DASHI: INITIATIVE FOR SUSTAINABLE HYDROPOWER IN DINARIC ARC

FINAL REPORT

ENVIRONMENTAL FLOW IN MONTENGRIN NATIONAL LEGISLATION AND CAPACITY BUILDING NEEDS

Center for Environmentally
Sustainable Development

March 2012

TABLE OF CONTENTS

1 ENVIRONMENTAL FLOW WITHIN THE LEGAL FRAMEWORK OF MONTENEGRO

1.1 Water Law Review

Water Law of Republic of Montenegro („Official Gazette of Republic Montenegro“, No. 27/07) was adopted on May 17, 2007. This law generally deals with issues related to legal status and integrated water management, water and coastal land and water facilities, conditions and manner of performance of water activities, and other issues of importance for water management and water resources.

In the chapter I - general provisions, Water Law of the Republic of Montenegro describes a context of the Law itself, including related framework of the law and basic principles of water management. This chapter also contains the definition of the terms used in the text of the law in order to clarify the meaning of particular terms used. In these definitions of the used terms, environmental flow is actually referred as the "guaranteed minimum" (within the article 5), which is defined as a “flow that must be provided downstream of water intake for survival and development of downstream ecosystems/biocenosis”.

Chapter II is related to water and water assets. In this chapter, waters are defined as a good of general interest and further on, that can be used under the terms and conditions defined by the law. It also defines a water classification, waters of importance for Republic and waters of local importance, water assets, determination of boundaries of water assets and the purpose of use of water assets. Afterwards, this chapter defines which waters can be public water assets – owned by a state, the manner of usage of such public water asset and under which conditions the public water assets might lose that status.

The concept of water management and water facilities management is defined in Chapter III of the Water law on Montenegro, which also defines the basic principles of water management. The main water areas of the river basin are also defined as basic units for water management. It is also stipulated that long-term national programme for water management shall be determined by a baseline for water management of Republic Montenegro. Water management plans shall be used for determination of the elements of water management on the water area of the river basin. This chapter also precisely defines the context of the water management plans, procedure of their preparation, adoption and amendments and relevant provisions also refer to cooperation with the public in the phase of preparation of these plans and public participation.

Further on, the same chapter defines the water objects and systems, which objects and systems are actually considered as water object and systems in the sense of this law. Further on, it defines that these objects are divided according to its purpose in the six categories such as: water objects for water usage, water objects for protection of harmful effect of waters, water objects for drainage, etc. These objects must be enrolled in real estate cadastre, certificated by authorized institutions and technical review of these objects must be completed after their construction or reconstruction.

Planning and water usage, manner and conditions for water usage, public and individual water supply, quality of water for human consumption and obligation of water quality control is defined within the same chapter, as well as the protection of the sources and sanitary protection zones. The Water law of Montenegro, further on deals with the issues related to protection of water from pollution and protection from harmful effect of waters.

End of the same chapter defines water acts and other water related documentation. This Law recognizes four types of water acts which are used for determining the conditions and ways of realizing the right on water. These acts include: water conditions, water authorization, water permit and water order. Article 113 of the Water law stipulates that general contents of the water act includes conditions for usage and measures which water right holder must pertain in order to prevent or mitigate negative impacts. Article 120 of this law prescribes that water permit determines manner, conditions and a scope of water usage and waste water discharge , as well as manner and conditions for storage and discharge of dangerous and other substances which might cause water pollution, and also conditions for other activities i.e. works which might have impact on water regime. This means that water permit might be a right moment to require from the investor to oblige and prove that guaranteed minimum shall be provided once the water permit is issued.

Chapter IV refers to concessions in the field of water and water assets. It defines the subject of the concessions at the public water asset, how the decision on awarding concession and cessation of concession is done. Article 137 defines that contract on concessions, besides the basic elements determined by a law on concessions of natural assets, also stipulates among other rights and obligations of concessionaire to maintain the water regime in the water stream and at coastal land, to preserve water and coastal ecosystems. Providing a guaranteed minimum, as prescribed by article 54, would contribute fulfilling this obligation.

