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Water Resources and Irrigation Project – Consultancy Services for Strategic Environmental Assessment of River Basin Management Plan for Drini- Buna and Semani River

DRAFT SEA REPORT FOR SEMANI RBMP

CEIA

COWI

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ABBREVIATIONS AND ACRONYMS

AOWB	Administrative Office of Water Basins (formerly River Basin Agency)
ASCI	Areas of Special Conservation Interest
BFF	Biodiversity Flora and Fauna
BOD	Biological Oxygen Demand
CEIA	Centre for Environmental Impact Assessment
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COD	Carbon Oxygen Demand
COM	Council of Ministers
CORINE	Coordination of information on the environment
dBA	Decibel
DCM	Decision of the Council of Ministers
DHI	Danish Hydrological Institute
EC	European Commission
ECAT	Environmental Centre for Administration and Technology – Tirana
EIA	Environmental Impact Assessment
EIONET	European Environment Information and Observation Network
EKYB	Goulandris Natural History Museum - Greek Biotope Wetland Centre
EMP	Environmental Management Plan
EO	Environmental Objectives
ERDF	European Regional Development Fund
ESIA	Environmental and Social Impact Assessment
ETC/BD	European Topic Centre on Biological Diversity
EU	European Union
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GHG	Greenhouse Gas
GoA	Government of Albania
GWB	Groundwater Bodies
HCFC	Hydro chlorofluorocarbons
HPP	Hydropower Plant
IBA	Important Bird Area
INDC	Intended Nationally Determined Contribution
INSTAT	Albania Institute for Statistics
IPA	Instrument for Pre-Accession Assistance
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for the Conservation of Nature
IWRM	Integrated Water Resources Management
Km^2	Square kilometres
LGU	Local Government Units
l/sec	Litres per second
LWR	Law on Water Resources
MAB	Man, and Biosphere Reserve
masl	Metres above sea level
M^3/sec	Cubic meters per second

ABBREVIATIONS AND ACRONYMS

MEFWA	Former Ministry of Environment Forests and Water Administration
Mg/l	Milligrams per litre
MoARD	Ministry of Agriculture and Rural Development
MoTE	Ministry of Tourism and the Environment
MW	Megawatt
NBSAP	National Biodiversity Strategy and Action Plan
NCSDLG	National Crosscutting Strategy for Decentralization and Local Governance
NGO	Non-Governmental Organisation
NO_x	Nitrous Oxide
NSDI	National Strategy for Development and Integration
NWC	National Water Council
OSHEE	Electricity Power Distribution System Operator
PCB	Polychlorinated biphenyl
PET	Potential Evapotranspiration
PHH	Population Human Health
PM	Policy Management
$PM_{10/2.5}$	Particulate Matter
PO_4	Phosphate
PoCSD	Programme of Cooperation for Sustainable Development
PoM	Program of Measures
RBA	Former River Basin Agency
RBC	River Basin Council
RBD	River Basin District
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SEO	Strategic Environmental Objective
SHPP	Small Hydropower Plants
SIA	Social Impact Assessment
Sida	Swedish International Development Agency
SPA	Special Protection Area
TAP	Trans Adriatic Pipeline
TS NWC	Technical Secretariat National Water Council
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNDP	United National Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
WFD	Water Framework Directive
WHO	World Health Organisation
WMO	World Meteorological Organisation
WRIP	Water Resources Irrigation Project
WRMA	Water Resources Management Agency
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plants

1 INTRODUCTION

1.1 BACKGROUND

The Preparation of a Strategic Environmental Assessment (SEA) report for the draft River Basin Management Plan (RBMP) of the Semani River Basin is part of Integrated Water Resources Management (IWRM) component of the Albania Water Resources and Irrigation Project (WRIP). The WRIP is funded by the World Bank, the Swedish International Development Cooperation Agency (Sida) and the Government of Albania (GoA). The SEA is a document required by Albanian Law 91/2013 that is necessary for the GoA to assess the future environmental impact and sustainability of the measures proposed in the draft RBMP moving forward.

In developing a SEA for the RBMP, cognisance must be taken that Albania is a candidate for membership of the European Union where the latter requires adherence to EU's Water Framework Directive (WFD). In addition, the implementation of the SEA (now passed into Albanian law) closely follows the EU SEA Directive which is another prerequisite for the EU Acquis.

The full implementation of the WFD requires substantial development of institutional capacity at central and regional level to effectively undertake the specific requirements of the WFD. This will be a major challenge for Albania in the future.

1.2 PROJECT AREA

The project area for this assignment is essentially the Semani river basin in the central part of Albania. It is the third largest of Albania's six main river basins, stretching across Berat, Fier, Elbasan and Korça Districts.

The basin has four main rivers (Semani, Osumi, Devolli and Gjanica), with a drainage area of 5649 km^2 and an average height above sea level of 863 metres. Rainfall in the River Basin averages 1084 mm/year, resulting in a perennial average flow is 95.7 m^3/s. Approximately 60% of water is provided by the Devolli catchment area. On average, the waters have a relatively high mineralization of 440 mg/l. Average water temperatures range from 6.8°C in January to 25.5°C in August.

The following Table 1-1 provides details of the main characteristics of the river basin while **Error! Reference source not found.** provides the spatial extent of the basin.

Table 1-1: Main characteristics of the Semani River Basin

River	Main tributaries	Length (km)	Drainage Basin Area (km^2)	Mean Altitude (masl)	Average flow ($m^3 \cdot s^{-1}$)
Semani	Main branch	281	5,649	863	95.7
	Devolli	196	130	960	49.5
	Osumi	161	2,073	852	32.5

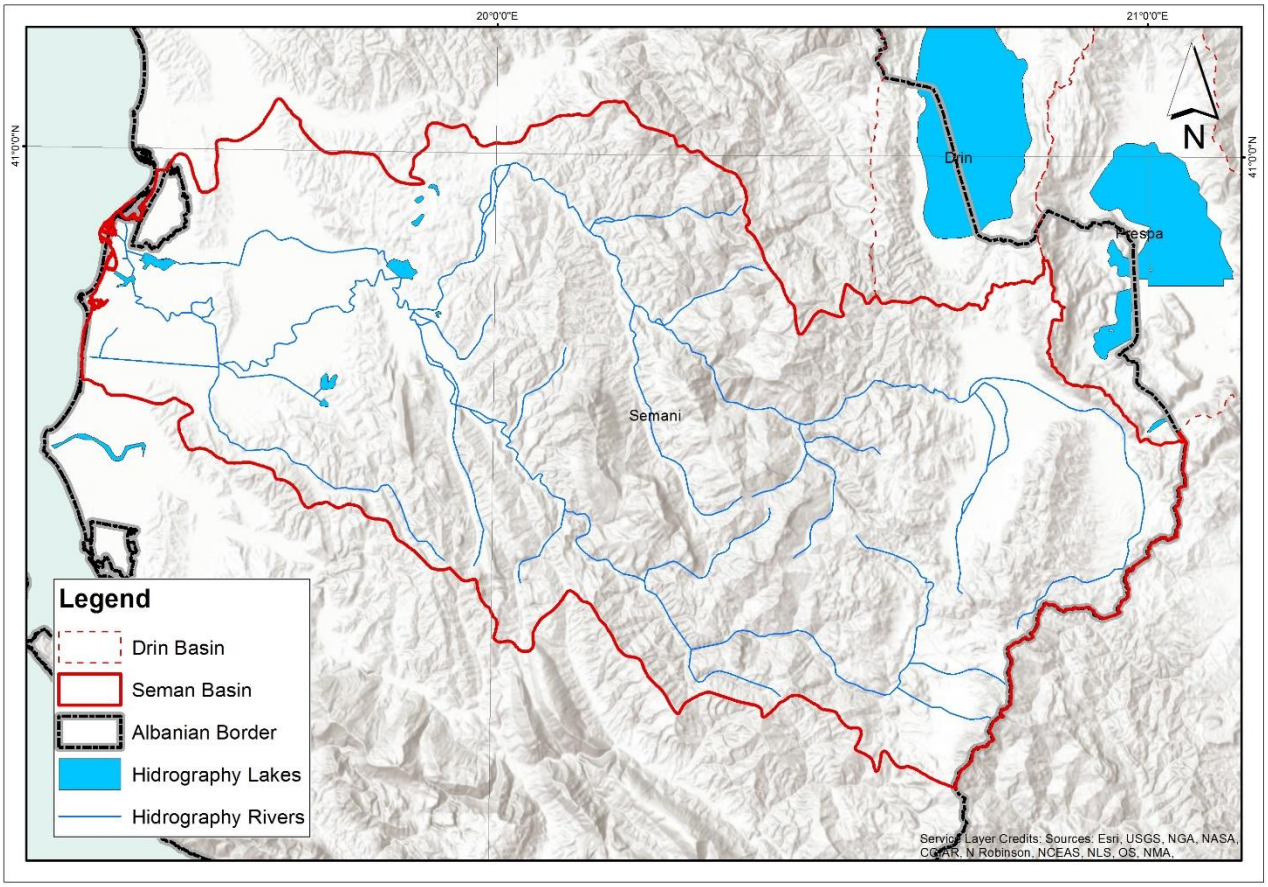
Source: after Draft RBMP for Semani River

The Semani River is 281 km long, discharging its waters in the Adriatic Sea, south of the lagoon of Karavasta. Before reaching the sea, the Semani River joins the Gjanica River, which traverses through the city of Fier.

The Devolli River, which originates from the southeast slopes of the Morava mountain range, is one of the two main branches of Semani. The Devolli River is 196 km long with a catchment area of 3139 km^2 and an average height above sea level of 960 metres. The Devolli River has an average flow of 49.5m^3/s, mainly fed by surface waters.

The Osumi River is the second main branch of Semani River. It is 161 km long with a catchment area of 2150 km^2 and an average height above sea level of 828 metres. The average perennial flow is 32.5 m^3/s with a low flow of 17.5 litres/s/km^2.

The Gjanica River, although not regarded as a main tributary, is regarded as the most polluted river in Albania with contamination originating from oil extraction around Patos-Marinza and from the Oil Refinery Plant in Ballsh. Furthermore, after passing through Fier (before joining the Semani River), untreated urban wastewater in combination with untreated industrial wastewater is readily discharged. It is estimated that every month approximately 12,587- 18,091 m^3 of liquid wastewater is discharged into the Gjanica River containing hydrocarbon and industrial oils (benzene, toluene, ethyl-benzene and xylene). Besides causing damage to the natural aquatic flora and fauna, the use of surface waters for irrigation and livestock is also compromised.



Source: RBMP for Semani River

Figure 1-1: Location Map of the Project Area

In Albania, the Semani basin supports around 916,255 people (INSTAT 2011), the principle settlements being Berat, Skrapare/corovode, Policane, Korça, Maliq, Devolli/bilisht, Ura vajgurore, Kuçove, Fier, Lushnje, Divjake, Patos, Roskovec, Mallakster, Cerrik and Gramsh.

1.3 LAYOUT OF THE SEA REPORT

The layout of the SEA Report is based on Article 10 of the SEA Law 91/2013 and was included in the Consultant's Inception Report submitted for approval in June 2018. Based on comments received we have assumed that the proposed structure is acceptable. The requirements of the SEA law are all contained in the SEA report but are reordered to make a more logical structure. Hence, the SEA Report for Semani RBMP contain the following chapters:

- Chapter 1 – Introduction
- Chapter 2 - Content and Main Objectives of the RBMP
- Chapter 3 – SEA Process and Methodology

- Chapter 4 - Description of the Current State of the Environment (Baseline)
- Chapter 5 – Future Trends without RBMP (Do Nothing Option)
- Chapter 6 – Basis for Environmental Assessment Preparation
- Chapter 7 – Alternatives – Options Considered
- Chapter 8 – Impact Assessment of Preferred Strategy
- Chapter 9 – Transboundary Issues (no specific TB issues)
- Chapter 10 - Guidelines and Mitigation Measures
- Chapter 11 – Monitoring of Environmental Impacts
- Chapter 12 - Non-Technical Summary of the SEA Report
- Chapter 13 – Consultation Process
- Chapter 14 - Annexes

The Current draft of this SEA report allows for a Chapter on the consultation process which at this stage has not being implemented. Once the consultation meetings are held then this chapter will be prepared.

2 CONTENTS OF THE RBMP FOR SEMANI RIVER

Article 10 clause 2 (a) of Law 91/2013 requires " Describe the purpose and objectives of the plan or program and its compliance with other plans or programs related to it, the decision-making phase and clarification whether some issues have been assessed or assessed at other planning levels and processes". These details are provided in this chapter.

2.1 RESPONSIBLE AUTHORITY FOR RBMP

At the national level, the National Water Council (NWC) is the central executive body and as Albania is divided into six river basins, each one has a River Basin Council (RBC) and an Administration Office of Basin Water (AOBW). The higher executive authority at the national level, is the WRMA. For EU Accession, Albania needs to approach compliance with a significant number of EU directives related to water management, most prominent of these being the EU Water Framework Directive (WFD). This structure allows effective administration at local level despite there being some fragmentation of water resources management at the national level.

The NWC was established in 1996 and is the central executive body for water resources management, providing a high-level forum for water resources planning and management in an integrated manner. The NWC now provides the majority membership of the Integrated Policy Management Group for water, established by PM Order no. 129 dated 21.09.2015. National Water Council Decision No. 4 of 2nd December 2015 established the four sub-thematic groups (Water for People, Food, Environment, and Industry, respectively). Their responsibilities are well defined, besides providing the flexibility needed to respond to ad hoc situations in time for action to be effective. In principle, they would meet indicatively twice in every month or otherwise as necessary.

Law 111/2012 “on the Integrated Water Resources Management” (IWRM) and Law No. 6/2018 “on some amendments and additions to Law No. 111/2012 on IWRM”, established the National Water Council (NWC) as the top-level body responsible for determining the main policy lines and decision-making. The Prime Minister chairs the NWC and, in accordance to Article 5(2) of the Law on Water Resources No 8093/1996, its composition shall be determined by the Council of Ministers.

Members of the NWC are as follows:

- Prime Minister (Chairman), or in his absence the Deputy Prime Minster;
- The minister responsible for water resources policy;
- The minister responsible for irrigation and drainage;
- The minister responsible for the environment;
- The minister responsible for civil emergency;
- The minister responsible for finance;
- The minister responsible for energy issues;
- The minister responsible for water supply and sewerage infrastructure issues;
- The minister responsible for tourism;
- The minister responsible for urban development issues;
- The minister responsible for health issues.

The functions of the NWC include, but are not limited to:

- Making proposals for draft laws and regulations for any kind of activity related to water resources;
- Approving the legal, technical and regulatory framework to implement the LWR, and in addition, draft instructions and undertake other necessary actions for implementing the national plan on water resources;
- **Approving and managing River Basin Management Plans, such as the subject of this SEA**;

- Issuing water use and wastewater discharge permits and authorizations when the concerned activities take place beyond the boundaries of a single river basin;
- Adopting the functioning rules for the Water Resource Management Agency (WRMA) (formerly the Technical Secretariat for the NWC), RBCs and AOBW;
- Approving interregional, national plans and projects in the fields of agriculture, urban planning, industrial and territorial development with effects on water conservation and management;
- Defining river basin boundaries and establishing the headquarters for each, where the Register of Water Resources will be kept;
- Establishing agencies or other organisational units, under the Council's control, to facilitate water resources management and law enforcement;
- Proposing and adjusting appropriate measures for implementing any international agreement or convention on water resources to which the Republic of Albania is a signatory party; and
- Approving concessions for water resources according to the Council of Ministers' provisions. In cases where water resources are of national importance, the concession will come into force only upon approval by the Parliament.

The NWC is supported by the WRMA, established by Law No. 6/2018 on some amendments and additions to Law No. 111/2012 "on the IWRM". Although initially under the ministry responsible for environmental issues, the WRMA currently functions as the executive body of the NWC under the Prime Minister Office. In addition, the Deputy Prime Minister is a member of the NWC and leads the meeting in case of Prime Minister's absence. The functions of the Water Resource Management Agency include, but are not limited to:

- Implementing the water resources policies approved by the NWC;
- Implementing the provisions of international agreements on transboundary water resources to which the Republic of Albania is a signatory party;
- Developing a national inventory of water resources, including quantity and quality information;
- Screening applications for water use and wastewater discharge permits and authorizations to be issued by the NWC;
- Promoting water users' participation in water resources management;
- Promoting studies and research;
- Identifying research areas and the relevant funding sources, in coordination with research institutions;
- Coordinating and supervising the work of RBCs and AOBW;
- **Monitoring RBMPs' implementation**.

2.2 REQUIREMENT FOR A RBMP

The Preparation of a RBMP forms part of several measures that need to be addressed for Albania to aspire to membership of the EU. The drafting of RBMPs for all Albania's river basins is an essential component of the EU's WFD. However, effective implementation of the WFD, as required under European law, is a challenge to achieve at present because Albania does not currently have the technical capacity to carry out the specific requirements of the WFD. Notwithstanding, the passing of numerous national laws, some of which are mentioned in the previous section, show a serious commitment to fully implement the WFD in the future. The mechanism by which the WFD achieves its objectives is through the adoption and implementation of a RBMP and Programmes of Measures (PoM).

2.3 SCOPE AND FUNCTION OF THE RBMP

An important part of developing the RBMP is the understanding that it does not stand alone in achieving the water quality objectives under the WFD and focusing on the RBMP alone is likely to fall short in meeting those water quality objectives. Without an outward focus that recognises the effect other sectoral plans and policies

have on achieving the WFD objectives, there can be no significant improvements in the current state of Albania's water quality.

The relevant policy areas include but are not limited to; land use and spatial planning; climate change; flooding; water services policy; waste management; agriculture; fisheries; and forestry. For these and indeed other relevant policy areas the existing policy, plans, strategies and programmes all feed into the RBMP.

2.4 RBMP VISION AND STRATEGIC OBJECTIVES

The RBMP is a tool through which the objectives of the WFD can be achieved; therefore the 'vision' of the RBMP and WFD are intimately linked.

2.4.1 Purpose - Geographical Scope

The draft RBMP is a regional plan for the management of water resources set at basin level. As such the SEA for the RBMP is primarily focused at activities advocated within the RBMP occurring at the national to regional scale. Any local development activities would fall under the auspices of an Environmental and Social Impact Assessment (ESIA).

2.4.2 Vision - Temporal Scope

The RBMP is meant to be for a period of six years and the current version represents the first cycle for the Semani basin. However, the action plan provided within the RBMP runs up until 2030. In line with the SEA Law 91/2013 (and the SEA Directive), short, medium and long-term impacts (including reference to secondary, cumulative, synergistic, permanent and temporary, positive and negative effects) would be considered during the assessment.

The recommendations put forward in the draft RBMP have a longer perspective than the timeline of this cycle of the plan and will take several years for certain aspects to be implemented and to take effect. As a result, the time lines proposed for assessment of short, medium and long-term impacts were defined as: short term horizon up to 2021, a medium-term horizon up to 2027 and a long-term horizon beyond 2027.

2.4.3 RBMP Strategic Objectives

The overarching objective of the WFD is to bring about effective co-ordination of water environment policy and regulation across Europe, which is laid out in Article 1 as follows:

- Prevent further deterioration and protect and enhance the status of aquatic ecosystems and their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems;
- Promote sustainable water use based on a long-term protection of available water resources;
- Enhance protection and improve the aquatic environment, inter alia, through specific measures for the progressive reduction of discharges, emissions and losses of priority substances and the cessation or phasing out of discharges, emissions and losses of the priority hazardous substances;
- Ensure the progressive reduction of pollution of groundwater and prevent its further pollution; and
- Contribute to mitigating the effects of floods and droughts.

The environmental topics in the SEA Law that were scoped for the assessment of the RBMP and after consultation with the stakeholders for the SEA were: Biodiversity, including flora and fauna (BFF); Population and human health (PHH); Water; Soil/Land; Air Quality; Climate Factors; Material Assets; Cultural, Architectural and Archaeological Heritage and Landscape. Consequently, these topics are applied to the SEA as the principal headings for impact, mitigation and monitoring.

2.4.4 Selection of Sustainability Criteria and SEA Objectives

Part of the scoping exercise undertaken by the RBMP Consultant involved meetings with several stakeholders to gain their views and opinions on the RBMP. Based on the responses obtained and a review of the main strategies and commitments that Albania is adhering to, a final list of sustainability criteria and SEA objectives were

compiled to form a broad spread across economics, environment, natural resources, social, cultural and ethical themes.

2.5 LEGAL FRAMEWORK RELATED TO RBMP

Water resources are regulated from the passing of Law No 111/2012 on IWRM that in turn was amended by Law No. 6/2018 on some amendments and additions to this law enabling:

- Protection and improvement of the aquatic environment, surface waters, either temporary or permanent, sea water, territorial waters, exclusive economic zones, continental shelf, transboundary waters, groundwater, and their status;
- Security, protection, development and sustainable use of water resources, necessary for life and for the social and economic development of the country;
- Equitable distribution of water resources, as intended by their effective management;
- Protection of water resources from pollution, overuse and promotion of consumption contingent on actual needs;
- Establishment of the institutional framework, at national and local level, required for the implementation of a national policy for the administration and management of water resources to the benefit of communities and according to the country's social and economic interests.

Various secondary legislation (by-laws) have been included to support Law 111/2012 and Law 6/2018. Those that relate to RBMP are as follows:

- DCM No. 416, dated 13.05.2015 "on the approval of general and special conditions, accompanying documentation, period of validity, application forms for authorizations and permitting, procedures for decision making and types of authorization and permits for use of water resources";
- DCM No. 797 dated 29.09.2010 "on the approval of hygiene and sanitary regulation "for water quality management>>";
- DCM No. 63 dated 27.01.2016 "on the reorganization of operators providing water supply, wastewater collection and treatment services";
- DCM No. 504 dated 6.07.2016 "on the establishment of the National Water Supply and Sewerage Agency";
- DCM No. 643, dated 14.9.2011 "on the approval of the National Sectorial Strategy of Water Supply and Wastewater Services";
- DCM No.125, dated 02.03.2006 "on establishment of the NWC updated by DCM No. 1080 dated 18.12.2013, "on the establishment and composition of the NWC and further updated by DCM No. 268 dated 6.04.2016 on the approval of the regulation on functioning of the NWC, in turn updated by DCM No. 590, dated 18.10.2017 "on establishment and functioning of the NWC";
- DCM No.177, dated 26.03.2014 "on creation and composition, functions, responsibilities and duties of the Special Commission on Transboundary Water Management";
- DCM No. 342 dated 4.05.2016 "on the approval of the territorial and hydrographic river basin borders in the Republic of Albania, the head office location and composition of the council for each of them";
- DCM No. 230, dated 23.4.2014 "for the composition, organization and functioning of the Technical Secretariat of the National Council Water", which in turn was superseded by the WRMA established under Law 6/2018;
- DCM no. 379, dated 25.05.2016 for approval of regulation "Quality of Drinkable Water", repealing the DCM no. 145, dated 26.02.1998 for approval of Hygienic – health regulation on control of drinking water quality, design, construction and supervision of supply drinking water system";
- Draft Decision "on the content, development and implementation of National Water Strategies, of River Basin District Management Plans and of Flood Risk Management Plans", currently approved by the NWC on 17.02.2015 but still to be approved by the Council of Ministers. This DCM is the most important by-law act of Law No.111/2012. It sets out the contents and the procedures for the development and implementation of the National Water Strategies, RBMPs and Flood Risk Management Plans. These strategies and plans are subject to

the SEA procedures. The DCM annexes contain detailed descriptions on EU WFD and EU Flood Directives issues.

In terms of compliance to other relevant laws the provisions of Law No. 6/2018 and Law No. 111/2012 are in accord with the Law No. 9115/2003 "On the environmental treatment of wastewater", as amended by Law No. 8743/2001 "On state immovable properties" in conjunction with the Maritime Code, Article 5, Law No. 10081, dated 23.02.2009 "On licenses, authorizations and permits in the Republic of Albania" and other by-laws, as amended, as well as Decision No. 643, dated 14.09.2011 of the Council of Ministers "On the approval of the National Service Sector for Water Supply and Sanitation". Law 111/2012 and Law 6/2018 are also in compliance with:

- SEC (2009) 386 - White Paper - Accompanying Document on Water;
- COM (2009) 147 final - White Paper on European Framework of Action;
- WFD Guidance Document no. 24 - Basin Watershed Management in a Changing Climate;
- Directive 2000/118/EC - on groundwater;
- SEC (2010) 166 final - Staff Working Document as enclosed document of the Directive on Groundwater;
- SEC (2010) 1096 final - Report on Groundwater Directive;
- Directive 91/271/EEC - on urban wastewater;
- Directive 2008/105/EC - on environmental quality standards in the field of water policy;
- COM (2004) 472 - Communication on Flood Risk Management, Prevention, Protection and Mitigation;
- COM (2007) 414 final - Communication on lack of water scarcity and droughts. Plan Report on Droughts;
- COM (2007) 354 final - Green Paper on adapting to climate change.

