## МЕЃУНАРОДНА НАУЧНА КОНФЕРЕНЦИЈА

# СОВРЕМЕНИТЕ ТРЕНДОВИ НА ОПШТЕСТВЕНАТА КОНТРОЛА НА КРИМИНАЛОТ

30-31 Мај 2016, Охрид

Tom IV

Скопје 2016

### INTERNATIONAL SCIENTIFIC CONFERENCE

# CONTEMPORARY TRENDS IN SOCIAL CONTROL OF CRIME

**30-31 May 2016, Ohrid** 

**Volume IV** 

Skopje 2016

#### Издавачи:

Универзитет "Св. Климент Охридски" Битола Факултет за безбедност – Скопје

#### За издавачите:

проф. д-р Сашо Коруновски, ректор на Универзитетот "Св. Климент Охридски" – Битола проф. д-р Оливер Бачановиќ, декан на Факултетот за безбедност – Скопје

#### Компјутерска обработка:

Оливера Трајанова Ѓорѓијовски Кемал Рушид

#### Печати:

АД "Ван Гог" - Скопје

#### Адреса на издавачите:

Факултет за безбедност 1000 Скопје П. Фах 103 тел: 022546211

Универзитет "Св. КлиментОхридски" 1ви Мај б.б. 7000 Битола,

тел: 047223788

#### **Publishers:**

University "St. Kliment Ohridski" Bitola Faculty of Security- Skopje

#### For the Publishers:

Sašo Korunovski, Dr.Sc Rector of the University "St. Kliment Ohridski"- Bitola Oliver Bačanović, Dr.Sc Dean of the Faculty of Security- Skopje

#### **Computer Processing:**

Olivera Trajanova Gjorgjijovski Kemal Rushid

#### **Print:**

"Van Gog" - LTD Skopje

#### **Address of the Publishers:**

Faculty of Security1000 Skopje P.O. Box 103 tel: ++389(0)22546211

University "St. KlimentOhridski" 1 Maj b.b.7000 Bitola tel: +++389(0) 47223788

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### ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF) FOR FOSTERING ENVIRONEMTNAL PROTECTION AND SECURITY IN DRINA RIVER BASIN RIPARIAN COUNTRIES

#### Srna Sudar

Director of the Regional Environmental Centre in Montenegro e-mail: srnass@gmail.com

#### **Aleksandar Ivanov**

Faculty of Security – Skopje, Skopje, Idrizovo, Macedonia e-mail: aivanov@fb.uklo.edu.mk

#### Vladimir Cvetkovič

Academy of Criminalistics and Police studies, Belgrade, Serbia e-mail: vladimirkpa@gmail.com

#### Abstract

The trans-boundary nature of the Environmental issues is recognized as a fact, as in Science, so in practice and in politics. On a global level efforts are being made towards making the Communities resilient on Natural Hazards and Catastrophes that arises from them. This is most due of the fact that the Political borders between states are absolutely irrelevant for the Geography and the Natural processes that happens on Earth. One of the most challenging processes that the Human race is facing is the Climate change issue. Also, the level of drinking water, and most of all, the Water management which is being divvied between two or more states is one of the most common mentioned argument towards the understanding of the Environmental Security Doctrine. Thus, meaning that the access to drinking water especially as a result of water management of another country could be a reason even for war.

That is why this paper tries to answer some of the questions that arises from the fostered international waterway management between three Countries – Bosnia and Herzegovina (BiH), Montenegro (MNE) and Serbia (SRB), through the West Balkans Drina River Basin Management (WBDRBM) actions. These countries, Bosnia and Herzegovina (BiH), Montenegro (MNE) and Serbia (SRB) undoubtedly must strengthen the capacity to plan and implement integrated, cooperative management of the trans-boundary Drina River Basin (DRB) and address climate change adaptation throughout the DRB – based on "global best practices" and within the framework of integrated water resource management (IWRM) involving extensive stakeholder consultations to ensure adequate public participation. The two main questions that this paper is trying to answer are:

• The need for Multi-state cooperation to balance conflicting water uses in transboundary Drina waters is enhanced, while climate adaptation measures in policy and planning frameworks is mainstreamed.  A shared vision and technical cooperation frameworks agreed with sustainable financing identified, including a strategic action plan for more sustainable and balanced investments, including identified investments that would be the subject of the GEF Drina follow-up actions.