Chapter V refers to the limitation of rights and obligations of owners and users of land and water supply facilities and water management organization. This is extremely important for preservation and maintaining natural and artificial water bodies and protective and other water objects, prevention of the disturbance of the water regime, implementation of the protection from harming effects of water, as well as environmental protection.

Organization of the water management authorized bodies for the implementation of the Montenegro Water law, Water advisory committee, the way of its functioning and water information systems are defined in the chapter VI. The inspection surveillance related chapter VII defines the relevant ministries and local government bodies oversee the implementation of the provisions of this Act.

When it comes to environmental flow (EF), the term as such is not mentioned in the text of the Water Law of the Republic of Montenegro.

Article 54 of the Water Law prescribes that when abstraction of surface water is performed, the downstream of the water intake, a guaranteed minimum must be provided. Furthermore, the same article stipulates that the Ministry of Agriculture, Forestry and Water management shall issue a regulation that closer define a method of determining the guaranteed minimum, taking into account the needs of ensuring good status of water, which is one of the main objectives of this Water Law.

Article 164 of Water Law prescribes that a legal entity, entrepreneur or the competent authority will be fined by fifty to two hundred fifty times of the minimum wage in the Republic of Montenegro, if, as defined by paragraph 3 of this Article, do not provide a guaranteed minimum downstream of the water intake, in accordance with regulation defined under Article 54, paragraph 1, when performs an abstraction of surface water.

Above mentioned regulation, defined under Article 54, paragraph 1, of Water Law of Montenegro was issued by Ministry of Agriculture, Forestry and Water management of Republic Montenegro in 2008 and entitled as: "Rulebook on the method of determining the guaranteed minimum flow downstream of water intake".

1.2 Rulebook on Guaranteed Minimum Flow Review

Article 1 of this rulebook stipulates that this regulation shall define the method of determining the guaranteed minimum flow downstream of water intake. Article 2 defines that for the abstraction of surface water, the user will determine by appropriate documentation a guaranteed minimum, which ensures their good status downstream of water intakes for the survival and development of downstream ecosystems/biocenosis. Processing documentation should include all factors of importance for ensuring good water status (biological elements, hydro morphological elements, chemical and physically-chemical elements, elements of general and specific polluting substances).

This regulation, further on, defines in Article 3, that in the process of preparation of technical documentation, the investor also submits, to the local authorized body for water management and the local government, the relevant evidence on the impact of planned water intake to water regime, downstream of water intake. Paragraph 2 of this article stipulates that authorized body from paragraph 1, can ask for an expert opinion from the relevant scientific and technical institutions, for the part of the documentation relating to the guaranteed minimum, for those facilities for which water act is being issued.

Within Article 4, it is prescribed that guaranteed minimum must be in accordance with the water baseline document of Montenegro and water management plans and cannot be granted for a period longer than the validity of the acts referred to in Article3, paragraph 2 of this Regulation.

Even though the Article of 54 of the Water Law defines that this regulation entitled "Rulebook on the method of determining the guaranteed minimum flow downstream of water intake", should closer define a method of determining the guaranteed minimum, this regulation does not describe and define methodology for determination of ecologically acceptable flow/guaranteed minimum as it is stipulated by Water Law and above mentioned regulation.

This regulation defines, very generally, that for the abstraction of surface water, the user will determine by appropriate documentation a guaranteed minimum without defining the context of such documentation. It does not stipulate in details the methodology for determination of ecologically acceptable flow, necessary investigations taking into account specifics of the local ecosystem and seasonal variation of the flow, procedures for determination of this flow, as well as the monitoring or reporting on ecologically acceptable flow. This regulation also does not define the objectives of

environmental protection with ecologically acceptable flow, the places for determination of ecologically acceptable flow, how this flow is determined for certain types of water bodies.

Thus, it can be concluded that "Rulebook on the method of determining the guaranteed minimum flow downstream of water intake" does not stipulate how the ecologically acceptable flow is calculated and on basis of which parameters and hydrological data, what is, at the end its purpose.

