

# *Drin Dialogue*

*Consultation process for the establishment of a  
Shared Vision for the management of the extended Drin Basin*

## **Montenegrin National Consultation Meeting**

**Wednesday, 28 September 2011**

**Podgorica, Montenegro**

### **Background Note**

Setting the framework and the background for the discussions

*Organized with the support and collaboration of:*

**Montenegrin Ministry of Agriculture and Rural Development**

**United Nations Economic Commission for Europe**

**Global Water Partnership - Mediterranean**

**Mediterranean Information Office for Environment Culture and Sustainable Development**

**United Nations Development Programme**

*Financially supported by the*

**Swedish Environmental Protection Agency**

*Within the frameworks of*

**UNECE Water Convention**

*and*

**Petersberg Phase II / Athens Declaration Process**

*Prepared by the Global Water Partnership – Mediterranean Secretariat and UNECE  
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### ***Background – the context for the discussions during the National Consultation Meeting***

The **Drin Dialogue** involves in a coordinated and structured consultation process the competent Ministries of the Drin Basin riparian countries, the existing (Lake Ohrid Watershed Committee, Lake Skadar-Shkoder Commission) and to be established (Prespa Park Management Committee) joint Commissions/Committees in the sub-basins and key stakeholders at national and transboundary levels.

The **aim** of the **Drin Dialogue** is to develop a Shared Vision for the sustainable management of the Drin Basin and to explore ways towards enhancing transboundary cooperation in this regard, in compliance with the provisions of the UNECE Water Convention and other related multi-lateral Agreements, as well as the EU Water Framework Directive. The Dialogue is conducted within the frameworks of the UNECE Water Convention and the Petersberg Phase II / Athens Declaration Process. Activities implemented and to be developed in support of the Drin Dialogue contribute directly to and are part of the Mediterranean Component of the EU Water Initiative and of the GEF Med Partnership.

### **The National Consultation Meeting in Montenegro**

The **Montenegrin National Consultation Meeting for the management of the Drin Basin** is organized in Podgorica, on Wednesday 28 September 2011, with the support and collaboration of the: Montenegrin Ministry of Agriculture and Rural Development, United Nations Economic Commission for Europe (UNECE), Global Water Partnership – Mediterranean (GWP-Med), Mediterranean Information Office for Environment Culture and Sustainable Development (MIO-ECSDE) and the United Nations Development Programme.

It is the third of the series of Consultation Meetings within the Drin Dialogue; the latter is financially supported by the Swedish Environmental Protection Agency. The other two Meetings were organized in Ohrid, the Former Yugoslav Republic of Macedonia and in Tirana, Albania, in November 2010 and April 2011 respectively.

The National Consultation Meeting will:

- discuss and elaborate on management issues, needs and actions for the sustainable management of the part of the Drin Basin extending in the country i.e. Skadar Lake and Bojana River sub-basins;
- facilitate the development of the Strategic Shared Vision for the management of the Drin Basin.

Targeted representatives of national and local stakeholders including national, regional and local authorities, important economic sectors (such as agriculture, energy, tourism etc.), water users associations, academia, private sector, NGOs and civil society organizations will be invited to participate.

## **Introduction**

### *Aim of the document*

This document aims to provide the framework as well as the background for the discussions during the National Consultation Meeting in Podgorica (28 September 2011) conducted in the framework of the Drin Dialogue.

The document has two parts:

- ✓ Part A. outlines the structure of the discussion during the Consultation Meeting and the steps to follow to reach its objectives:
  - Identification of the water-related environmental **issues and problems** in the Drin sub-basins extending in the country, namely Skadar and Bojana as well as:
    - the driving forces that lead to these including those of socio-economic, political and institutional nature;
    - their impacts, both environmental and socio-economic.
  - Development of the **Vision** of the stakeholders regarding the management of the Drin Basin including aspects such as ecosystem quality, economic development, quality of life and cooperation with the other riparian/littoral countries.
- ✓ Part B. is a preliminary attempt to describe the water-related environmental issues and problems<sup>1</sup> of the Drin sub-basins referring to the causes<sup>2</sup> and impacts.

