

## **Albania and Montenegro: Creating an Integrated Water Resources Plan for the Buna / Bojana Watershed**



# Albania and Montenegro: Creating an Integrated Water Resources Plan for the Buna / Bojana Watershed

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**July 2017**

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## 1 Description of the Problem

### 1.1 The Buna / Bojana Watershed

The Buna / Bojana watershed is located in the south-eastern part of Europe in the Mediterranean region and is important because of its transboundary nature between Albania and Montenegro. The geographical area of Buna / Bojana encompasses the catchment of the Bojana river in Montenegro and of the Buna river in Albania. The boundaries of the watershed enclose transboundary and land-sea interactions, inland natural environmental systems, and the marine zone which interacts directly with the inland natural and built environment as well as the local administrative divisions of both countries (GWP-Med, 2015).

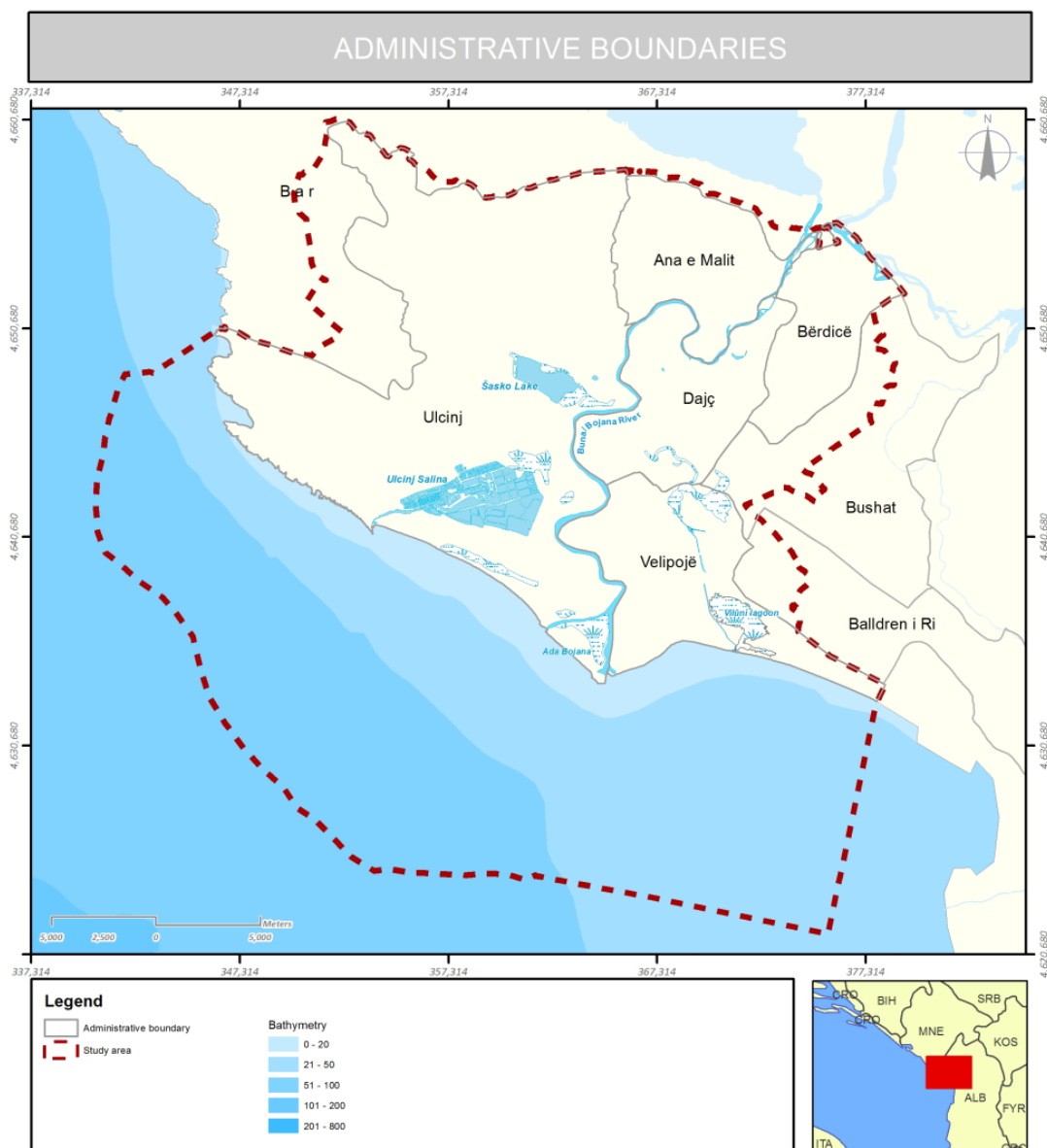


Figure 1: Physical characteristics of the Buna / Bojana watershed and its administrative boundaries (GWP-Med et al., 2015)

The Buna / Bojana river is a short 44 km river with the third largest annual mean discharge in the region, after the Rhone and Po, reaching 20km<sup>3</sup>/yr. The river begins at the southern outflow of the Shkoder / Skadar Lake and ends at the coastal zone of the Adriatic Sea, forming a delta of major ecological and touristic interest. Lake Shkoder / Skadar is the largest lake in southeastern Europe, situated close to the city of Shkodra, and receives water from the Great Drin River. The lake is protected under the RAMSAR Convention as it supports greater than 200 migratory bird species of international significance, as well as a highly diverse community of aquatic animals, plants, and fish (Regional Environmental Center Albania/RAMSAR, 2010). The respective regimes of Drin River and Lake Shkoder / Skadar directly influence the hydrological and ecological status, the aquatic quality, and the sediment regime of Buna / Bojana basin (European Commission, 2014). The river basin of Buna / Bojana is composed by limestone, sandstone, shales, and recent deposits whereas the marine zone is characterized by an extended continental shelf that reaches its maximum extension at about 60 - 80 km from the coastline. At the outflow of Buna / Bojana river, the deltaic landscape and the Ada island, an island of important ecological interest, were formed under high flood events. The delta includes several lagoon complexes and freshwater lakes (De Châtel et al., 2014)