Law 111/2012 and Law 6/2018 are partly in compliance with:

- Directive 2006/118/EC of the European Parliament and Council, dated on 12 December 2006 “On the protection of groundwater against pollution and deterioration”, regarding definition of "baseline levels". The rest of this Directive is fully transposed;
- Directive 2007/60/EC “On flood risk management”, the outstanding issues being the legal definition of the terms "flood" and "flood risk".

2.6 COHERENCE CHECK – DRAFT RBMP WITH OTHER NATIONAL POLICIES

Substantial progress has been made with the development of national strategic legislation and policy related to environmental protection, most linked with EU accession and other obligations relating to international charters and protocols.

One of the tasks of the SEA is to check the coherence of a plan, strategy, policy or program with the strategic documents on a higher level. The objectives of national strategies that are relevant for the water and environmental sector in Albania were compared to the environmental objectives of the Draft RBMP to determine coherence between the national strategies and the Draft RBMP. The main issues are summarised below. The seven environmental objectives of the draft RBMP are as follows:

1 To promote the sustainable use of water resources, their fair distribution among users, maximizing economic benefits in respect of environmental conditions and sustainable management principles
2 Preservation and achievement of minimal "good" ecological and chemical status for surface water bodies that have "less than good", "poor" or "very poor" status. (rivers, lakes, transitional / transitional waters, coastal, artificial and highly modified water bodies)
3 Prevention of pollution to avoid a deterioration of groundwater quality and to attain a good chemical status in Groundwater bodies (GWBs).
4 Preservation and achievement of minimal "good" quality for bathing water (internal, coastal and transitional)

5 Reduction of flood risk and losses for life, livelihoods, health, economy, cultural and environmental assets of persons, businesses and communities
6 Improvement of the safety irrigation dams
7 Preservation and/or reduction of the rate of erosion in rivers

During preparation of SEA a check has been undertaken on coherence between the main priorities and key strategic commitments from the RBMP against the main objectives and priorities of the Albanian strategies considered important for development, namely:

› The National Strategy for Integrated Water Resources Management
› The National Strategy for Development and Integration (NDSI II) 2013-2020
› National Crosscutting Strategy for Decentralization and Local Governance 2014-2020
› National Strategy for Energy 2018-2030
› National Biodiversity Strategy of Albania for the Period 2012-2020
› Local General Development Plans for Municipalities within the Semani Basin

2.6.1 National Strategy for Integrated Water Resources Development

The National Strategy for integrated water resources management (IWRM Strategy), designed for the period 2017–2027, was prepared by MoARD and adopted on 7th February 2018 by the Council of Ministers Decision No 73.

The IWRM Strategy aims to address and guide policies, as well as to stimulate operational and investment developments across all sectors over a 10-year time frame. It does not define detailed actions for all specific water sectors but includes an overall action plan that serves as the framework and sets the overall strategic direction, setting conditions for other water sector related strategies.

The IWRM strategy takes into consideration adaptation strategies in dealing with climate change. However importantly, the related proactive measures that need to be agreed and implemented are yet to be fully examined. Some underlying questions include:

› how to cope with increasing the number of reservoirs to extend the national potential for hydropower generation and/or irrigation demands, when reservoirs are notorious (their potential) in exerting "hydromorphological pressures" on aquatic ecosystems? and
› should flooding risks be anticipated by heightening dykes along flood-prone stretches of river and/or, creating/extending riparian "buffer zones" and/or steering the operating regimes of reservoirs?

The RBMP for Semani takes the IWRM strategy fully into consideration and is well aligned to the EU WFD.

2.6.2 Draft RBMP versus NSDI

Albania has no national strategy for sustainable development as such. The implementation of the first NSDI (NSDI-I), approved in 2008 for the period 2007–2013, was extended to 2014. The NSDI is de facto the instrument of planning for sustainable development, coordinating the objectives of development and those of integration into the EU. The NSDI-II points out the lessons learned through implementation of the NSDI-I. The NSDI-II acknowledges that the NSDI-I failed to sufficiently address the aspect of capacities required for the implementation of policies and absorption of considerable financing.

The NSDI-II, initially drafted for the period 2013–2020, was approved for the period 2015–2020 in May 2016. The NSDI-II represents a synthesis of sectoral and cross-cutting strategies and other planning documents drafted in the period until the end of 2015.

The vision of the NSDI-II is based on the delivery of the main objective, which is integration with the EU, and four strategic policy pillars: (1) ensuring economic growth through macroeconomic and fiscal stability; (2) ensuring growth through increased competitiveness and innovation; (3) investing in human capital and social cohesion; and (4) ensuring growth through connectivity, the sustainable use of resources and territorial development. The six priorities of the Government are: (1) innovative and citizen-centred public services (good governance); (2) recovery and financial consolidation of the energy sector (energy); (3) fostering innovation and competitiveness (FDI and domestic investments); (4) integrated water management; (5) integrated land management; and (6) financial structural reform.

The strategic objectives of the NSDI-II on environmental protection are:

- 1. Achieving measurable results in air quality by 2020 through:
  - 1.1 Reducing pollution levels in urban areas;
  - 1.2 Reducing the impact of air pollution on human health.
- 2. Reaction towards climate change and the contribution to protect the ozone layer by 2020 through:
  - 2.1 Reducing greenhouse gas emissions, compared to a baseline scenario for reduction of CO_2 emissions, by 2030;
  - 2.2 Reducing the amount of HCFCs.
- 3. Intensifying and strengthening nature protection by:
  - 3.1 Increased surfaces of protected areas through growth and integrated management of protected areas;
  - 3.2 Establishment of Natura 2000 ecological network;
  - 3.3 Ensuring conservation status of endangered/threatened species and habitats.
- 4. Strengthened management and conservation of forestry and pasture resources through:
  - 4.1 Reduction of illegal logging in forests by 2020;
  - 4.2 Formulation of management plans for all forestry economies in the country;
  - 4.3 Rehabilitation of degraded areas.
- 5. Strengthened water resources management and preservation through:
  - 5.1 Adoption of the National Strategy on Integrated Water Resources Management;
  - 5.2 Establishment of a national cadastre of water resources;
  - 5.3 Introduction of a water resource inventory;
  - 5.4 Formulation and implementation of water basin management plans;
  - 5.5 Meeting water quality levels;
  - 5.6 Rehabilitation of damaged riverbeds;
  - 5.7 Aligning national legislation with EU legislation.

The main strategic pillars and strategic priorities of the NSDI II either do not apply or are neutral to most of the objectives of RBMP. However, the fifth objective of the NSDI II " Strengthened water resources management and preservation" is in good coherence with the RBMP environmental objectives.

2.6.3 Draft RBMP versus National Crosscutting Strategy for Decentralization and Local Governance

The National Crosscutting Strategy for Decentralization and Local Governance (NCSDLG) 2014-2020 presents the government's vision towards strengthening local democracy and advancing the decentralization process on best European standards. The policy goals and objectives of this strategy are fully aligned with the overall goals and objectives of the National Strategy for Development and Integration 2014-2020 for social and economic development of Albania its path towards European Integration. In this regard, the Law on the Territorial and

Administrative Division of Local Government Units No. 115/2014 determined the administrative-territorial division of the country into 12 regions and 61 municipalities, in place of the previous 12 regions and 373 local government units (65 municipalities and 308 communes). The new division is meant to overcome high fragmentation of local government units to enable the provision of more efficient investments in public services, including public transport, water supply and urban waste management.

The relevant objectives regarding water and the environment within the NCSDLG fall under Part III – Own Functions as follows:

- Review the scheme of functions and competencies in the sector of water supply and sewage
- Review the scheme of functions and competencies in the sector urban waste
- Conduct a study on expansion of functions and competencies of LGUs in rural development and agriculture
- Review the legislation on decentralization of functions of maintenance of secondary and tertiary irrigation and drainage network
- Design local plans on management of and investments in the secondary and tertiary irrigation and drainage network
- Design local plans on management of forests and pastureland
- Review law on social housing and provide support for design of social housing plans at local level
- Support strengthening of tourism structures at local level
- Clarify functions of responsibilities in tourism and cultural heritage; review legislation
- Establish an integrated system of development for areas and facilities of cultural heritage at local level

The NCSDLG has good coherence with the RBMP environmental objectives apart from the plans for tourism at local level which may cause conflict regarding strategic pillars and strategic priorities of the NSDI II either do not apply or are neutral to many of the objectives of RBMP. However, the fifth objective of the NSDI II " Strengthened water resources management and preservation" is in good coherence with the RBMP environmental objective

2.6.4 Draft RBMP versus National Energy Strategy

Albania recently adopted the National Energy Strategy for the period 2018-2030 (Decision No. 480, dated 31.7.2018 which is pursuant to Article 100 of the Constitution and point 2 of Article 4 of Law no. 43/2015, "On the Electricity Sector".

The National Energy Strategy 2018-2030 will be reviewed every 3 (three) years. The Ministry of Infrastructure and Energy shall be responsible for drafting the Action Plan of the Strategy, (due by December 2018). The following stakeholders were consulted: the Ministry of Infrastructure and Energy, the Ministry of Finance and Economy, the Ministry of Tourism and Environment, the Energy Regulatory Entity (ERE), the Albanian Power Corporation (KESH), the Transmission System Operator (OST), the Energy Distribution Operator Electricity Company (OSHEE), Energy Efficiency Agency, Energy Efficiency Fund, State Technical and Industrial Inspectorate, public enterprise in natural gas transmission and distribution activities "ALBGAZ", public enterprise in exploration and production of crude oil " Albpetrol ", the National Agency of Natural Resources, the Concession Treatment Agency, the National Territorial Planning Agency and the National Territorial Council and the National Environmental Agency.

The future challenges currently facing the Albanian energy sector include:

- Supporting economic development in various economic and social sectors;
- Increasing the security of power supply in general and electricity in particular by taking an active part in the regional energy market, improving energy efficiency, increasing the share of renewable energy sources and other conventional energy sources while at the same time take important measures for environmental protection;
- Gasification of the energy sector by maximally utilizing the TAP, IAP project and the potential link between Albania and Kosovo with the natural gas line.

The specific objectives of the 2018-2030 National Energy Strategy are:

- Continue to reduce losses in the electricity distribution network from 26.4% in 2017 to 10% in 2030 - this level compared to all European countries;
- Continued increase of electricity collections from 90% in 2018 to 98% in 2030 - a level comparable to all European countries;
- Increasing the contribution of primary energy sources versus total supply with primary energy sources at 52.5% in 2030;
- The opening of the electricity market reaches 100% in 2025 by simultaneously building a simple and viable scheme for the protection of low-income household customers. In this framework, the Government of Albania, in cooperation with the Government of Kosovo, with the great support of USAID and the Energy Secretariat are working on the integration of electricity markets of Albania and Kosovo, the establishment of the Albanian Electricity Exchange with a long-term objective of integration of our markets in the European market;
- Economy and Albanian society reach a level of energy savings versus total consumption by 15% in 2030;
- The rate of renewable energies versus total consumption reaches 42% in 2030;
- Reduction of GHG emissions versus total reached 11.5% in 2030;
- Natural gas penetration versus total supply with primary energy sources reaches 20% in 2030.
-

The energy strategy is in coherence with the RBMP regarding the increase in energy efficiency and optimisation of energy sources by using renewables as much as possible, which in this case implies hydropower production. Several of the energy strategy objectives have no relevance to the RBMP environmental objectives. However, the Semani RBMP requires additional studies on small hydropower construction in Semani River Basin, to ensure a sustainable development according to ecological equilibrium and hydropower efficiency. This is elaborated in section 4.2.4 of the Semani RBMP. Of course, the main issue is lack of monitoring data which the RBMP addresses and advocates a substantial increase. This monitoring data is needed in order to assess a realistic minimum environmental flow.

An SEA for the Energy Strategy was prepared in 2017. One of the important recommendations was improvement and provision of new infrastructure, linked to commitments towards sustainable management of natural resources, to meet the objectives of the EU legal framework for enrollment and compliance with the legal framework for renewable energy sources, which is expected to improve in particular the ecological status of aquatic bodies and aquatic ecology in Albania.

The priorities and objectives that make up the strategy are expected to help alleviate climate change and encourage adaptation to climate change. Climate change adaptation measures include enhancing the sustainability of energy supply and energy supply infrastructure, reviewing climate change and extreme weather events in water resources and implementing the Climate Change Adaptation and Mitigation Measures Strategy.

Some of the SEA recommendations are as follows:

- The need to strengthen co-operation and coordination between relevant authorities of certain economic sectors with environmental and health authorities, especially when planning new infrastructure construction.
- The need for further integration of strategy implementation in the energy sector with sectoral and local plans, with the aim of implementing the measures and procedures envisaged by the SEA and following the specific EIAs.
- The need to ensure the interaction between energy supply and energy production used for waste management, protected area management, climate change adaptation measures, etc., which is essential to avoid adverse environmental impacts in these concerned areas or sectors.

2.6.5 Draft RBMP versus National Biodiversity Strategy of Albania for the Period 2012-2020

The National Biodiversity Strategy is built on three main objectives (based upon the Convention for Biodiversity) namely: (1) Conservation of biodiversity; (2) the sustainable use of its components; and (3) the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, though, among other things, appropriate access to genetic resources, and transfer of relevant technologies.

The general objective of the Strategy is to contribute on the national level to the achievement of the 2020 target of halting the loss of biodiversity and the degradation of ecosystem services, and restoring them in so far as feasible, while stepping up Albania's contribution to preventing global biodiversity loss. To achieve this general objective, 9 strategic objectives and 59 operational objectives have been identified. The strategic objectives are as follows:

- Ensure and Promote the Sustainable Use of Components of Biodiversity
- Identify and Monitor Priority Components of Biodiversity in Albania
- Investigate and Monitor the Effects of Threatening Processes and Activities and their Causes
- Maintain or Restore Biodiversity and Ecosystem Services in Albania to a Favourable Conservation Status
- Improve the Integration of Biodiversity Concerns into all Relevant Sectoral Policies
- Promote and Contribute to an Equitable Access to and Sharing of Benefits Arising from the Use of Genetic Resources
- Improve and Communicate Scientific Knowledge on Biodiversity and Ecosystem Services
- Involve the Community Through Communication, Education, Public Awareness and Training
- Ensure the Provision of Adequate Resources for Biodiversity

Although many of the strategic objectives are not applicable to the environmental objectives from the RBMP there is coherence on promotion of sustainable use of water resources and for maintaining good ecological status in waters. However, there is some discordance with the biodiversity strategy relating to flood mitigation and irrigation activities through flood barriers, dams and embankments that detract from sustainable use of the components of biodiversity.

2.6.6 Local General Development Plans for Municipalities within the Semani Basin

During last years, most of the municipalities located at Seamani River Basin, has developed their general local plans, territorial Development Strategies and related SEAs. Some of such documents are approved, some others in the process of approval, and few municipalities are drafting the Development Plans, but not yet Territorial Develkopment Strategies and SEAs. In the table below is shown the status of this documents for each municipality of Semani Buna River Basin.

Municipalitiy	General Local Plan	Territorial Development Strategy	Strategic Environmental Assessment of GLPs of Municipality
Berat	Approved	✓	✓
Divjake	Approved	✓	✓
Fier	Approved	✓	✓

Lushnje	Approved	✓	✓
Kucove	Approved	✓	✓
Polican	Approved	✓	✓
Skrapar	Approved	✓	✓
Ura Vajgurore	Approved	✓	✓
Korce	Approved	✓	✓
Devoll	In approval process	-	-
Mallakaster	In draft phase	-	-
Kolonje	In draft phase	-	-
Patos	In draft phase	-	-

Table 2/1 Local Development Plans and other strategic documents in the territory of Semani River Basin

The plans and strategies, defines the pollution and contamination sources, polluted sites, offers guidelines to mitigate or control them, sites with high and intensive erosion, or in risks from slides etc. The Semani RBMP, has considered in general a good part of above mentioned plans and strategies which were prepared during the project period or before it. The measures to face the contamination from oil exploitation and treatment, avoid its effects, or flood and erosion control still remains in general terms. Territorial plannings are made based in sites in risks, PAs and agricultural sites, tourism and recreational areas, industrial and settlement sites development and plans. Between others in such GDPs is mentioned the efforts that need for waste water treatment plants, planting of riparian vegetation in rivers valleys, control of river basin exploitation of gravel and sand pueposes, using/converting of riparian areas for recreation, considering risk from floods during atmospheric events, protection of water resources etc. Any of the study mentioned in the table above, propose increasing of PAs number and surfaces. In Berati GDP, are proposed protection measures again pollution in the Osum and Molishti Rivers, improvement of the morphology of the river basin, control of industrial pollution and discharges in Osum River, control of pollution cames from ex industrial activities, which still is impacting the river waters etc. Separate and detailed studies should be undertaken to ensure the right plans on solid waste and waste water management, protection of biodiversity, increasing of the number or surface of PAs, flood and erosion controll and implementation of resilient action plans due to climate change effects etc. Still the Semani RBMP, goes in line with general terms represented in such plans and strategies. Semani RBMP has given enough details on water use, exploitation of water resources etc.

2.7 RBMP PROGRAMME OF MEASURES

In adherence to the EU WFD the RBMP must put forward a Programme of Measures (PoM) to achieve the environmental objectives for the basin mentioned in Section 2.6 above. The PoMs can either be "basic" or "supplementary" measures and are developed based directly in line with the Environmental Objectives (EOs) reflecting the seven distinct categories, each of which is inclusive of ‘basic’ and/or ‘supplementary’ measures, as follows:

1. Promote the sustainable use of water resources, their fair distribution among users, maximizing economic benefits in respect of environmental conditions and sustainable management principles, which includes measures for: a) Improved water supply, b) Improved collection of waste water, c) Water for irrigation for

agriculture land, d) Improvement drainage network for irrigated agriculture land, e) Sustainable development aquaculture in specified zones, f) Use of hydro energy potential and g) Fulfilling of industrial water requirement

2. Preservation and achievement of minimal "good" ecological and chemical status for surface water bodies that have "less than good", "poor" or "very poor" status. (Rivers, lakes, transitional / transitional waters, coastal, artificial and highly modified water bodies). Specific measures will result in the following: a) Improvement of monitoring for all water bodies, b) Improvement of ecological status and chemical quality for all surface water body types, c) Introduction of good agricultural practices – assessment, monitoring and management, d) Reduction of contamination from use of pesticides in agriculture and e) Reduction of illegal use of inert and river gravels
3. Prevention of pollution to avoid a deterioration of groundwater quality and to attain a good chemical status in GWBs Based on the EO, which has two sub activities: a) Elimination/reduction of the amount of hazardous substances and nitrates entering groundwater bodies, and b) Increase of wastewater treatment efficiency to avoid groundwater pollution from urban and industrial pollutions sources
4. Preservation and achievement of minimal "good" quality for bathing water (internal, coastal and transitional), which requires: a) Increasing the number of coastal monitoring stations for microbiological elements, and b) Increasing the number of monitoring parameters according to the requirements of the European directives
5. Reduction of flood risk and losses for life, livelihoods, health, economy, cultural and environmental assets of persons, businesses and communities, which has two sub activities: a) Reducing the number of residents affected by flooding, and b) Reducing the agriculture land affected by floods
6. Improvement of the safety irrigation dams
7. Preservation and/or reduction of the rate of erosion in rivers, required for: a) Less vulnerable areas (20% of the territory), ad b) Highly endangered areas (70% of the territory)

The PoM in the Semani River Basin is developed within an action plan from 2018-2030 divided into ‘basic’ and ‘supplementary’ measures in the short term, middle term and longer term. The total cost for the implementation of the proposed measures for the Semani River Basin is Euro 554,900,000 with approximately 11.7% of these costs attributed to ‘supplementary’ measures and the majority to 'basic' measures (see Table 2-1 below).

Table 2-1: Costs for the Programme of Measures within the Semani Basin

PoM based on Environmental Objectives	Basic Measures (Million Euro)	Supplementary Measures (Million Euro)	Estimated Value (Million Euro)
1. To promote the sustainable use of water resources, their fair distribution among users, maximizing economic benefits in respect of environmental conditions and sustainable management principles	300.30	34.30	334.60
2. Preservation and achievement of minimal "good" ecological and chemical status for surface water bodies that have "less than good", "poor" or "very poor" status. (Rivers, lakes, transitional / transitional waters, coastal, artificial and highly modified water bodies)	157.65	22.85	180.50
3. Prevention of pollution to avoid a deterioration of groundwater quality and to attain a good chemical status in GWBs	7.00	1.55	8.55

4. Preservation and achievement of minimal "good" quality for bathing water (internal, coastal and transitional)	-	3.50	3.50
5. Reduction of flood risk and losses for life, livelihoods, health, economy, cultural and environmental assets of persons, businesses and communities	25.00	0.90	25.90
6. Improvement of the safety irrigation dams	-	1.20	1.20
7. Preservation and/or reduction of the rate of erosion in rivers	-	1.65	1.65
Total	**489.95**	**64.95**	**554.90**

The costs are distributed throughout the period 2018-2030 as follows: i) Euro 66.82 million short term 2018-202, ii) Euro 370.57 million medium term 2021-2026, and iii) Euro 117.51 million long term, 2027-2030.

The SEA Consultant considers the Programme of Measures adopted in this RBMP an excellent start and strongly advises the Government of Albania to start the process of preparing for this.

3 SEA PROCESS AND METHODOLOGY

Article 10 clause 2 (b) of Law 91/2013 requires " A description of the methodology applied for drafting the SEA report, including the difficulties encountered during its preparation, and the existing information sources used for drafting the report". These details are provided in this chapter.

3.1 WHAT IS SEA?

Strategic Environmental Assessment (SEA) is one of the key instruments for integrating environmental issues and principles of sustainable development in strategic planning and decision making. SEA, through detailed environmental analysis and review of objectives of the plan (the RBMP in this instance), can be considered as "a systematic progression that predicts and evaluates the plans' effects at the earliest stages of decision-making process".

More concretely, the SEA process supports the authorities responsible for plans and programs, as well as decision-makers, to consider:

- Environmental trends and impacts of projects proposed in the overall RBMP;
- Objective Compliance and Environmental Indicators with the Plan or Program;
- Significant environmental impacts of the proposals and projects envisaged in the plan;
- Environmental mitigation measures in the proposed overall plan to avoid, reduced or mitigated negative effects is one of the SEA goals; and
- Suggestions or additional information during public hearings, consultation with interest groups etc., to improve the information and level of review of the proposed projects.

The SEA Law (mentioned in the next section is relatively new for Albania (law 91/2013) and closely follows the EU Directive 2001/42/EC and sets out the guidelines to undertake a strategic environmental impact assessment for plans or programs, when the implementation of a project is likely to cause significant impacts (both positive and negative) on human health and the environment. The EU Directive (and hence Law 91/2013) follows widely recognised principles of SEA that can be summarised as follows:

- Sustainable development Principle;
- Principle of prevention and taking precautionary measures
- Principle of conservation of natural resources
- Principle of mutual accountability and cooperation
- Principle of promoting environmental protection activities
- The polluter pays principle; and
- The principle of public awareness and participation in decision-making

3.2 SEA LEGAL FRAMEWORK

The SEA legal framework includes a mandatory SEA Law in Albania which mirrors EU legislation and international best practices.

3.2.1 Law no. 91/2013 "On Strategic Environmental Assessment",

Law 91/2013 aims to provide environmental protection and sustainable development through the incorporation of environmental issues over drafting, approving, reviewing, modifying or modifying plans or programs with potential negative consequences to the environment. The law defines the relevant institutions and authorities, the duties and their responsibilities as well as the rules of procedure for conducting strategic environmental assessment. As previously mentioned, the law is aligned with Directive 2001/42 / EC, dated 27 June 2001.

The SEA process is subject to the drafting of all plans and programs for agriculture, forests, fisheries, energy, industry, mining, transport, waste management, water management, telecommunications, tourism, national plans local planning of urban and rural areas, including landscape protection, land use.

The SEA process requires the preparation of a report on the environmental consequences of a plan or program, the conduct of stakeholder consultation and consideration of the results of the report and consultations in obtaining final decisions on the plan or program, in accordance with the procedures set out in Law 91/2013.

SEA procedure for both national and local-level plans and programmes is conducted at the national level, and includes the following stages:

- Notification of the Ministry of Environment by the proposing authority;
- Consultation with stakeholders on the issues that shall be addressed in the SEA report (scoping);
- Drafting of and public consultations on the preliminary SEA report;
- Drafting of the final SEA report;
- Review of the final SEA report and issuance of the Minister's declaration (i.e. official position of the
- Ministry);
- Decision of the proposing authority for adoption of the plan or programme;
- Monitoring of effects of the plan or programme on the environment, and reporting.

A detailed list of plans and programmes that are subject to SEA has been approved, to ensure the consistent application of SEA (DCM No. 507 dated 10.06.2015). While the 2013 Law refers to "plans and programmes" only, DCM No. 507 extends SEA requirements to "strategies, plans, programmes and other planning documents". The enumeration of sectors in DCM No. 507 is adapted to the national economy.

Subsidiary legislation has been adopted to establish rules for consultation with stakeholders and public hearings during the SEA process (DCM No. 219 dated 11.03.2015) and procedures for SEA in a transboundary context (DCM No. 620 dated 07.07.2015). The national methodology on SEA still must be approved.