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<sup>1</sup> Pressures and State in the DPSIR framework – see Box 1

<sup>2</sup> Driving forces in the in the DPSIR framework – see Box 1

## A. Organizing the discussion

### *(i) Structure of the discussion*

The discussion is structured to be highly participatory so as the:

- Drin Dialogue process to be informed by the knowledge and experience of a broad range of stakeholders.
- Outcomes of the meeting to reflect the aspirations of the stakeholders with regard to the management of the basin and its future state in terms of development and ecosystems quality.

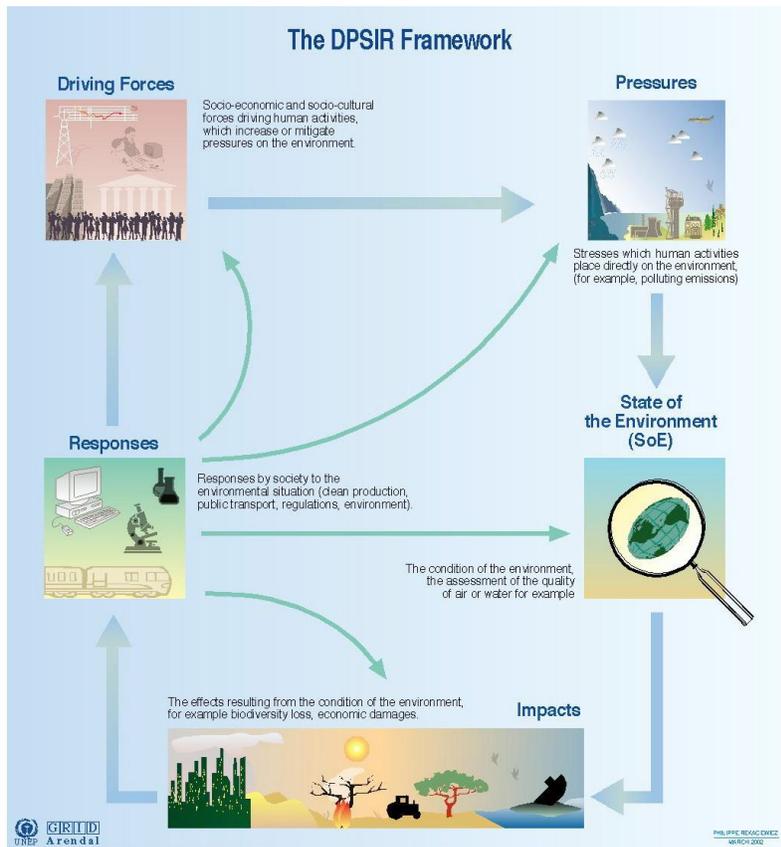
The DPSIR framework will be used for the needs of the consultation, to enable a structured discussion for each one of the following:

- (i) **Driving forces,**
- (ii) **Pressures,**
- (iii) **State,**
- (iv) **Impacts,**
- (v) **Responses.**

Information about the DSPIR framework is given in the Box 1. below.

#### **Box 1. The DSPIR Framework**

The DPSIR is a causal framework for describing the interactions between society and the environment adopted by the European Environment Agency (extension of the PSR model developed by OECD).



Source : Global International Water Assessment (GIWA), 2001 ; European Environmental Agency (EEA).

#### ✓ **Driving forces:**

*Socioeconomic and socio-cultural factors driving human activities which increase or mitigate pressures on the environment (e.g. EU accession, national regulatory framework, development planning, economic activities e.g. industrial production)*

#### ✓ **Pressures:**

*Stresses that human activities place directly on the environment (e.g. pollution emissions)*

