja. The deterioration of water quality of waters is of significant concern; given the negative impact this has on potential tourism.

B. Technical Description

On the Ćehotina River, three dam profiles were considered in previous planning cycles. The analysis showed an optimal technical solution for construction of HPP Gradac and HPP Milovci.

The existing Otilovići arch dam was designed as 59 m high, has a crown at 842 m a.s.l., and the water level is at 837 m a.s.l. The total storage volume would be 18 million m^3, while useful volume amounts to 13 million m^3. The average flow at the dam profile was 4.68 m^3/s. The installed power capacity is 3.2 MW and annual production of

11.52 GWh and 10.44 GWh from the available flow. This reservoir was built for the needs of TPP Pljevlja, to provide cooling water.

- HPP Gradac was planned with a dam elevation of 742 m a.s.l., an average discharge of 12.56 m³/s and a volume capacity of 85 million m³. The installed power will be 25 MW and a production of 72 GWh yearly.
- HPP Mekote would have the task of working coupled with the upstream HPP Gradac, using the previously regulated upstream water reservoir. Its water level is at 657 m a.s.l., useful volume of 74 million m³. Installed power is 26 MW and annual energy production 70.6 GWh.
- HPP Milovci is located from the energy optimum point of view. The location of the dam has been foreseen close to the state border on the Bosnia and Herzegovina side. Because of that, this solution requires cooperation with Bosna and Herzegovina (Republika Srpska) as a riparian state, in the development of HPP Milovci. The operation water level at HPP Milovci reservoir would be at 650 m a.s.l. The flow at the dam site 17.2 m³/s. The net volume of the reservoir has been foreseen to be 386 million m³. The net head is around 117 m. The installed power capacity is 50 MW and the annual energy production 146 GWh (as total production, which has to be shared). An advantage of the location of HPP Milovci is that in the downstream direction of the planned reservoir no major settlements exist, nor are there specific protected areas, therefore the adequately determined basic minimum flow will satisfy ecological conditions.

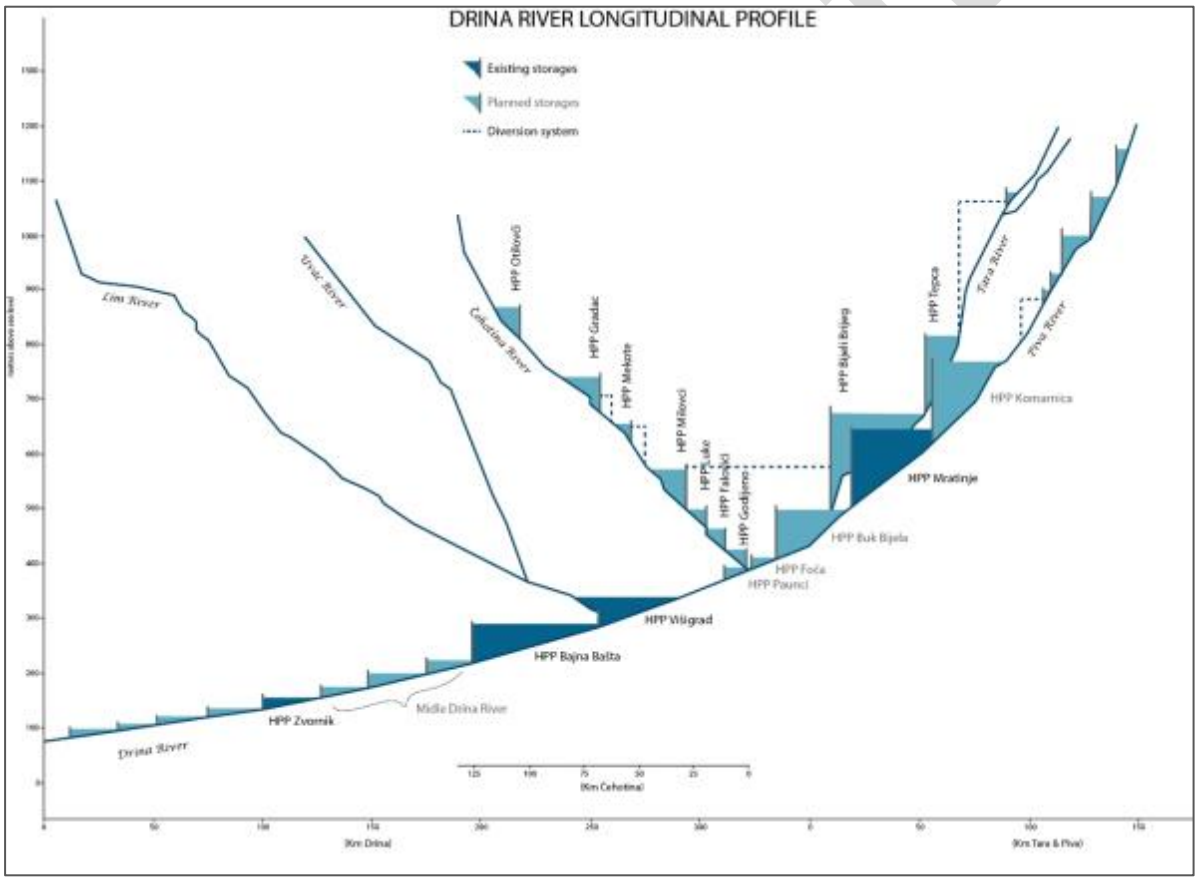

Figure 3.13: Longitudinal section of planned HPPs on the Drina River integrated with Ćehotina Tributary

C. Commercial and Political Circumstances

In January 2013, the Ćehotina HPP Concessions were granted. These concessions cover a 26-kilometre section of the Ćehotina River in Montenegro, which has an elevation drop of 114 metres and median flow rates ranging from 20 m³/s upstream at the Montenegrin border to 23 m³/s downstream where it joins the Drina River. Downstream from the border in the BiH, three HPPs are planned, while the concession has been granted for the

plants: Luke, Falovići and Godijeno to a private investor. The total natural energy capacity for this section of the Ćehotina River is 211 GWh/year, from which the preliminary design of the three power plants with installed capacity and projected output summarised in the HPPs Luke, Falovići and Godijeno totals to the annual production of 69.6 GWh.

3.3.5.2 Transboundary Legal Framework

The Montenegrin Water Law provides a solid platform for transboundary agreements, complemented by water rights contained in appropriate international conventions, recommendations, declarations, charters, etc., signed by Montenegro as a result of active participation in the work of international organisations, related to integrated water management. Besides international cooperation in global terms, the Water Law covers also regional cooperation, i.e. cooperation between interested states, concerning the management of transboundary water resources. This cooperation is implemented in accordance with the long-term and short-term strategic policy adopted by the Government, at the proposal of the competent Ministry.

From the point of view of the interests of Montenegro and its water resources, such cooperation would be expected with all neighbouring countries, and regionally for the waters of Black Sea Watershed in the framework of the Sava and Danube commissions.

During former Yugoslavia, the legal acts regulating water uses between former republics (that evolved into independent states after disintegration) was contained in the following legal acts: the Water Law from 1965, then the Law on the basis of the water regime of interest of two or more republics and inter-state watercourses from 1974 and finally related to Serbia and Montenegro, the Law on the water regime from 1998. The first two laws also governed the agreements between republics when the construction of new or reconstruction of existing water supplies and other facilities located on the transboundary water course affects the natural water regime of the upstream or downstream republic territory by stipulating that prior to construction or reconstruction, a water no-objection is obtained, and prior to operation a water license had to be issued after the consent of the competent authority of the republic.

The obligation from such mutual agreements was the preparation of a water master plan specifying the water regime at the border for the shared river. An agreement on hydropower and the water supply potential development of the River Basins Drina and Morača, concluded between Serbia, BIH and Montenegro in 1984 was drawn up. However, this agreement was not realised as it hwasn blocked by the Decision of the Federal Constitution Court in 1987 due to a direct collision with the World Heritage Convention ratified in 1974.

According to the legislation regarding water from reservoirs at shared rivers or forming a boundary between republics, a water contribution payment should be made between the republics. The payment of the contribution was proportional in accordance with the following criteria: the area of the river basin, the accumulation area, investments for the construction of the reservoir, damages upstream or downstream of the reservoir and other applicable measures. In addition to this, there was the obligation to devote part of the income from the hydro power plants' operation towards the municipality's budget (or in some cases, the republic's) as they were affected by the facility.

In contrast to the abovementioned laws and the Law on water regime that was in effect during the state union between Serbia and Montenegro, the provision of a water no-objection for the construction of new and reconstruction of existing facilities and plants also exists, but has currently been abandoned. After the disintegration of SFRJ, all quoted laws have been repealed, and agreement i.e. a contract on management of transboundary water has been the required legal instrument for the regulation of the mutual relationship.

In 2005, the government of Montenegro accepted the initiative by Bosnia and Herzegovina addressed to the former state union of Serbia and Montenegro and adopted the platform related to it. But, up until now, BiH – as the initiator – has not called the first meeting in order to finally start with negotiations in spite of diplomatic notes sent by Montenegro. This situation prevails at present and has an impact on the future planning on the Ćehotina River.

3.3.5.3 Overview of Transboundary Situation

The use of the hydro potential of River Ćehotina is foreseen by the construction of HPP Gradac and HPP Milovci. The second power plant has been planned with a relatively large reservoir, which might contribute to the water

regulation of the Drina River. For that reason, prior to the construction of these plants, it is necessary to prepare and sign an international agreement with Bosnia and Herzegovina on the use of hydro potential. Up to now, several research studies have been finalised, preparatory activities need to be continued and field research conducted in order to prepare studies, the basis for the spatial plan and the conceptual design.

Agreement on Ćehotina is needed between Montenegro and BIH on the IWRM, which is the basis for the integral water-Management Plan of utilisation. The continual and long term setting out of issues important for the management of river with a direct transboundary effect, based on the principles of cooperation, equality and mutual respect, while accomplishing and implementing both specific and common rights and interests is required. The conclusion of these contracts shall enable a fair solution to current and future issues of mutual interest in relation to water transboundary effects on/by water management facilities and their operation. Implementations of these agreements imply the obligation of detailed analyses of each open question in order to achieve mutually acceptable goals. This includes the need for the active participation of the appropriate bodies and offices in following in a systematic and planned way all the relevant parameters important for quality decision-making.

3.3.5.4 Problem Analysis

Conflicts in sharing transboundary water resources often happen because countries use either different attributes or different goals while evaluating impacts from alternative development strategies. If projects are underdeveloped, as is this one for Ćehotina, baseline decision-making documents have to be prepared by (preferably independent) experts, before the states get into entrenched positions and arguments. Studies or projects jointly carried out by several riparian countries in a specific area can favour basin-level transboundary cooperation. The platform proposed by BiH might be the right one to deal with most of these problems, but it has to be noted that any agreements in the field of land and water management (and many others) on the state level needs to be complemented by approval by the relevant BiH entities, as well.

3.3.5.5 Consultant's Conclusions

The Ćehotina River water use proposals are not yet at the state of basic design. However, some alternatives of resources utilisation were developed. Very fragmented ideas of water use and specifically hydropower require some time to be prepared in a Water Management Plan, to be followed up by a Detailed Spatial Plan, both done for the whole of the resources in the River Basin. Before filling the reservoirs, the water pollution issue of the Ćehotina River requires to be resolved to an acceptable level.

Different techniques could be used to address conflict resolution. Some analysts are, for example, proposing a combination of Integrated Risk Analysis and MCDA – Multi-Criteria-Decision-Analysis. However, without a sound understanding of the project and acknowledgement of the fundamental differences between the parties involved, no deal would be possible. Trade-offs are made either at the level of countries' different appraisal of individual project attributes, or at the level of countries' different goals.

The main objective of an effective engineering approach is to satisfy the demands of all riparian countries, given the possibilities and limitations of water balancing. This balance between the availability and demand of resources should take into consideration both water quantity and quality aspects and the protection of the environment. Water quantity and quality problems are inter-related and should be studied in an integrated framework considering the existing reservoir on the Ćehotina River and the TPP Plevlja cooling system. To understand the origin of serious conflicts over shared water schemes, three main factors should be considered:

1. Significance of water (both in quantity and quality);
2. Relative strength of the actors;
3. Respective riparian position of the countries regarding catchment.

Recent advances and related theoretical developments in this area can be obtained from literature. However, the success in practice of this kind of engineering or rational modelling is mainly dependent on the interested stakeholders and countries' acceptance of the baseline assumptions, which rely on a set of prescribed objectives, and the relative weights or preferences between conflicting goals. In the real world, this is not usually the case, and therefore, there is a need to develop better, easier-to-use, interactive and reliable predictive instruments.

Such models, including the behaviour of institutional structures, multi-country negotiation strategies, alternative dispute resolutions and political models are very useful. They are mainly prescriptive and not predictive. They do not necessarily give a quantitative output (such as costs and benefits), but are extremely important for understanding the processes and analysing the origin and evolution of conflicts or cooperation.

Key learning points:

- Whatever is done at one point location in the river, must be planned at the river basin level. If the river basin is shared, a joint approach is needed to secure integrated planning.
- Heavily modified water bodies and polluted rivers should be dealt with in the RBMP to try to accomplish good status. As a rule, heavily polluted streams should be brought to a good status in the transboundary context, if reservoirs are to be realised.
- The division of hydropower potential and other water elements like sediments, discharge and biota should be agreed at the border line and these should be included in the RBMP.

3.3.5.6 Guidelines and Recommendations

Different techniques could be used to address conflict resolution. Some analysts are, for example, proposing a combination of Integrated Risk Analysis and MCDA – Multi-Criteria-Decision-Analysis. However, without sound understanding of the project and acknowledgement of fundamental differences between parties involved, no deal would be possible. Trade-offs are made either at the level of countries' different appraisal of individual project attributes, or at the level of countries' different goals.