3.2.2 European Commission Directive 2001/42 / EC

This EU Directive on the assessment of the effects on the environment from the plans or specific programs (commonly called the SEA Directive). More information is available at http://ec.europa.eu/environment/eia/home.htm.

3.2.3 The Espoo Convention

The Espoo (EIA) Convention sets out the obligations of Parties to assess the environmental impact of certain activities at an early stage of planning. It also lays down the general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries more information is available at: https://www.unece.org/env/eia/eia.html

3.2.4 Law no. 10 431, dated 9.6.2011 "On the Protection of the Environment"

Legislation on environmental protection has been progressively enriched by legal and sub legal acts that are generally approximating with the EUs environmental directives and standards.

3.2.5 Law no. 9587, dated July 20, 2006, "On the Protection of Biodiversity"

The main purpose of this law is to ensure the protection and preservation of biological diversity. In addition, regulation of the sustainable use of the components of biological diversity through the integration of the main elements of biodiversity in the strategies, plans, programs and decision making of all levels.

3.2.6 Other relevant Albanian legislation relating to the SEA

There are a considerable number of laws, decisions and other relevant legislation relating to the environment. Some of these are bulleted below and Annex 1 provides a complete listing.

- Law no. 8906, dated 6.6.2002 "On Protected Areas" amended by Law No. 9868, dated 4.2.2008 "For some additions and amendments to law no. 8906, dated 6.6.2002 "On Protected Areas".
- Law No. 10463, dated 22.9.2011 "On Integrated Waste Management"
- Law no. 10440, dated 07.07.2011 "On the Assessment of the Impact on the Environment
- Law no.9115, dated 24.7.2003 "On the environmental treatment of wastewater"
- Law no. 9108, dated 17.7.2003 "On Chemical Substances and Preparations
- Law no. 9774, dated July 12, 2007 "On the assessment and management of noise in the environment
- Law no. 107/2014 "On territorial planning and development
- Law No. 8652, dated 31.07.2000 on the Organization and Functioning of Local Government

3.2.7 International Environmental Conventions

Besides the Espoo Convention mentioned above, Albania has ratified several international conventions and environmental protocols that improve environmental protection and institutional strengthening and that have been passed into Albania law. These include:

- The Ramsar Convention on Wetlands came into force for Albania on 29 February 1996. Albania presently has 4 sites designated as Wetlands of International Importance, with a surface area of 98,181 hectares. Two of these sites are within the Semani Basin e.g. Divjake - Karavasta Lagoon.
- The Bern Convention; "On the Conservation of Europe's Wild Flora and Fauna and the Natural Environment", passed in Law no. 8294, dated 02.03.1998.
- The Barcelona Convention; "For the protection of the marine environment and the coastal area of the Mediterranean Sea", passed into Law No.8690, dated 16.11.2000 "On the Accession of the Republic of Albania to the Convention of Barcelona as well as 6 associated protocols ".
- Basel Convention; "For the control of transboundary movements of hazardous waste and their destruction", passed into Law no. 8216, dated 13.05.1997.
- The Bonn Convention On the conservation of migratory species of wild animals" and Agreements for Cetaceans (ACCOBAMS), European populations of bats (Eurobats), and conservation of African-Eurasian Migratory Water birds (AEWA), which Albania accepted by Law No. 8692, dated 16.11.2000.
- Vienna Convention; "On the Protection of the Ozone Layer" and the Montreal Protocol "substances that dilute the ozone layer" passed into one Law No.8463, dated 10.03.1999.
- Aarhus Convention; "About the public's right to have information, to participate in decision-making and to address the court on environmental issues." passed into Law No. 8672, dated 26.10.2000.
- United Nations Framework Convention on Climate Change, October 1994.
- United Nations Convention on Biodiversity, January 1994. Albania is a Party since 10.11.1996 and the Nagoya Protocol on access to genetic resources and sharing of benefits that arise from their utilization, to which Albania has acceded in January 2013 after the approval of the Law No. 113/2012 date 22.11.2012
- Cartagena Protocol on Biosafety; ratified by the Albanian Parliament through the Law No. 9279, date 23.9.2004 "On the accession of the Republic of Albania at Cartagena Protocol on Biosafety to the Convention "On biological diversity" published at Official Journal No.74, date 27.10.2004.
- Convention for the Protection of the Marine Environment and the Coastal Zone of the Mediterranean Sea.
- Convention for the Conservation of Europe's Wildlife Flora and Fauna.
- Convention "On International Trade in Endangered Species of Wild Fauna and Flora" (CITES), in which Albania has acceded after the approval of the Law No. 9021, date 6.3.2002
- Convention for the Protection of Wildlife Species.
- Convention on Atmospheric Pollution over long Distances.

- The Convention on Hazardous Waste and their Destruction, March 22, 1989.
- Stockholm Convention; "On Sustainable Organic Pollutants", passed into Law no. 9263, dated 29.07.2004.
- United Nations Convention to Combat Desertification (UNCCD), in which Albania is Party after the approval of the Law No. 8556, date 22.12.1999 "

Further details on Conventions are provided in Annex 2.

3.3 THE KEY PHASES OF THE SEA PROCESS

The SEA process is broadly comprised of the following steps, as outlined in Table 3-1.

Table 3-1: Stages in the SEA Process

SEA Step / Stage	Purpose	Status regarding this project
Screening	To reach a decision, on whether an SEA of the RBMP was required.	This stage was completed by the MoARD in 2017 with a decision to undertake SEA of the two RBMPs.
Scoping and statutory consultation	To clarify the scope and level of detail to be considered in the environmental assessment. This was done in consultation with the defined statutory body for SEA in Albania (i.e. MoTE) and other stakeholders.	Most of the scoping was already performed under the preparation of the draft RBMP. This stage was finalised in June 2018 with the submission of this inception report.
Environmental assessment and consultation	To assess the likely significant impacts on the environment because of implementation of the RBMP and consideration of reasonable alternatives. The output from this stage of the process is a draft SEA Environmental Report that addresses the draft RBMP. Consultation on the draft RBMP and draft SEA report is then undertaken before a final SEA report is produced for the public hearing.	To stage will be completed in Early 2019 and is finalised with the completion of the draft and final SEA reports on the RBMP for Semani river.
SEA Declaration by the responsible Ministry	To identify how environmental considerations and consultations have been integrated into the final RBMP culminating in the production of an SEA Statement and Declaration.	To be completed in late Q3 and published with the Final RBMP in early Q4 2018.

3.4 THE NEED FOR STRATEGIC ENVIRONMENTAL ASSESSMENT

As mentioned above Albania Law 91/2013 on Strategic Environmental Assessment (SEA) and all related by-laws constitute the minimum requirement for the SEA assignment. The legislation requires that plans and programmes that might have significant environmental impacts (in this case the RBMPs for the Semani River) are subject to a SEA and in which case the requirements of Law 91/2013 need to be met as well as the UNECE Water Convention regarding protection and use of transboundary water courses and international lakes (The Helsinki) Convention; as well as the UN Convention on EIA in a Transboundary Context (the Espoo Convention). These two conventions that relate to the management of transboundary waters, have been signed and ratified by Albania. The timing of the SEA is important and must be ready concurrently with the RBMP being finalised. Hence the SEA needs to be prepared in parallel with the finalisation of the RBMPs.

4 DESCRIPTION OF CURRENT ENVIRONMENTAL SITUATION (BASELINE)

This chapter encompasses three clauses under Article 10 of Law 91/2013 namely clause 2 (e) "a description of the environmental components in the range of the proposed plan or program"; clause 2 (f) a description of the quality of the environmental elements in the area where the plan or program is proposed, which may be affected by the implementation of the proposed plan or program; and clause 2 (g) possible environmental interactions of the proposed plan or program, including in particular the problems relating to areas of particular environmental importance, such as protected areas". These details are provided in this chapter.

The chapter uses data on the physical-biological and human environments (the latter primarily focussing on socio-economics). The data collected are from existing sources of information, such as “the Hydro-meteorological Atlas”, "State of the Environment Reports", the “Physical Geography of Albania” (Edition of Albanian Academy of Sciences), INSTAT ALBANIA, data from offices of the relevant districts and from the draft RBMP. Due to limited time for the SEA no field surveys could be undertaken for verification purposes or for gap filling.

4.1 PROJECT SETTING

Albania is a small, very mountainous country, with a population of about 2.88 million people comprising 1.45 million men and 1.43 million women.[1] Around 58% of the population live in urban areas and this has steadily increased from 36% over the past 30 years. Notwithstanding, agriculture continues to be the foundation of Albania’s economy with nearly half of the workforce employed in this pastime and around 22% of GDP is generated by the sector.

In this context water is a strategic natural resource for the Republic of Albania and much of Albania’s economic activity is dependent upon the utilization of water resources. Over 90 % of energy production in the country is from hydropower plants, while agriculture is critically dependent on irrigation. However, the inadequate and poorly maintained infrastructure in each of the water-using sectors (especially regarding dams and reservoirs for irrigation) and the absence of good institutional coordination has resulted in the lack of water supplies becoming a key constraint to many economic activities and to satisfying basic social needs.

Although the country is rich in water resources, the ever-increasing effects of climate change with seasonal increasing temperatures and decreasing precipitation, causing changes towards milder winters, warmer springs, drier and hotter summers, and autumns will have serious consequences for water management. Water resources are expected to decrease by up to 14% by 2050.[2] These changing precipitation patterns will give rise to more heavy rainfall, combined with intense snowmelt induced by higher temperatures in spring, and leading to more frequent flooding. Additional pressures will come from population growth, economic development, and competition for resources.

Due to the above facts and sometimes competing requirements of the different water sectors, not surprisingly the Government of Albania (GoA) has identified water as a priority issue. The GoA see the need for an ‘overarching’ water resources strategy to be able to effectively manage water quality, quantity, and risks in a sustainable manner.[3] This is to ensure:

- Adequate access to water in sufficient quantity and quality for human and animal consumption;
- Security of food production;
- Balanced use of water resources for energy production and other industrial purposes;
- Protection of water dependent habitats, ecosystems, and biodiversity;
- Protection against water pollution, floods, and droughts; and

[1] According to latest INSTAT publication for population released January 1st, 2017. http://www.instat.gov.al/en/themes/population/publications/books/2015/press-release-population-of-albania-1-january-2015.aspx

[2] Chenoweth et al. (2011), Impact of climate change on the water resources of the eastern Mediterranean and Middle East region: Modelled 21st century changes and implications, Water Resources Research, Vol 47

[3] National Strategy for Integrated Water Resources Management, MoARD, Feb 2018

› Mitigation of and adaptation to climate change.

4.2 THE STUDY AREA

4.2.1 The Semani River

The Semani River lies within the central part of Albania and its basin is the third largest basin in Albania. Surface water areas include the Karavasta Divjake Lagoon adjacent to the Adriatic coast in the East and Lake Prespa lying on the border with Greece to the east.

Source: after Draft RBMP for Semani River

Figure 4-1: Location map of the Semani River Basin

It is formed by two main branches of his Devolli River and Osumi River that account for large reaches of their respective catchment within the overall Semani basin.

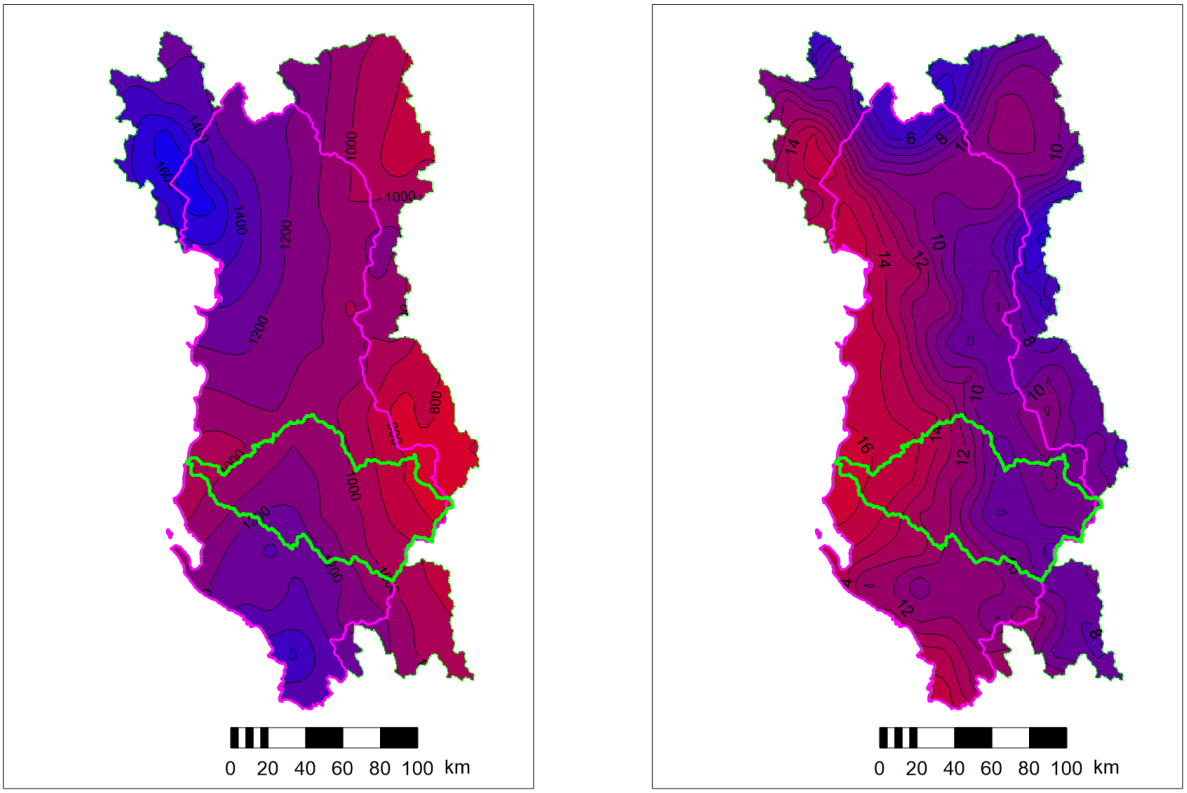
4.3 ENVIRONMENT

4.3.1 Climate

Albania lies within the sub-tropical Mediterranean climate zone that is characterised by mild winters with large amounts of precipitation, and hot and dry summers that strongly influence water resources.

The coastal lowlands which include the Semani River Basin have typically Mediterranean weather; the highlands have a Mediterranean Continental climate. Precipitation at the coast is around 1,000 mm/year but tapers off to the east and the south-east where is can be about 800 mm/year. At higher elevations, most of the precipitation in winter months is in the form of snow that only runs off when the temperature increases in the spring (Figure 4-2).

Temperatures follow a similar pattern having annual average temperatures higher in the north west of the basin and lowest in the east. Understandably therefore, potential evapotranspiration (PET) follows a similar form with annual average PET of up to 1,000 mm/year in the north west of the basin adjacent to the Adriatic coast.



Average Annual Precipitation (mm/year) **Average annual temperature (°C)**

Source: RBMP for Semani River (Mott MacDonald 2018)

Figure 4-2: Precipitation and temperature profiles in the Semani River Basin

Winds are multi-directional, predominantly from the west (from the Adriatic Sea) that bring in precipitation. They are also from the north east (from Montenegro) that can be strong and drying, causing problems for agriculture.

The Climate of the Semani River Basin, changes from its East part, to the central part and the western part (River discharge in Adriatic Sea). The eastern, has the lower temperatures, which goes to be increased in the Western.

In the Eastern part, the highest average temperatures are in the summer (July and August) about 21.20C, with a maximum of 34.40C. The minimum temperatures are in winter, January, about 1.50C with a minimum of -17.20C. In the top of the valley slopes the rainfalls are lower than surroundings of river body. In those highlands the average of rainfalls per year is about 710mm. This part of the River Valley is characterized by a dry climate in compares with other sites of the Semani River Basin. The snow is an abundant phenomenon during the winter. The solar radiation in this territory is about 2300 hour/year. This territory of Semani River Basin is the coldest territory of this basin. In the central part the climate has mainly Mediterranean Hilly characteristics. The winds coming from Adriatic Sea, worming the air masses coming from continental regions of Central Balkans. The yearly average of temperatures is about 15.90C. The average of minimum temperatures in winter is 7.20C (January-February) and the maximum in summer with 28.20C (July-August). The absolute minimum is -12.20C and the absolute maximum 47.10C. The western part of Semani River Basin is characterized by a typical Mediterranean Climate. The average air temperature is over 15 °C, with an average minimum temperature of 7.2 °C in January and an average maximum temperature of 23.9 °C in July. The minimum absolute temperature observed in this region is -13 °C, and the maximum absolute temperature is 42.5 °C. Precipitation in the Western territory of the Semani River Basin consists mainly of rain, almost in the winter, when the snow is extremely rare. Annual precipitation in this section is 986-1000 mm. Solar radiation is 226.32 kwh/m2 with about 2000 hour/year.

4.3.2 Climate change

The United Nations Framework Convention on Climate Change (UNFCCC); and the Intergovernmental Panel on Climate Change (IPCC) established by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) are the principal bodies to provide understanding of the risk of human-induced climate change. Within the context of the UNFCCC, Albania is required to submit "National Communications" that that outline the country's contribution to climate change and their response to the challenges it poses. The initial National Communication was submitted in 2002 and the Second National Communication in 2009. The third National Communication is the latest and was submitted in 2016 providing an updated inventory of greenhouse gases, both direct and indirect, and key sources. The study for the Third National Communication concentrated on the climate zone around the capital, Tirana, and the coastal zone "the Mediterranean field zone".

In September 2015, Albania submitted to the UNFCCC Secretariat its Intended Nationally Determined Contribution (INDC), adopted by DCM No. 762 dated 16.09.2015. The GoA committed to reduce CO_2 emissions in the period 2016–2030 by 11.5 % compared with the baseline scenario (2015). The reduction of CO_2 emissions is also identified under the NSDI-II strategic objective on reaction towards climate change.

Model simulations which are only predicted to national level, show that the expected annual increase in temperature could be up to 1.1°C by 2027, and 1.8°C by 2050. Rainfall is estimated to decrease by about 4% by 2027 and 6.1% in 2050. Temperature is expected to increase during all seasons. What is significant is that the largest increases are expected in the summer, which has an important consequence for added demand for irrigation water. A second consequence will be an increase in the frequency and intensity of summer thunderstorms. The temperate increases in spring will have an impact on flooding, as many floods are combination of rainfall and snowmelt.

By 2050, the range of annual precipitation total is expected to vary between 570mm (in the South-East of the country) and 2100mm (in the South-West area). The maximum value is estimated at about 2650-2850mm over the alpine zones. Due to the predicted higher average temperature in winter, more precipitation is likely to fall in the form of rain rather than snow, which will increase soil moisture together with soil erosion and run-off. Episodes of intensive rain are also predicted to increase. The number of days with heavy precipitation (24 hours maximum) compared to the 1961-1990 average is likely to increase by 1-2 days by 2027 and by 2-3 days by 2050.

Other parameters are also predicted to change (MEFWA, 2009):

- Cloudiness is expected to decrease by 2.6% by 2050 as compared to 1990. Due to the close relationship to radiation, the number of sunshine hours and global radiation are supposed to increase;
- Higher wind speed is expected to occur especially in summer;
- Rising temperature will be expected to contribute to an increased number of hailstorm days in summer;
- Higher temperatures will also affect the frequency and intensity of hot days and heat waves. The number of days with a temperature higher than 35°C is likely to rise by 2-4 days by 2050 compared to the 1961-1990 average.
- The number of frost days (with temperatures below -5°C) in high altitudes is expected to decrease by 4-5 days by 2027, and by 9 days in 2050.

4.3.3 Air Quality

Air pollution is an important cause for several respiratory diseases, carcinogenic diseases and effects on the cardiovascular and nervous system. Over the last few years, urban air quality within the Semani basin has been poor with high concentrations of particulate matter (PM_{10} and $PM_{2.5}$) but reducing due to improved management, control and completion of the legal framework. Approval of the National Environmental Air Quality Strategy and Law no. 162/2014, dated 04.12.2014 "On the protection of ambient air quality that complies with Directives 2008/50 / EC and 2004/107 / E has contributed to the improvement of air quality.

Notwithstanding air pollution continues to be a challenge and comes from the following sources.

- Oil field activity near Ballsh which a major cause for concern is.
- Burning of energy - household fuel consumption and low use of alternative energy in dwellings from solar panels causes air pollution especially in the discharge of dust, soot, carbon dioxide and nitrogen
- Vehicle activity - Transport is currently one of the main factors affecting urban air pollution. Vehicle use has increased over 30 times compared to 1990. Vehicles that do not meet combustion and fuel quality parameters, old cars discharge significant amounts of CO, NOx, vehicle traffic flux, dust emissions and gases that are caused by abnormal burning of fuel. Vehicle pollution is higher in the main cities in the basin e.g. Fier.
- Industrial discharges to the atmosphere, burning of hydrocarbons, agricultural products (e.g. pesticides blowing in the wind) and
- Mismanagement of urban waste and burning of water through incineration or on landfill

4.3.4 Noise

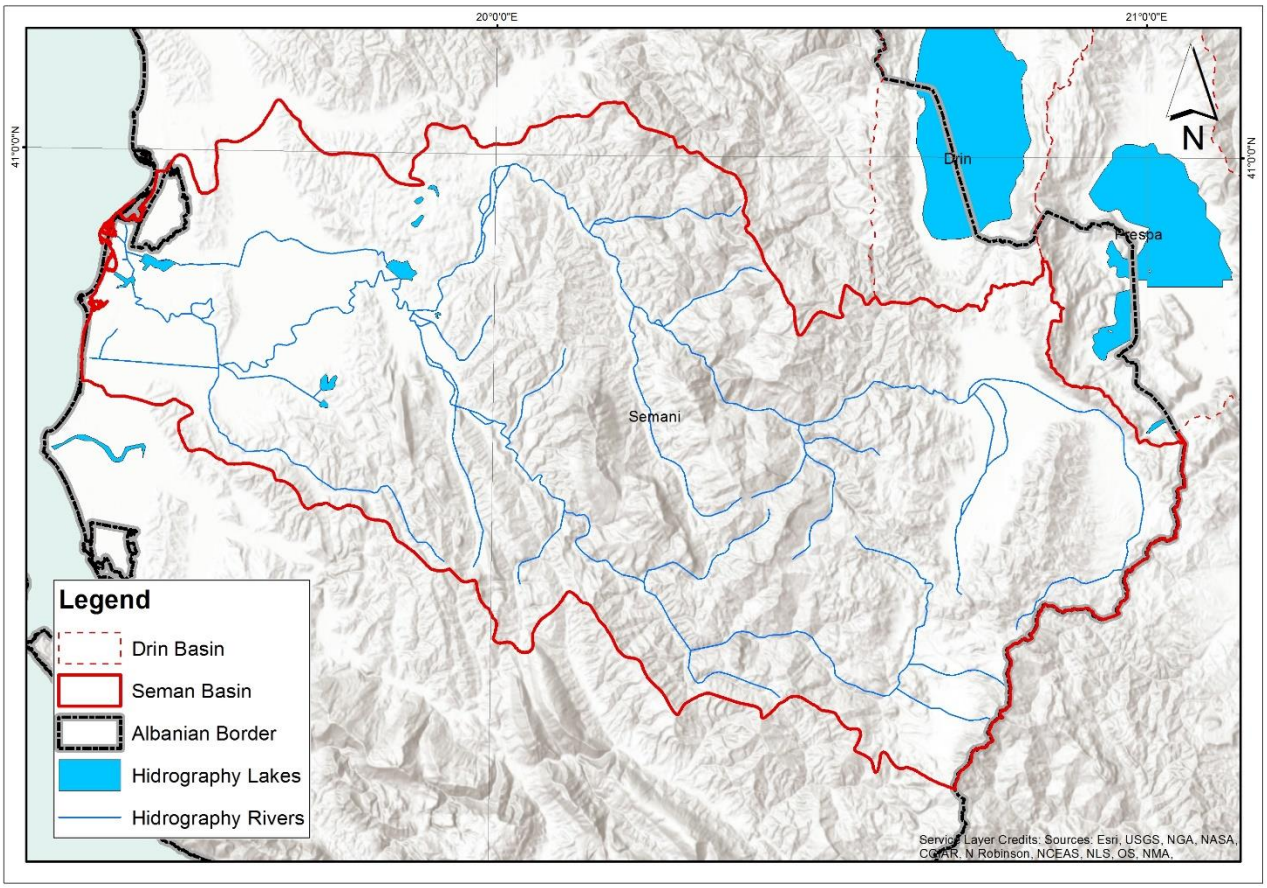
Very limited noise monitoring data exists within the Semani basin with selected single sources within the main settlements such as Fier. Background noise levels are like other urban environments and are consistent with increases from traffic and construction. The cities in the basin set a target of achieving the EU noise standard with background day levels of 55dB (A) and background night levels of 45 dB (A)). If traffic growth levels and construction are left unchecked, then these standards will not be realised. Further, with only limited monitoring it is not known if these background levels

4.3.5 Hydrology

The total area of Semani River basin is 5649 km^2 and its length is 281Km. Semani River as its two branches collect their water from a mountainous and hilly terrain, while its lower reach lies in the valley area (see Figure 4-3).