#### ✓ **State of the environment:**

*The condition of the environment (e.g. water quality in rivers and lakes)*

#### ✓ **Impacts:**

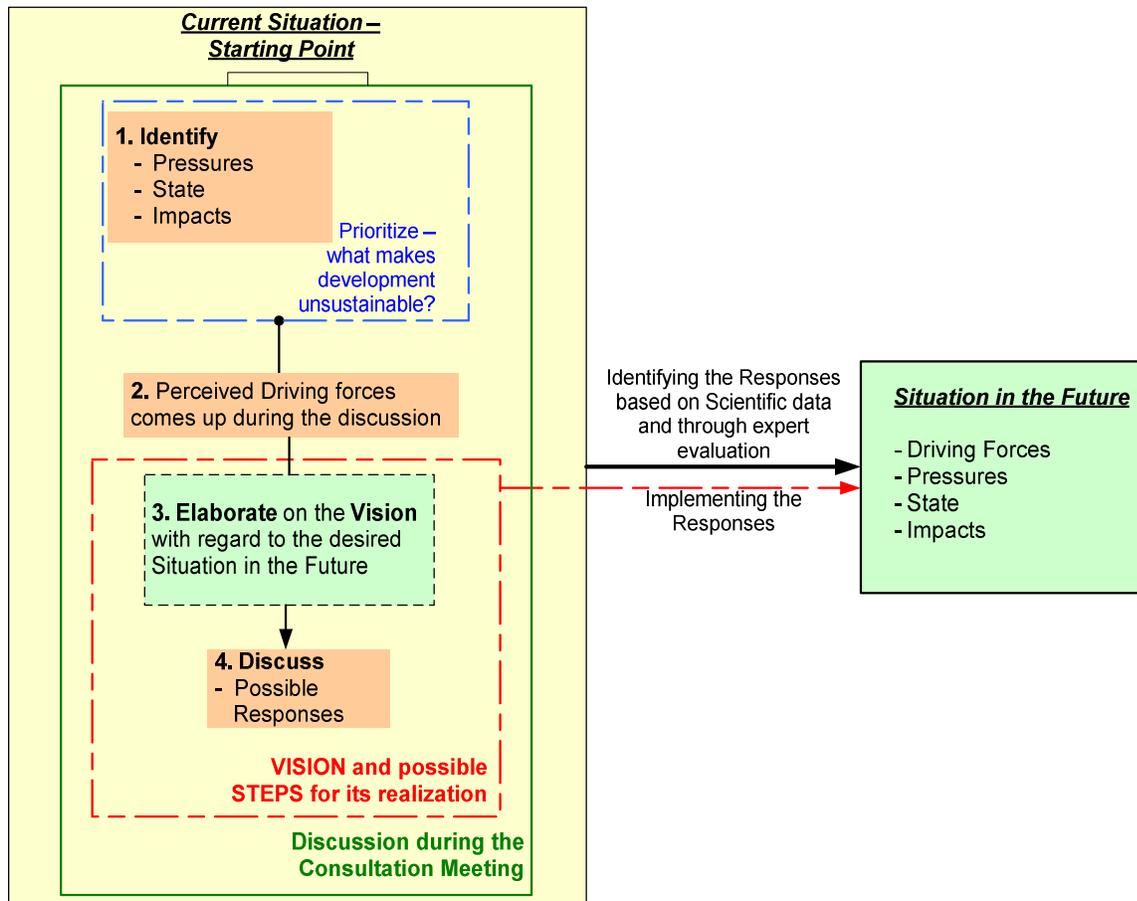
*The effects resulting from the condition of the environment on population, economy, ecosystems (e.g. water unsuitable for drinking, biodiversity loss, less overnight stays in hotels)*

#### ✓ **Responses:**

*Responses by the society to the environmental situation (e.g. laws and regulations, incentives and disincentives, integrated basin management planning etc.)*

The discussion will focus first on the **Pressures** and the resulting **State** of the Environment and the **Impacts** caused; the **Driving forces** as these are perceived by the stakeholders are expected to come up during the discussion. Time will be dedicated later on to elaborate on the **Vision** of the stakeholders in relation to the sustainable development in Skadar and Buna sub-basins and the possible societal **Responses** to address issues and problems.

Figure 1 depicts the structure of the discussion, its envisaged outcome and the general framework that the discussion during the consultation meeting falls under; figure 2 depicts the sequential steps to *be followed during the facilitated discussion*.



**Figure 1**

*(ii) The steps to be followed during the facilitated discussion are presented below:*

Steps / Sessions	What			
1.	<b>Introduction by the Facilitator on the structure of the discussion</b>			Short discussion
2.	<b>Pressures, State, Impacts (and Driving forces )</b>	Introduction by the Facilitator - Stakeholders asked to provide input		Discussion
→ 3.	<b><i>Review and prioritize – what makes development unsustainable?</i></b>	Stakeholders asked to provide input		Discussion
→ 4.	<b>Vision Responses</b>	Stakeholders asked to provide input		Discussion
→ 5.	<b>Wrap-up / Conclusions</b>	Rapporteur		

A rapporteur will be capturing the main points of the discussion

**Figure 2**

*(iii) Rules for the discussion*

- All participants will participate in the discussions on an equal basis.
- The working language will be English - Interpretation will be used to secure communication among all stakeholders, national and international.