The development of political willingness to cooperate on transboundary waters needs clear and precise action objectives, confirmed in a written and executed agreement.

A Water Management Plan for water use and specifically for hydropower will require between 5-8 years for preparation, to be followed up by a Detailed Spatial Plan, both done for whole catchment of Ćehotina. The plan should be financed from the budgets of both countries, so the concession contract could follow on known terms and conditions.

International associations can catalyse the political will of States wishing to cooperate on the same basin, often on a specific issue championed by the association, as was shown in the case of Lake Prespa/Prespan. With the support of the Convention on Wetlands of International Importance (Ramsar Convention on Wetlands), especially as Waterfowl Habitat and its MedWet Initiative, the trilateral Prespa Park Coordination Committee (PPCC) was established in 2001. Joint activities have included the preparation of a Strategic Action Plan for the protection and development of the region, and the contribution to the development and submission of a GEF Prespa Park project proposal, approved by the GEF secretariat in 2005. The aim of these guidelines is to show how traditional engineering planning and design methods for reducing risks in water supply and management can be extended to consider environmental and social risks.

TWRM – Transboundary Water Resources Management is a special discipline, which addresses not only physical and technical issues but should also take into consideration social stakeholders, institutions and administrative procedures.

Many alternative negotiation strategies are available to modify a complex framework of TWRM issues. Decision makers and those who may negotiate on their behalf have a choice of six universal negotiation strategies:

a) "Win-Win" solutions or Positive sum benefits;
b) "Lose-Lose" solutions or Negative sum benefits;
c) "Win-Lose" negotiations or Zero-sum benefits;
d) Unilateral creation of new facts;
e) Conflict and threats of violence;
f) No action, causing opportunity costs from neglect and/or delayed decisions.

It is crucial that projects located in designated protected areas, or areas of high nature and biodiversity value and vulnerability, shall be assessed with a higher scrutiny in compliance with the EU environmental legislation.

3.3.6 Drina River System - HPPs along Middle Drina River (Serbia – Bosnia and Herzegovina)

Box 3.6: Summary of the Drina River System - HPPs along Middle Drina River Case

Middle Drina HPPs is a cascade concept of three run-of-river plants of similar characteristics each with small storage basin, intended to be operated in a harmonised fashion with the existing hydro power plants like the existing HPP Bajina Bašta (located in Serbia). There is an open question of the payments to be made to landowners on the west side of the Drina River to compensate for inundated areas, which was not respected for a long period of time, since the start of the conflict in the Balkans in early 1990s and has only recently been reinstated. Today, the situation is more favourable and the parties have agreed to solve the issue. This case provided guidance on how to manage an existing scheme, which abandoned the agreed terms of running mutual business relations in a changing administration setup.

Plans for the Middle Drina River HPPs are currently under development independently from this compensation issue. A new river management structure is emerging in the Drina River Basin. It is however advised that a Strategic Action Plan (SAP) with a strong transboundary component is prepared before taking any further steps.

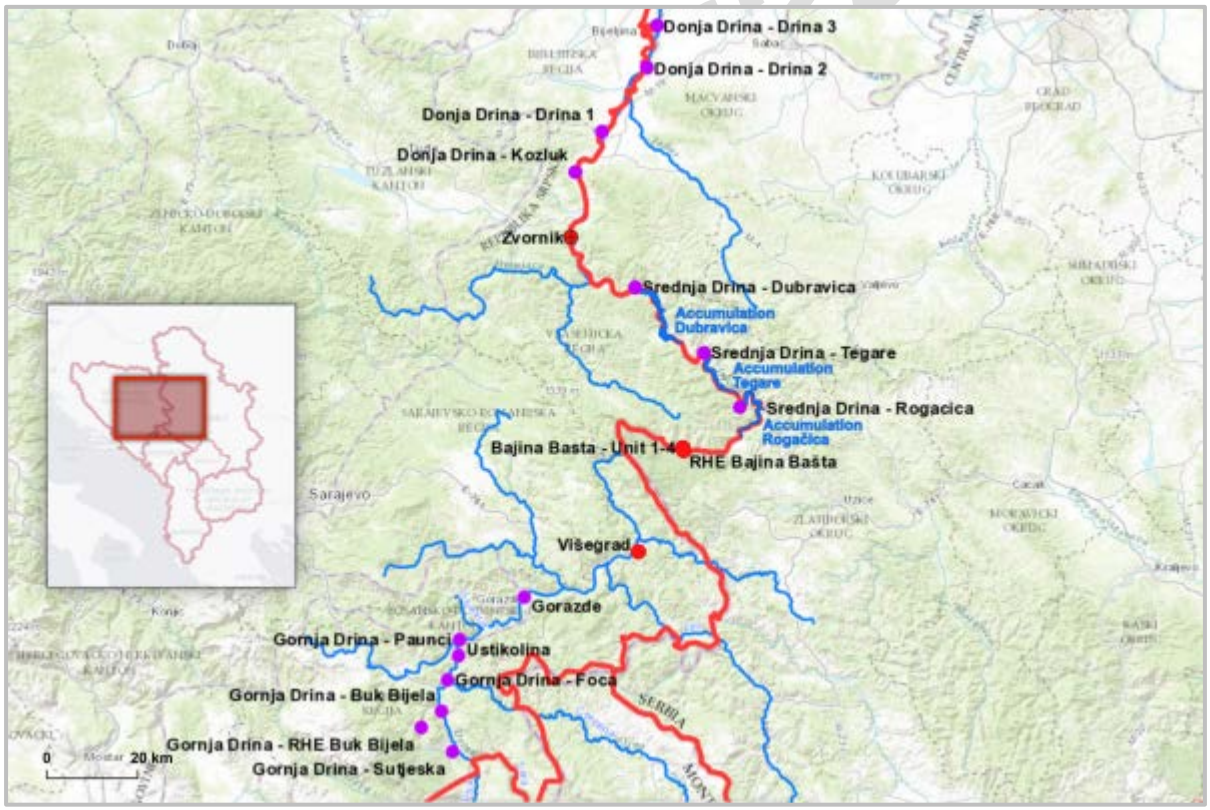

Figure 3.14: Locational Reference of the Existing and the Planned HPPs on the Drina River and the Planned RHPP Buk Bijela

3.3.6.1 Overview of Transboundary Situation

The storage reservoirs of HPP Bajina Bašta and Višegrad are permanently inundating considerable land surfaces of the Municipalities of Višegrad, Zvornik, Bratunac and Srebrenica. In the case of the Bajina Bašta reservoir, two thirds of the surface belongs to the Municipality of Srebrenica (BIH), while one-third belongs to Bajina Bašta

Municipality (SER). This surface on Bosnian side used to be agricultural land that was flooded after the construction of the Reservoir. Since Bajina Bašta Municipality receives compensation on a regular annual basis, Srebrenica expects to receive adequate compensation by the power utility, but this has been cut since 1992. The loss of the land and financial compensation for these impacts were agreed upon in a MoU signed by the two Republics' Governments of the former Yugoslavia in 1966. The key question regarding the compensation issue is whether the MoU ceased to be recognised after 1992 when the conflict surfaced.

There is controversy about the date when Municipality of Višegrad stopped receiving financial compensation for the flooding of agricultural fields. Some references claim that until 1990 they were regularly compensated.

Initial attempts were made to resolve this issue via the hydroelectric power station in direct contact with the Municipalities of Srebrenica and Bratunac continuing to make payments; however, there was nothing agreed because the case has been taken to the "higher" level of Authority which was to be expected. It has been since pointed out many times that this case can only be solved at the level of the National Administrations of Serbia and BiH (including Republika Srpska), in such a way that the competent authorities sit at the table and renew or agree the principle of compensation.

Recently, a working group comprising of representatives of the state administration, EPS and the municipality of Srebrenica was appointed by the Serbian Government to resolve the case. In fact, after both hydropower plants were constructed, the power was consumed in Serbia and compensation was paid to the local communities by EPS to the Municipalities of Srebrenica, Bratunac and Zvornik, until 1992 when EPS stopped paying.

This example of HPP Bajina Bašta and Srebrenica is not alone. HPP Zvornik has flooded land administered by the Municipalities of Zvornik and Višegrad. Presently it is not completely clear how much debt has to be paid to the municipality's budgets, but if the fee has not been paid in almost 25 years, then it means that Višegrad Municipality could expect around 7-8 million EUR. According to unofficial information, the Municipality of Bajina Bašta has received up to 1 million EUR yearly. There is no indication of how much Srebrenica is owed for the years since 1992. Some rough calculations show that it could be some 15 million EUR, but these are only very initial estimates. In all the cases mentioned above, the competent national authorities should determine the exact amount of debt and means of compensation, and one of the possibilities is that it could be also be repaid in kind.

3.3.6.2 Background Project Information

A. Location and Environment

According to river slope and discharge, the course of the Drina River is divided into three sections with respect to hydropower development:

- Upper river section ("Upper Drina River"): from the boundary between Montenegro and BiH to the existing Višegrad HPP storage basin;
- Middle river section ("Middle Drina River"): from the storage basin of the existing Bajina Bašta HPP to the storage basin of the existing Zvornik HPP;
- Lower river section ("Lower Drina River"): from the downstream side of the existing Zvornik HPP to the confluence with the Sava River.

The Upper Drina River has considerable potential for hydropower development.

In hydropower investment terms, the Middle Drina River is much less favourable than the Upper Drina River. It includes the following three planned HPPs: Rogačica, Tegare and Dubravica. Hydropower potential at all three HPPs is intended to be shared on an equal basis between Serbia and the Republika Srpska, BiH.

The Lower Drina River is considerably less attractive than both the Upper Drina River and Middle Drina River. It includes the following four planned HPPs: Kozluk, Drina I, Drina II, Drina III. As in the Middle Drina River, hydropower potential is intended to be shared on an equal basis between Serbia and Republika Srpska.

B. Technical Description

The "Rogačica" dam for HPP was planned in the middle part in the course of the Drina River. This location belongs to the municipality of Rogačica; the nearest town is Bajina Bašta. The construction height is 42 m. The mean annual electricity generation of HPP Rogačica is 413 GWh and the installed capacity is 4x33=132 MW.

The rated discharge was adopted primarily in the view of the capacity of the upstream Bajina Bašta HPP when rehabilitated and the possible addition of the fifth unit, as well as the adaptation of capacity of the downstream Zvornik HPP after the planned rehabilitation (replacement) of units and developed with a capacity increase.

The "Tegare" dam, for HPP Tegare, is the next one planned downstream in the middle part of the Drina River course. This location belongs to the municipality of Tegare; the nearest town is Ljubovija. Its basic properties as given in the original technical documentation are: construction height 44.3 m., mean annual electricity generation: 448 GWh and the installed capacity is 4x36= 144 MW.

The "Dubravica " dam for HPP Dubravica was planned as the last dam in the middle part of the Drina River course. The location belongs to the municipality of Dubravica; the nearest town is Ljubovija. Its basic properties as given in the original technical documentation are: construction height 39,0 m., mean annual electricity generation: 335 GWh and the installed capacity is 4x26= 104 MW. The aggregate power generation capacity of the three HPPs at the Middle Drina River would be 380 MW.

The large active volume of these reservoirs will provide conditions for a very flexible management and operation of HPPs, “cold” reserve power regulation, etc.

The following problems were noted in the management of the existing water storage basins:

- The smallest possibility of water regulation is provided by the "Zvornik" storage, since its reservoir is filled with sediments (almost 50% of the reservoir volume). This storage can also play only a limited role in flood control.
- The Bajina Bašta pumped-storage HPP, the sole facility of this type and size in the power system of Serbia (PSHPP Lisina is only 3.5 m^3/s) can operate both in the pumping and power generation regimes. In the generation regime, this facility works as a regular HPP with a positive energy contribution to the system. Due to the volume of its reservoir, this facility can be used for providing a part of the “cold” reserve to the system. The “Bajina Bašta" storage can affect a positive retention of flood surges.

Figure 3.15: Locations of planned HPPs on the Middle Drina River

Hydropower generation dominates Drina River Basin water management. The hydropower facilities, including reservoir operation, were primarily designed to optimise hydropower production and not for concurrent flood mitigation / management, which would require much larger reservoirs.

Recent studies indicate that the Balkans is particularly sensitive to future climate and precipitation change in Europe as weather related events become more frequent and intense. The Drina RB has been assessed as the part of the Danube River Basin which is most sensitive to climate variability.

3.3.6.3 Transboundary Legal Framework

Complex transboundary water management problems along the whole Drina River Basin (DRB) have meant that the DRB's potential for economic and environmental development has remained largely unexploited. The DRB is pivotal to the economic, environmental and social development of the large part of the WB6 region comprising of Bosnia and Herzegovina, Serbia and Montenegro. Strong transboundary cooperation between these three countries is indispensable for the sustainable development of the communities living in this basin area.

On the one hand, there are plans to develop HPPs on large sections of the Middle Drina River, while on the other hand, the problems at existing HPPs Bajina Bašta and Zvornik remain to be resolved. It is difficult to imagine how new plants could go ahead before there are firm commitments from both sides to settle this dispute with the neighbouring state about the financial compensation for the inundation of the area on the left bank. It will indeed be unfortunate if promising new HPP projects are blocked from further development on account of some unresolved problems.

Problems which are connected to financial issues from valid agreements - such as non-payments on existing agreements for HPPs Bajina Bašta and Zvornik - should be dealt with in a separate process, in order not to interfere with development efforts on other HPP locations.