The Semani basin coincides with the corresponding hydrographical catchment of the Semani River spreading over 5,649 km^2. It is formed by two main tributaries: Devolli River (3,130 km^2) and Osumi River (2,073 km^2), which meet near the city of Kuçove.

The basic characteristics are an annual discharge volume of 2,700 million m^3 (Agim Selenica 2001/1). The last left bank tributary, the Gjanica River, drains oil fields and shows very high contents of oil and phenols, to name but a few; it is possibly the most polluted river in the country. This has already had disastrous effects on the biodiversity in the lower reach of Semani River and the nearby coastal areas. But it may also affect other uses, such as drinking water supply, by contaminating the groundwater. The water for irrigation purpose is taken upstream of the main pollution sources and should be safe. More recent analyses showed an improvement of the water quality in the lower reaches of the Semani River, linked to the strong decrease in oil extraction and the slowdown of chemical industry activities in Fier, but the quality is still far from good (Bashkim Lushaj et al. 2008, 2009/1, 2010, 2011; Çomo et al. 2013; Arben Pambuku et al. 20120, 2014).



Source: after Draft RBMP for Semani River (Mott MacDonald 2018)

Figure 4-3: Hydrographic map of the Semani River Basin

4.3.6 Groundwater

The Semani River Basin passes Albania in an East to West direction and exits into the Adriatic Sea. The course of the river passes over three main aquifer types; Quaternary, Carbonate and Magmatic (see Figure 4-4).

Quaternary Aquifer

The Korça aquifer, is characterized by porous rocks. In this part are lied 7-8 water bearing horizons separated from each other by clays layers that extended to most part of the Korça lowlands. The other important aquifer is this of Berati. This aquifer is composed by a water-bearing basin with considerable reserves of groundwater. According Semani RBMP, in the water bearing aquifer of porous rocks, gravel-alluvium deposits form the centre of the valley starting by Uznova to Fier. The thickness of the depositions, starting by the exit of Berati town towards Ura Vajgurore to Çiflig and Arrëz, are 58 m, 147 m and 172 m respectively. Fier-Shegan feature, also has a deep of gravelly floor (Çinari area). In Kozare area the thickness of gravelly horizon has the same characteristics as Osumi zone, varying from 10-15 m in Vlashuk, to 26 m in Kozare and then up to 172 m in Arrëz. From Uznova, nearby Ura Vajgurore, there is one horizon of gravels, while Fier – Shegan, is separated in two horizons by a clay combination with thickness about 15-20m. The deposits of the Rrogozhina groundwater body occupy the main side of Fier territory and flow at the surface in the Patos-Marinza, Kraps, Ivorians, Ardenica and Frakulla structures. Deposits of this groundwater body are in the lower plains areas below the quaternary deposits. The thickness of the deposits ranges from 80-120m in the Patos structure, 260-280m in the Zharsi structure, 200-250m in the Bregasi structure and in Roskoveci-Strum area, 300-350m in Frakulla structure, and 240-270m in Krapsi structure and 200-250m in the Ardenica structure. In conglomeratic packages in the Zharsi area and sandy-conglomerates in the Vanaj area (Ardenica structure), hydrogeological wells yield between 8-22 l/sec.

Figure 4-4: Hydrogeological Map of Albania

Carbonate Aquifer

This aquifer is represented mainly by natural springs with the main basins; Shpiragu, Tomorri and Mali Thate, which are the main sources for natural springs such as Ura Vajgurore, Poshnjë, Bogovës, Mançurishtit and Gollobordës.

The Shpiragu carbonate aquifer is constructed mainly of medium Palaeocene -Eocene limestone. Springs flow from Ura Vajgurore with a discharge of 150 l/sec and Poshnja with discharge of 50 l/sec. Bogova springs flows from tectonic contact of low-medium Eocene limestone. Their discharge is 600-2,000 l/sec, which is exploited for water to supply the towns of Poliçani and Berat. Mancurishte and Gollobaorda springs discharge approximately 15-35 l/sec.

Magmatic Aquifer

This aquifer is situated in the South and South-Western part of the Korça field. There are some springs that flow from tectonic fissures with discharge of 0.5-1.5 l/sec such as Boboshticës, Vithkuqit, Voskopojes, Gjergjelices, Bellovodes (Ujbardhit), Shalesit, Zemblakut, Drenoves, Tvoranit (Mollasit) springs. From tectonic fissures flow some great springs with discharge of 7-15 l/sec.

4.3.7 Water Quality

Some investigations have also been undertaken on the water quality of the Semani River in the late 1990's. with carbonate rich water predominating from the surrounding karst to the north. The following Table 4-1 are given some general data on water quality and heavy metals in sediments.

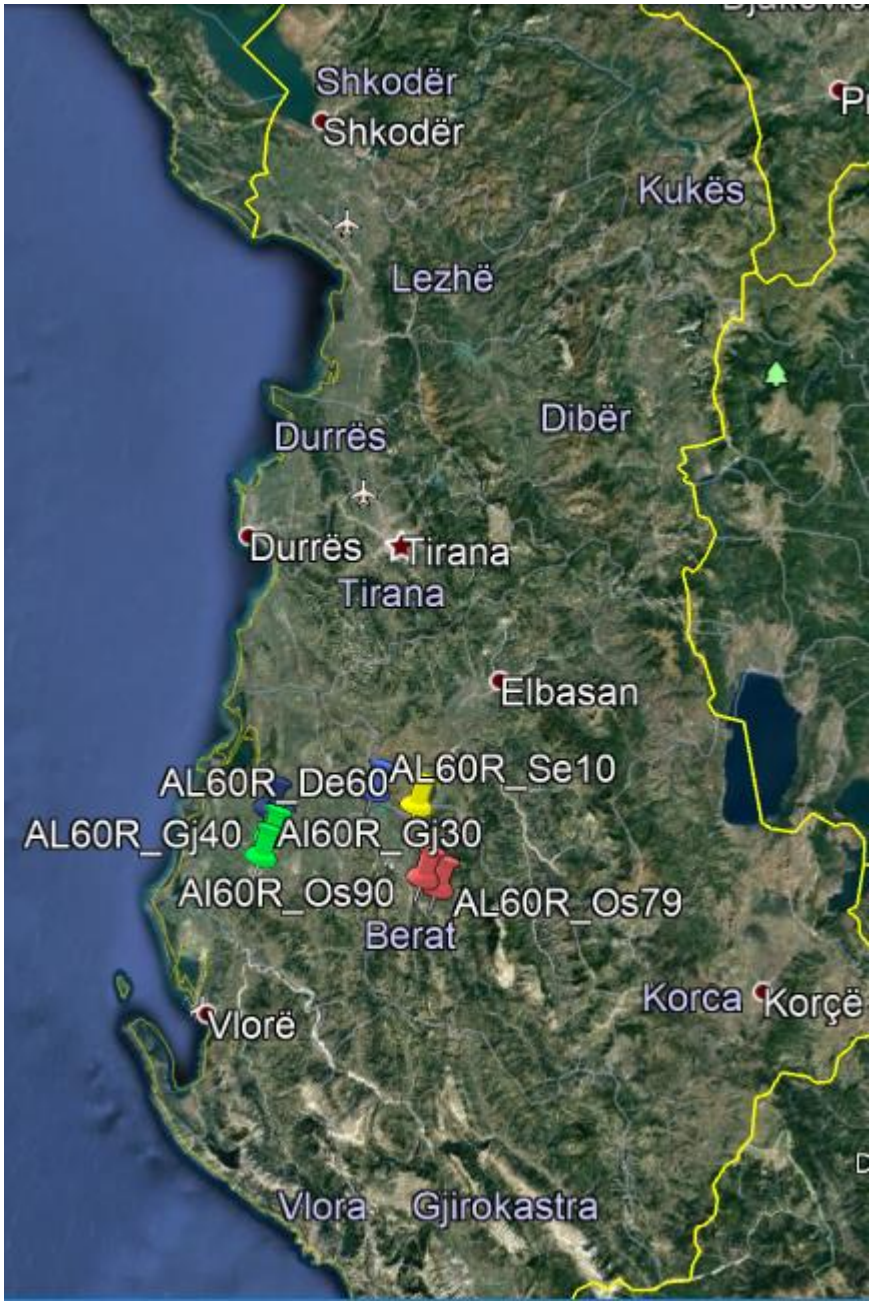


Figure 4/1.1 Monitoring stations for surface waters of Semani river basin (With blue color are shown monitoring stations in the Semani river, red color are monitoring stations of Osumi river, yellow color are the stations in Devolli river and with green color are the stations in Gjanica river), Ellaborated from Environmental Status, NEA 2017.

Table 4-1: Water Quality from the Semani River

Physical chemical parameters	Mean Nutrient Levels	Max values of heavy metals in waters	Max values of heavy metals in sediments		Max values of heavy metals in algae Cladophora	NIVA Typical Class II (Average Polluted)	
			Min	Max		In Water (ug/l)	In Sediment (mg/kg)
Pb = 2.9	N-NO3(mg/l)	Pb = 2.9	Pb = 1.03	Pb = 9.46	Pb = 5.6	0.5 – 1.2	50- 250
Cd =3.2	1.26	Cd = 3.2	Cd = 0.02	Cd = 0.06	Cd = 0.25	0.04 – 0.1	0.5 – 2.5
Cu =2.7	N-NO2(µg/l)	Cu = 2.7	Cu = 38.4	Cu = 144	Cu = 18.9	0.6 – 1.5	30 - 150
Zn =20	108.3	Zn = 20	Zn = 17.9	Zn = 47.4	Zn = 117.2	5.0 – 20.0	150 - 750

Physical chemical parameters	Mean Nutrient Levels	Max values of heavy metals in waters	Max values of heavy metals in sediments		Max values of heavy metals in algae Cladophora	NIVA Typical Class II (Average Polluted)	
			Min	Max		In Water (ug/l)	In Sediment (mg/kg)
Ni = 16.8	N-NH4(mg/l) 1.84	Ni = 16.8	Ni = 131	Ni = 289	Ni = 168.5	0.5 – 2.5	50 - 250
Cr =10.0		Cr = 10.0	Cr = 101	Cr = 429	Cr = 231.7	0.2 – 2.5	50 - 500
Mn =110		Mn = 110	Mn = 556	Mn = 990	Mn = 724.4	Nd	nd
Fe =0.83	P-PO4(µg/l) 43.8	Fe = 0.83	Fe = 2.37	Fe = 3.82	Fe = 6647	Nd	nd
Hg =0.21		Hg = 0.21	Hg = 0.08	Hg = 0.17	Hg = 0.09	0.002-0.005	0.15 – 0.6

Source: Elaborated from EA of water quality of Albanian Rivers

Hence, the Semani River remains problematic in relation to particulate matter, because of erosion and sedimentation. The guide limit of CEE for Total Suspended Solids (TSS) is 25 mg/l. The Semani has a TSS with a max of 436 mg/l! Dissolved Oxygen (DO) is less than 2 mg/l, which implies “very poor” status according to NIVA classes (Norwegian Water Agency).

Semani River waters also exceed the ammonium limit of 0.16 mg/l N-NH4 of EC Directive for cyprinid waters. Regarding physical-chemical parameters the quality of Semani River waters can be considered as fair, poor to very poor. From a heavy metals point of view, the Semani River can be considered as markedly polluted NIVA Class IV to V) but only in the lower reaches.

More recent research (2006-2010) on irrigation water quality from rivers and reservoirs in Albania has shown that the Semani River is within the State Standard Catalogue (SSC) accepted values for physical-chemical parameters. Samples have been taken and are shown in Table 4-2 below. Heavy metal values are not available, but much of the industrial activity associated with the pollution measured in the late 1990’s has now ceased.

Table 4-2: Water Quality Results from Semani River 2007-2010

Water parameters	Symbols	Units	SSC Accepted value	2007	2008	2009	2010
Electrical Conductivity (or)	ECw	dS/m	0 to 3	0.54	0.40	0.42	0.20
Calcium	Ca2+	me/l	0 to 20	2.60	1.50	4.20	2.20
Magnesium	Mg2+	me/l	0 to 5	2.70	1.20	1.90	1.00
Sodium	Na+	me/l	0 to 40	0.30	1.60	1.40	1.10
Carbonate	CO3 2-	me/l	0 to 1	-	0.30	0.40	0.30
Bicarbonate	HCO3 -	me/l	0 to 10	3.50	2.10	2.50	1.20
Chloride	Cl-	me/l	0 to 30	0.60	0.60	0.70	0.20
Sulphate	SO4 2-	me/l	0 to 20	1.80	0.60	0.20	0.20
Nitrate-Nitrogen	NO3-N	mg/l	0 to 10	0.60	2.20	1.40	2.50
Ammonium-Nitrogen	NH4-N	mg/l	0 to 5	0.60	1.10	0.30	1.10
Phosphate-Phosphorus	PO4-P	mg/l	0 to 2	-	-	0.90	0.80
Potassium	K+	mg/l	0 to 2	2.90	4.70	22.50	0.70
Acid/Basic	pH	1-14	6.0 to 8.5	7.30	7.70	7.60	7.20
Sodium Absorption Ratio	SAR	me/l	0 to 9	0.20	1.40	0.80	0.90
Dried residue	DR	gr/l-1	-	0.20	0.20	0.30	0.10

The measurement at this river showed low values of EC (0.20-0.54 dS m-1), nitrate (0.6-2.5 mgL-1) and ammonia (0.3-1.1 mg L-1). Cation and anion concentrations as well as pH values (7.2-7.7) were within the accepted limits set by the SSC to prevent salt accumulation in soils. During the sampling period, only potassium K+ concentration

in 2009 (22.5 mg L-1) and CO32- concentration from 2008 to 2010 (0.3- 0.4 me L-1) were above the limits established by the SSC standards. The high K+ can be explained by urban wastewater discharge coming from the city of Lushnje and Fier, upstream of the river sampling point, while the relatively high CaCO3 concentration can be explained by the high carbonate content of the soils and the parent materials in the Semani basin. Based on these results, the waters of the Semani River can be classified as Class II for irrigation purposes. Water quality in the Semani River and the Kurjan Strum reservoir is influenced by the underlying geology

Monitoring results for groundwater and surface water within the Semani Basin overall during the period 2002-2008 indicate that in general mineralization, nitrate and nitrite content are within the permitted levels and the pH of groundwater is within the permitted levels for drinking water. However, the required standards for ammonium content are not met (European Environment Agency, 2010).

More recent monitoring of the Semani River has been recorded in the most recent State of the Environment Reports (see Table 4-3). The river was monitored at three stations: Ura e Kucit, Ura e Mbrostar, Gjanice-Fier. Gjanice river station is an indicator to the urban discharge and to the oil extraction and refining.

Table 4-3: Monitoring on Semani River 2013

B	Basin	River	Station	Phase 1 Q(m3/sec)	Phase 2 Q(m3/sec)
1	Semani	Semani River	Ura e Kucit	51.83	132.47
2	Semani	Semani River	Ura e vjeter Mbrostar	45.4	214.16
3	Semani	Gjanice River	Derdhja ne Semani	6.76	6.164

Recent analysis performed and presented in the State of the Environment Reports show that there are chemical analyses performed, namely Temperature, pH, Alkalinity, Electrical conductivity, dissolved oxygen, Biological Oxygen Demand BOD5, Chemical Oxygen Demand COD, total phosphorous, ammonia, nitrates and nitrites.

The water temperature for Semani River ranges between 26.4 to 27.1 and 28.3oC, for the stations Ura e Kucit, Ura e Mbrostarit. While the second phase values vary between 17.34 to 18.8oC

The pH for surface waters in Semani River ranges from 7.63 – 8.38 respectively for Ura e Mbrostarit, Gjanice and Ura e Kucit stations. Seasonal changes fluctuations have a small value of 0.15- 0.75. The waters are neutral according the EU WFD (pH = 6.5-8.5). This is illustrated in Figure 4-5 below

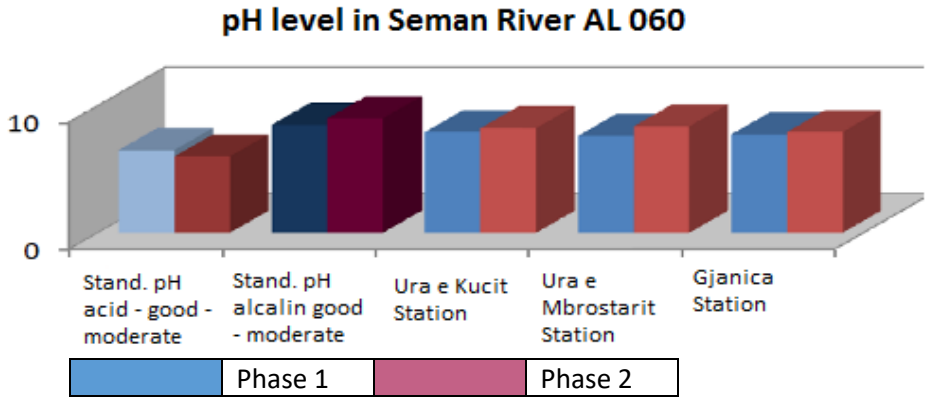


Figure 4-5: pH values for Semani Monitoring Stations

Alkalinity - From measurements carried out in 2013, we see that the values range from 203-387 mol/l for Ura e Mbrostarit, Ura e Kucit and Gjanice stations. Seasonal fluctuations from Ura e Mbrostarit and Ura e Kucit have a value of 5 mol/l while in Gjanice they have a higher value 99mol/l

Electrical conductivity - v values fluctuate from 509- 888-1744 µS/cm respectively in Ura e Mbrostarit, Ura e Kucit and Gjanica. Seasonal fluctuations in the three stations are high ranging from 436-644-865 µS/cm. These are the highest values observed in monitoring during 2013.

Dissolved oxygen content in the Semani River has low values in all stations, but the lowest value is observed in Gjanica station with an average of 3.22 mg/l. According to EU WFD standards, Semani river waters have a poor quality. See Figure 4-6 below.

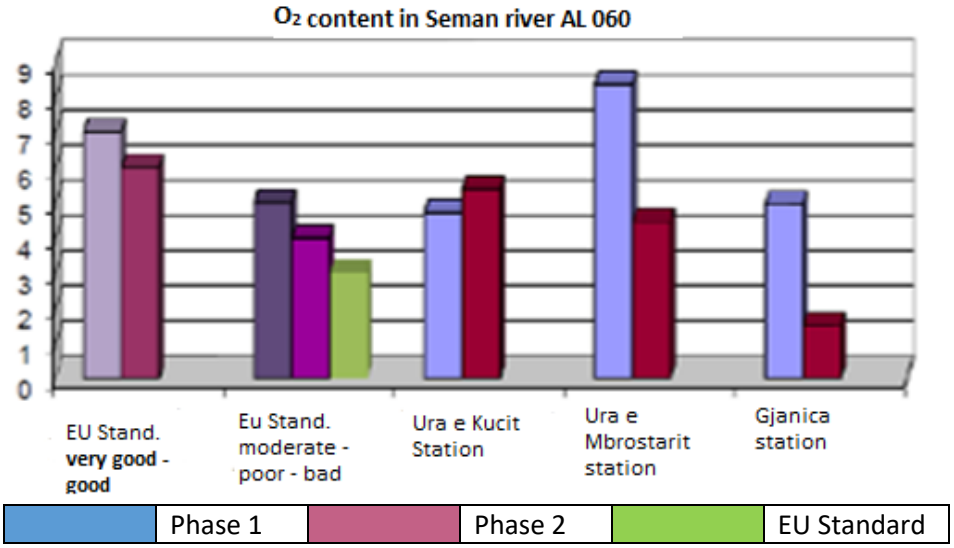


Figure 4-6: Dissolved Oxygen measurements for Semani River Monitoring Stations

The BOD5-v content value ranges from 0.6- 3.9 mg/l up to 5.2 mg/l. Seasonal fluctuations are sensitive, clearly observed in the chart. Semani River waters are classified moderate according to EU WFD standards that means the values, are near the lower limit (see Figure 4-7 below).

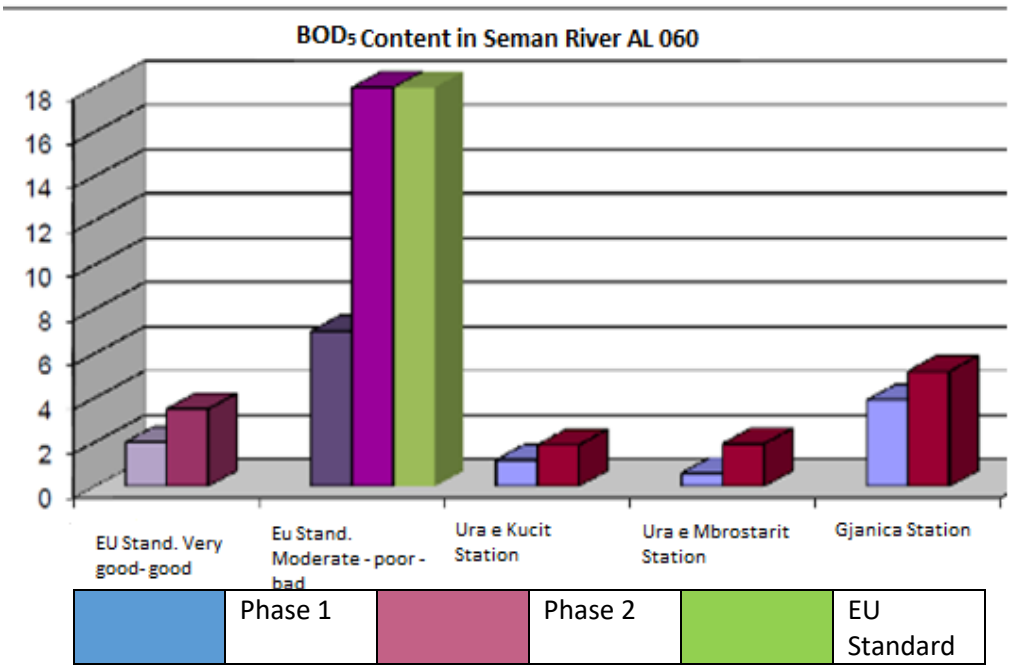


Figure 4-7: Biological Oxygen Demand measurements for Semani River Monitoring Stations

Chemical Oxygen Demand - COD content value ranges from 0.56 to 1.0 to 3.96 mg/l, in Ura e Kucit, Ura e Mbrostarit and Gjanica stations. Seasonal fluctuations are low ranging from 0.28-0.76 mg/l. In the second phase, there is a growing demand for chemical oxygen. Gjanica station represents the highest value of COD.

Ammonium content value ranges from 0 to 0.19 to 2.18 mg/l in Ura e Kucit, Ura e Mbrostarit and Gjanica stations. During 2013, seasonal fluctuations have been considerable especially in Gjanica. At this station, the average amount of ammonium is 1.1mg/l, leading to a poor-quality water (see Figure 4-8 below).

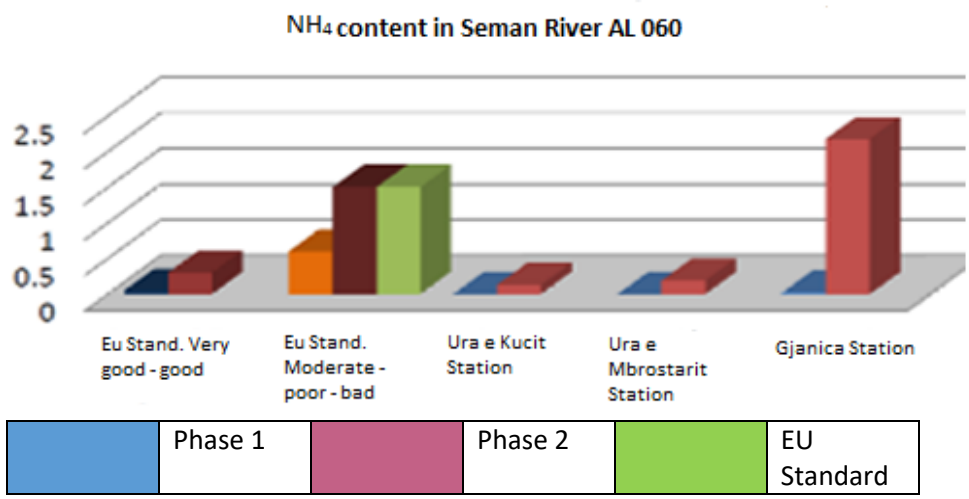


Figure 4-8: Ammonia measurements for Semani River Monitoring Stations

Nitrates content values are high ranging from 3.2 to 4.4 to 20.7 mg/l. Seasonal fluctuations are high ranging from 0.29 to 4.26 mg/l. The water quality assessment according to NO3 content is of a poor level <10mg/l (see Figure 4-9).