2 NEEDED ENVIRONMENTAL FLOW REGULATION STRUCTURE

To meet the actual needs of article 54 of the Water Law, to issue a regulation that closer defines a method of determining the guaranteed minimum, taking into account the needs of ensuring good status of water, such regulation should have at least the following parts:

1. **Chapter I GENERAL PROVISIONS**, aiming to define act purpose, which is to regulate the manner of determining the environmental flow (EF) as integrated part of RBMPs, methodology and research needs, taking into account the specificities of local ecosystems and seasonal variations in flow regime, procedure to determine these flows, monitoring and reporting on the EF. The same chapter should define Scope on Regulation which should include:
   - Objectives of environmental protection with the EF - to achieve good ecological status of all water bodies in Montenegro
   - Conservation objectives of protected areas, as well as habitats and endangered species
   - help define and achieve good potential of heavily modified water bodies
   - help define and achieve good quantitative status of groundwater

   The same chapter should define Sites for determining EPP, so as eventual exemptions of the by-law application. Definitions of terms used would be defined within the same chapter too.

2. **Chapter II METHODOLOGY FOR DETERMINING ENVIRONMENTAL FLOW** should define selection of method(s) for determining EF, considering the ecological relevance of the water body, needs and goals of protecting water bodies and the water users. It does not need to refer to a single method, but may define different cases where appropriately advised methods would be applied. EF evaluation needs to be defined besides surface waters also for lakes, wetlands, and heavily modified water bodies.

   It would be advised to propose at least one quick hydrological method for general purpose of non-sensitive water courses, but to define separate methodology for areas of high ecological values (e.g. protected areas with exceptional conservation values - presence of threatened habitat or species, or specific lakes or wetlands).

   Depending on the potential impact of the water intake infrastructure to the natural hydrological regime of the body of water, it is advised to determine the hydrological components of the EF that are significantly affected, such as minimum flows, seasonal variations and flushing flows.

Chapter should also define the characteristics of hydrological time series that should be used for EF evaluations using hydrological method, so as provide details on EF evaluation report structure.

3. **Chapter III MONITORING AND REPORTING** should define Monitoring requirements for each defined method of EF evaluation, so as structure for Reporting on EPP monitoring.

4. **Chapter IV TRANSITIONAL AND FINAL PROVISIONS** would regulate position of Existing water rights and concessions, eventual Exceptions in determining EF on existing water rights and concessions, Unresolved requests for the issuance of water acts, so as entering into force of the by-law.

3 LIST OF CONSULTED MONTENEGRIN LEGAL REGULATIONS

1. Water Law of Republic Montenegro („Official Gazette of Republic Montenegro“, No. 27/07);
2. *Law on amendments of the Water Law of* Republic Montenegro („Official Gazette of Republic Montenegro”, No. 32/2011);
3. Rulebook on the method of determining the guaranteed minimum flow downstream of water intake („Official Gazette of Republic Montenegro”, No. 22/2008).

4 WORKSHOP IN PODGORICA

Based on the above assessment workshop on environmental flow was prepared and delivered to representatives of Montenegrin public administration having any responsibility related to water management. Workshop was scheduled for March 7 and Invited were:

Table 1 List of invitees for the workshop in Podgorica

Name	**Institution**
Ivana Vojinovic, Assistent-minister	Ministry of Sustainable Development and Tourism
Andro Drecun	Ministry of Sustainable Development and Tourism
Milena Kapa, Senior advisor	Ministry of Sustainable Development and Tourism
Daliborka Pejović, Director	Environmental Protection Agency
Velizar Vojinović, Assistent-minister	Ministry of Agriculture and Rural Development
Zorica Đuranović, Advisor	Ministry of Agriculture and Rural Development
Dragana Djukić, Advisor	Ministry of Agriculture and Rural Development
Zoran Janković, Director	Directorate for Waters
Zdenka Ivanović	WB project
	Water management inspection
Sonja Kralj, Expert for copepodae	State Institute for Nature Protection
Danilo Mrdak	Faculty of Science - Department for Biology

Workshop content was drafted during February by CESD and after being commented by Green Home it was revised and appropriate powerpoint presentation was prepared. Workshop final fine tune arrangements were agreed the day before, on March 6 in Podgorica. It was delivered at premises of the Montenegrin Ministry of Sustainable Development and Tourism in Podgorica, started at 10 AM on March 7. Finally the following participants were present at the workshop, where still all of the invited institutions had their representatives present, even though with several personal replacements:

Table 2 List of Podgorica workshop participants

Name	**Institution**
Ana Pavičević	Ministry of Sustainable Development and Tourism
Milena Kapa	Ministry of Sustainable Development and Tourism
Milica Vukčević	Environmental Protection Agency
Lidija Šćepanović	Environmental Protection Agency
Zorica Djuranović	Ministry of Agriculture and Rural Development
Dragana Djukić	Ministry of Agriculture and Rural Development
Ivana Bajković	Directorate for Waters
Sonja Kralj	State Institute for Nature Protection
Danilo Mrdak	Faculty of Science - Department for Biology
Nataša Kovačević	Green Home
Jovana Janušević	Green Home

Workshop lasted for three hours, where the Consultant Branko Vucijak presented concept of environmental flow (EF), different types of EF evaluations, experiences of WWF project and related activities on EF, so as the structure of environmental flow by-law. Discussed was also Montenegrin legislative environment related to this topic.

It was commonly concluded that actually EF concept as such is not fully reflected in the Montenegrin legislation, and is weakly replaced by practically unclear definition of guaranteed minimum flow. The full concept of EF evaluation and a number of different methodologies was not previously known to most of the participants. The division of responsibilities related to licencing and permitting seems to be disputable between different authorities, what may bring problems in the future EF implementation, if not being settled before. At present situation is such that most of the requests for the water intake or modifications of water regime are submitting also environmental impact assessments where the "guaranteed minimum flow" is assessed and result is provided. But since there is no clear methodology for justification of such evaluations, that means that actual acceptance or rejecting of such results is based only on individual feelings of the reviewer and could hardly be justified at eventual court cases.

Common conclusion was that there is a need for capacity building of the public administration anyhow responsible for water management and that any support into that direction by Green Home would be highly appreciated.

5 CAPACITY BUILDING OPTIONS

Since the lack of the knowledge on environmental flow concept and of the specific evaluation methodologies was recognized as the key obstacle for better inclusion of EF into the water management practice of Montenegro, it is concluded that capacity building in this area for the key Montenegrin water administration is really a necessity. It should be focused at least to the following institutions: Ministry of Sustainable Development and Tourism - Environment department (sector), Ministry of Agriculture and Rural Development - Water Management department, Directorate for Waters, but it may be advised also, eventually at more limited level, to the Ministry of Economy - Energy department, State Institute for Nature Protection and Environmental Protection Agency.

Capacity building may compose of the following:

- Exchange visits to the appropriately selected water administration of other countries;
- More operational workshops with practical exercises using available local data or high quality trainings on specific demand-driven topics related to environmental flow and evaluation methods;
- Field work - case studies, where team(s) of experts would practically test some selected methodologies at pilot sites of special interest.

It would be recommended to combine all three types of the capacity building approaches, where probably exchange visits and trainings should be initially organized, to achieve the level where case studies would become appropriate.

5.1 Exchange visits

Exchange visit should be organized to a country that already has adopted and implemented specific EF legal regulations. Since Montenegro is on the road towards EU accession (as Candidate country), it would be good that such country is EU member. As good candidates for such a visit, Spain and Slovenia as EU members could be mentioned, so as Bosnia and Herzegovina as neighbouring country also streaming towards EU accession. Final selection should be finally made based on technical and financial opportunities available.

5.1.1 Spain

The policy of Spain in terms of the water management is based on the principles of the Water Framework Directive. A variety of types of infrastructure has been constructed in Spain (more than 1200 big dams) in areas of high environmental interest and these may significantly affect the conservation of habitats and the species living in these ecosystems. Maintenance of these functions as connectors and habitats for other living creatures is one of the key issues for the Spanish water administration. It is thus setting out the measures to be taken to ensure that water-based species can complete their biological cycle and continue to migrate along watercourses. To do this, the connectivity of these watercourses is to be ensured, along with the correct conservation of a system of environmental flows.