Eight medium to large hydropower generation plants are located or are planned in the DRB. The cooperation on water resources management is improving between Bosnia and Herzegovina, Serbia and Montenegro, albeit slowly. A very recent example of improving cooperation is that Serbia (with the power utility of Republic of Serbia (EPS) and HPP Bajina Bašta as the actual debtors) has expressed its readiness to reinstate payments to the local community Srebrenica in Bosnia and Herzegovina after almost 25 years of withholding the money, claiming that the validity of the legal basis for the compensation (dating from 1966) is uncertain after the SFRJ dissolution in 1990.

For example, the GEF study "SCCF West Balkans Drina River Basin Management Project", suggested that the responsible agencies for Project implementation would be from all River Basin countries: BIH (FBIH and RS), Montenegro and Serbia.

3.3.6.4 Problem Analysis

Although many development opportunities are attractive to national interests and authorities, such as hydropower at Middle Drina, the externalities and trade-offs at local and regional scales have not yet been quantified. The lack of confidence, and limited availability of data and analytical tools have kept individual countries from taking initiatives to address key questions about the prioritisation of investments, and the transboundary sharing of benefits and risks. Similarly, due to the longstanding neglect of transboundary cooperation, the three countries struggle with the operationalisation of the IWRM approach, depending mostly on donor support.

The national and local institutions, including the ministries responsible for water resources, their water directorates, the water agencies and the hydro-meteorological institutes collaborate at the local level and are active participants in the ICPDR, and the ISRBC. Recent studies have identified short-medium term (4-5 years) actions to improve the basin management by the riparian countries: a Strategic Action Plan (SAP signed at ministerial level by each of the three participating countries) stressing, among other objectives, improved stakeholders dialogue and institutional cooperation.

3.3.6.5 Consultant's Conclusions

The planning of the Middle Drina HPPs is accompanied by frequent arguments between the BIH Federation and Republika Srpska. It is usually concerning differences in understanding each other's' competences. While the

Federation believes that every deal concerning the utilisation of natural resources must be processed by State Commission for concessions, the Republika Srpska points out that this plan is from the Agreement on Special and Parallel Relations between RS and Serbia. It is obvious that the many parties party to this project are not adequately involved, and the starting point has often been postponed. In that sense, preparation for the investment should be carried out based upon the agreement of parties who have been fully involved.

Under the BiH Constitution, only BiH can negotiate with Serbia and Montenegro on how the hydro potential of Drina River should be shared between these three countries. The Drina River is an international border of BiH and flows through both entities, and therefore its use and the share of its use needs to be internally agreed between the state and both entities.

Effective planning tools should be provided to the riparian countries for enhanced decision making in integrated DRB management, in order to identify trade-offs, and to put in place appropriate policies and reforms, applying IWRM principles and developing climate-change adaptation measures.

Key learning points:

- Agreed compensations must be respected to secure future HPP planning and water management at shared rivers. If debts have accumulated, the situation must be resolved without delay.
- Compensation for flooded land should be calculated not only for areas under the water line, but also for the sanitary corridor or the line where the impact of impoundment is no longer significant.
- Without impact and benefit-damage quantification methods, it will be impossible to find an agreement between all sides involved.

3.3.6.6 Guidelines and Recommendations

In regard to the agreement (MoU) from 1966, which was the basis for the construction and operation of HPP Bajina Bašta it would be advisable that the stakeholders agree on the issue and either accept the validity of the old arrangement or forge a new one. Fifty years has passed since the signing of the MOU. In the meantime, new sovereign subjects have emerged in the Region, facilitating the transition to the market economy with paying discipline. It is very likely that a tangible act of good will, by making a reasonable but substantial payment towards the settling of the debt that most certainly exists, would be needed as a step in the direction of normalisation of relations and, potentially, also of entering negotiations on a new agreement.

The recommendation is to precisely define all engineering, environmental and socio-economic elements of the scheme development and assure the rational and equitable management of the DRB for sustainable development in the mid-term. These preparatory documents will provide more effective planning support using up to date tools to the riparian countries for enhanced decision making in integrated DRB management comprising actions from the Strategic Action Programme once finalised.

Institutional development would improve water resource management capacity in riparian countries, strengthen transboundary mechanisms (institutional, technical, and regulatory), develop tools for effective water resource management, and develop climate change adaptive management frameworks, at bilateral, trilateral and the ISRBC levels. It would also support consultation among the countries on national and local policy and regulatory reforms to facilitate transboundary Drina RB management, especially on national parks.

The action plan for a transboundary basin like Drina RB should first include actions of a transboundary nature, benefiting both countries. Actions at the national level will be included provided that they participate in the consistency of the water management master plan. Actions at the local level and involving only one country should preferably be included in the national IWRM action plan. At the same time, specific mechanisms are planned to identify actions likely to harm the downstream administrative areas.

A Strategic Action Plan (SAP) with a strong transboundary component is a negotiated policy document that should be endorsed at the highest political level for all relevant sectors. It establishes clear priorities for action (for example, policy, legal, institutional reforms, or investments) to resolve the priority problems identified.

A key element of the SAP is a well-defined baseline for transboundary issues, which is in the part concerning the environmental analysis of cumulative effects. This enables a clear distinction between actions with purely national benefits and those addressing transboundary concerns with mutual benefits. Another key element involves the

development of institutional mechanisms at the regional and national levels for implementing the SAP and monitoring and evaluation procedures to measure the effectiveness of the outcome of the process.

A SAP will identify policy, legal and institutional reforms and investments needed to address the priority transboundary waters problems. The preparation of a SAP is a cooperative process among the participating countries. It outlines the actions needed to resolve the priority problems and must be agreed before technical assistance, capacity-building, or investment projects could be developed. The SAP sets out specific actions for each country that can be adopted nationally but are harmonised with the other concerned countries.

Sharing the benefits and costs of actions is established by consensus between the countries of the basin and based on the results of the various economic simulations and through a consultation and negotiation process.

3.3.7 Drini River System - HPP Skavica (Albania – the former Yugoslav Republic of Macedonia)

Box 3.7: Summary of the Drini River System - HPP Skavica Case

HPP Skavica is a head reservoir in Albania on Drini River/Drim River and represents a storage reservoir for operation of several hydro power plants downstream. Several alternatives have been identified, the largest dam with the highest water table enters the territory of the former Yugoslav Republic of Macedonia. There is an open issue of the water quantity at the border point. Due to the complicated transboundary situation, the time elapsed is counted in decades during which the political situation was changing, as was support of the development plans. Today, the situation is favourable and a transboundary institution Drin CORDA is emerging, but plans for HPP Skavica have changed due to the proposal of two storage basins instead of one by the volume of 6 billion m^3. It is however advised that Integrated Water Resources Management (IWRM) continues to be employed for the Drini River Basin, while a water monitoring system should be established urgently. In this case, the message drawn from the analysis is that the unique location for the reservoir is valuable not only for its hydropower potential, but also from the point of view of utilising other water resources like flood protection with a relatively good perspective to be realised also in transboundary conditions.

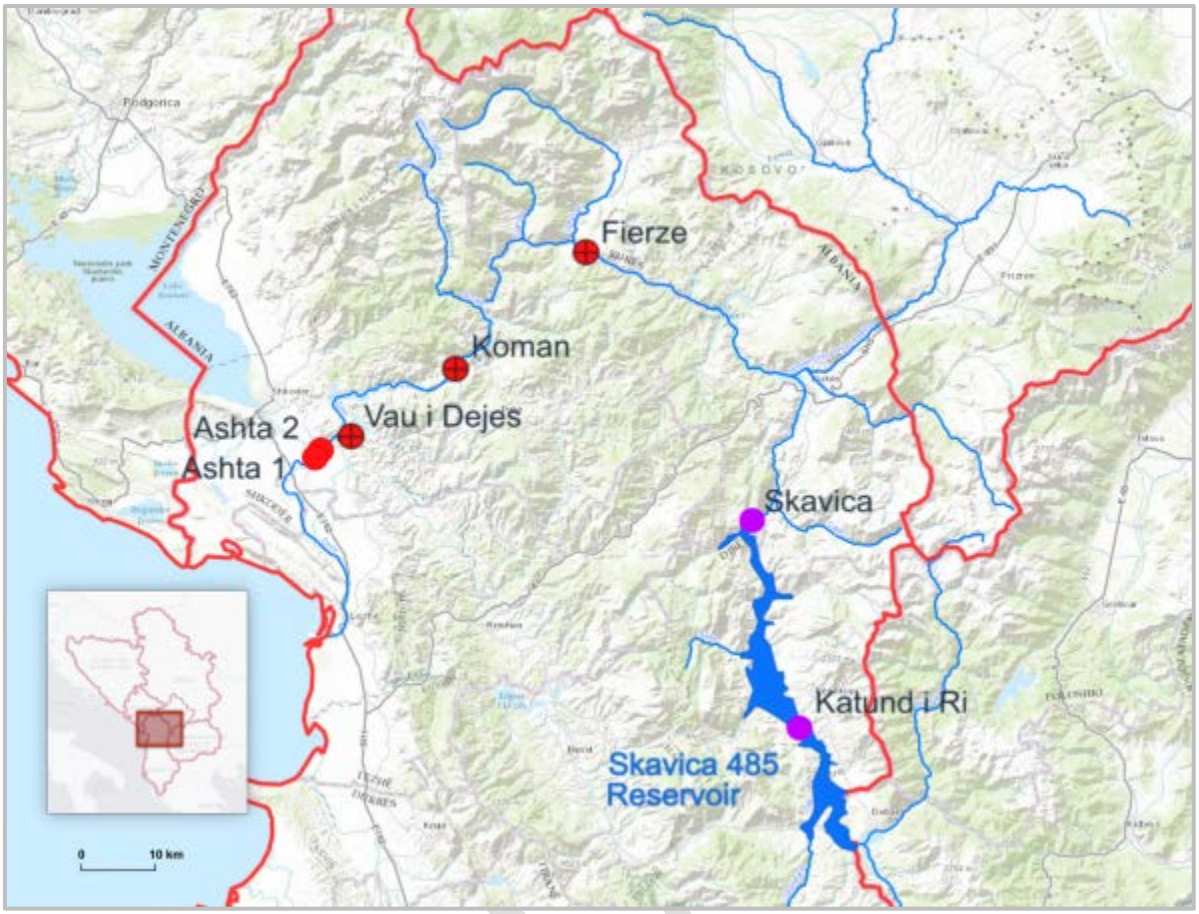

Figure 3.16: Locational Reference of the Existing and the Planned HPPs on the Drini River

3.3.7.1 Overview of Transboundary Situation

Complex transboundary water management issues have meant that the Drini River potential for economic and environmental development remains unexploited to a certain extent. There was a plan for a "big" Skavica (Figure 3.20), which was abandoned due to the prospective flooding of land in the former Yugoslav Republic of Macedonia, despite an agreement signed between former Yugoslavia and Albania. After this, a plan was prepared with a much lower water table and a considerably smaller volume to avoid resettlement and the flooding of the fields in the neighbouring country. Such a waste of water resources is not always acceptable, because of the unique conditions pertaining to the large reservoir (mainly protecting the lower section of Drini River from flooding) that would be otherwise lost forever.

Although many development opportunities are attractive to national interests and authorities, such as hydropower, the externalities and trade-offs at local and regional scales have not yet been quantified. The lack of confidence, and limited availability of data and analytical tools have kept countries in the Drini River Basin from taking initiatives to address key questions about the prioritisation of investments, and most of all the transboundary sharing of benefits and risks. Similarly, the three (now Kosovo is not active) countries struggle with the operationalisation of an IWRM approach in an environment of severe financial constraints.

Hydropower generation dominates Drini River Basin water management. The hydropower facilities, including reservoir operation, were primarily designed to optimise hydropower production and not for concurrent flood mitigation, which would require much larger reservoirs. In periods between extreme flooding events, localised droughts (particularly significant in karstic terrain) have affected crops and the water environment.

Recent studies indicate that the Balkans is particularly sensitive to future climate and precipitation change in Europe with weather-related events becoming more frequent and intense. The Drini River Basin has been assessed as very sensitive to climate variability. Modelling suggests that a once in a 100-year flood could cause

severe economic and environmental impacts in the broader WB6 area. The resulting public damage and losses could amount to between 4-5 percent of country's GDP. Large shares of the population would also be exposed to a once in a 100-year flood. The cumulative impact of less frequent events could be even more significant.

With the expected socio-economic developments in WB6, the demand for water and energy is most likely expected to increase as economic development increases water demand. Secure access to water for all riparian countries in the basin is thereby essential and directly linked to water security, which can only be achieved by transboundary cooperation. It means enough, safe, affordable water to lead a clean, healthy and productive life, including flood protection but also environmental protection.

3.3.7.2 Background Project Information

A. Location and Environment

The proposed Skavica HPP would be geographically the first in the existing chain of hydropower stations already built on the Drini River Basin which include: Fierza, Komani, Vau i Dejës, Ashta in a downstream direction.

B. Technical Description

The project documentation for HPP Skavica has been ready for almost 30 years, but construction was postponed due to high investment costs and demanding technical conditions.

This project has significant national and regional impact and this is demonstrated by the fact that HPP Skavica is at the top of the 2013 PECI list assessed by the Energy Community Secretariat among many other projects proposed by the Contracting Parties of the Energy Community in the power generation sector. Even though the list has been suspended in the meantime, it illustrates the importance of this project.