The inland portion of the watershed includes agricultural land covering approximately 40% and several urban settlements on both sides of the river borders; on Montenegro's side the municipality of Ulcinj and on Albania's side four communes from the county of Shkoder and several smaller parts of other communes. Most of the settlements share similar economic and social challenges as well as environmental risks.

The complexity of the landscape components of the Buna / Bojana watershed, as well as its transboundary nature, make it an interesting case for study and analysis. Natural linkages between lakes and rivers, brackish waters and groundwater, inland and coastal zones in the area as well as the ongoing development of the socio-economic



*Figure 2: Coastal marine waters in Buna / Bojana river mouth (GWP-Med et al., 2015)*

activities, and the lack of legal framework for sustainable management represent the main aspects of the watershed required to be analyzed and further addressed. All the above will be discussed in the following chapters and focus will be given on the "Integrated Resource Management Plan for the Buna / Bojana area" developed for these needs which encourages strong transboundary governance and bilateral cooperation between Albania and Montenegro.

### 2.1 Current State

The political, social, and economic instability of the Balkans, and the market oriented reforms which were introduced after the collapse of communism, have had a great impact on the two countries divided by the Buna / Bojana river. Albania and Montenegro have different administrative structures and legal and institutional frameworks but share similar social development and economic activities. The shared land of Buna / Bojana watershed as well as that of Lake Shkoder / Skadar have forced the two countries to develop and strengthen their cross-border cooperation and come to bilateral agreements for the management of the area through a holistic approach.

The Buna / Bojana watershed includes a population of 53,000 people. Montenegro's demographic data in the inland area has been in decline compared to the growing population of the Albanian part. For both countries, the migration of people to more urban and coastal zones is very common. In the Montenegrin coastal part of the area, Albanians, Serbs, and Bosnians form strong minorities. During summertime, the population radically increases because of the touristic activity in the coastal area (GWP – Med et al., 2015).