Institutions to visit in Spain may include:

- General Directorate for Water of the Ministry of Agriculture, Food and Environment (since December 2011), responsible of the hydrological planning, through the National Hydrological Plan and the River Basin Management Plans. . This Directorate developed the Spanish Sublaw in Environmental Flows, known as the "Hydrological Planning Technical Guidance" (Ministerial Order ARM/2656/2008)

- Catalan Water Agency, responsible for the development of methodological tools for determining environmental flow regimes considering different functional components (minimum flow, seasonal variability and floods).

- Júcar Water Agency, that developed pilot cases for the conceptual and methodological development of the "Hydrological Planning Technical Guidance" in the basin).

5.1.2 Slovenia

Slovenia is another EU country that uses the principles of the Water Framework Directive for water management. As a part of former Yugoslavia, Slovenia owns an an historical heritage that makes it closer to Montenegrins. In 2009 Slovenia adopted by-law on environmental flow (Uredbo o kriterijih za določitev ter načinu spremljanja in poročanja ekološko sprejemljivega pretoka) which is till now showing all its advantages and disadvantages.

Institutions to visit in Slovenia may include:

- The Institute for Water of the Republic of Slovenia (Inštitut za vode Republike Slovenije - IzVRS), responsible for the development of an innovative water policy and contributing to social development and quality of life of the individual, including adverse effects of human activities to water and, in turn, contribute to the reduction of adverse effects of water to human lives and property. Experts of this institute developed Slovenian EF by-law, so as they were engaged in another project of potential interest for Montenegrin administration which is the Project CH2OICE (Certification for HydrO: Improving Clean Energy). This project aimed at developing a technically and economically feasible certification procedure for hydro power generation facilities of high environmental standard, being explicitly coherent with the requirements of the Water Framework Directive, to be implemented in "green labelled" electricity products, and being integrated, as much as possible, with existing EU tools.

- Slovenian Environment Agency, that performs expert, analytical, regulatory and administrative tasks related to the environment at the national level. Its mission is to monitor, analyse and forecast natural phenomena and processes in the environment, and to reduce natural threats to people and property, what includes the following responsibilities: ensuring legal protection and professional assistance to participants in environmental encroachment procedures; ensuring high-quality environmental data; raising the awareness of people and institutions about the environment and environmental issues.

5.1.3 Bosnia and Herzegovina

The next appropriate option would be visit to Bosnia and Herzegovina (BiH), as being a neighbouring country that has made steps towards environmental flow evaluations inclusion into its legislation and operative river basin management plans. Also once being part of former Yugoslavia, it has partly the same historical heritage as Montenegro, what in social sense brings it close to Montenegrins. Sharing accession process is another strong point of connection, so as neighbouring countries they also share some of the river basins. In 2010 and 2011 WWF/CESD project in BiH drafted by-law on environmental flow (Pravilnik o ekološki prihvatljivom protoku) which is still discussed within the public water administration and is expected to be adopted, after eventual additional revisions.

Institutions to visit in Bosnia and Herzegovina may include:

- Water Agency for Trebišnjica River District Trebinje of Republic of Srpska, Bosnia and Herzegovina ("Agencija za vode oblasnog riječnog sliva Trebišnjice" Trebinje), responsible for, among others, organizing hydrological and water quality monitoring of water of part of Neretva with Trebisnjica basin within the territory of Republika Srpska, one of the two BiH constitutive entitites, so as preparation of integrated river basin management plan, including EF evaluations.

- Agency for Watershed of Adriatic Sea Mostar, Federation of Bosnia and Herzegovina ("Agencija za vodno područje Jadranskog mora" Mostar), also responsible for, among others, organizing hydrological and water quality monitoring of water of part of Neretva with Trebisnjica basin within Federation of Bosnia and Herzegovina (FBiH), so as preparation of integrated river basin management plan, including EF evaluations. Both these agencies together constitute public institutions responsible for river basin management planning for the Adriatic river basins within Bosnia and Herzegovina and part of the Trebisnjica sub-basin belongs also to Montenegro.