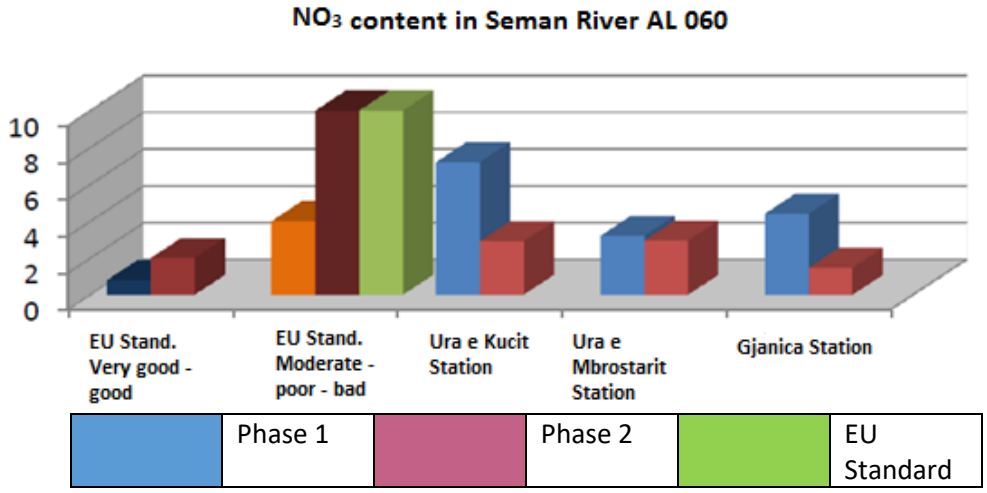


Figure 4-9: Nitrate measurements for Semani River Monitoring Stations

Nitrite content values ranges from 0 to 0.05 to 0.56 mg/l for the three respective monitoring stations. Seasonal fluctuations are also observed. The limit values of NO2 content according to EU WFD, classifies Semani river waters as of good to moderate state. NO2 < 0.06 mg/l and NO2 <0.12 mg/l tending towards poor state (see Figure 4-10 below).

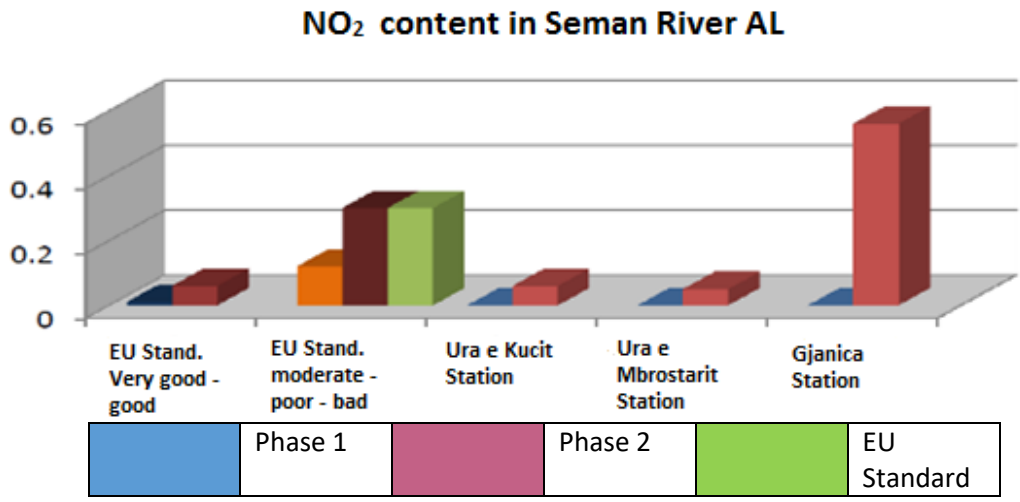


Figure 4-10: Nitrite measurements for Semani River Monitoring Stations

Floating material- have high values ranging from 2.8 to 222.2 mg/l. Seasonal fluctuations are high ranging from 40.9-116.4 mg/l. There is a decrease in value in the second phase, which coincides with a period of higher precipitation.

By monitoring process of 2017, is prepared a summary of water quality of Semani in respect with National Norms. In some cases, Gjanica River quality is represented separately.

Table 4-4: Data from Monitoring results of 2017,

Monitored indicator	Level of contamination in compares with Albanian Norms
BOD_5	Partially Higher
Ammonia	Semani - In norm limits Gjanica - over the norms
Nitrites	Semani – Lower than norms Gjanica – In the limits of norms
Nitrates	Lower than norms
Ph	Semani - Lower than norms Gjanica - in the limits

Source Reference Environmental Status Report, 2017, NEA.

An historical high pollution, is caused by oil treatment discharges by Ballsh Refinery in Gjanica River, branch of Semani River.

Groundwater Quality

The ground water quality report refers to the monitoring data of 2013 and 2017, to see the water quality trends during the last 5 years. The "State of the Environment Report" for Albania of 2017, provides details on the quality of groundwater for the various aquifers in Albania. Monitoring data are presented for Korça and Berati sub-aquifers. Pollution indicators like NO2, NO3, NH4 and other indicators like Na, Ca, Mg, Fe, Cl, SO4, pH, Mp, etc. are evaluated and compared to country and EU standards. The recommended concentrations (STASH-R) and the maximum allowed concentrations (STASH- PML) are compared to Albanian standards. In addition, monitored indicator values are compared to the EU standards, recommended concentrations (EU-R) and maximum allowed concentrations (EU-PML). Below are the data of Semani aquifer monitoring in 2013-2017. For the Semani River Basin, the estimated total water quantity used from the aquifer (AL500) is 465-500 l/sec. The monitoring process

is done twice per year; May and October, as representative months for springtime and autumn seasons. In the figures given in following are included also the result per station, where stations, STASH and EU Recommended Limits are shown with different colours.

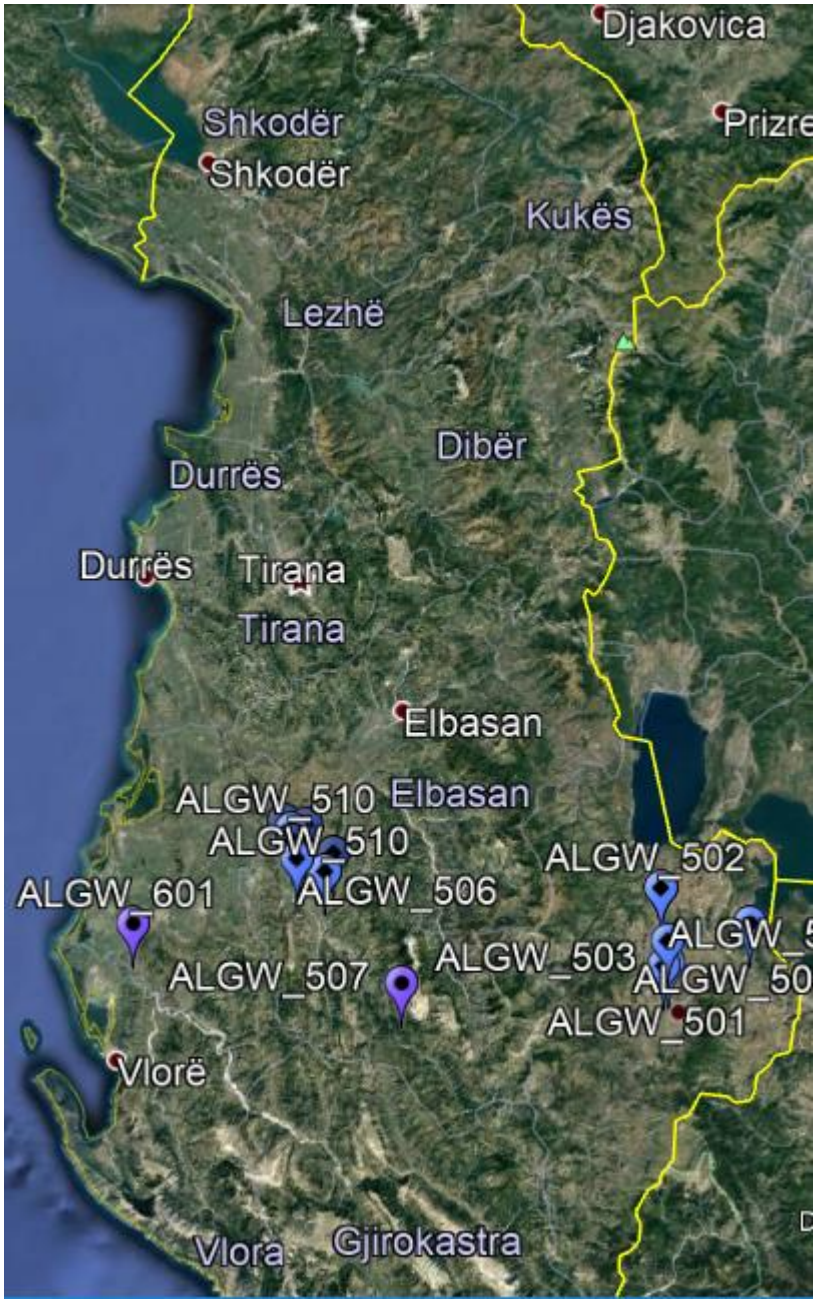


Figure 4/10.1 Monitoring stations of groundwater in Semani basin

Korça Aquifer

In Korça aquifer, the samples are taken in 4 monitoring stations; Turan, Terove, Bulgarec and Sheqeras. By the monitoring of 2017, results that the waters of this aquifer are of good quality by physic chemical characteristics and Hygienic/sanitary ones. The total of groundwater exploitation in this aquifer vary from 450-500l/s. The higher exploitation is in Turan. The general exploitation coefficient varies from K= 0.3-0.5. The pollution risk is considered as “medium”, because of existence of several water hold layers, divided/isolated by each other from clay layers. The water temperature varies from 11.6-14.8 ^{0}C, and Albanian Norms are 8-15-20 ^{0}C.

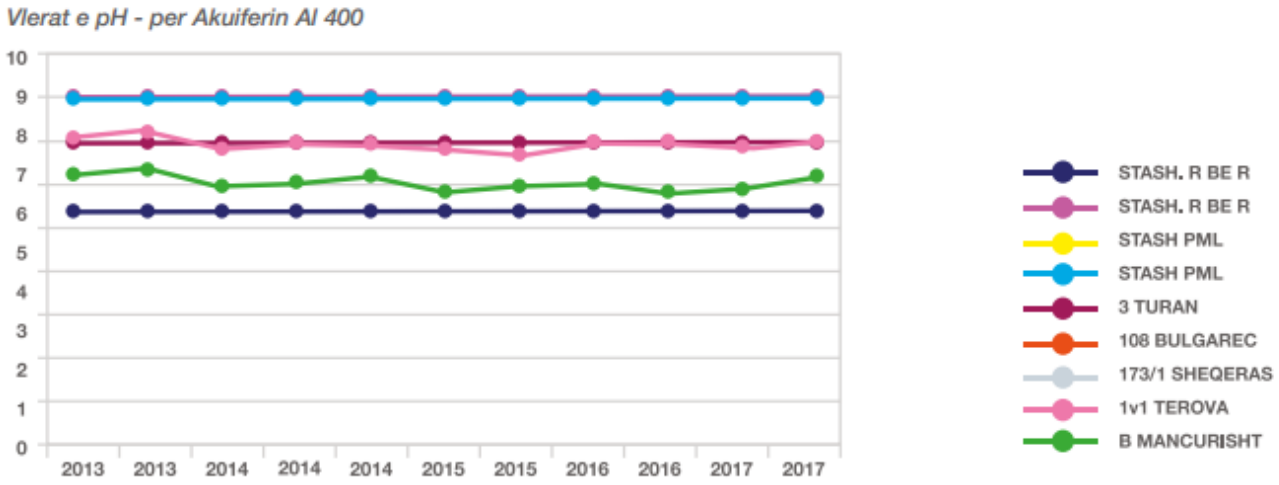


Fig.nr. 85 - Vlerat e pH për akuiferin AL 500

Figure 4-11: pH content in Korça aquifer

As shown in Figure 4-11 above, the pH content in waters of Korça aquifer results correct with STASH (6.5-9.5) and EU Recommended Limits (6.5 – 8.5). Also, Total hardness in German degrees, expressed in Figure 4-12 below as "fp", is in the limits of STASH (10-20-25). In compares with the previous years, these indicator shows a tendency of increase.

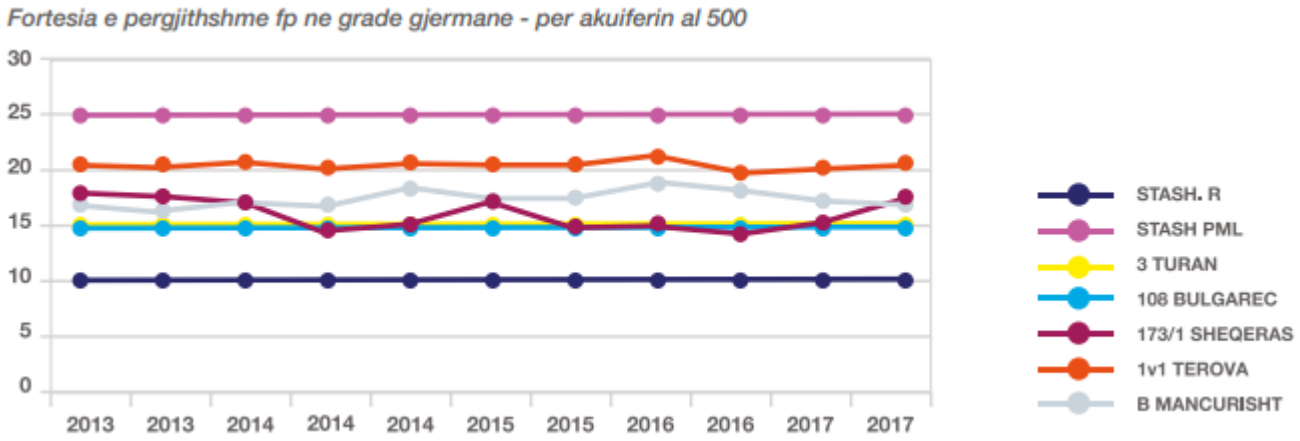


Figure 4-12: Total Hardness in German Degree, in Korça aquifer

The Total Mineralization, result in the same level in past 5 years as shown by the flat lines in Figure 4-13 below.

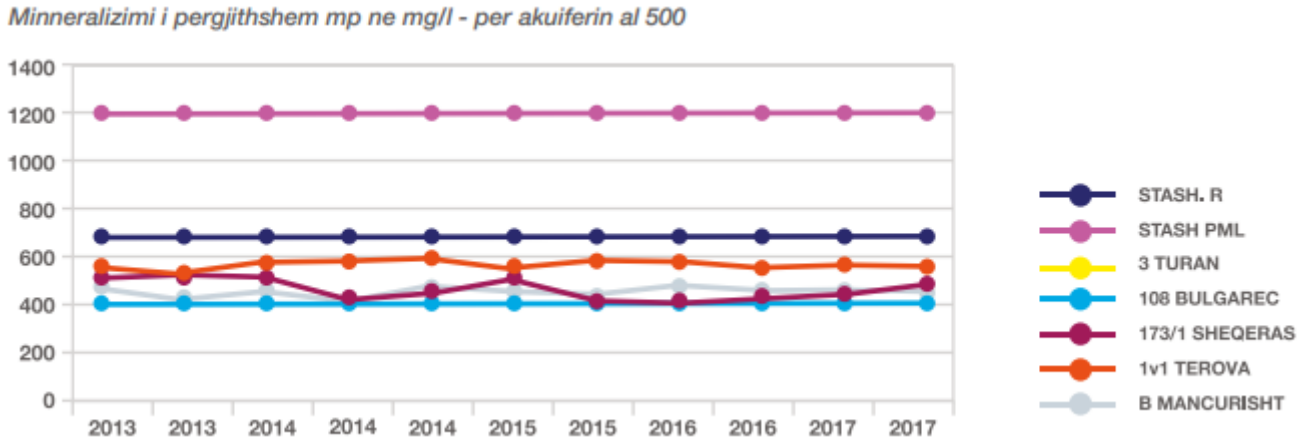


Figure 4-13: Total Mineralization in Korça aquifer in Years 2013-2017, in mg/l

By Figure 4-14 below, results that the trends of the Na content in last 5 years, has very few fluctuations with seasonal characteristics. Total trend of Na during those years fluctuates from 15-20mg/l.

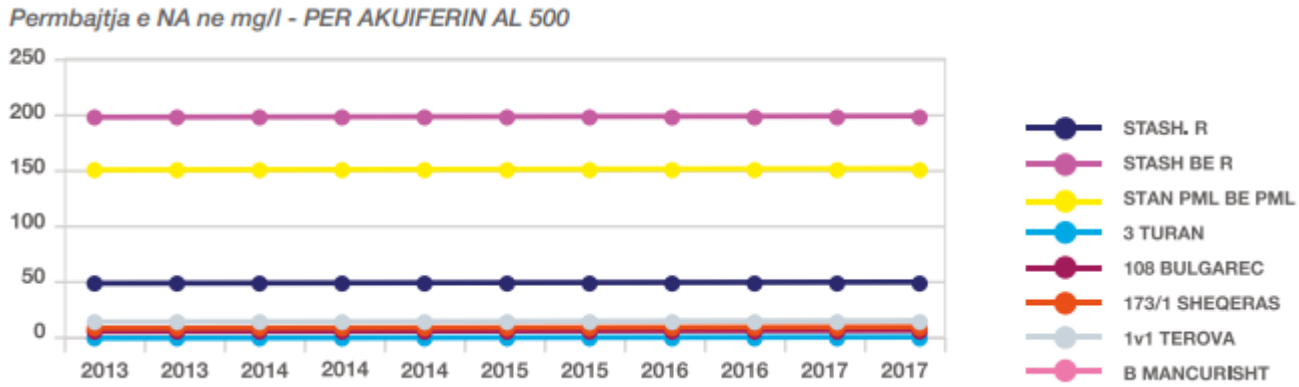


Figure 4-14: Na content in Korça aquifer during last 5 years, in mg/l

The Ca content is given in Figure 4-15 below, in compares with STASH and EU Limits. The CA content has very few fluctuation, with seasonal characteristics.

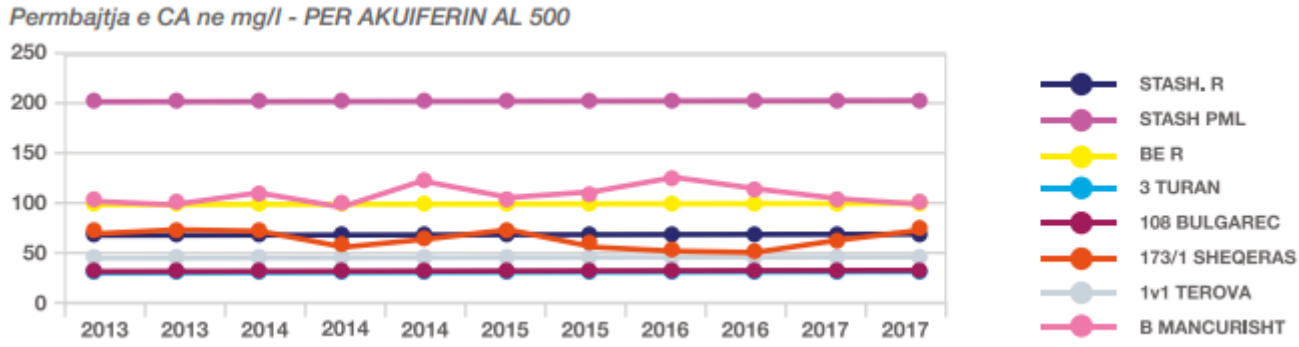


Figure 4-15: Ca content, in mg/l. in Korça aquifer during last 5 years

Also, the Mg content, given in Figure 4-16 below, is shown in compares with STASH and EU Recommended Limits. Only Terova station, results on small content of Mg, over the STASH and EU Recommended Limits.

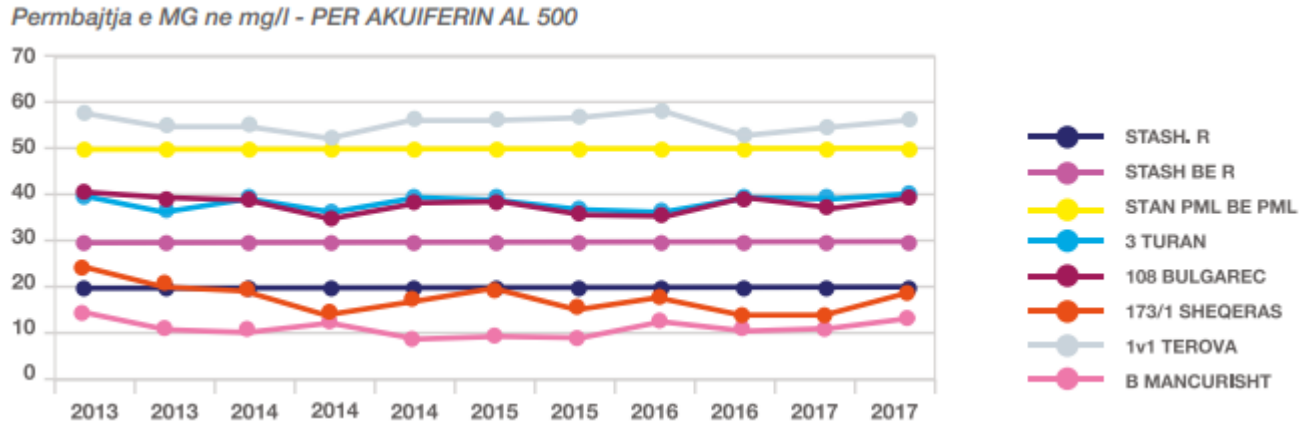


Figure 4-16: Mg Content in mg/l. in Korça aquifer during last 5 years.

As it is shown in Figure 4-17 below the Fe content is below the STASH Limits/norms (0.05-0.3(0.8) mg/l. The tendency is below such limits, but there is some small fluctuation with seasonal characteristics. The EU Recommended Limits are (0.05-0.02 mg/l.).

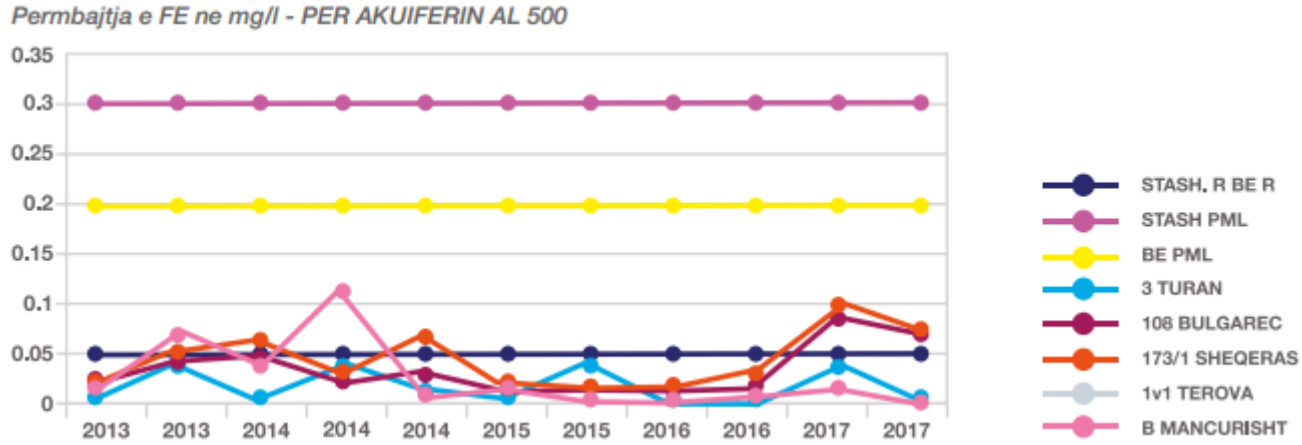


Figure 4-17: Fe content in mg/l., in Korça aquifer during last 5 years.

In Figure 4-18 below is given the content of Ammonia in mg/l, in years 2013-2017. The higher content, if found in Sheqeras sampling point. This contamination is coming by penetration of pollution from the surface, by missing of sanitary protection measures.