The original or "big" HPP Skavica was conceived with a reservoir volume of 6 billion m^3. as an enormous head storage capacity at the top of the Drini River for the seasonal regulation of flow at the HPP reservoirs downstream. A couple of variants then followed, with lower dams than the initial 485 m a.s.l. scheme. The Feasibility Study (1964) was discussed with the former Yugoslavia authorities. An Institute in Paris reviewed the study (in the mid-1960s). The size of flooding based on the initial scheme was 40 ha in the former Yugoslav Republic of Macedonia, while on the Albanian side it was around 5,800 ha. The initial scheme was approved by the Council of Ministers (in the 1960s), but further variants at lower levels were never developed. The variant at the level of 445 m a.s.l. has no flooding consequences in the neighbouring countries.

Three variants of the Skavica Scheme have been considered until now:

- The first, consisting of the construction of a "big" HPP Skavica, whose cost at 662 million EUR was prohibitive for the Albanian government. It would also have a considerable environmental impact with over 5,800 ha being submerged and 10,000 people being displaced, while some area (40 ha) in the neighbouring the former Yugoslav Republic of Macedonia would also be submerged.
- The second and the third version, accordingly, consisted of the construction of two HPPs, one in Katund i Ri and the second in Skavica (water level at 445 m a.s.l.), but the height of the second dam (395 m a.s.l.) would be lower in the third version (385 m a.s.l.) by 10 m.

Table 3.3: Skavica Dam Height and Reservoir Volume Characteristics

Dam Height (above sea level)	Reservoir Volume (million m^3)	Flooding Across the Border
485 m	6,310	Yes
455 m	3,600	Yes
445 m	3,000	No
420 m	1,600	No

Dam Height (above sea level)	Reservoir Volume (million m³)	Flooding Across the Border
390 m	600	No
360 m	150	No
305 m	0	No

C. Commercial and Political Circumstances

According to the Government of Albania, the publicly-owned KESH should remain the exclusive developer, investor and operator of the HPP Skavica, due to its decisive controlling role in the operation of the downstream chain of five existing HPPs (three of them are operated by KESH, and two of them have been developed and are operated on a concession basis by a private investor).

A Study from SOGREAH (May 2009) examined how the exploitation of the hydropower potential of upper part of Drini i Zi River (Black Drini) could be achieved. The study confirmed that an optimal solution would be to construct two dams in a cascade approach (a 49 MW HPP at Katundi i Ri and a 132 MW HPP at Skavica) as the most balanced and reasonable option considering the investment financing requirements, the economics of generation potential and social and environmental impact mitigation. Such a scheme would cost much less - around 250 million EUR.

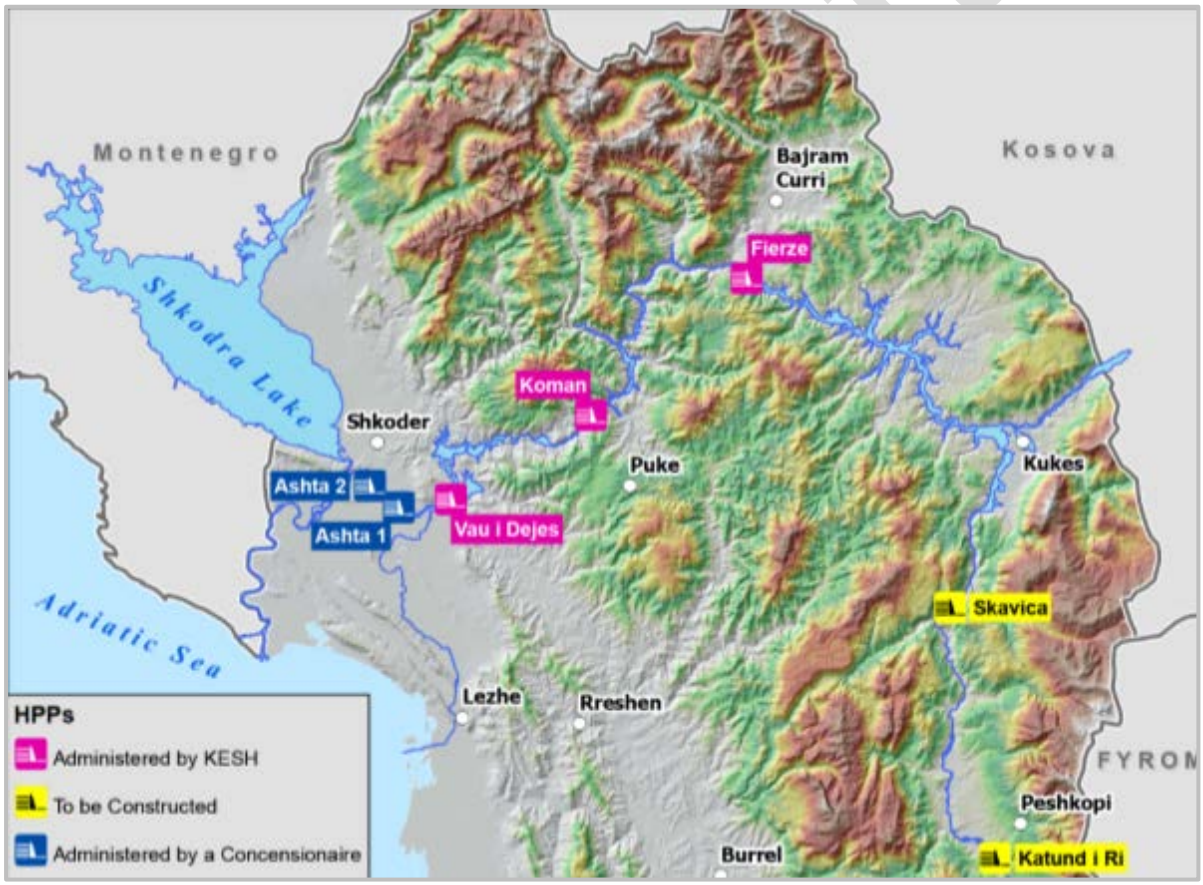

Figure 3.17: Locations of existing and planned HPPs on the Drini River

The study report concluded that the Katundi i Ri HPP will have no adverse effect on the regulation capability of downstream because its dam is a run-of the river type passing all the inflow downstream without any diversion or alteration of the flow into the second - Skavica reservoir.

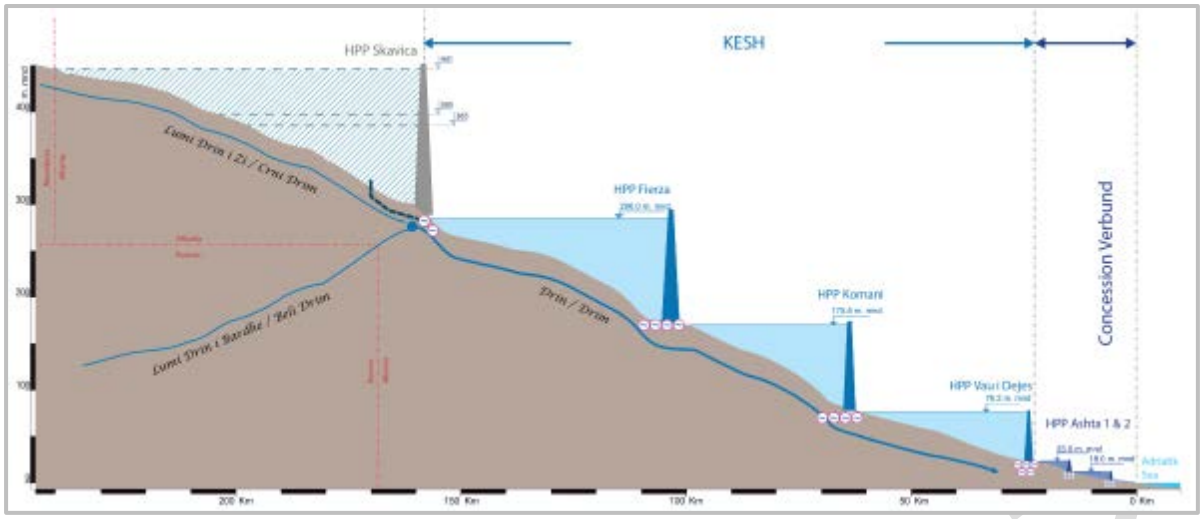

Figure 3.18: Longitudinal Diagram of the Hydro Potential Use on the Drini River

The development of HPP Skavica is considered a valid opportunity to increase the utilisation of the hydropower potential of Drini River and specifically, to optimise the management of the hydropower reserves and production for the entire Drini Cascade. HPP Skavica will also notably mitigate the adverse impacts of the Drini River in flooding the downstream area of Shkodra/Skadar Region. The HPP Skavica project is therefore one of the top priority projects for KESH and one of the national energy projects.

3.3.7.3 Transboundary Legal Framework

Good cooperation between the involved countries (Albania, the former Yugoslav Republic of Macedonia, Montenegro and Kosovo) and effective planning and management of the Drin River Basin, including the pertaining Lake Basins are a prerequisite for mutually beneficial and responsible utilisation of the hydro potential that would reach its ultimate development dimensions with the construction of the HPP Skavica. Therefore, the establishment of a proper institutional framework to achieve this goal is indispensable.

Official cooperation for the management of some of the Lake Basins shared between countries (Albania, the former Yugoslav Republic of Macedonia and Montenegro) has been initiated and is in different stages of development. These cooperation efforts were initiated mainly within the framework of externally funded (GEF, UN, bilateral donors etc.) projects or initiatives of stakeholders and NGOs. Relevant Memoranda of Understanding and Agreements have been signed. The current frameworks for the management of the sub-watersheds of the Prespa, Ohrid, Drin, Shkoder and Buna need to be further strengthened for complete management, also at the national and transboundary levels. The countries place importance on signing agreements and memorandum of understanding (MoU), although the effectiveness of cooperation often depends more on funds for joint programmes and projects than on the existence of a formal agreement.

With regard to the Shkoder/Skadar Lake, the Albanian and Montenegrin ministries responsible for environmental protection signed the “Agreement for the Protection and Sustainable Development of the Skadar/Shkoder Lake and its Watershed” in 2008. The Skadar/Shkodra Lake Commission commenced work in 2009; it should over time become a legally based Lake Commission for transboundary cooperation.

Transboundary cooperation on the Buna/Bojana and Drin rivers (including its tributaries, Black Drin and White Drin) is limited, if compared to that for the lakes. In Buna/Bojana, an integrated IWRM plan at transboundary level will be the outcome of the cooperation between PAP/RAC, GWP-Med (Priority Actions Programme/Regional Activity Centre), GWP-Med (Global Water Partnership-Mediterranean) and UNESCO for the implementation of a pilot activity in the framework of the GEF supported MedPartnership Project. A draft of the plan was prepared in July 2015.

Transboundary cooperation with regard to the extended Drin River Basin – including Prespa Lake – has been absent until recently. Efforts for the enhancement of cooperation have been initiated under the “Drin Dialogue” initiative coordinated by UNECE and GWP-Med and financed by the Swedish EPA aiming to develop, with the participation of the stakeholders, a Strategic Shared Vision for the management of the Drin Basin. The “Drin Core

Group" (DCG) was established as the steering committee of the initiative and an informal body to provide a forum for coordination among the Riparian countries. Actions under the Drin Dialogue have led to the adoption of the "Ministerial Declaration on the management of the extended Drin Basin". The Ministers expressed a strong political will to collaborate for the joint management of the Drin Basin.

This political will was translated into the signing of a Memorandum of Understanding by the Ministers of the water and environment management competent ministries of the Riparian countries and their representatives (Drin MoU - Tirana, 25 November 2011) that included as its objective the Strategic Shared Vision developed through the Drin Dialogue, as follows:

> "to promote joint action for the coordinated integrated management of the shared water resources in the Drin Basin, as a means to safeguard and restore to the extent possible the ecosystems and the services they provide, and to promote sustainable development across the Drin Basin".

The MoU for the Management of the Extended Transboundary Drin Basin (Drin MoU) identifies short-, medium- and long-term actions to address problems identified as affecting sustainable development in the entire Drin Basin or in one or more of the Sub-Basins. The Drin MoU provides the political framework for and defines the context of the cooperation among the Drin Riparian countries.

3.3.7.4 Problem Analysis

By accepting a lower water table in Skavica Head Reservoir, a large part of volume capacity remained non-validated, so extreme discharge during flooding would be less regulated. On the energy production side, the volume that has been decreased excludes the possibility to store seasonal flows for operation during summer time of downstream HPPs. Lower discharge is thus maintained in the river corresponding to decreased energy outputs. It is suggested that due to the topographic and geologic potential of this reservoir's location, the initial project plans are reconsidered (not in terms of MCA prioritisation) in the frame of the presently used Transboundary planning process using trade-offs, having a background of recent technical and environmental planning advantages.

3.3.7.5 Consultant's Conclusions

The planning of HPP Skavica may continue before any inter-basin organisation can effectively take over planning and management of water resources. Therefore, it would be of the utmost importance to urgently set up proper discharge measurement Stations and obtain flow data which will enable a safe agreement about water quantity and no less important, to enable discharge control. Currently, neither of the two National Hydro-Meteorology Services (NHMS) in Albania and the former Yugoslav Republic of Macedonia operates an effective regular monitoring system even at a national level. There is a reasonably effective meteorological early warning system in the former Yugoslav Republic of Macedonia, but this does not extend to a monitoring and real-time reporting of fluvial conditions in response to meteorological inputs. Hydrological models for discharge forecasting are neither used in the former Yugoslav Republic of Macedonia nor in Albania.

If institutions within Drini River Basin are not yet prepared for the internal mediation of unsettled cases, certain levels of cooperation, mediation and counselling should be provided by outside institutions by transferring such responsibility to them. Enforcement, in this sense, is not foreseeable because it has immediate implications based on sovereignty rights. Existing outside institutions - preferably with specific energy expertise - will be contacted and the idea of a mediation platform for existing open cases will be presented to them. The intention is to inform them and to propose their decision about institutional involvement in resolving open issues. The Energy Community represents a future platform for administering transboundary problems in the WB6 Region.