- Hydro Engineering Institute Sarajevo and Center for Environmentally Sustainable development, as expert and NGO organizations whose experts were deeply involved into the preparation of the drafted by-law on environmental flow (Pravilnik o ekološki prihvatljivom protoku) and implemented most of the specific case studies in this area;

- Federal Hydro-Meteorological Institute, responsible for monitoring and data management on water level for more than 40 locations at FBiH territory. More than a half of locations/hydrological stations are equipped by automatic stations with remote data transfer. After admission and primary control, data is used to be stored in hydrological data base. These data are supposed to be used for EF evaluations by any of the hydrological methods.

- Two more options would be Agency for Watershed of Sava River basin Sarajevo, Federation of Bosnia and Herzegovina ("Agencija za vodno područje slivova rijeke Save" Sarajevo), and Water Agency for Sava River District Bijeljina of Republic of Srpska, Bosnia and Herzegovina ("Agencija za vode oblasnog riječnog sliva Save " Bijeljina). Both these agencies together constitute public institutions responsible for river basin management

planning for the Danube river basin within Bosnia and Herzegovina and part of the Drina sub-basin belongs also to Montenegro.

5.2 Workshops/trainings with topics on environmental flow and evaluation methods

Strengthening the capacity of institutions and organizations addressing environmental flow is a necessity. In general it is the case even in the EU countries where i) EF related studies and programs within the administrations, institutions and agencies are understaffed and lack sufficient experience in these topics ii) Water Agencies do not have adequate technical staff for the study and application of EF regimes.

The situation is not better in Montenegro. The ultimate objective of such workshops is to improve knowledge in order to translate EF concepts into a practical tool to achieve the objective of good water quality status in the protected areas, natural water bodies and heavily modified water bodies. This includes the identification of those biological indicators that better determine the ecological status in water bodies affected by hydrological changes.

Such trainings should include also practical examples and exercises with available local data. Topics to be recommended include the following:

- EF evaluation methodology types in general
- Introduction to Hydrological methods and Look-up tables
- Introduction to Extrapolation methods
- Introduction to Hydraulic methods
- Introduction to Habitat simulation methods
- Introduction to Holistic methods
- Characterization of common and extreme values of flows (minima and maxima) and their trends of evolution
- Hydrological change in rivers and wetlands as a result of the water use
- DATA
    - Identification of available hydrological time series at a daily scale, with a minimum length greater than 20 years
    - Compilation of hydrologic data
    - Existing hydrological information from the gaging station network, data from the water balance in reservoirs or rainfall-runoff models developed for this purpose

- Potential use of data from adjacent basins and use of hydrological techniques suitable for this purpose
- Identification of series in natural regime and its potential restitution from modified hydrologic series
- Identification of relevant spatial and temporal gaps in hydrological data

– Flow components to consider
  - Minimum flows and their distribution throughout the year
  - Maximum flow rates and their distribution throughout the year
  - Flood Regime
  - Rate of change of the flows

– Detailed selected hydrological methods, appropriate for Montenegrin conditions (to include additionla biological and chemical parameters)

– Detailed selected Habitat simulation and Holistic methods, appropriate for Montenegrin conditions

– Characterization of the natural regime

– Practicle work with available hydrology data, with 3-5 different hidrological methods, and results comparisons

5.3 Field work - case studies

Another capacity building option, but not recommended to be implemented before the option(s) above would be defined and delivered, is to build case studies for selected pilot river section(s). Such sections should be selected in areas of high conflicting interests, both for some change of water regime (water intake for supply or irrignation purposes, energy infrastructure or other) and for nature conservation purposes. More desirable areas are those having observed hydrological data for at least 30 years. Team(s) of experts, including at least an hydrologist, biologist and chemist, should be created to test some selected methodologies at these pilot sites.

Recommendations for case studies can be grouped into three time horizons:

<u>Short-term work</u>

Several (recommended 3-5) hydrological methodologies for EF evaluation should be initially selected for testing purposes. All should be used for EF evaluation at the selected pilot sections, with the same hydrological data input. Results should be compared and analyzed. Appropriatness of the results achieved should be discussed. If none of the selected methodologies would be accepeted as appropriate, another selection set should be delegated and the whole process restarted.

Medium-term work

If there would be common understanding that some of the tested methodologies is appropriate for the whole Montenegro or its parts, then it should be replicated at other pilot sections. The case studies should be expanded, refining the recommended methodologies and meeting the real possibilities of application in Montenegro.