## **B. Main Issues and Problems in the part of the Drin Basin extending in Montenegro**

### **I. Introduction – Basin management**

All previous meetings, analyses and discussions concerning the overall Drin Basin have concluded that the current frameworks for the management of the sub-watersheds of Drin including these of Skadar and Bojana need to be strengthened.

At transboundary level there is already a basis for cooperation provided by a number of legal documents signed by Montenegro and Albania. The *Treaty between the Government of Montenegro and the Republic of Albania on the water related issue*, which was concluded in October, 2001 in Podgorica, is an “umbrella” legal document in this regard. The Government of Montenegro established a commission under this treaty with a task to monitor the overall cooperation with Albania and to propose measures and activities for the enhancement of cooperation regarding water management sector. Furthermore, the Ministry of Agriculture and Rural Development of Montenegro and the Ministry of Environment, Forestry and Water Administration of Albania signed on December 2010 an agreement to allow coordinated action and response on the occasion of floods. The *Agreement between the Ministry of Sustainable Development and Tourism of Montenegro and the Ministry of Environment, Forestry and Water Administration of Republic of Albania for the Protection and Sustainable Development of the Skadar/Shkoder Lake (signed in February 2008)* focus on the coordinated management of Skadar Lake. Among others it established a joint management body, the Skadar - Shkoder Lake Commission.

Gains achieved, though, are until now rather “fragile”. To overcome this “fragility” the countries need to take the actions necessary to fulfil the obligations undertaken through the Agreement as well as to provide sustained support to the joint management body.

At national level, alignment with the Water Framework Directive and its daughter directives is in a relatively advanced stage - the expected date of complete transposition is end of 2016.

Steps have been made but there is still a lot to be done for the implementation of the related legal framework and furthermore for the adoption of integrated water resources management. The preparation of a new water strategy, basin management plans, harmonized monitoring of both surface and ground waters are at very early stage of realization - overall, the date for the full implementation of the Directive has not been determined yet.

The inadequacy of an integrated basin management framework is paralleled with weak implementation of spatial planning. As a result of the lack of integrated approach, urban and economic development planning do not take into account adequately the potential impacts of the consequent changes in the water balance and quality of the lake and riverine systems.

Difficulties are attributed to the overall institutional capacities; in general, human and financial resources are not sufficient and coordination among the competent national authorities including between the national and local ones is an issue of concern. The scientific and research institutes responsible for the monitoring of the state of the environment, the collection and interpretation of physicochemical and biological data suffer financial shortcomings. Furthermore availability and dissemination of information generated is an issue. In addition, the administrative functions to coordinate the various institutes, collect and integrate information so as to be used for decision making and reach out to the various sectors and stakeholders need to be strengthened.

Efforts for the improvement of the overall institutional capacity to deal with challenges related to water resources management should continue.

A major concern is that the assessment of the state of the system is based –in most of the cases– on observations and “*ad hoc*” scientific evidence rather than on systematic and comprehensive scientific monitoring and research. As a result, the spatial and time scales as well as intensities of the pressures cannot be accurately assessed. This is also true with regard to their impacts. There are results of scientific research that reveal specific problems e.g. decline of populations of certain species, and/or shifts in species’ composition; nevertheless, the overall effects on the environment and the ecosystems cannot be assessed and documented with accuracy.

## **II. Pressures, subsequent resulting State of the environment, and Impacts caused.**

The effects of pressures exerted on the Skadar Lake and Bojana River system are manifold. The degradation of sites of paramount ecological importance from a European and international conservation perspective, such as the wetlands in the Bojana delta, should be noted.

### ***✓ Water and Sediment Balance***

The connection of Drin River, in Albania, with Bojana River which drains Skadar Lake affects the hydrological regime in the area as well as the morphology and function of the Bojana Delta in the Adriatic Sea. The flow of Bojana itself is dependent on the level of water table in Skadar Lake and both are dependant, in addition to the flow of surface and underground tributaries mainly at the Montenegrin part, to the flow patterns and discharge of the Drin River.