#### 1. INTRODUCTION

The climate change represents one of the most critical issues of our modern living. The science in the last 60-70 years is closely following the meteorological processes that results in a global rising of the average temperature.

The risks and the dangers are subject of intense scientific discussion in the economics, politics, culture, security. We are looking for links between risk, crises, security (Borodzicz, 2005), (Boin, Hart, Stern, & Sundelius, 2005), (Gunter Brauch, et al., 2011), (Belluck A., Hull, Benjamin, Alcorn, & Linkov, 2006), (Ganoulis & Simpson, 2006), the Environment and the security ( (Malish - Sazdovska, 2010), (Mileski, Ecological Security, 2006), (Mileski, Ecological Security - sustainable development sustainable security, 2011), (Barnett, 2001), (Deudney, 1990), (Floyd, 2010), (Hulme, 2009), (Aipas, Berskowicz, & Ermakova, 2011), (Matthew, Barnett, Macdonald, & O'Brien, 2010), (Simmons, 1999) (Dodds & Pippard, 2005), (Todorovič, 2009) and others, the Environment and the Sustainable development (Roger (Atkinson, Dietz, & Neumayer, 2007), (Baker, Sustainable Development, 2006), (Baker, Kousis, Richardson, & Young, 1997), (Danilov - Danil'yan, Losev, & Reyf, 2009) (Elliott, 2006), (Lafferty & Meadowcroft, 2000) (Marten, 2001) and as a result of these discussions and academic research works it is quite sure that interdependence is determined. The link between environment and all sciences exists because the term environment signifies the entity of everything that is surrounding us, the totality of the dead and the living nature into its total functioning and exchange.

The security, I would say, is a very "stretchable" concept. The individual elements of the perception of security only further contribute to the possibly increasing differences into its understanding.

The environment represents a field that comprises the interest of many scientific disciplines and as a result of such interest different scientific instruments are being created. In general, it can be observed both as an interest of the natural andas an interest of social sciences. In the social sciences of particular importance is the connection between the economics and the sociology on one hand and the technical and the natural laws on another. This, of course, results in the creation of the concept of sustainable development (Иванов, 2013).

The existence of the consequences for the human health over the last decades of the 20th - century have created social interest groups that enabled the creation of a system for Environmental protection, which is not completely finished i.e. is not yet utterly functional and operational (Иванов, 2013).

The theoreticians in a global sense recognize the changing societies which are closely related to access to information and the process of globalization. This process could be compared with the recognition of transition from the feudal towards a capitalist society by Marx. Today, according to Beck (Besk, 1986), in contemporary terms, we are talking about postindustrial, modern society in which people are becoming concerned with the risks associated with the food we eat, lacking the risk of food shortages. Comparing modern with the consumer society Fromm concluded that the orientation

towards consumption is resulting with suffocating the man and does not allow the spiritual, physical and intellectual development. It is interesting to look at Borodzic' example who says that the fears about the techniques of the modern food production are prevailing regarding the salmonella poisoning from eggs, infected animals, due to which, he says, there appears a mass phenomenon of vegetarianism in Europe.

The West Balkans Drina River Basin Management (WBDRBM), is divided between three countries which need to address the issues related to climate change adaptation. Also Bosnia and Herzegovina (BiH), Montenegro (MNE) and Serbia (SRB) need to meet objectives related to climate change adaptation (but also to climate change mitigation) and climate change resilience, through the financing of, and the building of capacity for interventions to prevent and deal with climate change-related disasters notably floods and droughts, and thus meet the short- and long-term objectives of the GEF Strategy on Adaptation to Climate Change.

## 2. THE DRINA RIVER BASIN (DRB) MANAGEMENT AND CLIMATE CHANGE

#### Climate change impacts and water resources status

The interconnections between climate change and water has been increasingly point of interest of scientists and consequently decision makers globally in past two decades. The evidence showed that climate change alteration induces changes in hydrological cycles, as a result of numerous feedback cycles, such as the one of global warming increasing the air capacity for water holding and thus magnifies the evaporation leading to increased air moisture, than to increased intensity of water cycling, which finally leads to changes participation's distribution, intensity and frequency. In addition the quantitative and qualitative status of water resources has been also affected by climate change - surface water quality(temperature, nutrient content), intensity and frequency of floods and droughts, water (peak demands during periods of drought), groundwater quality and biodiversity in aquatic systems, and in due course water availability (river flows and groundwater levels). Taking into account that freshwaters already suffer from intense human activities, their susceptibility to climate change impacts are even higher resulting in threat that restoration of some water bodies to the acceptable good status could be impeded.