E-flows results of previous studies and some of the components of the proposed environmental flows must be contrasted with the ecological theory and international experiences (e-flows reference values) and refined such as flushing flows, the seasonal pattern of base flows, e-flows in times of drought, etc. Try to select or develop, and test specific methodology for wetlands.

Final result of this phase should be drafting by-law on environmental flow, that should replace existing Rulebook on Guaranteed Minimum Flow Review. This by-law, after public discussion procedure and final revisions and fine-tuning, should be declared by the Ministry of Agriculture and Rural Development. Structure of sucg regulation is already described within the chapter 2.

Long-term work

Implement detailed fundamental research on subjects about which little is known, including the conservation status of aquatic species, dependence of these species of e-flows, relate water quantity and quality, natural hydrological regimes, connectivity between surface waters and groundwaters, etc., all specifically for Montenegro. Follow results of EF implementation and adjust regulations accordingly, if needed.

6 FINAL CONCLUSIONS

This report provides review of the most relevant Montenegrin legislation related to water management and environement flow in specific, analysis of the workshop results, delivered in Podgorica on March 7 2012, so as recommendations for capacity building based on previous steps. It also includes recommendation on introducing EF concept into Montengrin legislation. It is expected that tho whole process till reaching effective environmental flow by-law in place and fully implemented will last several years and probably would not be reached within the scope and timeframe of a signel project, but it is still important to initiate this process as soon as possible.

Annex 1 - RECOMMENDATIONS FOR LEGISLATION CHANGES

	LEGISLATIVE / REGULATION	REMARKS
1.	Water Law / Zakon o vodama (Official Gazette / "Službeni list RCG", 27/07)	Align with recommendations - details are provided below
2.	Rulebook on Guaranteed Minimum Flow Downstream of Water Intake / Pravilnik o načinu određivanja garantovanog minimuma proticaja nizvodno od vodozahvata (Official Gazette / „Službeni list RCG“, 22/08)	Align with recommendations - details are provided below

WATER LAW - RECOMMENDATIONS			
RECOMMENDATIONS	**1.**	**RECOMMENDATION**	**Revise article 5 point 32 where the Guaranteed Minimum Flow is defined; replace it with the definition of Environmental Flow.**
		JUSTIFICATION	Article 5 point 32 defines „guaranteed minimum”, which is defined as a “flow that must be provided downstream of water intake for survival and development of downstream ecosystems/biocenosis”. But this definition is obsolete and misleading towards the conclusion that such flow should be constant during the year.
		IMPLEMENTATION MODE	Replace article 5 point 32 with the following definition: „Environmental Flow represents the minimum flow that must be provided downstream of water intake or any other water regime modification, that varies during different seasons, which ensures the preservation of the natural equilibrium and preservation of water-dependent ecosystems.”
	2.	**RECOMMENDATION**	**Revise article 54 of the Water Law that prescribes that when abstraction of surface water is performed, the downstream of the water intake, a guaranteed minimum must be provided.** Furthermore, the same article stipulates that the Ministry shall issue a regulation that closer define a method of determining the guaranteed minimum, taking into account the needs of ensuring good status of water, which is one of the main objectives of the Water Law *(“Prilikom zahvatanja površinskih voda mora se nizvodno od zahvata obezbijediti garantovani minimum.* *Ministarstvo donosi propis kojim se bliže utvrđuje način određivanja garantovanog minimuma, uzimajući u obzir potrebe obezbjeđivanja dobrog statusa voda.“).*