The hydrology of Drin River has been dramatically altered by the construction of a cascade of dams for hydropower production upstream in Albania; a new hydropower plant is currently under construction in Albania (Ashta area). Furthermore, the flow patterns in Drin downstream the dams are influenced by both licensed as well as uncontrolled gravel extraction.

The interventions in the Drin watershed have an effect on the patterns of oscillation of the water level of **Skadar Lake**. The outflow of the Lake through Bojana River is impeded during periods of high waters in the Drin River (a result of water releases from the artificial lakes upstream); under specific conditions Drin water even enters Lake Skadar resulting in the water level in the lake to increase significantly. This occurs mostly from December to February, but may also occur during other periods, depending on the water quantity released from the hydro-power dams (Vau Dejes), which, in turn, depends on rainfall and electricity demand. Furthermore, increased flow in the Drin River causes sediment deposition in the river channels at the confluence point of the two rivers, thereby further obstructing the flow in the Bojana River and the outflow from the lake.

In turn, altered patterns of oscillation of the water level of **Skadar Lake** exert pressures on the ecosystems. Skadar Lake is a shallow floodplain type of lake, with regular and extensive flooding of low gradient areas. The periodic flooding of these shallow zones (some 150 km<sup>2</sup>) is an important driver of the lake’s high fisheries productivity; the flooded areas provide essential spawning grounds and nursery areas for many fish species. Overall, the flooded areas are essential habitat for maintaining the overall biodiversity of the lake, including birds and other organisms. The flood regime, the timing and amplitude of changes in water levels, are important factors for fish spawning success and recruitment to the fishery – disturbance of this regime alter the characteristics of the habitats.

Increased in frequency and intensity flooding in the Skadar– Bojana area during the past two years has had detrimental socioeconomic effects in the region; the latest was one in 80 years flood. While there is a need for these phenomena to be further studied it is believed that they come as a result of the combined effect of the following:

- flow variability due to both natural and anthropogenic factors (extreme weather phenomena, water releases from the dams on Drin River);
- high sediment input through the tributaries of Drin in Albania, downstream the dams due to erosion caused by gravel extraction and loss of plant coverage;
- accumulation of alluvium in the tributaries of Drin, Drin itself and Bojana. In the case of Drin this is due to the decreased sediment transport capacity as a result of the controlled outflow from the artificial lakes; in the case of Bojana the latter is combined with the low gradient of the riverbed;
- blockage of the natural secondary channels of the Bojana River that existed in the past in the delta area in the Albanian side; the pick flows exceed the capacity of the main (existing) channel;
- the poor maintenance of the irrigation channels and flood preventing constructions in Albania.

Climate change variability leading to the increase of the frequency of extreme precipitation events should be taken into consideration while flooding phenomena in that area are to be explained.

The balance among / combined effect of the accumulation of sediments, the water flows in the Skadar–Drin–Bojana system, the variability of the wave activity and sea level, short-term events (storm waves and tides) and long-term processes (sea transgressions), defines the morphology, the hydrography and the related values of the whole Drin – Bojana deltaic complex.

Coastal erosion in the delta of the river Bojana is believed to be mainly the result of the altered physical characteristics of the Drin and the entrapment of alluvium of the upper part of the watershed in Albania by the dams. The quantity of alluvium that results from erosion in the tributaries of Bojana and Drin as well as in the downstream part of the latter is not enough to invert the coastal erosion process. In addition, the reduction of the sediment transport capacity of the Drin in combination with the natural low gradient of the channel of Bojana River result in the accumulation of alluvium from erosion in the bed of Drin and Bojana preventing this from reaching the Bojana mouth at the Adriatic Sea. The progression of the sea along Bojana mouth has been about 500 m since 1936 and about 50 m the past 20 years.

The changes in the coastline affect drastically the ecosystems in the Bojana Delta. For example, nesting bird habitats are being lost progressively throughout the Bojana delta by the disappearance of islands.

### ▼ *Water Quality*

Poorly treated wastewaters from cities, communes and industries in the Montenegrin part have been entering the hydrological system ending up in the Skadar Lake hence in Bojana River through the tributaries or through underground karstic connections; diffuse pollution has been following the same paths.

Available information does not allow the identification of a well defined pollution trend in the system. However, they suggest that water quality has been varying in space and time.