It is projected that on a global scale and when it comes to the Europe, especially the south-eastern part the second half of the Century will be subjugated by the climate change changes in yearly and seasonal water availability, river flow seasonality and frequency (summer flows are projected to decrease in most of Europe, including regions where annual flows will increase; annual river flow is projected to decrease in southern and south-eastern Europe and increase in northern Europe), increased water demand for irrigation and urban supply (due to the higher temperatures), impacts on groundwater (due to sea-level rise, shrinking land ice and permafrost areas, declining groundwater recharge), extreme peak flows and prolonged low flows of rivers. For the coming decades, global warming is projected to further intensify the hydrological cycle, with impacts that will probably be more severe than those so far observed (EEA/JRC/WHO, 2008).

Evidently, these climate change and water interconnections and interdependences and climate change variability affects freshwater resources and any related socio-economic activities, induce security threat question of scarcity of essential natural resources for human existence and ultimately survival. Therefore, it shall be emphasized that 'doing

nothing' scenario is not an option, and one of the planning and strategic option is coordinated (joint) river basin management as rivers and water bodies in usually shared resources political readiness and will is needed to accept uncertainties and agree and implement first actions for adaptation/resilience to climate change. In order to be able to plan, implement and achieve results data, predictions/models and social behaviour should be taken into account and used for adaption and resilience action in any water management action. When a waterway or water body is shared among two or more countries, political willingness and acceptance of joint responsibility for management is ground for efficient preparedness as well as mitigation of climate change boosted with human /socio-economic activities.

#### **Drina River Basin (DRB)**

The Drina River Basin (DRB), with total surface area of 19,680 km², covers the northern half of Montenegro (MNE, 31.6% out of total watershed), Bosnia and Herzegovina (BiH, 37.1%) and Serbia (SRB, 30.5%), while less than 1% of the basin belongs to Albania. With its high flow volume (about 12 billion m³ annually) and good water quality, the Drina River Basin scores high on the list of areas with high endowments of natural resources and development opportunities in the region. It also has a significant hydropower generation potential (of which about 60% is reported to be still untapped) as well as tourist attractions (among others the UNESCO World Heritage Site of the Tara Canyon), and it is a source of abundant biodiversity. Mining, manufacturing, tourism and agriculture create other significant economic opportunities. Almost one million people live in the DRB, their settlements being concentrated along the Drina and its major tributaries.

In the 20<sup>th</sup> century, the utilization of hydropower potential has been a development priority in most of its sub-catchments. The hydropower use still plays a dominant role, both in terms of the operational impact of the existing reservoirs and hydropower plants, and by supporting national plans for further increase of renewable resources in countries' energy sector (e.g. small HPP/SHPPs), arising from the Energy Community obligation, to which all Drina River Basin countries are contracting parties (201ht)<sup>1</sup>. However, equally important present water usages in the basin, besides the energy production, are: use of water as a social good (e.g. drinking water supply and recreation), use for fishery (both commercial and sports), tourism, industry and mining, and to a lesser extent for irrigation. The biodiversity of the basin is becoming increasingly recognized, as the basin hosts numerous endemic species, and provides the space and sustenance of large important habitats (some in protected nature parks), that in turn support tourism and "green agriculture" economies.

The basin is also known for both floods and droughts, which increasingly demand to be mitigated. The Drina River Basin has experienced major floods with the loss of lives in the past decade, and most lately in 2010 and 2014, in all three riparian countries due to inadequate flood protection and preparedness. In parallel with the emergency response, it has been decided to start putting in place more robust policies, capacity and infrastructure to help minimize flood damages in sustainable and cost-effective manner. The Drina River Basin is characterized by extreme variability in discharge rates due to the terrain and climatologic conditions, creating high vulnerability in many locations of the basin to both floods and droughts. Absence of cooperation between two dominant water using sectors in

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<sup>1</sup>https://www.energy-

the basin, namely water management and energy generation, was found to be one of the weaknesses for 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 the summer) and agriculture. Climate variability and change are thought to be a critical and already on-going feature for the basin, as the river flow depends on snowmelt and rainfall. Both temperature and rainfall patterns are changing, which is likely to increase the likelihood of water shortages in the summer, and very high water discharges, and flooding, in the other seasons. In addition, the high run-off and geological conditions also cause high erosion degrees.