Accession into the European Union is of high priority in both countries agendas. Montenegro is an active candidate, highly prepared and undertaking negotiations, whereas Albania is slowly getting into action. This accession could be a chance for more economic opportunities and financial investments. Both countries follow a similar approach for economic development, though the Albanian part of the Buna / Bojana watershed is remarkably less developed than the Montenegrin part. The main economic activity in the Albanian part is agriculture and stockbreeding, whereas in the Montenegrin territory, agricultural contribution to the overall GDP of the country is low. Fishing in lakes and in the sea is a main economic activity in both countries, supporting tourism (e.g. restaurants etc.) and livelihoods. Hunting is also very common especially in the Montenegrin part. The beautiful natural sites of the Buna / Bojana watershed, the rich cultural heritage from former civilizations of the area (e.g. ancient castles, medieval monasteries etc.), and the highly developed leisure activities on the coast attract thousands of tourists and urban dwellers annually. Intensive tourism development takes place in the coastal zone of Montenegro where the key tourist attraction is the large, sandy beach of Ulcinj, whereas in Albania, tourist development in the Velipoja commune is still low. Industrial activity recently rose in the Buna / Bojana area, after political and economic reforms in the Balkans, creating new job positions and opportunities (Schneider-Jacoby et al., 2006a).

The undeveloped remaining land in the Buna / Bojana watershed is covered by rich natural landscape. Both parts of the river borders contain forests and semi-natural areas including Maquis shrubland, beaches, sand dunes, and dry grasslands. Rare and endangered species dominate in the water bodies and wetlands of the Lake Shkoder / Skadar wetlands, where the outflow of the Buna / Bojana river and its deltaic area empty into the Adriatic Sea. These wetlands include 900–1,000 plant species and provide habitats to 25,000 wintering birds and at the delta more than 76% of migratory birds can be found (Schneider-Jacoby et al., 2006a). The wider region of the Buna / Bojana delta supports high reptile biodiversity and also provides a migration route for fresh water fish, linking the Shkoder / Skadar Lake and the Adriatic Sea. Ada island formed in the delta of the river is protected by the community of Ulcinj. The island is characterized by a natural mosaic of habitats formed by the dynamic growing delta of the Bojana River and is therefore protected under special laws for preservation of the entire Montenegrin coast. Areas of Albania such as Velipoja are also protected as a natural reserve. Wetland ecosystems can be found throughout the watershed area and are mainly important for water retention and flood control, while floodplain forests help humidify the region during summer Mediterranean droughts (Schneider-Jacoby et al., 2006a).

### 3.1 Pressures and Challenges

Extensive research has been carried out for the development of the “Integrated Resource Management Plan for the Buna / Bojana area” to identify the pressures on the remaining natural resources of the watershed. The challenges focus on the impacts of socio-economic activities and the hydro climate variability impacts on the inland, marine, and coastal environment. Apart from the problems acknowledged in the area of Buna / Bojana, it should be emphasized that the status of the

watershed is directly influenced by the upstream activities and water body conditions of the Great Drin River and Lake Shkoder / Skadar.

According to the World Bank, the Southeast Region of Europe will be severely impacted by global warming. Climate change variability, mainly reflected by temperature increase, extreme weather events such as droughts and flash floods, low precipitation, and sea level rise, highly impact the situation of the area, putting its households and agricultural land in danger. Sea level rise and storms



*Figure 3: Outflow of the Vau-I-Dejes dam, January 2010, (GWP-Med et al., 2015)*

can lead to severe flooding of the coastal areas and increase the salinity of freshwater bodies, affecting the ecosystem. Flood events also often occur at the lower Drin River of the Lake Skadar / Shkoder watershed, highly influencing the Buna / Bojana watershed. In 2010, severe floods were reported in the lower Drin - Buna / Bojana River and Lake Skadar / Shkoder due to heavy precipitation combined with strong winds at the outflow of the Lake (GWP-Med et al., 2015).

Hydro-morphological disturbances are often caused in the area due to the construction of dams along the Drin River for hydropower generation in Albania. As a result, perturbation in flow regime and sediment distribution regime on the island are impacted. Erosion in Drin river's tributaries also increases the sediment inputs to the Buna / Bojana River, resulting in coastal erosion and loss of coastal land. Along the Buna / Bojana river, dikes have been constructed for flood control using the inert materials extracted by its riverbanks and are radically changing the natural morphology (GWP- Med et al., 2015).