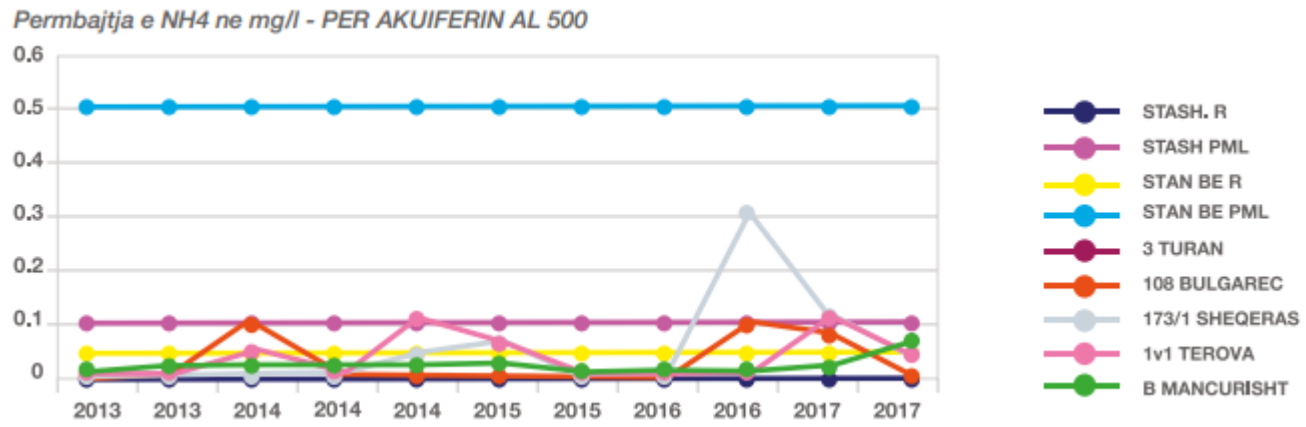


Figure 4-18: The content of Ammonia, in mg/l. in last 5 years in Korça aquifer.

The Cl content, in the figure below, is given also in 5 last years, and compared with STASH and EU Recommended Limits which are 25-200mg/l. The level of content is quite similar with EU Recommended Limits and lower than STASH norms. Still, there are few fluctuations with seasonal characteristics.

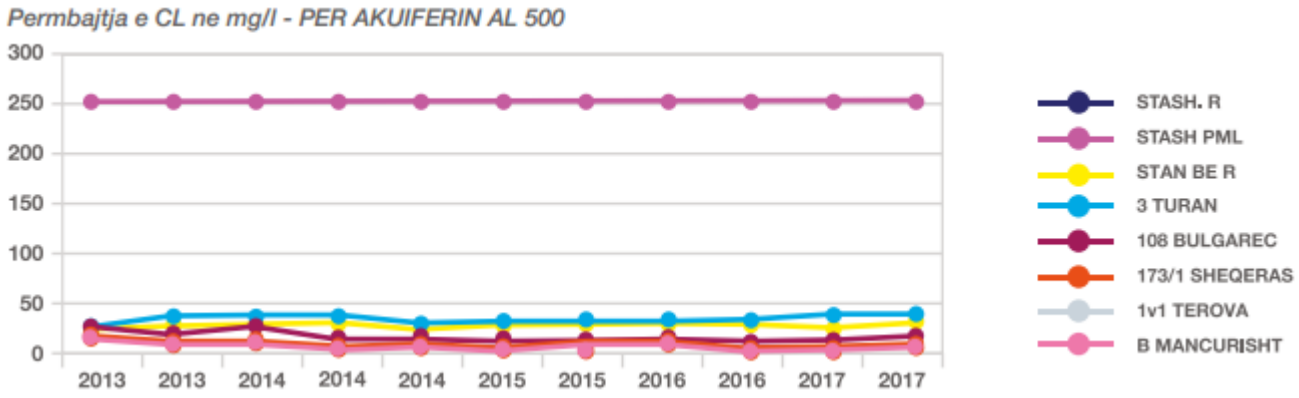


Figure 4-19: The content of CL, in mg/l. in 5 last years in Korça aquifer

In the following Figure 4-20, the content of SO_4, is given in mg/l. on last 5 years and is compared also with STASH and EU Recommended Limits. In all stations, except Terova one, the content of SO_4 has small fluctuations with seasonal characteristics. In Terova station, the groundwaters have a tendency for increasing of SO_4, during the years.

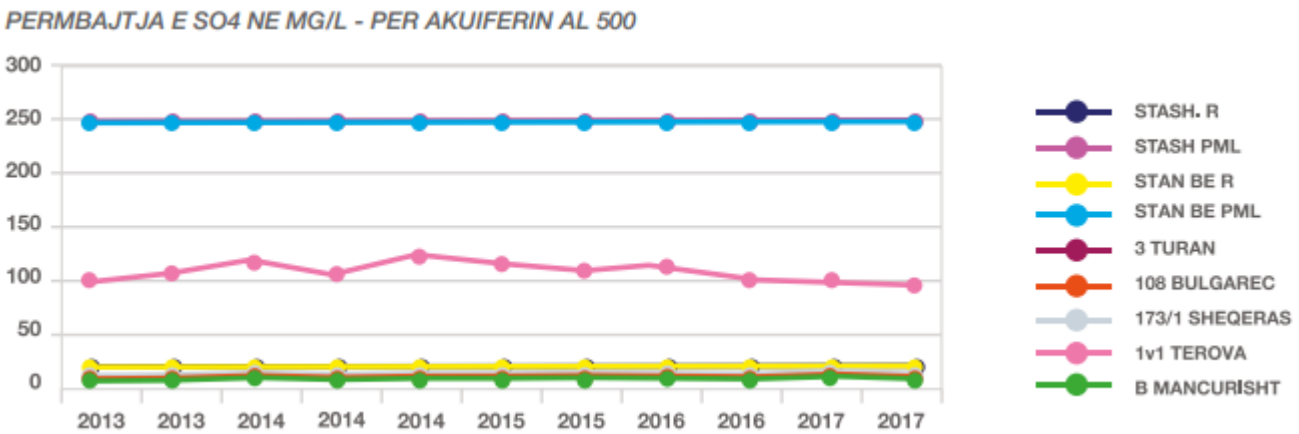


Figure 4-20: Content of SO4 in mg/l. for 5 last years in Korça aquifer

Also, the content of NO_3 in Korça aquifer in last 5 years looks stable, and in respect with Recommended Limits of STASH and EU. The results of monitoring and comparison with STASH and EU Recommended Limits is given in Figure 4-21 below.

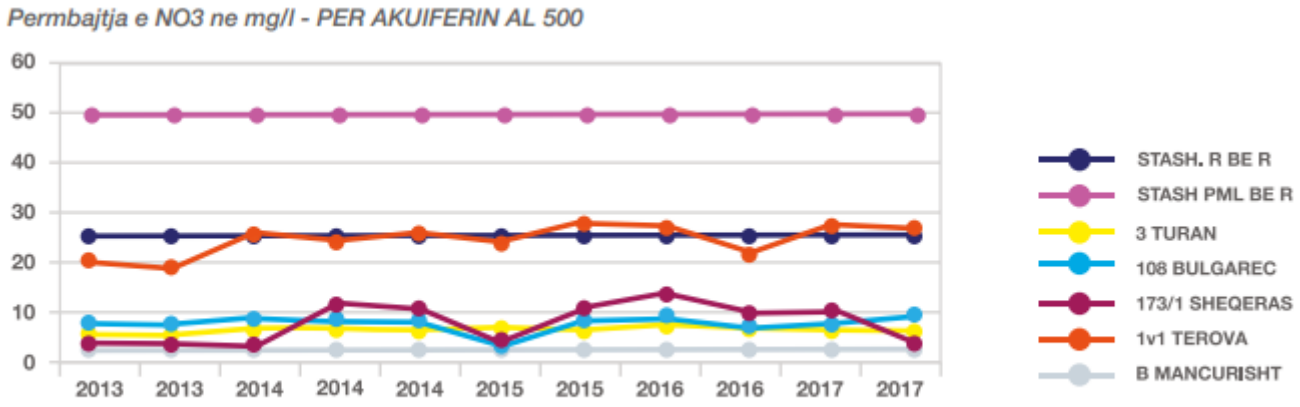


Fig.nr.95 - Përmbajtja e NO3 për akuiferin AL 500

Figure 4-21: NO3 content in mg/l., during last 5 years in Korça aquifer.

Hydro-dynamic regime of Korça aquifer.

The quaternary groundwater of Korça Region has a high pressure and sometime have free discharges in surface. In Sheqeras, the wells have free discharge/flowing characteristics, so the ground water level (piezometric level) is over than 1m below the ground level. In Turan, there is an intensive groundwater exploitation, so the groundwater level is more than 10m below the ground level. The fluctuation of groundwater level is depended by seasonal characteristics, as well as from the intensity of exploitation.

Berat Aquifer

Berat aquifer is monitored in 6 monitoring sampling points in quaternary gravel aquifer; in Banaj, Arrez, Ciflik, Kozarre, Otllak, Lapardha, and 2 water sources of carbonate aquifer respectively in Bogova and Ura Vajgurore water sources. The samples are taken twice per year; in May and October. Because of the missing of funds, the NEA has not performed a monitoring of groundwater for several indicators in the past.

The total amount of exploited water is about 250-500l/s. The biggest exploitation is in Ciflik and Banaj. The exploitation coefficient varies from K=0.3-0.4. The risk of groundwater pollution/contamination is very high in Ciflig, because of the hydrocarbons exploitation and treatment activities. Also, an increasing of inorganic elements content is observed, because extensive use of inorganic fertilizers. The groundwater quality analyses made in 2017, are showing that waters of this aquifer have not appropriate physic-chemical and hygienic/sanitary characteristics. The groundwater temperatures vary from 16.3-18.1 ^{0}C, and the Albanian norms are 8-15-20^{0}C. According the Semani RBMP the Berati aquifer, composes a water-bearing basin with considerable reserves of groundwater. In water bearing aquifer of porous rocks, gravel-alluvium deposits form the centre of the valley starting by Uznova to Fier (via Shegan, Ura Vajgurore, Kuçova, Vlashuk and Kozare). The thickness of the depositions, starting by the exit of Berati town towards Ura Vajgurore to Çiflig and Arrëz, are 58 m, 147 m and 172 m respectively. Fier-Sheganit, also has a deep of gravelly floor (Çinari area). In Kozare area the thickness of gravelly horizon has the same characteristics as Osumi zone, varying from 10-15 m in Vlashuk, to 26 m in Kozare and then up to 172 m in Arrëz. From Uznova, nearby Ura Vajgurore, there is one horizon of gravels, while Fier – Shegan, is separated in two horizons by a clay combination with thickness about 15-20m.

Reserves exploited by the quaternary basin of Berat are:

› Uznova - with three wells yielding 150 l/sec.

- Çiflik - with four wells yielding around 80 l/sec, which supplies the city of Kucova.
- Banaj: 25 l/s.
- Çiflig: 4,2 l/s.
- Arrëz: 10 l/s.
- Ura Vajgurore: 18 l/s.
- Vlashuk: 4 l/sec.
- Ura Kucit: 15 l/s (supplying Lushnja several villages)
- Poshnje: 10 l/s.
- Perondi: 20 l/s.
- Kucova (near Devolli River): 50 l/s.

In addition to these stations, are also used several private wells/boreholes with a general yield of about 30-40 l/sec. The general quantity of water that is used in the basin of Berati is 350-450 l/s. The annual rate of utilization for the quaternary basin of Berati varies from 0.35-0.6.
The deposits of the Rrogozhina groundwater body occupy the main side of Fier territory and flow at the surface in the Patos-Marinza, Kraps, Ivorians, Ardenica and Frakulla structures. Deposits of this groundwater body are in the lower plains areas below the quaternary deposits. The thickness of the deposits ranges from 80-120m in the Patos structure, 260-280m in the Zharsi structure, 200-250m in the Bregasi structure and in Roskoveci-Strum area, 300-350m in Frakulla structure, and 240-270m in Krapsi structure and 200-250m in the Ardenica structure. In conglomeratic packages in the Zharsi area and sandy-conglomerates in the Vanaj area (Ardenica structure), hydrogeological wells yield between 8-22 l/sec.
Several wells supply drinking water to many villages of Fier:

- Portez: 3 - 5 l/sec.
- Kuman: 3 - 4l/sec.
- Strume: 3 - 5 l/sec.
- Other private wells where discharges are around 20-30 l/sec.

The total amount of groundwater that it is exploited from the Rrogozhina groundwater body is about 30-40 l/sec with an annual coefficient of exploitation is 0.7-0.8.

The RBMP proposed other areas of the Berati aquifer where water extraction may also be included in the future[4]:

- In Uznova zone in gritty earth of Osumi River, it may be possible to exploit groundwater with good drinking water quality.
- In Tapia-Kucova large groundwater areas occur but with elevated hardness.
- The Arrëz-Banaj-Çinar (Fier-Shegan) areas constitute the most important sector of groundwaters with substantial reserves and a good quality.
- The terrace of Devolli River near of Vlashuku dam presents an opportunity to exploit a significant water amount of groundwater of good quality.

The Figures 4-22 – 4-25 below, provide data for years 2016-2017. The results are compared with STASH and EU Requirement Limits.

[4] Assessment of these waters should be carried out through analysis in the IPH laboratories, also referring to DCM 379 dated 25.05.2016 "Drinking Water Quality".

In Figure 4-22 below are given data for Total Mineralization in Berati aquifer for years 2016-2017. The general trend has not important variations, excluding Kozare station, where seasonal changes has high values, with their maximum 104.98 mg/l. The 2-yearly average of Total Mineralization vary from 210.43-700-988.31 mg/l.

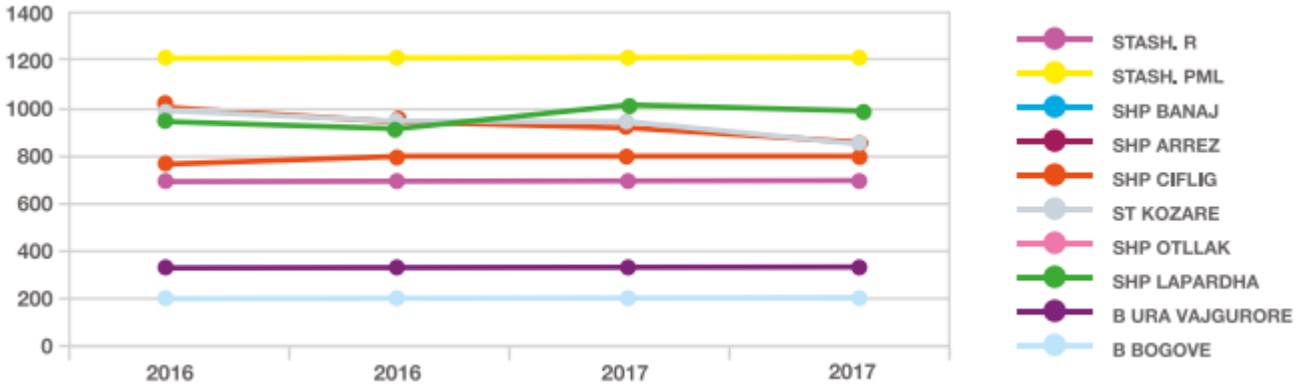


Figure 4-22: Total Mineralization in mg/l., in Berati aquifer, for years 2016-2017.

The content of Na, in groundwater, is appropriate according STASH for water resources with free discharges and other groundwater. The changes of Na content in different monitoring phases are small and vary from 0.09-15.9 mg/l. The Na levels are appropriate considering STASH and EU Recommended Limits.

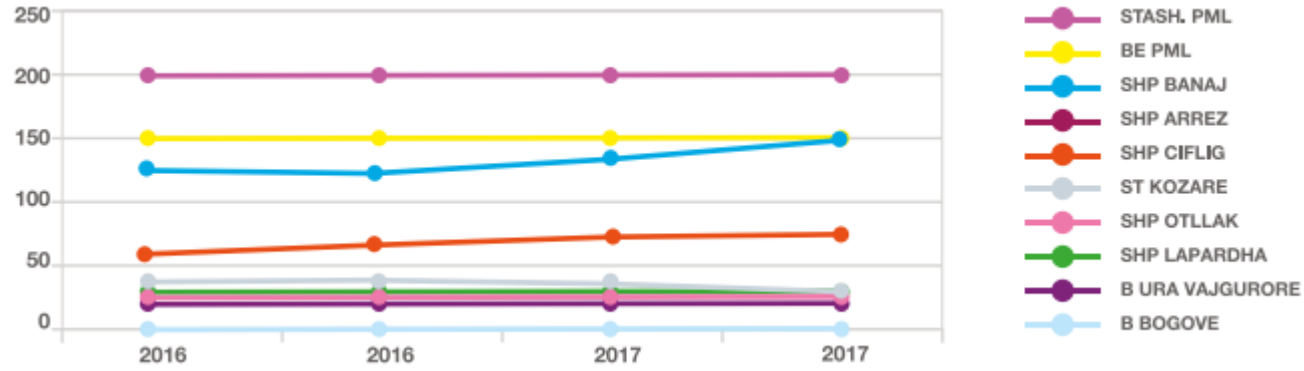


Figure 4-23: Na content in mg/l., in Berati aquifer

Following is given the content of Ca, for years 2016-2017, compared with national and international recommended limits. The levels of Ca are lower than Stash but higher than EU Recommended limits.

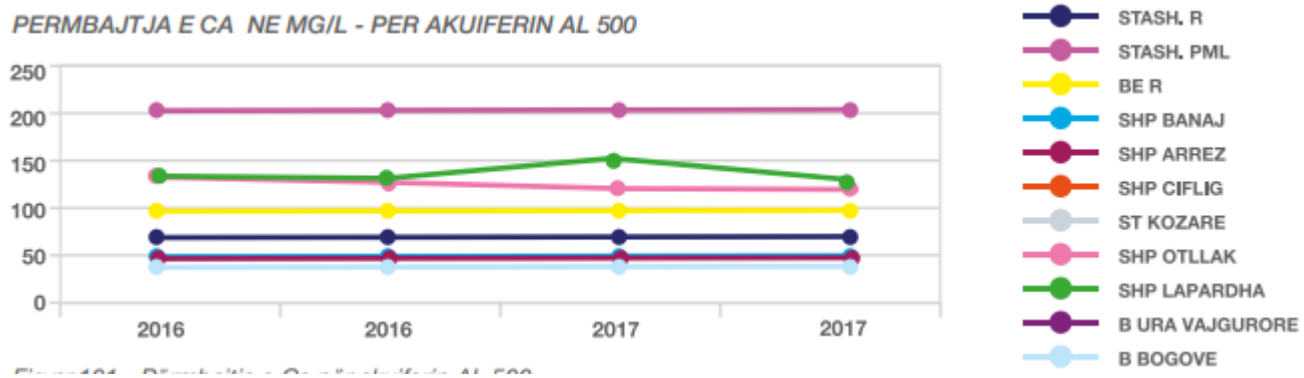


Figure 4-24: The content of Ca in mg/l., in Berati aquifer.

The content of Mg, is given for 2 years (from 2016 to 2017). In each monitoring season, it varies from 43.17 – 130.11 mg/l. in groundwater. In water resources with free discharge, they vary from 3.62-7.56 mg/l. The level of Mg is appropriate with STASH and EU Recommended Limits in water resources with free discharge, but not appropriate for ground waters.

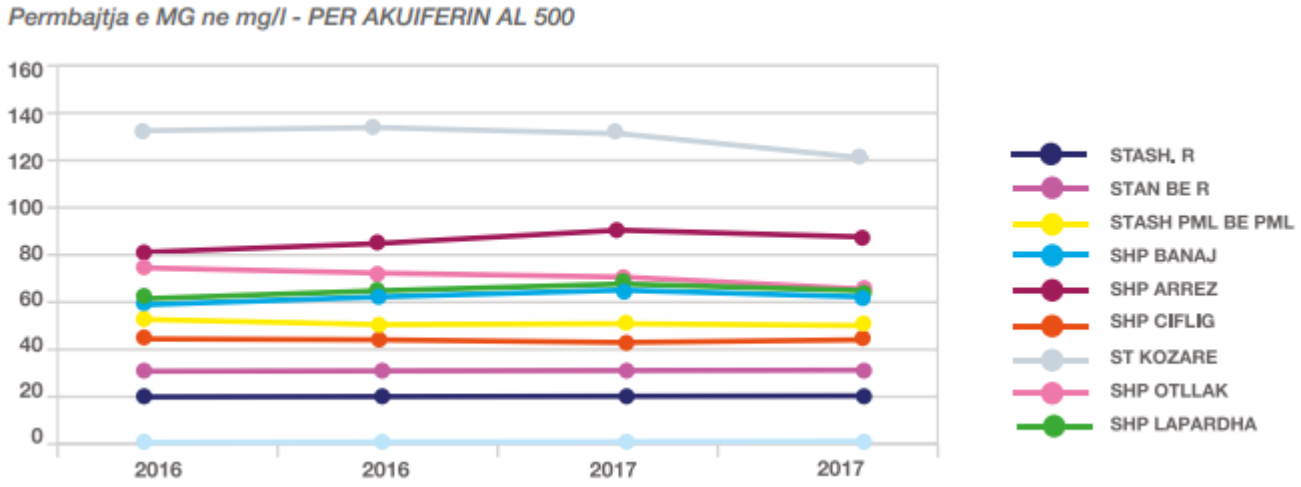


Figure 4-25: Mg content in mg/l. in Berati aquifer for years 2016-2017.

The content of Fe in Berati aquifer is given also for years 2016-2017. The Fe content for each seasonal sampling vary from 0.01-0.32-09 mg/l. In all sampling wells, is found the Fe content, but the higher one is defined in Banaj and Ciflig, which are close to the limits of STASH and EU. From Figure 4-26 can be defined very low variation of the Fe content with seasonal characteristics. The STASH and BE recommended Limits are 0.05, 0.02, 0.03 mg/l.

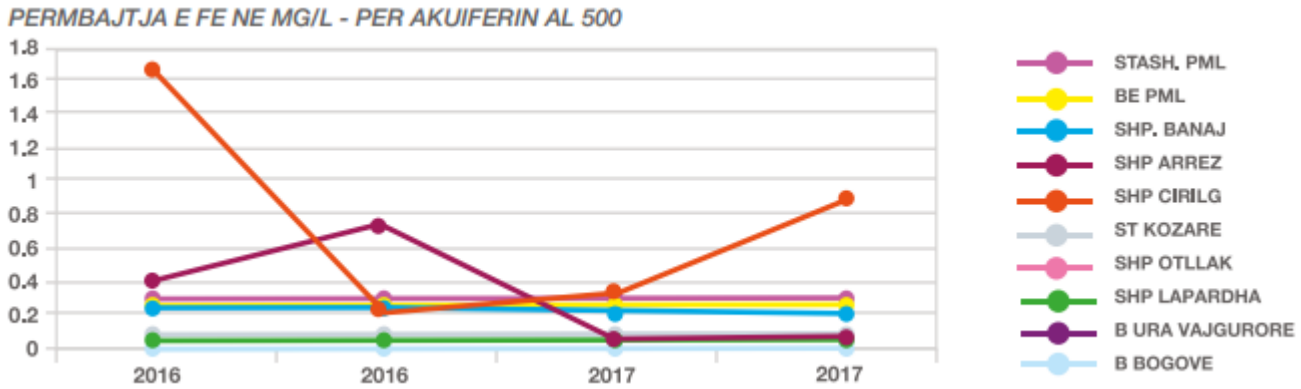


Figure 4-26: The Fe content in mg/l. in Berati aquifer for 2016 and 2017

Not frequent analyses are done to monitor water contamination by oil industry, nevertheless this contamination in Gjanica river is visual. The remains of oil industry in Marinza field and refinery of Ballsh has transformed the Gjanica River, in one of the main polluted river body in Albania. From Ballsh Refinery are discharged about 12.57-12.91m^3 un-treated waters polluted by oil production. The oil concentration in such waters is calculated on CC=0.2-6mg/l.

4.3.8 Geology and Seismic Activity

Geology

The geological structure of Semani River Basin is part of Albanides, that lies between Dinarides and Hellenides. From geotechnical point of view Albania is part of the Peri-Adriatic range, of the Alpine orogenic system. The South/eastern part of the Semani River basin, Osumi and Devolli river basins, are part of the Mirdita tectonic zone (Devolli Massif). The Devolli Massif, by tectonic point of view is overlaid over the depots of tectonic subzone of Krasta. The rocks of this massive are mainly magmatic/ultrabasic. Tomorri subzone, part of Tomorri/Kruja sub-zone, is characterized by Tomorri, Kulmaka and Qishabeshi structures (see Figure 4-28).