Key learning points:

- Monitoring stations are essential for controlling bilateral agreements. Without a properly installed monitoring system installed long before the plans for reservoirs commence, it is impossible to find a common transboundary agreement. The monitoring should cover: biota, water quality and quantity and sediment transport.
- It is prerequisite for sharing water resources that the political situation is sufficiently mature to facilitate full technical discussions between countries.

- Big reservoirs have a manifold function in the river basin, therefore their function must be agreed upon by all riparian administrations. Without this agreement, operation will be difficult if not impossible.

3.3.7.6 Guidelines and Recommendations

The IWRM approach in a transboundary framework provides the necessary tools and guidance for achieving the above and in the context of the food/energy/water nexus this also means that transboundary cooperation should go beyond water management (e.g. incorporating also energy and climate change issues).

In such a process, attention should be paid to the following key points - modified to fit to the particular case of hydropower[56]:

- Ensure the representativeness of water and energy stakeholders (including the private sector), the civil society and the users;
- Start from the organisation of stakeholders at the national level and from the latter's relationship to the local level;
- Include transboundary basin organisations (if existing, or are in the phase of establishment);
- Sufficient resources should be allocated to the participation of the civil society. This can require technical assistance or financial resources;
- Ensure public consultations on major infrastructure projects, including consultations in countries experiencing their impacts downstream.

A bilateral agreement from 1956 between Albania and former Yugoslavia provided for a commission that adopted several binding protocols, including its second one in 1962 concerning the exploitation of Black and White Drini River. According to that, 45 m^3/sec on average should be respected at the border with the former Yugoslav Republic of Macedonia on Black Drini River Basin. However, at present, doubts about such levels have been voiced in connection with the levels at Fierza (after the confluence of White and Black Drini), often only achieving 40 m^3/sec. The two upstream reservoirs are managed by ELEM: Debar Lake and Globočica Lake. But no gauging exists on Black Drini River at the border despite the impact of those reservoirs on flow quantity. The authorities are recommended to provide one station at each side of the border. Another one near Kukes has been foreseen in the near future.

NHMS Macedonia should prepare a Meteorological Station at Globočica supported with an Observer and regular maintenance. It should also make every effort to establish full cooperation with ELEM in the exchange and use of data from the reservoirs. The Hydrometric Station Lozani should be reinstated, but NHMS Macedonia should prepare documentation on how the Station would be supported with an Observer and regular maintenance.

It is recommended that the Albanian NHMS makes every effort to establish full cooperation with KESH in the exchange and use of data from the reservoirs.

The Meteorological Stations at Kovashica and Skavica on the Albanian part are active but not calibrated and will encounter significant snowfall in winter, which should be taken care of by an adequate protection structure and remote delivery of data. Subject to suitable safeguards and the security of the Station proved by NHMS Albania, it is recommended that the NHMS consults with the appropriate Authorities to reinstate the Hydrometric Station Kukes at the bridge crossing to monitor the upstream level of Fierza Reservoir.

3.4 Sharing of water resources in the EU practice (bilateral commissions, international organisations)

3.4.1 Introduction

The WB6 countries share similarities in history, culture, consumption patterns and institutional arrangements for water-resource management. This provides significant scope for mutual learning to enable better resource management.

[56] Christophe Brachet et al. 2012.

There are also convergences on issues of water management, quality and quantity, biodiversity degradation and climate change. Competing demands for water from domestic consumers, industry and agriculture demonstrate the complexity of resource management and highlight regional commonalities. In addition, each country in the region faces some degree of water crisis from severe flooding to droughts. The potential scope for collective action to resolve water challenges is therefore very significant.

However, despite the logical basis for cooperation (on water and a range of other issues), the Western Balkans has considerable reservations in developing shared / joint approaches. Water sharing is frequently conceived in terms of river water volumes – a zero water balance at state border (usually through balancing on a yearly basis, the volume balance cumulative approach) that weakens trust between countries. Cooperation over water is often treated with mutual suspicion at the governmental level, with the result that, while promoting more joint research projects should be the aim, even basic data are shared reluctantly.

Efforts in the direction to share: information, collaborative studies, and capacity-building need to be strengthened, while knowledge base exchange is constant and undertaken in the widest possible way among relevant government institutions, industry, academia and respected NGOs. But translating the lessons that can be drawn into policy and practice requires political willingness, ingenuity and leadership.

3.4.2 The European Union is a Pioneer

Europe is the continent where the greatest number of transboundary basins shared between at least two countries is found. The WFD strengthens transboundary basin management by introducing the concept of International Basin Districts. Riparian states have the same obligations towards these international basins as they do for their own national basins. It is common understanding that existing international commissions will be strengthened, and new ones will emerge.

In Europe, most of these international commissions have a similar organisational set-up, which is based on the plenary assembly of the international commission itself, made up of official representatives of its Founding Members. Decisions are followed by official geographical, sectorial or technical Working Groups, which are the places of associations between economic partners, local authorities and the civil society of the basin and where the decisions are prepared. Plans and programmes are developed or common tools designed for observation, monitoring and warning in particular.

Prior to 1992, there were three major transboundary rivers crossing the Sub-Danubian geographical area, which consists of the territories belonging to WB6 – SE European countries. These rivers are the Vjosa/Aoos, Drini/Drim, and Axios/Vardar. With the emergence of new states (Croatia, Slovenia, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Serbia, Montenegro and Kosovo) in the Balkan region, the number of shared rivers in the area has more than doubled. In fact, several other rivers (e.g. the Sava, Kupa/Kolpa, Cetina, Una, Drina, Neretva and Trebišnjica) are now listed as transboundary cases.

The current European effort shows that a suitable and constraining integrated management of the resources of river basins and lakes shared between several bordering countries is considered both necessary and feasible.

There have been numerous initiatives regarding cooperation for sharing transboundary waters among SE European countries, but the existing formal agreements are very limited and they are almost exclusively of a bilateral nature.

These bilateral agreements do not cover all existing country pairs and some of them are rather problematic in their implementation. The lack of the necessary, functional water agreements between neighbouring countries (there are only a few in existence), negatively affects regional cooperation and the state of the water resources in the respective transboundary basins, therefore agreement between countries should be prioritised in the possibilities offered by RBMPs.

The potential for international conflicts as a result of water scarcity, quality degradation or even flooding regarding shared waters poses a risk to stability and development in the Region. The international community (including the EU, donor countries, international organisations, inter- and non-governmental organisations) has undertaken a series of initiatives, many of which are complementary. Particular reference is made to the Petersberg Process (1998) and the Athens Declaration Process (2003). Regrettably, no sound or formal water related agreements have yet been drawn up because of the above-mentioned initiatives and processes.

Transboundary rivers in the Region currently cross EU member countries and mostly non-Member States. Taking the approaching obligation in the process of accession to the European Union, the latter still have to fully implement and enforce relevant European Directives, though they are nevertheless recommended to do so as soon as possible. In this respect, especially the early completion of transposition and accelerated implementation of the WFD is very important. The WFD is based on a holistic and integrated management approach and in the case of international basins requires each of them to be assigned to an international River Basin District (RBD). The Directive further specifies that EU Member States shall ensure cooperation for producing one single River Basin Management Plan for an international RBD falling within the territories of the EU. The Directive, however, indicates that if not produced integrally then plans must be set up for the part of the basin falling within each country's own territory. If the basin extends beyond the territories of the EU, the Directive encourages Member States to establish cooperation with non-Member States and, thus, manage the water resource on a whole basin level (Articles 3 and 13).

3.4.3 Organisational Forms of Transboundary Rivers

It seems especially necessary to support the creation of international commissions or similar organisations, such as river basin authorities, and to strengthen those already existing. Such international commissions or authorities allow better dialogue, the exchange of useful information, the solving of potential conflicts and the sharing of the benefits of better joint management and intensification of transboundary cooperation.

Depending on the needs, local situations and history, various approaches have been adopted to organise water management at the river basin level and there is a great variety in the mandates and selected organisational forms:

- **Administrative International Commissions**, with or without a permanent secretariat, in which participants are mainly representatives of the ministries concerned, aiming to coordinate various projects on the same river, exchange information or data in particular on emergency situations, define common rules (navigation, etc.), and whenever necessary to allocate the available resources between the countries and the categories of uses, especially in periods of crisis or when regulation structures do not exist.
- **Arbitration Authorities** to which the interested parties refer for decision-making on conflicts that arise.
- **Organisations or Basin Authorities** in charge of contracting large structures or combined installations; this is the case for navigation, flood control, water transfers, the building of reservoirs, in particular for irrigation, hydropower production, etc. These organisations, often created as public, usually have the concession of the community infrastructures for which they are responsible for the construction and long-term management.
- **Basin Committees or Councils**, or specific working groups which gather, together with the administrations, representatives of the local authorities, economic sectors, water users, civil society, etc., who can be advisers or decision- makers, in particular as regards planning, the allocation of available resources, etc.
- **Projects**, which are usually temporary and initiated by multilateral donor for specifically implementing an action plan with specific financing.

It is especially recommended that support be given to the creation of instruments necessary for the coordination between bordering countries, such as ones relevant to hydropower:

- Water monitoring, information and surveillance systems;
- Prevention and protection against floods and droughts, through better information exchange and harmonisation of action plans between the upstream and downstream areas of river basins;
- Practices of long-term planning and programming of priority investments;
- Adapted financing mechanisms;
- Adequate measures to prevent the introduction and dissemination of invasive aquatic species, which cause considerable ecological and economic damage and which are continuously discovered.

Currently WB6 River Basins are technically administered by two organisations, one for the Sava River and one for the Danube Drainage Basin. There are many bilateral agreements, but most of them need to be re-assessed by newly emerged states.

3.4.4 Concluding Remarks

The creation of transboundary basin organisations is accepted practice and is generally successful, but many institutions of transboundary basins do not yet have sufficient power, capacities or resources to resolve cases which are more common than sharing hydropower potential. There is no inter-state institution to manage water in most transboundary river basins and the joint sharing of hydropower potential has hardly started to be considered. There is thus still an enormous need to strengthen governance in this field throughout the WB6 Region.

It would be appropriate specifically for the WB6 Region if donors preconditioned their support to large projects for hydropower, navigation, irrigation or any other project implying the abstraction or diversion of significant water flows in transboundary rivers and lakes, on prior agreements based on a vision for a common future between all riparian countries of the same basin. The formalisation of this phase would result in a River Basin Management Plan. An assessment of the long-term effects of these projects and its feasibility under different development scenarios should also be made. The establishment of coordinated observation systems allowing the exchange of information between riparian countries should be a priority and a prerequisite for the implementation of any large project, since information transparency is a key factor in developing trust. Finally, mechanisms for involving the concerned populations in decision-making are a pressing requirement.

3.5 Key Regional Actions

Many projects in the WB6 region are faced with transboundary aspects to be resolved before or during their realisation as their impacts are not limited to the individual (relatively small size economies) states and territories. In addressing these issues, sovereignty over the natural resources of the involved states and territories is a major factor to be accounted for and dealt with. Therefore, a legal platform is proposed for the practical reasons of focusing and structuring discussion on the issues related to the development of hydropower projects impacting multiple countries and territories sharing several river basins.

In approaching issues of transboundary nature, the principles of integrated water management are much easier to respect when the decisions taken are based on sufficient information that is equally shared among the parties. Introducing such regional and river-basin dimensions to the decision-making process should benefit the justified projects in every aspect, from ecological and social sustainability to political and business feasibility.

The introduction of, and agreement to, the basic principles of evaluation and sharing of common water bodies in order to achieve the maximum possible welfare gain for all the riparian countries jointly while simultaneously securing tangible welfare gain for each of them, should always be the desired outcome. Disputes resolved in an amicable way should not be equated to giving national interests away – resolving open issues related to the use of shared natural resources should primarily be based on fairness.

3.5.1 Proposal for a Legal Platform for Resolving Transboundary Cases

We are recommending **setting-up a legal platform for resolving transboundary cases related to hydropower project development under the umbrella of the Energy Community (EnC)**, administered by the Energy Community Secretariat (ECS). As the first step in this direction, we propose the European Commission join forces with the Energy Community Secretariat and make a compelling offer to the countries and territories involved. We present our reasoning for making this recommendation below. It is an Energy Community statutory matter that any new task to be included in their scope will be legally regulated accordingly, therefore breaches of legal acts are unlikely to happen.

3.5.1.1 Our Approach

The primary aim of the proposed platform is to help justified projects of a transboundary character regain momentum. It seems that most projects are missing some kind of political signal – either of support in order to proceed or of disapproval to define the futility of the endeavours – and in most cases the political level appears to be unable to take appropriate decisions due to either insufficient information on the one hand or misaligned requirements regarding the project across the border(s) on the other. We believe that a formally structured information and know-how exchange significantly reduces the likelihood of the justified projects becoming the subject of disputes.

The sovereign nature of the required decisions demands that any kind of platform is politically supported from the very beginning. With the political level agreeing to the procedures governing the discussion groups, the process should be followed by a thorough discussion and exploration of the individual issues by the delegated experts in order to both secure national input and aspects presented and agree as much as possible on the facts regarding the subject matter. The reports should finally serve as input in taking sovereign decisions.

The platform should be able to serve the whole WB6 region and their neighbours, including downstream riparian countries, that may all have certain rights in regard to individual projects on the table[57]. To do so, the process of its provisioning would require the active engagement of multiple parties, comprising at least the governments in charge of all the individual countries and territories that might be involved in its eventual work and the platform's operator.