		JUSTIFICATION	Article 54 defines only water intake as condition for evaluating guaranteed minimal flow, thus neglecting other forms of changing water regime. Article should be revised in order to relate to the environmental flow concept and to all types of water regime changes.
		IMPLEMENTATION MODE	Article 54 should be revised to embrace all water regime changes and to adopt environmental flow concept. Possible wording follows: "*Environmental flow shall be determined on the basis of investigations and in accordance with the methodology of its determination as defined by the regulation referred to in paragraph 2 of this Article.* *The Minister of Agriculture and Rural Development, in agreement with the Minister with competence for the environment, enacts a regulation defining the method of determining environmental flow. In particular, this regulation includes the methodology and necessary investigations, taking into account the specific features of the local ecosystem and seasonal variations in flow and the procedures for determining the said flow.* *The costs of the necessary investigations shall be borne by the investor or user*."
	3.	**RECOMMENDATION**	**Revise article 164 point 3 that prescribes that a legal entity, entrepreneur or the competent authority will be fined by fifty to two hundred fifty times of the minimum wage in the Republic of Montenegro, if, as defined by paragraph 3 of this Article, do not provide a guaranteed minimum downstream of the water intake, in accordance with regulation defined under Article 54, paragraph 1, when performs an abstraction of surface water.**
		JUSTIFICATION	Article 164 point 3 should be aligned with the changes to be done in the article 5 and article 54, thus replacing term of guaranteed minimum flow with the environmental flow.
		IMPLEMENTATION MODE	Article 54 should be revised to adopt environmental flow concept. Possible wording follows: "*Legal entity, entrepreneur or the competent authority will be fined by fifty to two hundred fifty times of the minimum wage in the Republic of Montenegro, if, as defined by paragraph 3 of this Article, do not provide a environmental flow downstream of the section where the water regime is changed, in accordance with regulation defined under Article 54, paragraph 1.*"

RULEBOOK ON ENVIRONMENTAL FLOW - RECOMMENDATIONS			
RECOMMENDATIONS	**1.**	**RECOMMENDATION**	**Revise the whole rulebook, present one does not respond to needed environmental flow regulation.**
		JUSTIFICATION	Rulebook on the method of determining the guaranteed minimum flow downstream of water intake does not stipulate how the environmental flow is calculated and on basis of which parameters and hydrological data, what is, at the end its purpose.
		IMPLEMENTATION MODE	To meet the actual needs of article 54 of the Water Law, to issue a regulation that closer defines a method of determining the environmental flow, taking into account the needs of ensuring good status of water, this regulation should be structured as follows: 1. Chapter I GENERAL PROVISIONS, aiming to define act purpose, which is to regulate the manner of determining the environmental flow (EF) as integrated part of RBMPs, methodology and research needs, taking into account the specificities of local ecosystems and seasonal variations in flow regime, procedure to determine these flows, monitoring and reporting on the EF. The same chapter should define Scope on Regulation which should include: – Objectives of environmental protection with the EF - to achieve good ecological status of all water bodies in Montenegro – Conservation objectives of protected areas, as well as habitats and endangered species – Help define and achieve good potential of heavily modified water bodies – Help define and achieve good quantitative status of groundwater – The same chapter should define Sites for determining EPP, so as eventual exemptions of the by-law application. Definitions of terms used would be defined within the same chapter too. 2. Chapter II METHODOLOGY FOR DETERMINING ENVIRONMENTAL FLOW should define selection of method(s) for determining EF, considering the ecological relevance of the water body, needs and goals of protecting water bodies and the water users. It does not need to refer to a single method, but may define different cases where appropriately advised methods would be applied. EF evaluation needs to be defined besides surface waters also for lakes, wetlands, and heavily modified water bodies. It would be advised to propose at least one quick

			hydrological method for general purpose of non-sensitive water courses, but to define separate methodology for areas of high ecological values (e.g. protected areas with exceptional conservation values - presence of threatened habitat or species, or specific lakes or wetlands). Depending on the potential impact of the water intake infrastructure to the natural hydrological regime of the body of water, it is advised to determine the hydrological components of the EF that are significantly affected, such as minimum flows, seasonal variations and flushing flows. Chapter should also define the characteristics of hydrological time series that should be used for EF evaluations using hydrological method, so as provide details on EF evaluation report structure. 3. Chapter III MONITORING AND REPORTING should define Monitoring requirements for each defined method of EF evaluation, so as structure for Reporting on EPP monitoring. 4. Chapter IV TRANSITIONAL AND FINAL PROVISIONS would regulate position of Existing water rights and concessions, eventual Exceptions in determining EF on existing water rights and concessions, Unresolved requests for the issuance of water acts, so as entering into force of the by-law.