While hazardous substances pollution (heavy metals, PAHs, PCBs, etc.) had been observed in the period prior to 2000 in the Skadar Lake, in the most recent years water quality in this regard has been improved. The pollutants that have reached the lake in the past seem to have been accumulated in the sediments. Moderate and, in few cases, high concentrations of heavy metals have been (monitored) identified at specific sites of the lake in the sediments. PAHs and PCBs in sediments were found to be higher at the entry points of the Moraca River than the pelagic zone, and exhibited a decreasing trend from 1993-1996 to 2005. The Aluminium Plant in Podgorica (KAP) has been a source; the operation of the plant is associated with other toxic pollutants as well and endangers primarily the Moraca River. The Steelworks Niksic, which lacks a proper treatment facility, is a source of a range of pollutants such as waste oils, heavy metals and toxic substances that reach Bistrica River and ultimately Moraca River (through the Zeta River). Traces of pollution from Steelwork factory in Skadar Lake are minor; it is believed that these traces enter the lake through groundwater.

According to some stakeholders (information can't be checked) Drin contributes, to some extent, the Bojana River (and the through the processes explained above, the Lake) with trace metals originating from mining activities upstream.

Nutrients, due to agricultural activities from the Zeta Plain enter groundwater; it is believed that groundwater is their pathway to the Lake.

Untreated or poorly treated urban wastewaters end up in the Moraca and Zeta Rivers. The city of Podgorica is equipped with wastewater treatment plant that currently serves about 70% of the population. Wastewaters from Niskic and Cetinje are discharged untreated into open drains. Pollutants from the latter ultimately reaches via the groundwater (karst geologic formations) the Crnojevica River. Increased concentrations of nutrients (phosphorus and nitrates) are monitored in the littoral zone near the river mouths, in particular of Crnojenica and Moraca Rivers; concentration peaks are observed during summer season.

There is occasional organic and nutrient pollution from the Albanian side. Sewage from the Shkodra city is collected into a pool and then pumped into the Drin River in a small distance before its confluence with Bojana. Occasional failures of the sewerage system lead to spills posing a threat to the quality of the Lake. The discharged wastewater affects the Bojana River all the way down its delta and in periods of high waters in Drin and floods, the Lake. Bacterial pollution seems to be an issue of local importance during spring / summer period in Moraca River downstream the Podgorica wastewater treatment plant; this is also true at the point that Moraca enters Skadar Lake occasionally during the summer period. Improvement (Podgorica) and construction (Shkodra) of related infrastructure is underway.

Overall, the quality of the lake's water is considered to be reasonably good due to the high renewal rate (2-3 times per year). According to opinions of experts, Skadar Lake is in better environmental condition than the Prespa Lake. Good and stable quality of the Lake waters led to the construction of the regional water supplying system on the Lake, for whole Montenegrin coast.

The physical and chemical parameters of the waters of the Bojana River, determined during June 2000 – December 2001, are almost comparable to those of Skadar Lake, with the exception of nutrient levels. Phosphates, nitrates and ammonium were higher in the Bojana River, reflecting most probably the discharges of urban wastewater of the city of Shkodra. Further downstream, significant loads of nitrogen and phosphorus enter the system through agricultural runoff.

Data regarding groundwater quality in the watershed is limited. The studies conducted in 1990 - 1996 revealed significant contamination of groundwater in the Zeta Plain by PCBs and PAHs. However, measurements conducted in 1998-2004 showed practically no traces of PCBs. The current analysis of Albanian spring waters (Shegani and Viri) near the lake show that their quality is good and in accordance to the EU standards.

Pressures exerted as a result of inadequate solid waste management are of particular importance. While in Albanian part there is almost complete absence of waste management, situation is slightly different in Montenegro where the core of the problem is that waste collection system covers just a share of the population (mainly urban population), that there is almost no separation, reuse or recycling, and that there are almost no sanitary landfills in the area. Apart from Podgorica, Cetinje and Danilovgrad that are served by an organized system of waste collection and disposal as well as a sanitary landfill, waste collected from urban centers in the rest of the Skadar and Bojana sub-basins are dumped on a large number of inappropriate disposal sites or even in the catchments of watercourses that wash the litter into larger streams and/ or Bojana river.

Floods exacerbate the situation. Eventually, part of waste swept by the area's watercourses ends in the sea.

Efforts to improve waste management system in Montenegro including construction of sanitary landfill are ongoing.