3.5.1.2 Evaluation of the Options

Several aspects have defined our decision on our recommendation of the most suitable proposal for the platform and its operator. Our criteria are summed up in the following list:

- general acceptability – primary criteria, the formal impartiality of the operator;
- ability to provide service – the institutional set-up of the operator and its service portfolio;
- willingness to get involved – the operator's interest in the region and the issues at stake;
- cost considerations – a rough estimation of the costs likely to be incurred by the participants.

In addressing the general acceptability, we focused on international organisations and formally constituted groups of countries, like parties of a convention; creating an ad-hoc arrangement from scratch might seem inviting, but it is necessarily linked with both a huge effort by all countries and territories involved and the need for a relatively big investment in the set-up phase. Since no river-basin organisation covers the whole region and very few international organisations have allowed Kosovo to join as a full party, we found that the Energy Community is in a unique position for three reasons: it covers the whole WB6 region including its imminent

[57] In this report, we have limited our focus to the countries of origin (i.e. origin of a project; in our case these are either countries of the WB6 region or, in some cases, their immediate neighbours), their neighbours and other downstream riparian countries, while it should be noted that a country not falling within this scope may be granted certain rights regarding these projects under various international treaties. For example, under the Espoo convention, Austria has requested being granted the status of affected party in relation to a nuclear power station project in Finland.

neighbours[58], its focus is very much on the WB6 region, and it concentrates its efforts on issues related to the hydropower development. The latter is expressed in the EnC's main mission statements that include: investment in power generation, improving the environmental situation in relation to the energy supply, and fostering renewable energy. The only other candidate passing this criterion, is the World Bank and the conventions under its auspices – notably the ICSID (International Centre for Settlement of Investment Disputes) Convention – who also recognises Kosovo among its parties alongside full list of UN member states. However, it has to be noted that their focus is entirely global in both geographic and substantive scope.

The Energy Community Secretariat's ability to provide the services we are recommending for the platform is one of the basic tasks of the Secretariat as an integral part of the Energy Community Treaty, providing for both the substantive and coordination role of the ECS in the dispute settlement procedure in cases of non-compliance by a Party with Energy Community law[59]. Moreover, its negotiation facilitation efforts to date[60] and the recent establishment of the Dispute Resolution and Negotiation Centre in October 2016, that offers numerous facilities for dispute resolution in many forms – from services as simple as 'good office' via 'negotiation facilitation', 'assistance in negotiations', and 'mediation', to 'arbitration'. All of this clearly shows the Secretariat's ambition to offer and further develop such services. Taking the record of the tribunals that might have been selected under the ICSID Convention's rules into account, there may be no doubt in their ability to provide any range of dispute resolution services.

We have taken the genuine interest of the Energy Community in both the region and the issues at stake for granted. Nevertheless, the Secretariat's willingness to get involved in the operation of a platform as we are proposing might have been an entirely different matter. According to the feedback from Secretariat, we understand that under the right circumstances they would co-operate in this process. ICSID's interest in the issues at stake is probably given, while the region as such most probably does not top their list of interests.

The last criteria of cost might be hard to estimate, but we are certain that with the Energy Community Secretariat as the platform operator and the support from the European Commission in it performing that role, the parties should be able to bear the cost of their own engagement. Should the platform at the Secretariat be organised under its Dispute Resolution and Negotiation Centre, the services provided by the Secretariat itself shall all be free of charge, leaving the parties to cover only the cost of their own delegates and an appropriate share of independent experts that might be appointed to help in the discussions. Presuming that the result of using the proposed platform lowers the possibility of entering into formal dispute resolution mechanisms under, for example, the ICSID's Convention at a selected permanent arbitration tribunal, the cost-effectiveness[61] becomes immediately apparent.

In short, the Energy Community Secretariat is recommended to operate this platform, primarily due to its regional focus and foreseen cost-effectiveness. In our preliminary informal discussions within the region, the idea of proposing the Energy Community Secretariat as the platform operator received positive feed-back and was considered a balanced proposal, not least because it is an international organisation that the WB6 area tends to perceive as its own. We also believe that the EU Member States that might eventually get involved using the proposed platform would have had no objection either.

[58] For details see Section 2.2.1 above. It should be noted also that the Energy Community counts among its direct or indirect parties every single sovereign country and territory within the river basins shared by the WB6 area.

[59] Since its establishment, the ECS has dealt with more than 40 cases under the Energy Community Treaty dispute settlement procedure.

[60] The ECS has successfully facilitated negotiations involving both sovereign actors and business entities in a number of cases so far. Among the results of their endeavours they count the 2014 dispute settlement between CEZ and Albania, the 2014 agreement between the TSOs of Serbia and Kosovo, and the 2016 dispute settlement between Gas Natural Fenosa and Moldova.

[61] For the purposes of illustration, we hereby state some of the figures related to the procedures with the ICSID: lodging of a request to the Centre costs either 25,000 USD or 10,000 USD, administration of a case costs 32.000 USD yearly, for coverage of the case's incidental costs an advance payment in the order of 100,000-150,000 USD is requested upon constitution of the tribunal. Apart from the administration fee, should the parties require limited services by the Centre, the cost may be lower. Nevertheless, as the proceedings under ICSID convention are usually of arbitral or conciliatory nature, the cost of legal representation that each party in dispute borne by itself, tends to be fairly high.

3.5.1.3 Set-up and Operation Processes

The platform should primarily serve the sovereign actors both to enter into and benefit from open discussion facilitated by the platform. Therefore, for the parties to retain appropriate level of control over the issues that are to be dealt by it, the set-up phase resulting in the basic rules of the platform's operation must be based on the unanimity of all the parties. The complete life-cycle of such a platform might take the form of the following 6 stages:

I. Platform set-up phase:
   1. initiation stage - unanimous expression of formal support at the highest political level;
   2. formation stage - organisation, work procedures, and nominations rules of the platform drawn-up by the operator with consent by the parties;

II. Projects and issues discussion phase:
   3. assignment stage - applications for participation and decision on the governing process regarding an individual project and/or issue;
   4. working stage - delegates, assisted by independent experts appointed under the platform's rules, discuss the individual projects and issues;
   5. reporting stage - delegates adopt opinions on the individual projects and issues;

III. Decision-making phase:
   6. feasibility consideration stage - political and business actors take informed decisions on the feasibility of the project.

3.5.2 Recommendations on the Approach and Technical Basis for Implementation of Sharing of Hydropower Potential[62]

3.5.2.1 Guidance on the Analysis of Cumulative Effect at State Borders

3.5.2.1.1 What are Cumulative Impacts?

In order to lead the transboundary process, some useful analytical framework, which has been recently developed should be applied. The idea is to analyse cumulative impacts for the river basin at the appropriate section, for example the border between countries or any other convenient river profile. Based on the results of the river basin cumulative impacts analysis, countries would acquire back up with arguments for knowledgeable talks.

Cumulative impacts are contextual and encompass a broad spectrum of impacts at different spatial and temporal scales. In some cases, cumulative impacts occur because a series of projects of the same type are being developed; for example, when several hydroelectric projects are constructed or planned on the same river or within the same watershed. In other cases, cumulative impacts occur from the combined effects over a given resource of a mix of different types of projects.

In the broadest sense, cumulative impacts are defined as a result from the successive, incremental, and/or combined effects of an action, project, or activity called developments or schemes when added to other existing, planned, and/or reasonably anticipated future ones. For practical reasons, the identification and management of cumulative impacts are limited to those effects generally recognised as important based on transboundary concerns and/or the concerns of affected communities.

[62] Interpretation and citation of IFC (International Finance Corporation), Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets, Good Practice Handbook.

Examples of cumulative impacts to be considered in a transboundary framework include the following:

- Reduction of the water flow in a watershed due to multiple withdrawals;
- Increases in sediment loads on a watershed or increased erosion;
- Interference with migratory fish routes or wildlife movement;
- Increased pressure on the survival of indicator species in ecosystem.

3.5.2.1.2 What Is Cumulative Impact Assessment (CIA) in a Transboundary Management?

Cumulative Impact Assessment (CIA) is the process of:

a) Analysing the potential impacts and risks of proposed developments in the context of the potential effects of other human activities and natural environmental and social external drivers on the chosen valued ecosystem components (VECs) over time, and

b) Proposing concrete measures to avoid, reduce, or mitigate such cumulative impacts and risk to the extent possible.

The key analytical task is to discern how the potential impacts of a proposed development might combine, cumulatively, with the potential impacts of the other human activities and other natural stressors such as water balance change. VECs are immersed in an ever-changing natural environment that affects their condition and resilience. VECs are integrators of the stressors that affect them. For example, periodic extremes of precipitation (droughts or floods), temperature (extreme cold or heat), or fluctuations in predators affect the condition of biodiversity VECs. Today and in the future, global warming (climate change) can be expected to have substantial impacts on the condition of VECs.

VECs are environmental and social attributes that are considered to be important in assessing risks; they may be:

- Physical features, habitats, fish populations (e.g. water quantity, biodiversity);
- Natural processes (e.g. sediment transport).

“Other human activities” of the greatest importance in CIA are those that (a) will occur in the future, or, if already existing, have ongoing influences on the environment in the future, and (b) are expected to interact with the same VECs in the future as does the development under assessment. CIA represents an analytical complication in the SEA because the spatial horizon of impact assessment is usually greater than in a “normal” project SEA, and the interactions between human activities and VECs increase in number and complexity.

Planning-initiated CIA has four objectives in a transboundary context:

- Assess the potential impacts and risks of a proposed schemes over time, in the context of potential effects from other developments and natural environmental external drivers on a chosen VEC: sediment transport, water balance and biodiversity – at the suitable profile preferably at the border point where river is crossing.
- Verify that the proposed development’s cumulative environmental impacts and risks will not exceed a threshold that could compromise the sustainability or viability of the selected VECs.
- Confirm that cumulative environmental effects do not limit the proposed scheme’s value and feasibility.
- Support the development of governance structures for making decisions and managing cumulative impacts at the appropriate geographic scale like the river catchment or regional landscape.

Assessment of cumulative impacts should employ information from a variety of instruments including: regional and local environmental and resource studies, programmes and/ or planning documents; strategic, sectorial, and regional assessments; project impact assessments, cumulative impact assessments, and targeted studies on specific issues.

3.5.2.1.3 Which Transboundary Conditions are to be CIA Processed?

Cumulative impact assessment and management is generally appropriate whenever there is concern that an activity under review may contribute to cumulative impacts on one or more VECs.

This concern may be pre-existing or a consequence of the potential cumulative impacts of the development and other projects or actions, human activities, or exogenous factors (e.g., natural drivers). CIA is also appropriate whenever a given development is expected to have significant or irreversible impacts on the future condition of one or more VECs that also are, or will be, affected by other developments.

The other schemes may already exist, or can be reasonably predicted, or be a mix of existing and reasonably anticipated developments. In circumstances where a series of schemes of the same type, like reservoirs is occurring, or being planned, the need for CIA can be fairly obvious when a series of hydropower developments occur within the same river or within the same watershed with cumulative impacts in common on water flora and fauna, on downstream water quantity-availability, and on watershed sediment dynamics.

Good CIA practice is not limited to assessing the impacts of developments of the same type. For example, CIA might be needed for the development of a mine perhaps in association with developments in adjacent forest management, hydropower developments and flood protection all of which may affect water availability. In some cases, CIA may be needed to assess and manage the impacts of several new projects, activities, or actions that are under development.

In other situations, the CIA of a single new scheme may be appropriate when it occurs in an area where concerns exist about cumulative impacts - concerns that are either well documented or identified through consultation with affected communities and other stakeholders. In some situations, different components of the same development are assessed in separate EIAs, and the cumulative impacts from these components should be subject to CIA. The key point in determining the need for CIA is that one or more VECs will be cumulatively impacted by different hydro scheme proposals.

Cumulative impacts should be identified and acknowledged in the SEA (EIA) process, and the measures proposed for managing the incremental contribution of a given project can be covered by the project's Environmental and Social Management System (ESMS). This is often the case when dealing with well-studied watersheds and landscapes, or with widely recognised global issues such as climate change. Cases like climate change would not require a separate CIA process in a transboundary context; the inclusion of standard mitigation and adaptation measures, as an integral component of ESMS, would typically suffice.

3.5.2.1.4 What are Expected Outcomes of Transboundary CIA?

The expected outcomes of a good CIA can be summarised as follows:

- Identification of all VECs that may be affected by the scheme put under evaluation;
- In consultation with stakeholders, agreement on the selected VECs the assessment will focus on;
- Identification of all other existing and reasonably anticipated and/or planned and potential schemes, as well as natural environmental drivers that could affect the selected VECs;
- Assessment and/or estimation of the future condition of selected VECs, as the result of the cumulative impacts that the scheme is expected to have, when combined with those of other reasonably predictable developments as well as those from natural environmental drivers;
- Evaluation of the future condition of the VECs relative to established or estimated thresholds of VEC condition or to comparable benchmarks;
- Avoidance and minimization, in accordance with the mitigation hierarchy, of the schemes impact on the VECs for the life span or for as long as the impacts are present;
- Monitoring and management of risks related to VEC viability or sustainability over the life span of either the scheme or its effects, whichever lasts longer;

- Provision of project-related monitoring data to governments and other stakeholders for the life of the development, and material support for the development of collaborative regional monitoring and resource management initiatives;
- Continuous engagement and participation of the affected communities in the decision-making process, VEC selection, impact identification and mitigation, and monitoring and supervision.