The basin is facing decrease of the population size, which is slowly declining, as there is lack of job opportunities and people are migrating to larger cities or abroad looking for work. In 2011, the Drina River Basin faced the unemployment ranging from around 19.7% for Montenegro, 22% in SRB to 27.6% for BiH. This is an additional reason why the local necessities need to be carefully studied and taken into account in the future development plans for DRB.

All above physical and natural characteristics of Drina River Basin, as well as economic and developmental potential strive for more efficient and closer cooperation between basin countries, especially of the water management and energy sectors, which has been a major weakness for implementation of flood protection and flood control activities. In addition, the natural uniqueness of Drina River Basin provides abundant source for cross-border cooperation, thus providing solid ground for further tourism and eco-tourism development, contributing and leading to economy revival of the region.

DRB countries pursue similar economic development objectives, share common heritage trends and development concepts, which all requires practical cooperation in the sphere of their interests, briefly presented above. The cooperation among countries should continue the collaboration which is occurring on the local level, among municipalities in DRB, where thirteen municipalities from the three countries have founded a joint platform as a Drina EU Region<sup>2</sup>.

## 3. INTEGRATED WATER MANAGEMENT AND THE CONVERGENCE WITH EU WATER DIRECTIVES

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 action should 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 sovereign rights and national/ entity development priorities, and because of the differences in the national/entity legal frameworks, and the need to harmonize, and
- at the aggregate level of the Drina Basin.

The water management, and its integration, will need to become increasingly consistent with the EU Water Directives and policies, such as the Water Framework

<sup>&</sup>lt;sup>2</sup> http://www.euroregiondsm.com/en/members.php

Directive, the Flood 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.

#### 4. COOPERATION IN THE BASIN

The cooperation is observed to be still weak among different users/sectors between the three countries, and with the 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 it 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 (hydro) power, nature conservation, tourism, and "green growth". Green growth strategies management and investment aim (in agriculture, energy, land use, etc.) is 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.

#### 5. ENVIRONMENTAL AND SOCIAL ASSESSMENT

The Environmental and Social Management Framework (ESMF) serves as environmental and social management guidance, including the Environmental and Social Management Plan. The Environmental and Social Management Framework (ESMF) has been prepared to assess the possible environmental impacts and to set up principles, rules, guidelines and procedures for preparation of site-specific plans to mitigate the possible negative environmental impacts of proposed investments.

Analysis of the necessity for environmental assessment of sub-actions has been based on the positive regulations in the field of environmental protection and impact assessments in Drina River Basin countries. The Environmental Assessment is given on a general ("generic") level and based on the level of sub-action information known at the time of preparation of this document (November 2015).

The overall WBDRBM actions' impacts are considered positive as they will strengthen the preparedness of countries of DRB for potential and possible climate change impacts on Drina River Basin water resource use and management, as well as mitigate or prevent risks pose by climate change to environment, humans and property. The positive impacts shall be observed on three levels: (a) cross-border/regional, (b) national and (c) local level.

- (a) On cross-border/regional level impacts will be experienced through: strengthening cooperation and coordination among relevant authorities in DRB countries, thus leading to more efficient and integrated water resource management in DRB; strengthening data gathering relevant hydro-meteorological data in DRB, which shall lead to more efficient monitoring of trends and provide base for effective resource management, preparedness for climate impacts, prevention and impact mitigation.
- (b) On national level, actions will support national preparedness for more effective water resource management and environmental protection from potential and actual climate change impacts. The pilot activities will increase and strengthen the level of surface water data gathering, underground data monitoring, efficient waste and waste water management in Drina River Basin.

(c) On local level - actions will contribute to effective local stakeholder engagement and rising awareness on climate change impact to water and environmental resources, and the actions that could minimize negative impact and/or foster resilience to it.

Pollution that can occur in various stages of construction, reconstruction, rehabilitation and/or repair is temporary in its scope and nature - and can be mitigated through the application of standard mitigation measures and good practices in engineering design, application of the code of good construction practice, and regular operation and maintenance.