The hydrological regime of Buna / Bojana watershed is affected by the main economic activities including tourism, agriculture and livestock along the river, the inland and the coastal area of the watershed and above, as well as by the status of the Great Drin River and the outflow of Skadar / Shkoder Lake. Large amounts of pollutants derive from municipal wastewater whereas stockbreeding and agriculture are main sources of N and P respectively. As a result, eutrophication is increasing in marine waters and freshwaters. According to EU Water framework directive, the biological status of Buna / Bojana river is classified as "poor" and so is the coastal marine zone. The physicochemical quality of the river has been assessed from "good" to "moderate." Additionally, over-abstraction of groundwater related to socio-economic activities has vitally deteriorated the quality of underlying aquifers. Data and samples for the analysis of the status of the water bodies of the area were provided for the development of the Integrated Resources Management Plan for the Buna / Bojana area by the Albanian Authorities and the Montenegrin Ministry of Sustainable Development and Tourism (GWP-Med et al., 2015).

Anthropogenic activities in the region, mainly through uncontrolled coastal development, population growth, increased economic activities, and poor management of urban waste and wastewater are adding additional pressures on the watershed affecting both nature and human wellbeing. Regarding economic activities, agriculture was previously one of the main activities in the area. Unsustainable agricultural methods led to degraded water quality and significantly increased water consumption. Local biodiversity has also changed as new animals and plants are introduced, destroying the



traditional local diversity. Non-sustainable and illegal methods of fishing and hunting has increased pressure on wild species in the watershed, impeding fish migration routes and decreasing bird populations (GWP-Med et al., 2015). Forest deterioration has been observed due to increased industrial and touristic activity as well as poor conservation efforts. Tourism is rapidly developing on the coastal area and is impairing the natural resources of Buna / Bojana catchment area as a consequence.

Construction has expanded due to increased urban development after the 1990's, affecting mainly the coastal zone and urban centers. The lack of a sustainable planning strategy in Albania and a poor strategy in Montenegro has led to landscape and nature degradation of the area. In addition, basic infrastructure and municipal services are poor in both borders of the river and are unable to meet the needs of the rapid spatial transformation. Road networks are outdated and not well maintained, resulting in severe traffic jams especially in the summer months. Drainage channels are also blocked and badly maintained causing frequent flooding in both the Albanian and Montenegrin watersheds. The potable water sources and wastewater treatment plants are too few to meet the demand of the increasing population. Moreover, waste management systems are inadequate and unsustainable. In the Montenegrin area, solid waste is collected in sanitary landfills, whereas in the Albanian part, waste is dumped illegally into ditches, with a huge environmental cost for the river banks, groundwater and seawater quality. As a consequence, the inland environment and the water bodies of the area are highly polluted with consequent risks to human health (GWP-Med et al., 2015).



*Fig. 4: Unsustainable fishing methods, (GWP-Med et al., 2015)*

Regarding the legal framework in the area, it is acknowledged as a major challenge that both countries in the Buna / Bojana watershed are facing rapid changes in local policies, laws and institutions related to sustainable development, in order to meet EU requirements. Technical capacity is also rather weak, and so are the institutional and administrative capacities responsible for environmental policy-making and implementation. There is a significant lack of public participation and stakeholder engagement in decision making processes, although this is supported, legally, by both countries.

## 2 Actions Taken

To address the above challenges in the Buna / Bojana watershed in order to preserve natural resources, improve wellbeing, and increase economic prosperity, long term commitment and policy reforms and joint cooperation are required by both Albania and Montenegro governments. This could not happen without the support and participation of different stakeholders, as well as the strong involvement of EU institutions and global organizations.

Albania and Montenegro, in 2010 and 2012 respectively, ratified the protocol to the Barcelona Convention for the protection of marine environment and coastal regions for the Mediterranean through the protocol for Integrated Coastal Zone Management (ICZM) (European Parliament, 2000).



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The protocol is incorporated in various national and regional policies and strategic documents focusing on the socio-economic and natural linkages on marine environment and natural resources, including aquifers. ICZM enhances transboundary and national communication between governments and stakeholders to encourage sustainable approaches for conservation of coastal zones through the “use of the best available techniques and the best environmental practices and promote the application of, access to and transfer of environmentally sound technology, including clean production technologies, taking into account the social, economic and technological conditions” (Barcelona Convention, 2004).