Because cumulative impacts often result from the successive, incremental, and/or combined impacts of multiple schemes, responsibility for their prevention and management is shared among the various contributing developments

It is usually beyond the capability of a single party to implement all measures needed to reduce or eliminate cumulative impacts, therefore collaborative efforts will likely be needed. Governments can play a significant role in ensuring environmental and social sustainability by providing and implementing enabling regulatory frameworks that guide and support the appropriate identification and management of cumulative impacts and risks. The different views are observed in how indicators are used to characterise an impact. In EIA, indicators may be chosen to reflect the incremental change in a VEC, while in CIA indicators are chosen to reflect the resulting condition of the VEC.

The two different views are not always distinct, and as noted before, CIA can be fully integrated throughout a good EIA process. Many practitioners have advocated this approach. EIAs should be conducted in a manner that supports a systematic CIA.

3.5.2.2 External Cost Benefits in the Context of Hydropower Sharing

3.5.2.2.1 Why Value Non-Marketable Components Like Environment?

The economic evaluation of the environment and non-marketable components of HPP schemes, like landscape quality, natural values, intrinsic values, etc. helps decision-makers to integrate the value of environmental services provided by ecosystems in decision-making processes. Direct and external environmental effects produced by economic projects are calculated and expressed in monetary terms. Monetary evaluation is a useful way to express in the same dimension different social and economic costs and benefits and is required to calculate a homogenous aggregate indicator of net benefits. This approach, despite being rarely used in the EU, presents a good basis for the evaluation of the in-kind contribution of parties in the shared hydropower potential cases. In the process, parties involved in sharing process would demonstrate the total value of their contribution on the one hand and participation from it on the other.

Environmental impacts affect environmental performance and services. Examples of direct and indirect environmental services provided by ecosystems are:

- Direct production of oxygen, water, fresh food, genetic resources, fuel and energy, raw materials;
- Indirect services such as the regulation of the hydrological cycle, water catchments and groundwater recharge, the regulation of climate, storage and recycling of nutriment, biomass production, the maintenance of biological diversity and so on.

Values attributed are directly linked to ecological services produced by ecosystems which support them. For example, fishery depends on the ecological productivity of the water ecosystem as wetlands. Water availability is linked to the entire hydro geological cycle and groundwater quality depends on the filtering capacity of soils. A reduction in the provision of ecological services (by the change from stream to lake ecology) will be likely to depreciate the values expressed by people on environmental quality with, as a final result, a decrease of social benefits associated with it.

3.5.2.2.2 Evaluating Environmental Impacts in Development Projects

Most hydropower infrastructure projects have both negative and positive impacts on the local and global environment and especially on the water segment. Typical environmental impacts are associated with local water availability, biodiversity and landscape degradation, and technical and natural risks (sediment transport). These impacts alter the normal functioning of ecosystems and reduce (or in some cases increase) the quality of ecological services provided by ecosystems. A decrease, or increase, in the quality or the quantity of

environmental goods and services will produce some changes, gains or losses, in the social benefits associated with their consumption.

For example, a hydropower infrastructure will be expected to reduce the useful rural land, will change the rural and natural landscape availability, and will increase pressures on biodiversity. From another side, it will benefit general air quality related to the emission free produced electricity in the wider area. As a result, each of the negative impacts will reduce the provision of environmental services by ecosystems and will lower economic benefits, such as farm activity, landscape and other recreational activities associated with the economic use of the area, but each of positive impacts will contribute to human well-being and to selected economic parameters.

Not taking into account environmental impacts, through the calculation of associated externalities, will lead to an over or under estimation of transboundary benefits pertaining to each country and will induce bad economic decisions.

3.5.2.2.3 How do we Measure Monetary Benefits?

When environmental service markets are available, the easiest way to measure economic value is to use the actual related market price. For example, when pollution reduces fish stock, market values for the lost harvest are easily observed through the fish market. When there is no "market", the price can be derived through non-market evaluation procedures. This is the case, for example, in measuring the social cost of landscape change since no market can be associated with that type of value. There are two broad approaches to evaluation, each comprising several different techniques: the indirect approach seeks to infer preferences from actual, observed market-based information, the direct approach is based on the simulation of market goods and uses survey and experimental methods.

3.5.2.2.4 Conclusions and Policy Implications

It is important to understand that economic value does not measure environmental quality per se, rather it reflects people's preferences for that quality. Evaluation is "anthropocentric" in that it relates to preferences held by people.

The literature on externalities has contributed to our understanding of how the production of some goods and services result in costs that are not passed on the final consumers of those goods and services through the normal market channels. Only when appropriate legislative framework is implemented (e.g. WFD, Nature Directives, EIA/SEA) can the calculation of the externalities be conducted properly.

In such situations, public action (as in a transboundary case) can be justified if reasonable estimates can be made at the level of project damages and benefits and if the parties involved cannot arrive at an internal solution to 'internalise' such non-marketable externalities in the transboundary process. This is very much the case with sharing water resources like hydropower potential. In the case of renewable electricity from water, the external costs are much lower (though they are not zero, when account is taken of the life cycle impacts, as is correct). In any case, these valuations can be used in a process of resources division.

3.6 Country-Relevant Actions

3.6.1 The Way Forward

Until now, transboundary issues in the WB6 region predominately dealt with water quality aspects and to some extent biodiversity, while the hydropower sector and power potential development remained behind any useful baseline. The greatest omission can be recognised in sharing hydropower potential, so transboundary cases have not moved forward, or in some cases have advanced in a suboptimal way by downsizing the best reservoir locations like Buk Bijela or Skavica. If such higher head reservoirs could actually be realised, the volume available in these reservoirs could enable regulation of floods on the Drina and Drini Rivers to the extent that flood safety in these two biggest river basins would be almost resolved.

The agreements for sharing hydropower potential depends mostly upon the willingness of stakeholders; there are no legal enforcements currently possible in this regard. So, a monitoring system should be conceived in a joint effort to address flood control and hydropower development, and realised as a first step for both systems: flood protection and hydropower development. All gauging stations should be unified and data formats harmonised.

From an overview of on-going and planned activities in the Region, it can be concluded that a significant number of projects have recently been implemented or are under implementation in the flood management sector, while the energy sector is lagging behind despite agreed strategies to develop renewable sources in line with energy policy targets and the commitment of the EU and all WB6 countries - Contracting Parties to the Energy Community Treaty, while EU Acquis prevails.

Coordination across the river basin, including the requirements for transboundary coordination, are regulated by the Floods Directive.

However, there is still a long way to go before a sound flood risk management is in place that can minimise potential risks endangering human health and wealth in the region. In general, there will still be a lot of opportunities for the flood management community and the hydropower development community to join forces. Both sectors have a lot in common, but mutual benefits, which could come out as a result of harmonisation of objectives between the two groups, are still to be identified in some river basins.

Therefore, both parties involved in the IWRM have to join forces and use infrastructure, which they hold in common, to achieve their independent management objectives. So, for example, embankments for storage basins could be planned for flood protection, at the same time raising the water level for hydropower use in a joint effort, sharing not only objectives but also financing possibilities. The biggest effect on flood protection would be accomplished, however by high head reservoirs. These could plan seasonal volume capacity for the storage of flood surges providing better human safety for riparian countries.

The status of the flood protection systems in the region is presented below, and needs significant enhancement:

- No country has completed their flood hazard and flood risk maps;
- Most of the countries do not have adequate flood warning systems;
- Climate change considerations are not included in the design of the available drainage and storm water infrastructure, which was installed decades ago;
- The drainage channels are not sufficient to cope with the increased loads due to climate change effects and the increase of the paved land in urban areas;
- Most of the countries did not invest in flood protection for a long period of time. A significant number of the dams were built during the Yugoslav era;
- The riverbeds are not maintained; they are usually overgrown and full with carried sediments, debris and stones;
- Optimisation of operation in regard to the water balance of the dams is necessary.

3.6.2 Building Mutual Benefit: Flood Management Plus Hydropower Development

All WB6 countries need to improve their disaster risk reduction capacities, mechanisms and infrastructures for flood prevention and in parallel develop hydropower where environmental conditions would allow for that by:

- **Revising meteorological and hydraulic models**, which establish the background for the flood prevention measures in the region, by integrating climate change and taking into account where rehabilitation and/or reconstruction is necessary for the flood prevention structures and promoting water infrastructure with mutual benefits to hydropower;
- **Developing sound flood risk management plans and introducing adequate land use planning**, promoting sustainable land use practices that improve water retention. In parallel, work on flood defences and climate resilient infrastructure of both structural (grey) and natural (green) type needs to be enhanced, providing for climate-proofing of vulnerable investments, adding sufficient storage volume in reservoirs where environmentally and economically feasible;

- **Developing integrated and cooperative early warning systems at all levels** (regional, national and local), and regular monitoring systems for water discharge, sediment transport and biota at state border points on shared rivers;
- **Co-operating regionally for upgrading contingency planning and emergency measures**, including adaptation measures and the sharing of data and information, coordinating and standardising hydro-meteorological data collection and analysis and sharing it in the region for weather and flow forecasts. Extending co-operation to the management of water balance in order to retain maximum flood volume in head reservoirs;
- **Intensifying efforts for further and full alignment with the EU Water Framework Directive and Floods Directive**;
- **WB6 countries should prioritise the implementation of the Danube and Sava Basin Management Plans**. The Sava Basin Management Plan should be scaled down for integrated development and implementation in each country. Countries should review the river basin management planning needs and improve maintenance standards in river infrastructure, in coordination with the ICPDR and the ISRBC and in full alignment with the Flood and Water Framework Directives;
- **WB6 countries should develop coherent river basis management plans**.

All these improvements should be done by taking into account already existing local, national, and transnational and EU level activities to optimise the synergies between different levels of action.

3.6.3 Significance of the Water Framework Directive in Transboundary Problems

Transboundary issues in hydropower development have two platforms, based on which resolution could be possible. The resolution of existing problems would be possible under the above-proposed mediation of the Energy Community, while another platform is a legal act which provides for regulation in the planning phase – and that is the Water Framework Directive. Regarding the planning phase, the WFD offers a framework for harmonising the diverse interests of stakeholders.

The WFD is not yet fully transposed and implemented in the WB6 countries, priority should be given to its full transposition, implementation and enforcement. An overview of WFD transposition in the legal framework of WB6 countries is shown in Table 3.4.

Table 3.4: An Overview of WFD Transposition in WB6 Countries as per 2014

Country	Status of Transposition	2014 ECRAN Report[63] Transposition Level
Albania	Progress in the transposition of the WFD is continuing. The majority of the Directive's provisions has been transposed into national legislation through the Law No 112/2012 on integrated water management. The transposition has advanced further in the last year due to the drafting of the Decision of Council of Ministers (DCM) on the content. However, the adoption of the relevant secondary legislation, which was foreseen in 2014, will not ensure the full transposition of the WFD. It should be noted that a transposition plan for provisions that have still to be transposed has not yet been drawn up. Consequently, the date for full transposition has not been set.	65%

[63] European Western Balkans Joint Fund (EWBJF). December 2014. No new report was published since – status as of September 2017.

Country	Status of Transposition	2014 ECRAN Report[63] Transposition Level
Bosnia and Herzegovina	In both entities of BiH, the transposition of the WFD is well advanced. In FBiH, the Water Law (Official Gazette of FBiH, No 70/06) has transposed the majority of the Directive's provisions. Transposition has further advanced in last monitoring period due to the adoption of the Decision on surface water and groundwater characterisation, reference conditions and water status assessment parameters and monitoring (Official Gazette of the FBiH, No. 1/14). Full transposition will be achieved by December 2014 through adoption of the amendments to the Water Law. In RS, transposition of the Directive has been finalised through the adoption of the Water Law (Official Gazette of RS, No 50/06 and 92/09) and the Decision on the determination of borders of River Basin Districts and river basins in the territory of the RS (Official Gazette of RS, No 98/06).	FBiH: 98% RS: 100%
The former Yugoslav Republic of Macedonia	The transposition of the WFD currently reaches 92%. Full transposition is scheduled for the end of 2015. The former Yugoslav Republic of Macedonia has no transitional and coastal waters.	92%
Kosovo	Not much progress has been reported with respect to the transposition of the WFD in Kosovo. In 2013, the new Water Act has been adopted which has ensured partial transposition of the Directive. Further transposition efforts are still required in order to achieve full transposition of the WFD.	49%
Montenegro	The transposition of the WFD is not very advanced. The current transposition status has been achieved mainly through provisions of the Law on Water (Official Gazette of MNE, No. 27/07, 32/11 and 47/11). Amendments to the Law on Water planned for 2014 will transpose the majority of the remaining provisions, while adoption of the new Regulation on water quality and determining water status planned for 2016 will ensure transposition of the Annexes VIII-X. Full transposition has been foreseen for 2016.	67%
Serbia	A preliminary transposition plan for this Directive has been determined, and it includes the adoption of amendments to the Law on Waters in 2015: the adoption of relevant by-laws in 2016, amendments to the Law in 2017 and achievement of full transposition in 2018, by the adoption of relevant by-laws. Detailed legal gap analyses will be carried out in 2014, with the assistance of the Policy and Legal Advice Centre (PLAC) Project.	76%

4 Conclusions, Recommendations and Final Remarks

4.1 Final Discussion and Observations – River Basin Level

The activities that could be undertaken to stimulate the transition to a more adaptive management of transboundary regimes differ between river basins throughout the WB6 region. It is clear that some transboundary regimes (for some detail, see below) have already developed much further than others. The transition has to be executed step-by-step and might take decades. Goals have to be adjusted to the prevailing situation to make sure feasible activities are employed and the development is not blocked by the desire to do "too much too soon".