The specific ESMF identified environmental issues requiring attention are direct consequence of human presence and assembly and construction/reconstruction works at location. Pollutions that occur in the phase of reconstruction, rehabilitation and/or repair are temporary in their scope and could be mitigated through application of standard safety measures and best practices in engineering, design, application of the code of good construction practice, and regular operation and maintenance.

The specific ESMF indicates generally positive environmental impact, with localized negative impact of certain pilot activities. Identified environmental issues requiring attention during the implementation of activities will arise as a direct consequence of human presence and assembly and construction/reconstruction works at specific locations. These are, for example drilling/excavation activities for flood protection measures, where the environmental impacts are expected to be local and occur during implementation/construction only. The implementation of the Environmental Management Plan (EMP) measures would minimise and prevent identified negative impacts, through set of specific environmental mitigation and monitoring measures, such as:

- *Health and safety issues-mitigation measure(s):* Workers' personnel protective equipment (PPE) will comply with international good practice; Appropriate fencing and signposting of the sites will inform workers of key rules and regulations to follow and emergency contact numbers;
- *Traffic safety-mitigation measure(s):* Existence of site-specific traffic management plans; organization of construction vehicles' movement; temporary traffic rerouting; regular vehicle and equipment maintenance;
- *Gas/emission control-mitigation measure(s):* compliance with emission standards as part of the annual vehicle registration process;
- *Dust control-mitigation measure(s)*: Wet areas of dust sources to minimize dust creation; control of vehicle speed;
- *Noise control-mitigation measure(s):* Use of vehicle/equipment with noise certificate; Schedule equipment movement during non-peak hours only; compliance with national legislation in respect to allowable noise levels; use of noise suppressing screen and barriers;
- Waste management-mitigation measure(s): Waste collection and disposal pathways and sites will be identified for all major waste types expected from construction activities; Mineral construction will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers.

In order to ensure the sustainability of environmental protection through mitigation measures set in the Environmental Management Plan (EMP), monitoring is prescribed ensuring the compliance with national legislation standards on pollution ceilings and relevant permits (construction permit, wastewater discharges, air quality, appropriate assessment, water permit, etc.). The EMP's mitigation measures encompass actions that

will reduce hazards, which could impact health and safety of the construction workers, and the public; measures related to soil and water pollution from oil and fuel, noise, air quality (dust), excavation of materials and disposal of surplus soil/earth and other materials; degradation of historical and cultural sites, etc. As identified, the attention shall be paid to chance findings of objects of archaeological or cultural value, during construction or research works. As stated in the relevant regulations on Cultural Heritage in DRB riparian countries, works will be suspended immediately if cultural/archaeology objects are found, and the contractor will inform the relevant authorities of these find(s).

#### **Ecological and Social Check-up forms**

The WBDRBM Screening Checklist, serve as a simple tool for identification of potential environmental and social impacts related to envisioned reconstruction / construction activities. Additionally, the checklist will also support decision-making process for the need of the preparation of the detailed EMPs or Resettlement Actions Plans (RAPs).

The WBDRBM screening checklist provides a set of associated environmental and social mitigation measures as well as monitoring measures that will help assess the implementation of the selected mitigation measures. The checklist-type format has been developed to provide "example good practices" and designed to be user friendly and compatible with the World Bank safeguard requirements.

The term reconstruction is understood to cover rebuilding of infrastructure after being damaged or destroyed to a previous state without change in its original purpose or increase of capacities.

The checklist-type format attempts to cover typical core mitigation approaches to civil and other reconstruction works with small, localized impacts on environment and human health. It is assumed that this format provides the key elements of an Environmental and Social Management Plan (ESMP) or Environmental Management Framework (ESMF), Resettlement Policy Framework (RPF) and Resettlement Actions Plan (RAP) to meet World Bank Environmental Assessment requirements under OP 4.01 and OP 4.12. The intention of this checklist is that it would be applicable as guidelines for the rehabilitation works contractors and constitute an integral part of bidding documents and contracts for contractors carrying out works (especially the World Bank-financed infrastructure rehabilitation activities). It consists of following major sections:

- 1. Administrative and institutional data: includes a descriptive part that characterizes the action, including administrative and institutional data and short description of action's technical content and location of works execution. This section could be up to two pages long. Attachments for additional information can be supplemented when needed.
- 2. Action exclusion criteria: includes a set of four questions that should help the evaluator to understand whether the action is suitable for financing under this financing scheme.
- 3. Environmental and social screening: includes set of question about possible environmental and social impact of an action where identified environmental and social issues can be checked in a simple Yes/No format. If any given issue is triggered by checking "yes", the corresponding mitigation and monitoring measures are to be implemented.
- 4. Summary of features of action and of its location indicating the need for specific ESMP development: includes a descriptive part that summarizes important

- conclusions about the identified environmental and social impacts, conclusion about possibility to mitigate impacts with available measures and indicating the need to develop a more specific ESMP for a specific activity.
- 5. Recording of decision: includes several options related to the final decision on a specific activity.

The Environmental and Social Screening section should be completed in four steps:

- Step 1 user should identify present or potential impacts of the action on environment among those listed in the column *Possible Environmental Impacts*. The appropriate Yes/No boxes adjacent to each impact identified should be checked.
- Step 2 for each impact identified, appropriate mitigation measures are listed in the column *Mitigation Measures*. One environmental or social impact can trigger one or several of the mitigation measures stated in the table. An attempt is to be made to implement all mitigation measures proposed. Following completion of monitoring activities, those measures that are actually implemented should be circled.
- Step 3 the monitoring parameters appropriate to mitigation measures among are listed in the column *Monitoring parameters*. The proposed monitoring parameters will be checked accordingly, as suitable. Decision on which of the monitoring parameters is optimal to monitor is based on the possibility of occurrence of the impact and its severity, cost of monitoring, etc. Following completion of monitoring activities, those parameters that are actually monitored should be circled.
- Step 4 –the Bodies (Proponent, Design Engineer, Contractor, etc.) listed in the column *Responsible body* are identified as responsible for implementing mitigation measure and/or conduct the monitoring. They should be notified of their obligations.

Leaving the box unchecked means that particular impact is not present or identified. For each impact box that is checked, at least one box in the columns for mitigation measures needs to be checked. The proposed monitoring measures will be checked accordingly, as suitable.

#### 6. CONCLUSIONS

Through 'enhanced dialogue and coordination' mainstreaming trans-boundary integrated water resource management (IRWM) and climate change adaptation in national planning, and sub-component, shared vision and technical cooperation frameworks will provide in three Drina river riparian countries, Bosnia and Herzegovina, Montenegro and Serbia, grounds for sustainable environmental protection and stability in joint integrated water management among Drina river basin riparian countries.

Envisioned WBDRBM components' activities include actions that comprise fostering and strengthening government and stakeholder cooperation in DRB countries, in the sphere of water management, hydrological data gathering, exchange and monitoring. These actions aim at understanding the climate change impact on Drina River Basin and to mitigate future adverse effects. Increasing and strengthening capacities of hydro-

meteorological services in the basin, together with some rehabilitation, reconstruction and replacement activities will result in better preparedness for potential negative occurrences (floods, droughts, etc.) and thus sustaining and preserving livelihoods on one side and environment and resources on the other. Through envisioned synergised and harmonised regional and national activities on all levels (state and local) the activities impact on environment and water management will be significant and positive, while minor negative impacts that will be a consequence of human presence and nature of construction works at specific locations will be mitigated at site using the set of specific mitigation measures.

The overall WBDRBM activities' impacts are considered generally highly positive as they will strengthen on regional, national and local level the preparedness of countries of Drina River Basin for potential and possible climate change impacts on Drina River Basin water resource use and management, as well as mitigate or prevent risks posed by climate change to environment, humans and property. Additionally, activities will result in strengthened cooperation and coordination among relevant authorities in Drina River Basin, more efficient and integrated water resource management in the basin, enhanced hydrometeorological data on surface and underground water resources, efficient waste and wastewater management in Drina River Basin and effective local stakeholder engagement and awareness raised on climate change impact to water and environmental resources.

Prepared generic EMP provides mitigation measures and monitoring structure for construction works, and or analyses that might take place within action implementation. Furthermore, legislative requirements for the need of preparing the environmental impact assessment of an action encompassing works and/or analyses in environment in all three Drina River Basin riparian countries shall be respected (relevant opinion on the need for undertaking the Environmental Impact Assessment (EIA) shall be sought, where applicable and needed), as well as relevant permits obtained.

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