The Integrated Water Resources Management Plan for Buna / Bojana area (“the Plan”) was developed as a pilot activity in the framework of the GEF UNEP/MAP Med Partnership Project demonstrating the implementation of the new Integrative Methodological Framework (IMF). The IMF supports and enables planners and interested parties to make efficient use of the limited resources in coastal zones. The Plan was completed over a 5-year time frame, with cooperation between Partner Organizations: the Regional Activity Centre for the Priority Actions Programme (PAP/RAC), Global Water Partnership Mediterranean (GWP-Med), UNESCO-International Hydrological Programme (UNESCO-IHP) and two teams of National (Albanian and Montenegrin) experts. The aim of the Plan as defined by the partners was “to support the efforts of the governments of Albania and Montenegro to improve the integrated management of the natural and anthropogenic environments in the Buna / Bojana area” (GWP-Med et al., 2015). Therefore, all partners jointly worked on an integrated approach to establish strategic and national action plans harmonizing legislation between the two countries. The Plan strictly follows the guidelines outlined in the EU Water Framework Directive, the ICZM Protocol, and the IMF but is shaped according to the local conditions and needs of the watershed.



*Figure 5: Final Consultation Meeting, Ulcinj, September, 2015 (GWP-Med, 2015)*

For the development of the Plan, an integrated approach was followed, linking the impacts of upstream activities to downstream areas and the ongoing interactions between inland, coastal, and brackish water in a transboundary context. Background data and key findings regarding the driving forces, the impacts, and the pressures of socio-economic activities and environmental factors were collected and further assessed by the partners. The goals for the Plan were set into a 15-year vision. Transboundary challenges as well as time frame constraints were encountered during the plan-making process. In addition, uncertainty in data and information were frequent due to lack of monitoring capacity; for example, collecting information regarding pollution sources from municipal solid and hazardous industrial waste was difficult in both countries (GWP-Med et al., 2015).

During the development of the Plan, several meetings took place. A Steering Committee was organized to allocate the organizational structure, purpose, roles, and process of the operational scheme of the Plan. Two stakeholder workshops at the transboundary level were held: one at the beginning to discuss the vision of the area, as well as one at the end of the process to present the key findings of the watershed analysis. Several focus group discussions with local communities took place to contribute valuable stakeholder analysis of the Buna / Bojana watershed. These meetings and

working groups to enhance public participation were part of the process of the development of the Plan.

The Plan was presented in September 2015 at the Final Consultation Meeting, organized by the partners of the project, under the auspices of the Montenegrin Ministry of Sustainable Development and Tourism, Municipality of Ulcinj, and with the participation of the Albanian Ministry of Economic Development, Trade and Entrepreneurship. More than 60 representatives of national, regional and local authorities, NGOs and academia from both countries were at the meeting. The Plan, developed following an integrated approach, recommended the following objectives:

- Enhance transboundary governance and cooperation for ecosystem conservation of the watershed and its respective services provided;
- Support policy reforms at the national and transboundary levels, especially regarding spatial planning;
- Compile all data into a knowledge system, enabling knowledge sharing capacities for the management of the transboundary system, as well as for improving monitoring systems;
- Improve the ecological and chemical status of water bodies and safeguard the availability of good water quality, while maintaining the hydrological conditions of the water bodies;
- Improve the quality of the landscape while protecting the biodiversity and natural values of the watershed;
- Support economic activities through the development of green jobs; and
- Promote the development of climate change adaptation infrastructure in the area to protect from natural disaster impacts (GWP-Med et al., 2015).

The recommended objectives were designed to be evaluated for a period of 15 years until 2030 at three levels: supranational, national, and local. The activities to achieve the objectives were budgeted based on experts' evaluation from Albania and Montenegro. Although the Plan of Buna / Bojana area has since been finalized, not all local level activities have begun.

### 3 Outcomes

The Plan stimulated the drafting of a Framework Agreement for the Sustainable Management of Skadar/Shkodra Lake Basin and Buna / Bojana area, as requested by the Montenegrin Minister of Sustainable Development and Tourism. The draft Agreement was prepared by GWP-Med and PAP/RAC with the contribution of the Centre for Water Law, Policy and Science of the University of Dundee. The Agreement recognizes the international importance of the Skadar and Buna basins and coastal areas of Albania and Montenegro, as these areas of high ecological interest also face major development mainly in tourism, agriculture, and fisheries. The Agreement brings the governments together to work jointly towards socio-economic and ecological security. As of July 2017, the agreement has not been signed due to further discussion required between the authorities of the transboundary watershed.