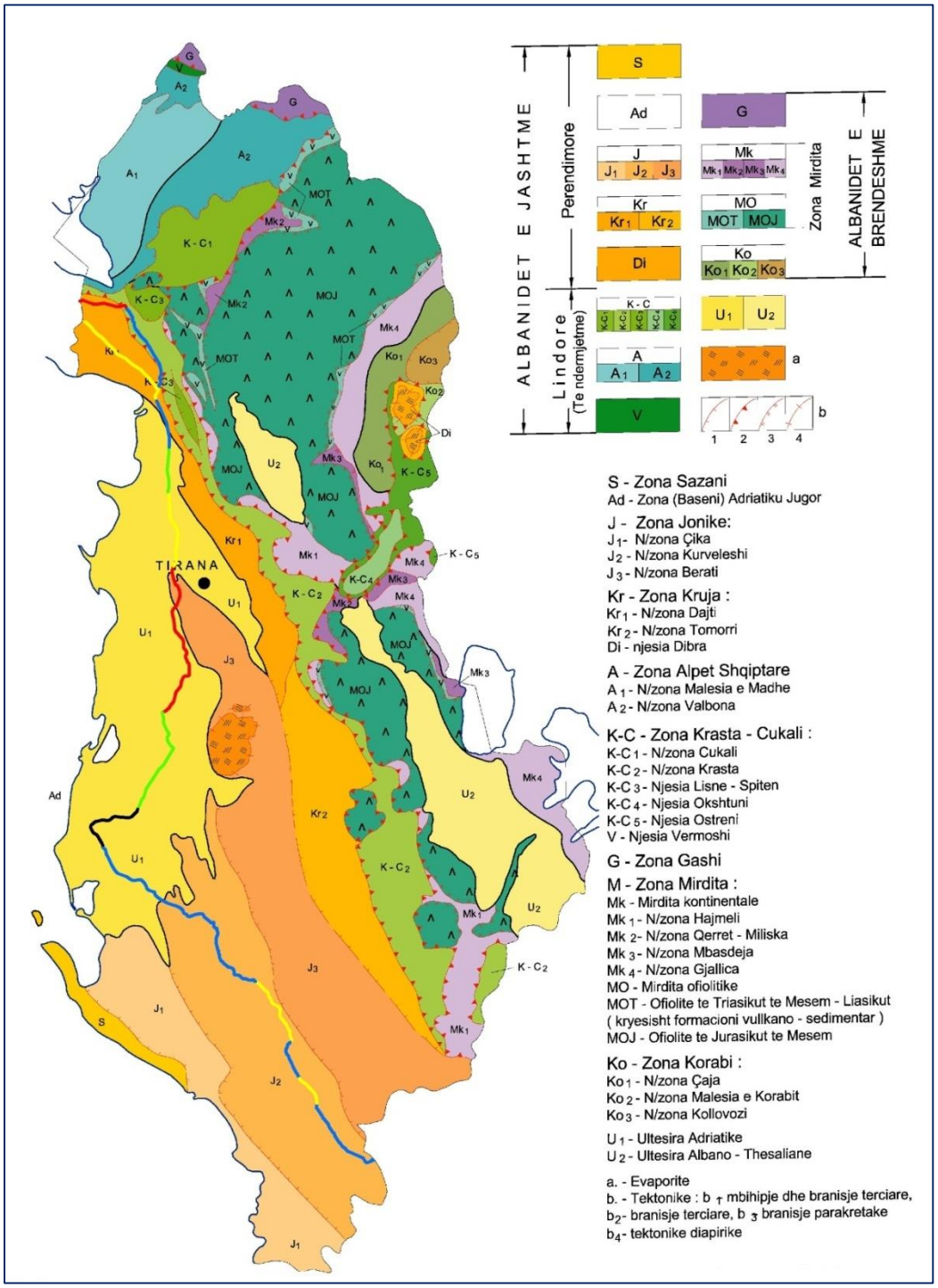


Figure 4-27: Tectonic Map of Albania – 1:200,000

The Central and Western zone of Semani River, is characterized by rock formation of hills and lowlands, almost with calcareous origin. In hilly areas, the rocks are represented almost by old Quaternary deposits like flysch and molasses (clay and sand/conglomerates). The geological structure of the Western part of Semani River Basin, part of Adriatic Lowland, is represented by young quaternary depots, and lied over Pliocene ones. Clays, sub-clays and salt-clays and pits are the main specific formation of this areas.

Seismicity

Duni Ll., Kuka Sh., Kuka N. and Fundo A. (2010) have attempted to improve the probabilistic seismic hazard map of Albania and this is included below. The whole of Albania is in an area of seismic hazard with greatest risks in Southern Albania and along the Coast. Referring to the Seismological studies and events, the Semani River Basin, is not included between Albanian territories with high seismological risk. Based on the seismic activity, the territory of Albania is divided into eight seismic sources as follows. Three of those are part of Semani River Basin (see Figure 4-28) as follows.

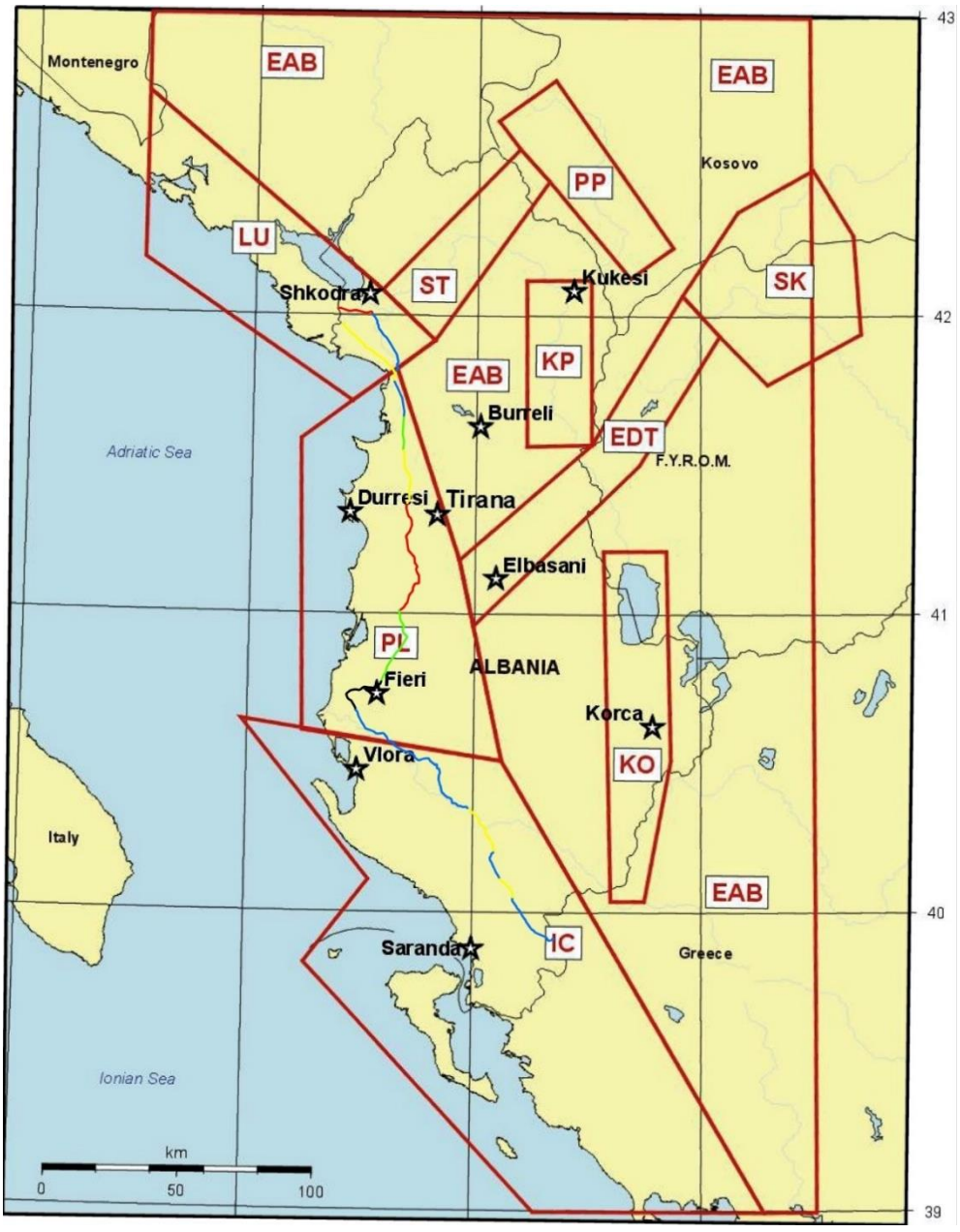


Figure 4-28: Map of Seismic Sources of Albania

- The Western territory of the Basin is part of the **Peri Adriatic Lowland (PL), is** a coastal zone containing post-Pliocene oblique-compression thrust faults, N- to NNW-striking, which are cut by E-NE-trending strike-slip faults. The maximum expected magnitude is 7.0.
- The Eastern part of the territory of the Semani River Basin, is part of the **Ohrid-Korça (KO) is** an interior zone comprising the Pliocene-Quaternary normal-faults of Ohrid graben, and Korça and Erseka half-graben, which are generally N-trending. The maximum expected magnitude is 6.9.
- The central part of the Basin, is part of the Eastern **Albanian Background (EAB)** a zone comprising the interior part of Albania and the northern neighbouring regions.

4.3.9 Material Assets – Natural Resources

The entire Semani River Basin territory is very rich in assets and natural resources including their surface waters, with Semani river with Osumi and Devolli, branches, their related natural streams, natural lakes and artificial/agriculture reservoirs, joined by a dense system of irrigation and channels. The main energy source is the electricity created by hydropower that has evolved due to the great potential in the basin. The Basin is also very rich (please refer to the hydrogeology sub-chapter), with groundwaters that are the main source for drinking water supply in the western part of the Basin.

The very rich natural soils, have incited the development of agriculture and the agriculture activity in the regions of this basin is the most developed and productive in Albania. The natural and manmade forests, nevertheless damaged in years 1990-2007 (through illegal forestry), remains a great asset. All such assets, together with archaeological/historical and cultural/heritage values are considered as very important tourism potentials. The road Infrastructure is developed and ameliorated every year, providing a good accessibility between the counties, as well as the drinking water system, has started the rehabilitation and improvement on the main Municipalities.

As previously mentioned, the Semani River discharges into the Adriatic Sea. This part of the Basin at the coast, represent a sandy zone very appropriate for tourism. Karavasta lagoon, is the most important Albanian Lagoon, very rich in fish of economic important and birdlife. The basin area is very rich in ore and non-metallic minerals.

One of the most important natural assets remains the oil sources in Fier County. Work undertaken since 1913 have shown oil and gas exists. In 1914 Italians recorded oil deposits in the west of Kuçova, Selenica, Patos and around 1914, the geologists of the Italian army in Sazan noticed the signs of oil and tracking these signs to the Shushica River, which passes to Drashovica. The first well was drilled up to about 200 meters and gave very good oil. After this result the Italians began to have an extraordinary interest and from 1924, at an international congress the oil marks in our country that were in Patos, Kuçove and Drashovicë became known.

Albania, became a country of great interest because of its beliefs about oil prospects. In 1925, when King Zog's government was in power, the governments of many countries, English, Italian, French, came and demanded concessions and were given a substantial area from Tepelena, Memaliaj to Shkumbin, the area on which including surface bitumen extraction. In the 1930s and 1932s, the Italians took over all oil exploration in Albania and, until the liberation of the country, they organized and directed all oil exploration and laid the foundations of the discoveries. It can be said that their works have been quite successful and serious. In 1927 the first drilling began in Kuçova. Kuçova, which began producing from 1927 and on the eve of liberation in 1943, achieved a maximum production of 200,000 tons of oil, later after Italy's capitulation production fell because the site was destroyed. Kuçove was the first source and oil to be brought to Italy. In 1943, the Italians needed a lot of oil and were forced to erect a processing plant in Kuçova and said they met those little needs they had. While before the liberation when they left, the Italians blasted everything.

After the liberation the entire site had to be revived. From the 1950 's oil production grew enormously, Patos was built, and until the 1970s and 1975s, many oil fields were discovered, now by Albanians in Fier County. Compared with pre-release, today there are many foundations discovered in sand, limestone and so on. Oil reserves in the country are estimated to be about 400 million tons, of which about 45-50 million tons have been released so far. The maximum production in the Fier County was reached in 1974 of approximately 2 million barrels and 100 thousand tons per year. That year there was a global oil crisis and its price has risen to tenfold. This has been the peak production in our country. Until 1990 there were not many discoveries because there were no investments for research. In 1990, oil production amounted to 1 million barrels and 100 thousand tons. The transition caused the oil production to decline a lot and today this production goes to 300-350 thousand tons. The country's needs were about 500,000 tons, and today they have multiplied, and overseas purchases meet over 90% of the domestic fuel needs.

4.3.10 Soils

Most of Albania's soils are classified as Cambisols, Luvisols, Regosols, Leptosols, Phaeozems. (According to FAO classification).

Typical soils in the western coastal area, hills and mountain areas of the Semani River Basin are the Fluvisols, Luvisols, Phaeozems, and Vertisols. Fluvisols are found typically on level topography that is flooded periodically by surface waters or rising groundwater, as in river floodplains and deltas and in coastal lowlands. They are cultivated for dryland crops or rice and are used for grazing in the dry season. Fluvisols are technically defined by a weak or non-existent surface horizon (uppermost layer) and by parent material derived from river, lake, or marine sediments that have been deposited at regular intervals or in the recent past. These soils exhibit a stratified profile that reflects their depositional history or an irregular layering of humus and mineral sediments in which the content of organic carbon decreases with depth. Wide variations in texture and mineral composition are observed. The Central and Easter part of the Basin are characterized by Leptosol, Luvisol, Cambisol and Luvisol. Leptosols appear as shallow soils, placed on strong rocks or on calcareous materials. They are less than 30 cm deep and considered little developed. Luvisols are mineral soils that have a B-Clayey horizon as a diagnostic quality, in composition of their own profile. Cambisols are soils with limited age (pedologic time) and are considered as lands with a transitional structure of development. These soils have in composition of their own profile a B- Cambic horizon as a diagnostic quality (almost eastern part of the Basin, in river valley slopes). Soil Texture Distribution is Loamy soil 50%; Clayey soil 30%; Sandy soil 20%. Soil Depth Distribution: Deep soils dominate on the flat coastal areas; Shallow soils dominate on hilly and mountainous area. Data of agrochemical studies show that: – 44.6 % of soils are classified as low in humus content located mainly in the hilly and mountainous area and partly in the western flat areas; – 78 % of soils are classified as low and medium in total N; - 75% of soils are classified as low and medium in P; more than 90% of the soils are classified as high and medium in K.

The River Basin is characterized by a well-developed agriculture. Mediterranean climate conditions allow the cultivation of a wide range of agricultural plants. In recent years, a broad cultivation of vegetables, fruit trees and fodder are observed. In this area are alternated lands with high agro-productivity capacity up to the middle. Humus content ranges from 0.62-3.6%, N-total from 0.063-0.21%, Assimilable Phosphorus (P_2O_5) from 1.08-18.72 ppm and Potassium (K_2O) 3.5-31.6mg/100 gr of soil. In the hilly area the land is mostly covered with pastures and forests. In the plain field with mainly flat terrain, vegetables, fruit crops and forage are cultivated. The area is characterized by soils with low to medium humus content with an average content of 1.4%, poor in nitrogen (N) with an average content of 0.098%, poor to medium in Assimilable Phosphorus (P_2O_5) with an average content of 10.2 ppm and medium in Potassium (K_2O) with an average content of 10.7 mg / 100 gr of soil.

Humus content in the Eastern part of the Basin ranges from 0.68-3.41%, Nitrogen 0.1-0.195%, Assimilable Phosphorus 3.91-19.26 ppm and Potassium 7.3-40 Mg/100 gr of soil.

4.3.11 Protected Areas

The structure of Administrative bodies of Protected Areas are composed by National Agency of Protected Areas (Central), Regional Directorate of Protected Areas (Regional) and the Protected Area Management Staff (Local/site structure).

According to the New Law on Protected Area (January 2017), the Protected Areas have a status according the focus of interest for their protection as follows:

a) Protected Areas with National Interest,
b) Protected Areas with international interest where are included:

   i. Ramsar Zones,
   ii. Zones of Special Area of Conservation (SAC), where are included Zones of Special Protection Areas (SPAs) and Zones with Special Conservation Interest).
   iii. Zones with Specific Interest on Conservation (Emerald)
   iv. Biosphere Reserves.
   v. Zones of Cultural and Natural Heritage of UNESCO

The protected Areas are categorized upon their status of conservation as follows:

a) Strict Natural Reserve/Scientific Reserve (Category I);
b) National Park (Category II);
c) Natural Monument (Category III);
d) Nature Managed Reserve/Natural Park (Category IV);
e) Municipal Natural Park (Category IV);
f) Protected Landscape (Category V);
g) Protected Area of Managed Resources/Protected Area for Multiuse Purposes (Category VI).

The RBMP goes beyond the normal scope of traditional protected areas as mentioned above and includes for areas as per the EU WFD.

WFD considers water related protected areas separately as water bodies that need extra protection for the conservation of habitats and/or species, and for the protection of human health by protecting drinking water, bathing waters, etc.

The water bodies of the Semani Basin like the lakes, wetlands and lagoons play an important role in the life cycle of several birds, fish species and the biodiversity in general. Many species are endemic and resident to these areas while others are migratory. Some of the Semani ecosystems are important at regional, national and international level. Karavasta Lagoon for instance, is an area of special conservation interest (Emerald site), a wetland of international importance (RAMSAR site) and a very important bird and biodiversity area (IBA).

A table of protected areas is included in Annex 4

Description of most Significant Protected Areas in Semani Basin

In Semani River Basin, the habitat and species Protected Areas are numerous and include four types of IUCN Categories. Currently, Albania has grouped the Protected Areas on a regional basis. Thus, many Protected Areas are shared between River Basins. Following are given the Natural Protected Areas, included within counties associated with the Semani River Basin.

Albanian Prespa Lakes (Liqenet e Prespes Shqiptare). Ramsar Site no. 2151. National Park, part of the trilateral international Prespa Park covers an area of 15,119 ha. A high-altitude basin (max. 2287 masl) located in the south eastern Balkan Peninsula in the Mediterranean bio-geographical region. The area has two inter-linked lakes, Macro Prespa and Micro Prespa, and is characterized by tree-dominated wetlands, seasonal freshwater marshes and flooded agricultural lands, permanent rivers and creeks, canals, drainage channels, freshwater springs, subterranean karst and cave hydrological systems.

The **Micro Prespa Lake, in the past were feed with waters also by Devolli River. The river was diverted later, so this Lake is transformed in a wetland with small and fragmentized marshes. To the other site, the Macro Prespa Lake, is considered as one of the main resource of Ohrid Lake. This Protected Areas is mainly considered in the Drin Basin River but is included here because it falls within the territory of Korça County.** The terrestrial ecosystem is dominated by the Mali i Thate (Dry Mountain) calcareous massif that extends south from the Albanian-Macedonian border. The boundary of the site is the same as the boundary of Prespa National Park regarding the aquatic component. The fauna and flora are characterized by not only high diversity but also a high level of endemism. The site is internationally important for globally endangered bird species such as Dalmatian Pelican (*Pelecanus crispus*) and White Pelican (*Pelecanus onocrotalus*), and it supports diverse and endemic fish, mammal and amphibian communities.

Photo 1: View of Prespa Lakes National Park (in Korça County)

By the end of 2013 Prespa's Lake area including Ohrid Lake was proposed to be the first Man and Biosphere Reserve for Albania. UNESCO's International Co-ordinating Council of the MAB (Man and the Biosphere) Programme at a session held in Jönköping- Sweden on 11.06.2014 approved the proposal and named the region of Ohrid and Prespa a cross-border biosphere reserve.

Divjake-Karavasta National Park.

The Divjake Forest-Karavasta Lagoon National Park is a national park in western Albania, sprawling across the Myzeqe Plain in the direct proximity to the Adriatic Sea. This lagoon and forest are created by contribution of Shkumbini River and Adriatic coastal waters interactions. This PA is taken into consideration in this study, because is part of the Fier County territory (Divjake Municipality). The park spans a territory of 222.3 square kilometers (22,230 ha) containing remarkable features such as wetlands, salt marshes, coastal, meadows, floodplains, woodlands, reed beds, forests and estuaries. Because of the park's important and great availability of bird and plant species, it has been identified as an important Bird and Plant Area of international

importance. Among the largest in the Mediterranean Sea, the lagoon of Karavasta has been recognized as a wetland of international importance by designation under the Ramsar Convention. It is separated from the Adriatic Sea by a large strip of sand and was formed by the sediments discharged by Semani and Shkumbini rivers. The particular climate has favored the development of a vast array of floral and faunal species with an immense quality. The wealth of fauna is reflected in the list of many species and subspecies recorded to date, with 228 species of birds, 25 species of mammals, 29 species of reptiles and 29 species of amphibians. The most important specie of the park is Dalmatian pelican (*Pelecanus crispus*). The wetlands and swamps are abundant in algae and dense phanerogam grasses. The forests and woodlands are ascertained by a mixture of varied species of deciduous, coniferous and mixed trees, due to the lower river valleys and sea coast. The forests are important because they provide shelter for a large number of animals, including the red fox, golden jackal etc.

Photo 2: View of Divjake Karavasta National Park

The park provides important spawning and nursery habitat for economically valuable fish species that are exploited by local fishermen. It is also known for the beauty of its natural landscape, its role in the local economy and its touristic appeal. This park offers a wide range of diverse wildlife to the explorers.

Tomorri Mountain National Park

Tomorri Mountain National Park is situated in the districts of Berat end Elbasan. The current size is 24,723.1 hectares. Park with high biodiversity and rich of endemism and sub-endemism. In this park you can find trees such as: beech, pine and black pine, subalpine and alpine pastures. Mountainous park, important for large mammals such as bear (*Ursus arctos*), wolf (*Canis lupus*), birds of prey etc. In addition to scientific and economic values the natural park landscape provides great value of aesthetic, recreational, touristic, historical, and cultural guarantee development of ecological and cultural tourism.

Photo 3: View of Tomorri Mountain National Park

Osumi Canyon, Nature Monument

The Osumi Canyon, a Nature Monument, category III IUCN, is another Albanian Protected Area lied in Semani River Basin, Osumi Branch. The Nature Monument is situated in Berati County, Skrapari Municipality. Canyons have a length of 13 km and are 450 m above sea level. It is thought that they have been formed 2-3 million years ago by erosion by deep water. Throughout the cave that are many underground passages and unexplored caves.

Photo 4: View of Osumi Canyons

Presumably the canyons have long served as underpasses on the Corovode River, but over the centuries, the underwater underpass ceilings have collapsed, releasing and shaping another relief, today this canyon. In the bay of this canyon, which is described by the Osumi River, on both sides of it flows waterfalls from different villages, which go to a rocky system. The canon of origin, the largest in Albania, is among the most fantastic in Europe, so characterized by European scholars, geographers who came to the area. This canyon has amazing beauty due to a special ecosystem that retains permanent greenery on both canyon slopes throughout the year. It comprises, Mediterranean shrubs with vegetation like berries, heather etc., with a rich living world and fish of the most diverse categories preserved on the foundations of the Osumi River. On the slopes of both canyons, erosive activity of external factors has created a series of rocks, from the rarest of found in Albanian canyons. In the Osumi River canyons, there are 6 straits, where the canyon in the river bed gets a tightness of up to 1.5 m, while the surface above the surface goes up to 35 m.

Emerald Network of Areas of Special Conservation Interest (ASCI-s).

The identification of Areas of Special Conservation Interest (ASCIs) was carried out in the period 2002-2008 for Albania. As the result 25 potential Emerald sites were identified and studied. These are listed in Table 4-5 below and shown on the map (see Figure 4-29). The proposals were assessed by the ETC/BD and Council of Europe during 2010-2012. The Standing Committee of the Bern Convention at its 32nd meeting in December 2012 approved the 25 proposed sites for Albania.