There is no sufficient data with regard to impacts due to pollution; nevertheless, the nature of pressures as well as their intensity in some cases, lead to the conclusion that there has been a threat to the ecosystem and potentially to the local population.

#### ▼ *Other issues*

##### *Unsustainable fishing practices and introduction of alien species*

Further to water regime disturbances and water pollution, already mentioned above, that lead to degradation of shoreline habitats and habitat alterations, there are additional pressures that result to the decline of the native fish stocks as well as biodiversity.

These include fishing during fishing ban periods (spawning periods), use of inappropriate means of harvesting (inappropriate nets), use of non-discriminatory and destructive fishing methods such as explosives and high voltage electrical shock and poisons etc.

The aforementioned pressures exist also at the transboundary level. An additional pressure in the Albanian side of Bojana River and Skadar Lake comes from the manmade barriers put for fishing purposes along the migration routes to the Adriatic Sea. Furthermore, overfishing at the mouth of the lake threatens the existing fish population.

Finally, the introduction of non-native fish like the Goldfish (*Carassius auratus gibelio*), the European perch (*Perca fluviatilis*) and the Topmouth Gudgeon (*Pseudorasbora parva*) had negative impacts to the populations of the native fish species, such as cyprinids, and especially the wild Carp (*Cyprinus carpio*). About 1/3 of the species and subspecies of the lake are allochthone.

The outcome of the aforementioned is a considerable decline of fish stocks and reduction in the number of fish species in the Skadar Lake; some non-commercial fish species are also under threat. The commercially valuable fish populations in Skadar Lake have declined in favor of less valuable species and there was also a significant decline on migratory fish in the overall production; there have been significant shifts on the composition of fish catches from early 60's till today.

Socioeconomic challenges in the near past, growing populations in coastal settlements and growing tourism as well as, despite the effort of the competent institutions, lack or inadequate regulation and/or law enforcement regarding fishing are major driving forces. Lack of coordination between the two riparian countries exacerbates the situation; the borders on the Lake not been clearly marked, there are cases that Albanian fishermen perform their activities in the Montenegrin side and vice versa. Lack of cooperation extends also at the level of scientific research; cooperation that would allow the assessment of the fisheries in the lake, especially the most important commercial species, such as eel, bleak or carp is absent. This affects the ability of both countries to manage appropriately the fisheries.

#### Unsustainable tourism development and illegal constructions

Unsustainable tourism development and illegal constructions (including weekend houses) exert pressures in areas such as the immediate littoral zone of the Skadar Lake, the Bojana delta and the coastal area at the Adriatic Sea leading to fragmentation and loss (in some cases in total) and/or modification of habitats, threatening biodiversity in a direct or an indirect way (e.g. pollution).

Characteristic examples of areas exposed to pressures due to urbanization and tourist development are:

- The littoral zone of Skadar Lake. In the Montenegrin part there are illegal constructions even within the National Park borders.
- The Bojana delta. Illegal constructions exist at the bank of the river close to its outflow to the Adriatic.
- The coastal zone of Bojana which is perhaps the most affected area in this regard. In Montenegro the Velika Plaza beach, in spite of its proclamation as a Natural Monument, is degraded due to illegal building, excavation of sand and hunting. Sand dunes have been destroyed in many cases.
- Unauthorized recreational activities taking place at ecologically sensitive areas; at the Velika Plaza beach in Montenegro, off-road vehicles running on beaches and building of trails to reach remote parts of the dune landscape are recorded.

#### Hunting

Unsustainable legal as well as illegal hunting is an issue for the entire ecosystem of the Skadar Lake and the Bojana River and delta; these pressures exist also at the Albanian side. There are violations with regard to the:

- protection status of certain areas i.e. hunting ban areas, such as the Ulcinj salina that is an important site for migrating waders in the delta;
- species allowed to hunt e.g. hunting of rare and endangered breeding birds like the Oystercatcher during the breeding season in the Bojana sub-basin, the Pygmy cormorant, the Common Redshank, the Avocet etc.;
- hunting ban period.

The long hunting season established in Montenegro should be noted among the issues of concern.

There have been effects to the populations of birds –including endangered species - and mammals; additionally the suitability of the Bojana delta for breeding of migrating birds has been impaired. The exact impacts cannot be assessed since data on the status of several fauna groups are limited due to the lack of a regular and coordinated monitoring at national and transboundary levels.