The legal and institutional framework established for the management of the shared natural resources of the Buna / Bojana watershed further enhances transboundary mechanisms and bilateral

cooperation between Albania and Montenegro. Some signed agreements and cooperative actions were already in place and had to be thus considered carefully to integrate with:

- The Agreement between the Government of the Republic of Montenegro and the Council of Ministers of the Republic of Albania for the Protection and Sustainable Development of the Lake Shkodra / Skadar and its watershed, signed in 2008.
- The Memorandum of Understanding on Cooperation in the Field of Environmental Protection and Sustainable Management of Natural Resources between the Ministry of Spatial Planning and Environment of Montenegro and the Ministry of Environment, Forestry and Water Management of Albania, signed in 2010, replacing the MoU from 2003.
- The Memorandum of Understanding for the Management of the Extended Transboundary Drin Basin.
- The “Joint Forum of Lake Shkodra / Skadar” has operated since 2008 as a civil society platform including civil society organisations, research and scientific bodies to promote transboundary dialogue between the two countries regarding the lake.
- Establishment of the “Lake Day” signed by the Minister of Environmental Protection and Physical Planning of the Republic of Montenegro and the Minister of Environment, Forests and Water Administration of the Republic of Albania in 2006.

## 4 Lessons Learned

The first important lesson is that transboundary IWRM needs support from all players involved to be successful. The recent political stability and institutional will experienced by both Albania and Montenegro provided an appropriate ground for the creation of the Plan in the Buna / Bojana watershed. The participation and strong support from the external actors who contributed to the development of the Plan was also very critical for its successful implementation.

The process of developing the Plan is an important knowledge asset which can be further shared and replicated in other Mediterranean basins. Specifically, harmonizing two frameworks, the Buna / Bojana Transboundary IWRM Plan and the Protocol of the ICZM in the Mediterranean, serves as an example for other Mediterranean countries on how to combine IWRM and ICZM plans. The development of the Plan was a successful pilot activity to test and demonstrate the new IMF, encouraging its replication to other countries in the Mediterranean region.

In addition, the draft Agreement prepared by GWP-Med and PAP/RAC with contribution of the Centre for Water Law, Policy and Science of the University of Dundee is considered to be one of the few global examples of a legal agreement regarding the integrated management of shared resources of nature, river basins, coastal, and marine areas. This plan will hopefully initiate other similar agreements to be established between countries facing similar issues.

During the creation of the Plan, a crucial step was a cost assessment. This assessment revealed that both Albanian and Montenegrin governments had to set the right policy frameworks to mobilize appropriate public, private, local, national, and international investments and resources. The multi-stakeholder partnerships such as those implemented in the Plan creation functioned well and should be carried through for Plan implementation. The creation of the Plan is a first step in generating a shared vision for the watershed; it identifies required financing in order to support socio-economic

activities, infrastructure and ecosystem conservation efforts. Involving the local and national authorities and different stakeholders from the watershed moreover, strengthens ownership, builds trust and promotes visibility of the partners in the area.

## 5 Recommendations

The development of an IWRM plan was an imperative primary step for the watershed management of the transboundary area of Buna / Bojana. It represents a significant achievement of joint efforts between global organizations, institutions, stakeholders, and two states. The recommended activities in the Plan reflect the priorities of the area and are designed to address local, national, and transboundary needs. These include a mix of infrastructure-based activities and soft tasks like pricing, trainings, awareness-raising campaigns, capacity building activities, spatial planning and land policy instruments, and improved monitoring systems. The Plan has to be adaptive to national, transboundary, and international changes to best facilitate improvement in the area.

Now that the Plan has been created, the following recommendations will ensure it is well implemented.