Because of differences in the understanding of the stakeholders regarding the process of transition towards more adaptive transboundary management, it is not possible to specify exactly the order of activities that should take place to help develop HPPs in the transboundary context. However, some general recommendations can be made for each river basin:

- In the **Trebišnjica River System**, the transboundary regime is rather well developed. Efforts for the new development scheme at HPP Dubrovnik II need to be supported by adaptive features such as the revision of the existing agreement signed in a recent political context. New hydropower potential division is expected with Montenegro, which initially agreed to benefit by a water supply for Herceg Novi. Therefore, future development could be aimed at developing cross-sectorial cooperation and cooperation between the administrative levels of three countries (BiH, Croatia and Montenegro) and two entities of BiH (FBIH and RS), adaptable legislation, interdisciplinary action, critical self-reflection about initial assumptions, the explicit consideration of uncertainty and the utilisation of information. Problems should be resolved in the context of new HPP development possibilities, rather than historic problems which occurred as a consequence of the conflict.
- In the **Drini River Basin**, the development of a comprehensive framework of law and policy for transboundary river basin management is lagging behind other developments. In policy processes, additional effort should be made in employing a long planning period time horizon, the consideration of the full range of reservoirs like Skavica and in actual implementation of the synergy in flood protection and renewable energy production policies.
- Efforts to develop the **Drina River** regarding its Middle Section transboundary management regime should be aimed at a better legal framework. However, because political support for change of the existing bilateral agreements is low, it might be better first to improve information management and actor networks and develop and implement policies resulting in a joint flood and energy scheme. This might create more trust between the riparian countries, which may in the end lead to an improvement of the legal framework or even the establishment of institutional management.
- In the **Tara River** a lot of work still has to be done to develop a regime that supports extreme adaptation to transfer water from one to another river basin to RHPP Koštanica. Following the lessons learned, it might be wise to start focussing on the development of a technical baseline for cooperation (including information exchange) with riparian countries to create adequate supporting capacities and mutual confidence.

- At the **Ćehotina River**, there is a River Basin Management Plan to be prepared in a transboundary set-up framework before taking any further development action. Cumulative impacts should be assessed at the border within the SEA for this river basin.

- The **Zhur River** HPP is already supported by prepared technical documentation developed in 2009, albeit only with a preliminary EIA assessment. Consequently, a Transboundary EIA addendum to the existing Preliminary EIA Report has to be prepared.

4.2 Regional Level

Cooperating in the planning and implementation of hydropower projects helps to make the most of the comparative advantage of the river basin, in order to achieve an efficient and optimal resource use, and given that hydropower generation potential and energy demand are geographically imbalanced. Hydropower schemes should undergo the process of thorough IWRM planning where the EIA plays a decisive role with consent granted in acceptability impacts on biota, water, sediment, etc. In a transboundary environment, there is one more consent to be provided from each of the involved countries administrations. This consent depends on agreement and is not achieved very often according to experience.

Joint mechanisms implemented from the start of a cooperative hydropower project can help to prevent, mitigate and monitor adverse effects, such as the consequences on ecosystems integrity and diversity (aquatic, terrestrial, hydrological dynamics and sediment/nutrient transport) and on social systems (because of the negative impacts on fisheries, agriculture and food security) and ensure that nonetheless emerging adverse effects (as well as benefits) are shared in a fair and equal manner among the countries.

Whether or not these benefits and risks will emerge depends on a number of factors common to all hydropower schemes, however some factors characteristically differ in transboundary related cases, therefore following advice and recommendation should be consulted in a hydropower transboundary case:

1) Proposed reservoirs uses:
   - Hydropower reservoirs (as any multipurpose use can amplify the effects downstream) can exacerbate peak floods and droughts in downstream countries, change sedimentation regimes, and block fish passages, but in conjunction with flood protection results could be overwhelming. Use of reservoirs for flood control can help flood prevention in downstream countries and regularise flow regimes;
   - Diversion of water quantity from one river basin to another should be approached on an individual basis. The transfer of water is not prohibited in advance; however, if benefits and externalities are in favour of it, any decision making should consider such a possibility.

2) Geographical position of the reservoir in relation to the political border:
   - The reservoir (or series) is located in an upstream state A and has positive and/or negative externalities in a downstream state B (e.g. Ćehotina). Negative impacts and externalities should be mitigated within economic feasibility conditions. Together with beneficial effects and externalities, Cost-Benefit Analysis will be used for negotiations. Cumulative Impact Analysis will be used as a reference for the evaluation of reservoir impacts on the downstream state B. If the flow downstream is modified in a beneficial way, it can be the subject of compensation of state B to state A or the opportunity to rightfully participate in an investment model;
   - The reservoir is located in the downstream state close to the international border (e.g. Buk Bijela, Skavica), which causes externalities in the upstream state as it inundates land. In such a case, the value of the land must be compensated together with a crop value for several years, while the head (water level difference) at average discharge in the upstream state is treated as the hydropower potential of the upstream state;
   - The reservoirs located where a river flows along border of state A and state B (e.g. Bileča Lake) for some distance: the natural head from the border line point of entry and point of leaving is divided equally between states involved. In special cases, hydropower potential can be valued also through pertaining discharge from the run-off surface of that state into reservoir. In such cases, energy potential is a product of the divided water head and run-off discharge.

3) Measures/instruments/legal acts to plan and survey environmental and social effects of a transboundary character:

- Baseline studies with measures of project planning to foresee environmental impacts to address the question if the project should proceed, then during construction and operation mechanisms to monitor and mitigate cumulative environmental impacts: Cumulative Impact Assessment (CIA) establishing environmental flow regimes, providing fish hatchery facilities and passes, afforestation measures for sedimentation control, etc.;
- Measures to monitor and mitigate water balance, sediment transport and the connectivity of biodiversity. The realisation of monitoring service in gauging stations to be located at state borders;
- Mechanisms to assess the socio-economic effects of hydropower/flood protection reservoirs: in this respect, existing agreements, especially if relatively old, should be rewritten and negotiated again in the present political constellation. Exceptionally, agreements can be reconfirmed if convenient to all parties.
- The economic effects of multipurpose reservoirs, but predominately energy and flood protection, should be maximised, to promote faster realisation under the condition that environmental impacts are compensated realistically;
- The Water Framework Directive (and Floods Directive when applicable) should be taken fully into account, due to the expectation of future political determinants. Despite transposition in national legal systems in the Region still in course, it is beneficial to treat it as if fully transposed, due to the very long period needed for planning reservoirs;
- Existing transboundary problems of a financial or technical character, which occurred before or after the Balkan conflict should not burden new development efforts (e.g. HPP Dubrovnik II, Buk Bijela).

4.3 Final Remarks and Concluding Overview

From the overview of HPP and reservoir Transboundary cases, learning points have been drawn. The project cases examined started their development but have remained stalled and unresolved for various reasons until the present day, therefore an insight into the mistakes and lost opportunities has been provided. Project cases became stalled predominately due to a lack of understanding of the emerging situation, when more than one country is involved in water resources use. Despite the fact that the issue of integrated water resources planning is today clearly dealt with in the WFD, which provides a legal guide for the river basin approach, it was not the case in the past decades. By neglecting transboundary situations, predominantly derived from an engineering-led perspective, mistakes were made which are still pending to be resolved. These mistakes generally concern the division of water quantity and water head at the river basin level and an omission in determining management rules (reservoir function) from source to river mouth. The absence of river basin authorities has further affected the transboundary issues experienced.

Ways of developing sustainable hydropower and providing synergy with the other benefits of reservoirs such as the management of water reserves have been studied. Sustainability in the frame of the WFD, in the process of transposition for existing HPP schemes and the cases described, has not been analysed up to this point. Instead, the benefits which were lost, like renewable energy support or the decrease of flood intensity have been assessed and these have formed the basis of the learning points in this report. Due to weaknesses in properly addressing transboundary situations, suboptimal hydropower development alternatives have been adopted in the WB6, which if reviewed and renegotiated in a consistent transboundary context would result in HPP project proposals offering considerably better performance.

The sustainability of transboundary cases is the key issue for the feasibility of projects under the present planning conditions, and requires searching for the consent of the nature protection arena and public representatives. The sustainability of the cases analysed remains to be answered, which would be evident in later phases of HPP planning after a proper implementation of SEA and EIA. Therefore, if some selected cases are worth re-assessing, it must be done in line with the EU environmental Acquis with a coherent and thorough application of all relevant assessments covering not only environmental impacts but all pertinent aspects including integrated water resources management, the effects of changes in climate patterns as well as transboundary considerations. In this perspective, there will be a milestone in the authorisation process, when there is a

balanced judgement on environmental issues and prospective hydropower production capacity as a result of this strategic planning process.

The range of benefits that can be generated in transboundary situation is motivating countries to move towards abandoning the unilateral decision-making usually practised so far in favour of joint action. However, joint action is only possible if countries understand fully that the benefits from cooperation are higher than those enjoyed when taking unilateral action. Cooperation can be difficult in any case and must be substantive in order to be successful.

The starting point for transboundary benefit sharing is the identification of national interest in developing the hydropower resources of the river basin. Negotiations over water resources planning amount to negotiations over national development plans as governments may plan to use water resources for general development needs, not necessarily only for energy use. Thus, hydro power plants are directly connected to national development interests, as well as at the same time an issue of national sovereignty since natural resources are in question.

If governments decide that cooperation will bring them benefit, then cooperation would be possible. Thus, as a first step in the negotiation process, all parties must understand that net benefits can be derived from cooperation. Some parties may feel that cooperation will make them worse off, or they see neither gains nor losses. Such parties might be induced into cooperation with side payments or issue linkages that need to do more than just compensate them for potential losses. Motivation from the international community would be an excellent opportunity to facilitate cooperation between parties.

Parties can devise mechanisms for the sharing of costs and benefits with the end result that all parties are gaining more than giving.

Despite their “favourable” position, the engagement of upstream countries can be considered if these countries are willing to cooperate generally. Cooperation can be induced in a number of ways, including various compensation mechanisms of a financial and in-kind nature. The key is that the country must perceive itself to be better off with cooperation than without, as otherwise no incentive to cooperate will be there.

If a country entirely resists cooperation, political pressure might be brought from within other basin countries. If there is no option for political pressure, then countries could cooperate on a sub-basin level. This, however, carries potential problems for the rest of the basin as sub-basin cooperation could ignore the interests of other riparian parties, or lead to conflict with states that are unwilling to cooperate but see their interests threatened by sub-basin cooperation.

Most of the issues that will be negotiated are politically sensitive as national sovereignty is involved and some countries might see significant risks in cooperation. As the benefits can be considerable and include trade facilitation and enhanced political stability in the Region, trust can be established from long-term cooperation. Cooperation is generally easier in river basins that already have high levels of institutionalisation, as institutions are often able to compensate potential conflict.

Hydropower is generally accepted to be the main non-consumptive water user. Cooling for energy production, agriculture, domestic use, industry and tourism are the main consumptive users influencing the withdrawal rates of water resources. The construction and operation of hydropower plants on rivers poses both challenges (ecological and socio-economic) and creates benefits (e.g. job creation, flood regulation, water diversion, irrigation, drinking water supply and recreational purposes).

The key message of this Background Report for its readers in the WB6 region is that without properly addressing Transboundary Issues the best use of the hydropower potential, and water resources in general, will be lost. It has been demonstrated that co-operation between parties is possible and considerable good practice of sharing hydropower potential has been established in the past internally (e.g. the republics in former Yugoslavia) and internationally (e.g. Albania-former Yugoslavia). Nevertheless, the resolving of transboundary concerns is in the best interest of countries, so a positive outcome from the process could be expected.

5 Proposals for Action

5.1 Regional level

Table 5.1: Proposed actions at the regional level

SN	Brief description of proposed Action	Assumed implementing agent	Anticipated timeframe
1	Adequate legal set-up in the countries concerned based on EU environmental legislation and applicable international conventions for enabling transboundary cooperation, eventual resolving of stranded cases and hydropower development.	WB6 Governments	Mid-term
2	Integral assessment of development impacts and benefits on existing environmental, social and economic conditions.	Developer	Within a project timing
3	Prepare a support proposal for a mediation platform of transboundary disputes and assistance in transboundary negotiations resulting in corresponding agreements.	DG NEAR, ECS	ASAP
4	Guidelines for an EIA-SEA transboundary procedure adapted to the geographic, politic and administrative conditions in the region and per each country. Develop an approach in mitigation measures.	DG NEAR, WB6 Governments	ASAP
5	Practical Guidelines on the principles of the division of water and other resources in transboundary conditions.	DG NEAR, WB6 Governments	Short-term
6	Detailed analysis of existing transboundary case(s) resolving issues of hydropower, and the preparation of guidance based on cases of good practice in the EU, followed by actual support provided in resolving transboundary problem to be selected with EU expert support.	WB6 line Ministries, IFIs	Short-term
7	Training programme tailor made and organised for the administration personnel from the Region, focusing on resolving transboundary issues in the development of hydropower.	WBIF, Line Ministries	ASAP
8	Realisation of the IRBMP, RB to be selected in a transboundary set-up.	WBIF	Mid-term
9	Review the existing design of HPP Reservoirs in transboundary conditions and assess the benefits of a multipurpose role and mitigation measures in the light of relevant EU legal instruments, such as the WFD, Floods Directive, Habitats Directive etc. prepare conceptual solutions and estimate the effects on feasibility.	Line Ministries	ASAP
10	Develop a business model for HPP for selected transboundary cases on Group 1 of HPP projects (see BR-7)	Governments, line Ministries	ASAP

Annex 1: Graphics

River Basins in the WB6

In Figure A1.1 (overleaf) the 14 River Basins in the WB6 region are presented.

Two of the river Basins are further fragmented to their respective Sub-River Basins, namely the Sava River Basin and the Velika Morava River Basin.

Figure A1.1: River Basins in the WB6 region

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