### 5.1 Participatory Processes

The effective watershed management of Buna / Bojana strongly depends on local authorities' and stakeholders' participation. Decentralized resources management can be accomplished through the development of integrated rural development plans for each settlement of the watershed (Schneider-Jacoby et al., 2006b). It is important to give actual roles and allocate tasks to stakeholders for the decision-making and implementation process of the watershed management. Some activities to include stakeholders could involve participation in: research programs on monitoring processes of the river and sea water quality or even groundwater; related conferences and workshops; art exhibitions such as photography or drawing with specific topics on the watershed; field trips in the area stressing its environmental and historical importance; and other awareness-raising campaigns. A good communication and informative strategy will also attract a variety of stakeholders including farmers, hunters, fishermen, and business men and bring them together to discuss watershed problems and adopt more water-conscious behaviors.

Capacity building, as well as guidance and consultation from global institutions or NGOs, enable local authorities to establish coordination management mechanisms as well as strong links and synergies at transboundary and national levels. National actions such as declaring annual events like "Lake Day" encourage communication and participation in decision-making process by watershed locals and trigger them to address the challenges of their watershed.

Good communication and appropriate outreach strategies are required for a better understanding of the complexity and uncertainties of the watershed. This will enable the development of strong watershed groups and collaborations for its management. An integrated communication strategy, which relies upon individual change and participation, can include continuous awareness-raising campaigns, publicity materials, websites, social networks, and knowledge-sharing-platforms such as blogs. These will enable "access to technical resources, information, and assistance to building cohesion among members of watershed groups and residents" and to encourage a joint vision for

the Buna / Bojana watershed as well as enhance the feeling of ownership in the area (Floress et al., 2015).

### 5.2 Student Involvement

Going forward, it will be important to emphasize the inclusion of schools and universities in the transboundary watershed communities of both countries. Greater awareness coupled with training activities among teachers to understand the challenges of the Buna / Bojana watershed will strengthen and develop new teaching methods to educate and motivate their students. Special educational activities can be initiated by the teachers and carried out by special educators and tutors. Once the students understand the importance of their watershed, they can efficiently participate in community activities through the implementation of research projects, art works, exhibitions, science festivals etc. Such an activity was implemented in May 2016 within the framework of the Act4Drin Spring School. “Balkan students from the riparian countries, FYR of Macedonia, Montenegro, Albania and Greece carried out a marine litter survey at the Buna / Bojana delta, based on beach monitoring methodology” (MIO-ECSDE, 2016). Knowledge sharing can also be performed through online platforms created by the schools of the Buna / Bojana watershed, as well as organize regular exchange programs between students. Increased dialogue between students coming from coastal and inland settlements of both countries will develop a strong student community within the watershed whom will eventually become more conscious citizens with a “new water culture and behavior”. The result of these actions can be further disseminated in the communities and raise awareness among broader target groups of the transboundary watershed.

Universities of the two countries already collaborate on many joint projects related to the water bodies of the Balkans, such as the Great Drin River and Lake Skadar /Shkodra. For example, the DRIMON project studied the Balkan lakes including Lake Skadar /Shkodra with cooperation from multiple universities including the University of Montenegro and the Agricultural University of Tirana. As mentioned in Chapter 3 and emphasized by Guri et al. (2015), critical structural problems exist in the watershed such as irrigation and drainage systems. Therefore, emphasis should be given in developing more sustainable irrigation systems in the area through a pilot project. This could be accomplished through cooperation between the Agricultural University of Tirana, the Farmers Organization of Albania, the Farmers Organization of Montenegro, the Ministry of Agriculture, Rural Development and Water Management, and relevant private companies in the watershed.

## 6 Conclusion

The roles of the UNESCO International Hydrological Programme, UN Environment Programme / Mediterranean Action Plan and Global Water Partnership Mediterranean have been significant for the development of the Integrated Water Resources Management Plan for Buna / Bojana area, by bringing together different stakeholders and encouraging the states of Montenegro and Albania to work jointly for the transboundary management of the watershed. The continued cooperation of both governments and of all the interested stakeholders will ensure successful implementation to accomplish the objectives identified in the Plan. Outcomes to look forward to include infrastructural development, policy reforms, improved conditions of water bodies and the natural landscape, amongst others. Continuous monitoring of the actions will be required to measure progress and continuously build capacity. These actions coupled together will ensure a healthy ecosystem, socio-economic prosperity, and sustainable development of the Buna / Bojana watershed.

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