Table 4-5: List of Emerald Sites in Albania

CODE	NAME	CATEGORY IUCN
AL0000001	Llogara National Park	II
AL0000002	Divjake Pine National Park	II
AL0000003	Prespa National Park	II
AL0000004	Butrint National Park	II
AL0000005	Allamani Strict Nature Reserve	I
AL0000006	Tomorri National Park	II
AL0000007	Dajti National Park	II
AL0000008	Protected landscape of the wetland complex Vjose-Narte	V
AL0000009	Managed Nature Reserve of Shkodra lake	IV
AL0000010	Alps	II
AL0000011	Aurora Lures-Kunore-Valmore-Zall Gjocaj	II
AL0000012	Bredhi Hotoves-Dangelli NP	II
AL0000013	Morava Protected Landscape	V
AL0000014	Karaburun-Orikum-Dukat	II
AL0000015	Bize-Brosh-Berandt (proposed Protected Landscape)	V (proposed)
AL0000016	Divjake-Karavasta	II
AL0000017	Shengjin-Ishem	IV
AL0000018	Managed Nature Reserve Kuturman-Qafe Bush	IV
AL0000019	Pogradec Protected Landscape	V
AL0000020	National Park Germenj-Shelegure Leskovik-Piskal	II
AL0000021	Protected Landscape of Buna river – Velipoja	V
AL0000022	National Park Rrajce-Shebenik	II
AL0000023	Protected Landscape of Korabi	V
AL0000024	Managed Nature Reserve Rrushkulli - Ishem (proposed)	IV
AL0000025	Managed Nature Reserve of Berzane	IV

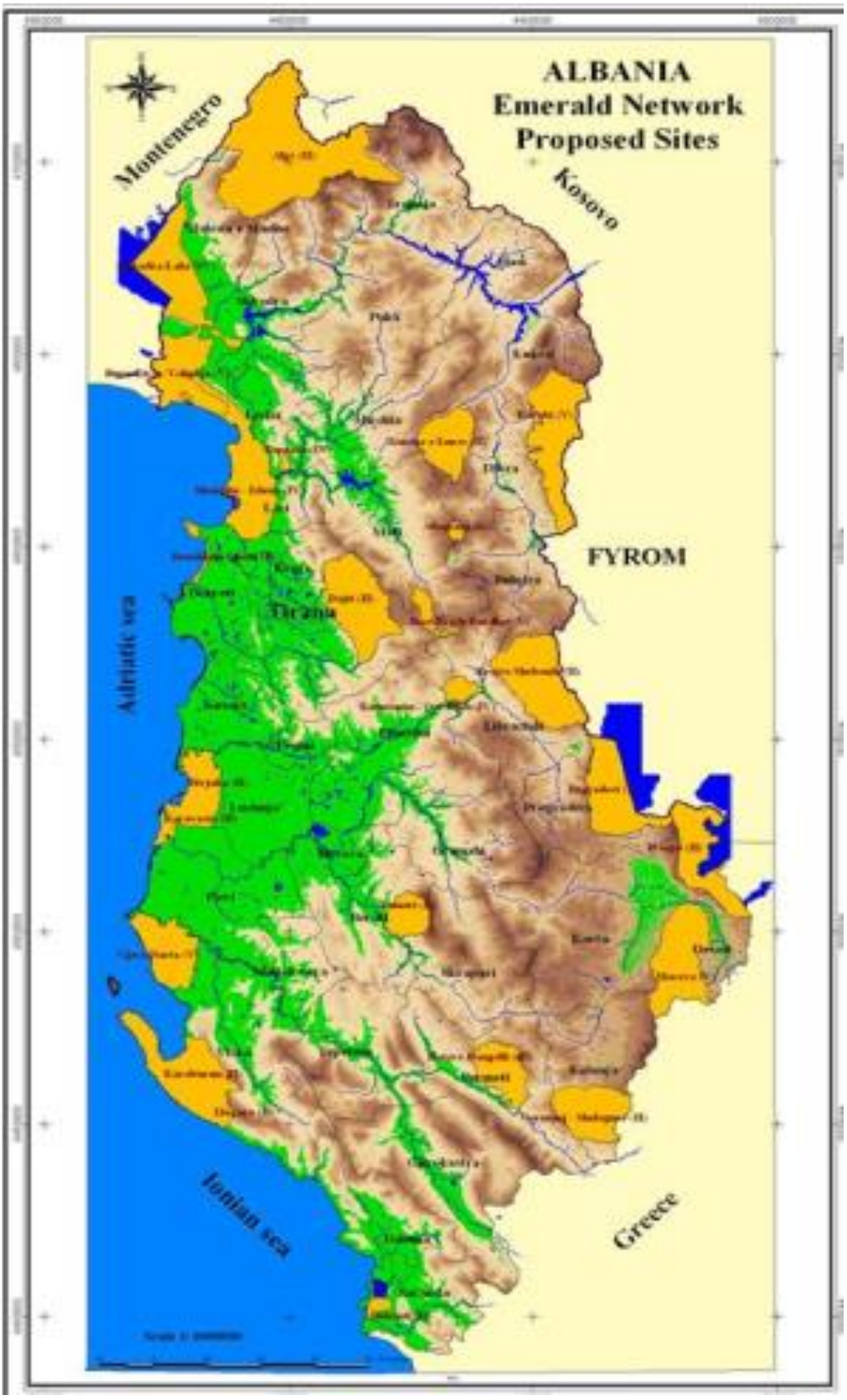


Figure 4-29: Map of Proposed Emerald sites (in yellow) within Albania

Important Bird Areas (IBAs) in Albania.

According to the study "Inventory of wetlands in Albania", carried out by ECAT Tirana in cooperation with EKBY Greece, several sites presented on the map enclosed in Annex 7. Map of Important Bird Areas (IBAs) in Albania have been identified as IBA-s for Albania. Furthermore, their status towards the designation as SPA for birds, according to the provisions of the Birds Directive, has been prepared by the elaboration of the national legal framework with the approval of the law "On protection of wild fauna" in late 2008. IBA-s in Albania are officially designated by Ministerial Order of 10. 4. 2013 "On the approval of the coastal areas serving as important habitats for migratory water birds". There are 15 IBAs in Albania ranging from 800 ha to 14000 ha. The largest IBAs are the inland lakes – Lake Shkodra, Lake Ohrid and Lake Prespa. All the rest are located on the Adriatic Coast. More detailed data on the status of IBAs in Albania are given in the table 8 below

4.3.12 Biodiversity

The biodiversity of the Semani river basin is very complex, because changes on soil and climate types, exposure of the valley, human interventions etc. The main characteristics of biodiversity are described following, considering habitats, including flora and vegetation and fauna, of different sub-phytoclimatic zones. The main habitats along the Semani River Basin are complex cultivation areas, transitional woodland shrubs, aquatic habitat, land principally occupied by agriculture with areas of natural vegetation and natural grasslands (Forests and meadows). The Semani River Basin is part of the Central Mediterranean Hilly Climatic Subzone (stretching from the Mati valley in the north to Vjosa valley in the south). The habitats are described according EUNIS habitat classification.

There are 32 plant species with 150 subspecies, which are endemic in Albania, and another 110 plant species that are subendemic in Albania, Kosovo, Montenegro, Croatia, and Greece. A full list of the 32 endemic taxa is given in Annex 5. Among paleo endemics, there are species with very old origin like Wulfenia baldaccii, Forsythia europea, Gymnospermium shqipetarum; endemics species to Balkan such as: Lunaria telekiana, Crepis bertiscea, Petasites doerfleri, Leucojum valentinum subspecies Vlorense, or endemic species in Albania such as: Aster albanicus subspecies Paparistoi, and others.

Habitats and Flora/vegetation

Marine Habitats

A.5. Sublittoral sediment

Eunis Habitat - A5.53322 Association with [Zostera noltii] on superficial muddy sands in shallow waters.

The main species that forms vegetation of aquatic bed are *Zosterra noltii* and *Ruppia cirrhosa*. The first cover about 40% of the surfaces of aquatic bed and is situated mostly in mudded bottom of the wetlands. *R. cirrhosa* is distributed mostly in calm and shallow waters. Together with accompanied algae they create some biocenosses that can be considered as one of the most important oxygen sources for the lagoon waters. Another group, but not so important is the monophyte plant community of *Lemna minor*, that is present in small stagnant freshwater ponds, with typical green colour. The communities represented by different *Patomogeton genera*, less developed than two firsts covers the peripheral inland shores of the lagoons, with low salinity. This habitat is characteristic of Kune Vain Lagoon. It will not be impacted by the project but is located close to the project area.

A.2. Littoral sediment

A 2.5. Coastal saltmarshes and saline reedbeds

Eunis Habitat A2.522. Mediterranean [Juncus maritimus] and [Juncus acutus] saltmarshes

Communities with predominant species of *Juncus genera*, are represented by *Juncus acutus* and *Juncus maritimus*, that often forms a continuous belt and sometime are altered with other communities of Arthrocnemum sp.A good part of the year they remain under the waters. The communities of *Juncus acutus* are very resistant to the salted water.

Eunis Habitat A2.526. Mediterranean saltmarsh scrubs

Communities with predominant species of *Arthrocnemum genera*, living in the very salted meadow. They are covered by waters during the most time of the year. The predominant species are *Arthrocnemum fruticosum, A. perenne, A. glaucum, Salicornea europaea* etc. Generally, they are accompanied with *Limonium vulgare, Inula crithmoides* etc.

Habitat of ***Broad-leaved forest***

G1.3 Mediterranean riparian woodland

G1.38 Oriental plane woods

Eunis Habitat; G1.381 Helleno-Balkanic riparian plane forests

This habitat occurs in coastal area and deltas site of the Semani River. The river bed forest of Alno-Platanetum orientalis, are characterized by the presence of Oriental Plane (*Platanus orientalis L*.) with admixed Small-Flowered Tamarisk (*Tamarix parviflora DC*.), Hampeanian Tamarisk (*Tamarix hampeana*), White Willow (*Salix alba L*.), Purple Willow (*Salix purpurea* L.) and Fierthorn (*Pyracantha coccinea*) in the shrub layer and with Great Horsetail (*Equisetum telmateia*) and sedges (*Carex sp.div.),* Hammer Sedge *(Carex hirta L.),* Winkel-Sedge (Carex *remota L.),* Soapwort (*Saponaria officinalis L*., Water Mint (*Mentha aquatica L*.) in the herb layer. They are concentrated in the river bed and springs of the hilly zone or on the steep slopes, near the river and springs. The substrate, in the fast flow rivers (hilly zone), has a gritty earth character as the result of presence of the higrophylous plant trees, such as: Oriental Plane (*Platanus orientalis L.*), White Poplar (*Populus alba L*.), White Willow (*Salix alba L.),* Purple Willow *(Salix purpurea L*.), Weeping Willow (*Salix amplexicaulis Bory*), Grey Willow (*Salix elaeagnos subsp. angustifolia*), Common Alder (*Alnuus glutinosa Scop*.). All the alluvial soils are almost under the agricultural activity, i.e. degraded in time.

Habitats of **Inland surface water**.

C. Inland surface waters

C3.2 Water-fringing reed beds and tall helophytes other than canes

C3.21 Common reed ([Phragmites]) beds

The main type of vegetation in the first floor is represented by the class of *Phragmitetalia*, where the main association is the one with reedbeds *Phragmites australis*. It is located alongside the main irrigation channel and it branches, in several drainage channels in the plain and in some parts of Semani and Vjosa River where the current is not so strong. They are often in association with species such as *Sparganium erectum, Alisma plantago-aquatica, Eleocharis palustris, Lythrum salicaria, Mentha aquatica*.

Habitat of **Regularly or recently cultivated agricultural, horticultural and domestic habitats**.

Non-irrigated arable land

I1, Arable land and market *gardens,*

Code by Eunis Habitat; I1.1 Intensive unmixed crops

In this habitat are included agricultural lands cultivated mostly with traditional crops like corn, vegetables, fodder, fruit trees. The most important cultures cultivated in these areas are Corn (*Zea mays*), Barley (*Hordeum vulgare*) and Jonxha (*Medicago sativa*).

Complex cultivation patterns

Reference to Eunis habitat; I2.22 Subsistence garden areas

A large part of areas is used for cultivation of vegetables, fruit tree or crops near the settlements.

Habitat of **Constructed, industrial and other artificial habitats**
Discontinuous urban fabric
J1.2. Residential buildings of villages and urban peripheries
In both sides of the river basin there are settlement located between agricultural lands and hilly terrain.
The vegetation spreads close to the settlements, roadsides and cultivated areas is represented by the association of *Polygono – Potea annua, Artemisetea vulgaris* and *Stellarietea Media*.

Code by Eunis Habitat. J2.4 Agricultural constructions
Along this basin there are a high number of greenhouses, where the cultivation of different vegetables is possible.

Habitat of **Woodlands, forests and other wood trees**.
G1. Broad-leaved deciduous woodland
Code by Eunis Habitat; G1.112 Mediterranean white willow galleries
This habitat grows along the Semani River bed. It is dominated by *Salix alba* and *Populus alba*. The forests dominated by *Salix alba* and *Salix fragilis* have their restricted habitats along the Seman River in the remaining small plots.

Code by Eunis Habitat; G1.381 Helleno-Balkanic riparian plane forests

The riparian forests are mainly dominated by Plane trees (Platanus orientalis). In these habitats are formed rich communities in associations with Salix alba, S. elaeagnos, S. purpurea, Alnus glutinosa, Cercis siliquastrum, Celtis australis, Populus alba, Frassin ornus, Crataegus monogyna, Cornus sanguinea, Vitex agnus-castus, Rubus spp., Rosa sempervirens, Hedera helix, Clematis vitalba, Saponaria officinalis, Lulebasan Hypericum perforatum, Melamine officinalis, Helleborus odorus, Cyclamen hederifolium, Arum italicum, Brachypodium sylvaticum, Dactylis glomerata, Calamintha grandiflora.

Human activity impact on expansion of the agricultural lands throughout the territory and especially along the water bodies has fragmented and heavily bare the riparian areas of vegetation, in Semani and Gjanica rivers.

Coniferous forest

Code by Eunis habitat; G3.7 Lowland to montane Mediterranean pine woodland (excluding black pine [Pinus nigra) G3.739 Albanian stone pine forests

In the southwest side, at the estuary of the Semani River, association species are the species of Tamarix, Ammophilia genus, etc. Near water bodies with fresh water there are wild reeds present.

Reference to Eunis habitat; G1.7 Thermophilous deciduous woodland

G1.7641 Helleno-Moesian [Quercus petraea] forests

In the south, on the border between Levan and Frakull, there is the "Forest of Levan " where the hornbeam oak tree (Quercus petrea) dominate the habitat. The Levan Managed Reserve (Category IV) has a surface of 200 ha and is populated by oak forests (relatively of young age). The park is also reforested with Mediterranean pine trees.

Code by Eunis Habitat; G2.91 Olive groves

The habitat dominated by olive plantations is found in the western part of the Basin, in the hilly terrain of the area.

Fauna

The aquatic habitats is a kind of eco-tone habitat and for that reason it is an important shelter for a high range of animals, especially, aquatic insects, fish, amphibians, birds and mammals. Insects are presented here by numerous Coleopterans (Beetles), Hymenopterans (Wasps, Bees and Ants), Hemipterans, Lepidopterans (Butterflies), Dragonflies and Damselflies. The spider Devade tenella was first sighted on the Balkan Peninsula and eleven spider species were first recorded as part of the Albanian spider fauna. Amphibians and reptiles (Rana graeca, Bombina variegata, Rana lessonae, Rana balcanica, Bufo viridis, Emys orbicularis, Natrix natrix) use such a habitat as roosting, feeding and breeding place.

The open parts of Semani and the main irrigation channel offer good feeding sites for different species of waterbird such as Ardea cinerea, Phalacrocorax carbo, Larus ridibundus and Larus cachinnans. A few others, Charadrius alexandrinus, Actitis hypoleucos use the same habitat as a breeding ground.

Terrestrial birds (order Passeriformes) such as Luscinia megarhynchos, Motacilla alba, Motacilla cinerea, Muscicapa striata, Sylvia atricapilla, Phylloscopus sibilatrix, Upupa epops, Miliaria calandra etc. use the aquatic habitats either for breeding, wintering or migrating.

Other species are Lepus capensis, Mustela nivalis, Meles meles, Suss scrofa etc.

Characteristic species Amphibians and reptiles of this habitat such as land turtles 'Testudo hermanni', Coluber caspius, Coluber gemonensis and Elaphe longissima is reduced 2 times considering the last 20 years.

Between species in risk of mammals can be counted such species like Lutra (Vulnerable), Delphinus Delphi (Vulnerable), Meles meles (Endangered).

Terrestrial Habitat

The entomofauna is dominated by numerous species of butterflies such as Swallow-tail, Cleopatra, Hairstreaks and Blues. In addition, some large and small Orthopterans, Longhorn Beetles and Ant-lions occurred in abundance in the drier habitats. Insects compose also the bulk of food resources for many species of amphibians and reptiles.

The typical herpetofauna (amphibian and reptiles) of woodland forest and shrub includes species as *Lacerta trilineata*, *Anguis fragilis*, *Elaphe longissima*, *Vipera ammodytes,* Dalamatian Algyroides (*Algyroides nigropunctatus*), *Lacerta trilineata*, Balkan Green Lizard (*Lacerta viridis*), Large Whip Snake (*Coluber caspius*), Smooth Snake (*Coronella austriaca*), Aesculapian Snake (*Elaphe longissima*), Four-lined Snake (*Elaphe quatourlineata*), Grass Snake or Ringed Snake (*Natrix natrix*), Nose- horned Viper (*Vipera ammodytes*) and *Hyla arborea*. Some other species (*Salmandra salamandra*, *Rana dalmatina*, *Triturus cristatus*) do also occur but their presence is nevertheless related with fresh water resources. Some species of herpetiles (amphibian and reptiles) are negatively influenced by deforestations, terracing and the indiscrimination use of different insecticides and herbicides and endangered either nationally or internationally. The most well-known taxa are the Globally Endangered Species of *Testudo hermanni*.

The avifauna of the maquis is typical of the northern Mediterranean community of birds. Passerines (*Passeriformes*) compose the dominant group of birds and are dominated by different species of warblers such as *Sylvia atricapilla*, *Sylvia melanocephala*, *Sylvia cantillans*, *Cettia cetti*, *Hippolais pallida* etc. Small flocks of migrants include species as *Upupa epops*, *Jynx torquilla*, *Turdus merula*, *Oenanthe oenanthe*, *Lanius excubitor* etc. The most common wintering species are *Buteo buteo*, *Erithacus rubecula*, *Phylloscopus collybita*, *Parus major*, *Troglodytes troglodytes, Sylvia melanocephala* and *Scolopax rusticola*. *Bonasia bonasia*, Blue Tit (*Parus caeruleus*)

and Spotted Woodpecker (*Dendrocopos medius*) characteristic species of woodland, forest and scrub ecosystem are vulnerable species.

Among the birds of Mediterranean forest birds is worth mentioning the presence of the Globally Threatened Species of *Falco naumanni*. The species use the woodland as a roosting place during the migration period.

The woodland is rarely visited even by species related to adjacent rocky habitats. However, the presence of *Aquila chrysaetos*, *Falco peregrinus, Alectorix graeca*, *Monticola solitarius* and *Sitta neumayer* are noted. The field terrain is rich in birds because a lot of birds from the cold zones descend in this zone. Here the birds find abundant food. Characteristic of wintry agricultural and abandoned landscape are big clouds of sparrows (Passeriformes order).

Mammals populate also the habitat of natural forests and woodlands in different periods of the year. The tracks of the *Mustela nivalis*, *Martes foina*, *Vulpes vulpes* as well as different species of mice (*Apodemus flavicollis*, *Apodemus sylvaticus, Apodemus mystacinus, Microtus thomasi, Mus musculus, Lepus europaeus,)* are observed everywhere. Other species such as *Crocidura suaveolens* and *Erinaceus concolor* are also observed in this habitat.

The Wolf *Canis lupus*, a Globally Endangered Species, together with bear, roe and boar are repopulating the mountain areas of the Eastern part of the Semani River Basin. Different species of bats (*Rhinolophus* sp., *Pipistrellus* sp. and *Myotis* sp.) are observed during summer. Among them, one species is considered as Globally Endangered Species: *Rhinolophus blassi*

Almost all terrestrial mammals are related with the forest ecosystems, meadows and alpine pastures *Myotis bechsteinii, Nyctalus lasiopterus, Plecotus austriacus, Plecotus auritus, Canis lupus, Martes martes, Martes foina, Sciurus vulgaris, Apodemus flavicolli, Dryomys nitedula, Glis glis, Muscardinus avellanarius* are abundant mammals of the forest and shrub area.

4.3.13 Archaeology and Cultural Heritage

The archaeological and Cultural heritage assets are spread in all Counties where is lied the Semani River Basin. Above are mentioned some Archaeological historical assets with international importance of the Counties, of the Semani River Basin.

In Korça County (Devolli River Basin) there are 158 Cultural Monuments. The site is very rich in archaeological values in the territories of Devolli Basin. Between the Korça County archaeological assets can be mention the residence of Kamnik, built with rocks in the years 2800-2700 B.C. Also, the residence of Maliqi (palafit), represents the developed culture of prehistoric period of the period of Late Neolith, Cupper and Bronze periods, of the years 2600 B.C. The ceramics produced in this period are named “Devollite” and are considered as the best decorative arts of this period. The other assets found like working tools etc, are of a great scientific, educational, historic, touristic value. Other archaeological assets are those of the first phase of the Iron period. Those values are found in fortified settlements of Gradishta of Shuec, the Wall of Control and castles of the Zvesda, Tren, Ventrok, Kakac, Gjonomadh, Lumalas, Bellovode, Trajan, Castle of Gradec, Bejkove etc. A very important site is Small Prespa Lake, which is also a tourism site. Tren Cave, is one of the ancient pre-historical sites where are found remains of human activity. This cave, is situated at the “Woolf Gorge”, in the coast of Prespa e Vogel Lake, and has very rare natural and material/cultural values. Trajan Castle, is the biggest castle in Albania, surrounds an area of 22 ha, in an altitude of 1245m., above sea level.

Photo 5: View of Devolli River from Tranjani Castle remains

The area is very rich in ancient graves (Tumes), like these of Kamenica, Rehova etc. In Maliq and Dunavec, are found ancient human settlements (lacustrine and palaphytes), that testimonies the beginning of civilization era.

Some cultural assets are also the settlements built in the end of 19 Century and beginning of 20 Century. They have quite specific architectural values. Between them can be mentioned the First Albanian School, the Old Lyceum, several private houses, etc. The “Korça Traditional Market”, testimonies the development of craftsmanship and market of the Korça city. This market has a specific architectural feature.

Photo 6: View of Korça Market place

The County is rich in religious assets, libraries, museums, cinemas, theatre etc.

Photo 7: View of Korça Orthodox Cathedral

The Skrapari Municipality, in the eastern part of Osumi, is also rich in archaeological and cultural/historical values. Between the most important historical monuments, can be mentioned the Corovoda Castle, remains of Corovoda bridge, Kasabashi and Sharova bridges, Castle of "Bregu I Koronit, Castle of Tomirrica, Red Mosque, Tekke of Backe, Zaloshnja and Cerrava Villages, etc. Berat city, is a Heritage City Protected by UNESCO, for its specific archaeological and historical features. The city has some very specific architectural features. Some specific historic and cultural asset are the Castle of Berat, city centre etc. In the Berat Municipality, there are 86 Cultural monuments of the first category, and 363 Cultural Monuments of the second category. The Saint Maria Church is also a great religious asset of this municipality.

Photo 8: View of Berat city

The Fieri County is an ancient crossroad from the Western to Eastern Europe. That's why this county is very rich in archaeological and cultural/historical assets. The "Apolonia", a colony of Illyrians in Adriatic Coast, is the largest Archaeological National Park of Albania. The ancient city of *Apollonia* is situated in southwestern Albania, about 13 miles from the city of Fier. The fascinating landscape of the archeological park, which has been preserved in an exceptionally intact condition, comprises a successful combination between the beauty of monuments and nature, attractive through its long history. Its foundation took place immediately after the foundation of *Epidamnus – Dyrrachium* and quickly became one of the most eminent cities of the Adriatic basin, which was mentioned more frequently from the other 30 (thirty) cities bearing the same name during Antiquity. The city lay in the territory of the political communion of the *Taulantii* and was broadly known as *Apollonia of Illyria*. It stands on a hilly plateau from where expands the fertile plain of *Musacchia* with the Adriatic Sea and the hills of Mallakastra. The ruins of *Apollonia* are discovered in the beginning of the 19th century. The city flourished during the 4th century AD as an important economic and trade center. Over time it was expanded over the whole hilly slope including an area of *ca.*81 ha, surrounded by a large wall of 3 km of length and 3 m of width.

Photo 9: View of Apollonia Archaeological Park

Other assets like Saint Kozmai Monastery in Kolkondas, etc, are already protected by Albanian government as historical and cultural monuments in Fier County. The County is rich in religious assets, libraries, museums, cinemas, theatre etc.

Between the most visited centres by tourists in cities lied at Semani river basins can be mentioned the; Ethnographic Museum, Iconographic Museum of Onufri etc. in Berat city, as well as Museum of Medieval arts, Archaeological Museum, Education Museum etc in Korça and other Archaeological sites in Fier etc.

4.3.14 Landscape

In the Semani River Basin, are mixed several and different landscapes, characterized from natural features and manmade ones, related to cultural, archaeological/historical and architectural ones, as well as mixed landscapes, where cultural heritage and development activities goes in compatibility with natural assets and features. The most important elements of Landscape formation are natural riches and urban development.

The natural assets consist of specific geomorphology and landforms, running and standing waters, forests and meadows, mountains characterized by snow layer in winter and coast and river valleys, which create a wonderful

complex for recreation and education. Most of the specific Landscapes, are proclaimed Protected Areas, by Albanian Government.

Photo 10: Landscape from Arrez village in Devolli River valley

To the other site, historical and archaeological heritage, proves the compatibility of the settlement and human activities with natural features in historical times. Nevertheless, the not appropriate developments of the last years has damaged seriously this compatibility. Fragmentation, pollution, etc., has deteriorate good parts of the natural beauties. In the development plans of the counties of the Semani River Basin, is proposed a careful rehabilitation of the damaged natural landscape, by planting of native trees, erosion control, waste management, avoiding of exploitation of quarries in exposed sites, rehabilitation of landscape in existing exploited quarries, control the dredging in river bodies, greening the cities and managed habitats etc.

4.4 SOCIO ECONOMIC BASELINE

4.4.1 Demography

Republic of Albania territory is 28,748 km². After the implementation of the Administrative Territorial Reform on 31 July 2014, the administrative divisions of Albania consist of two main levels: The Counties and the Municipalities.

Albania is divided into 12 counties with their own council and administration. The counties are the country's primary administrative divisions and further subdivided into 61 municipalities. The municipalities are the first level of local governance, responsible for local needs and law enforcement. There are about 2980 villages/communities within Albania.

During year 2016, Albanian economy performed a real GDP growth rate by 3.35 % compared with year 2015. Final Consumption in 2016 had the main share in economy with 92.54 %.

The residential population of Albania, on January 2018 was estimated about 2,870,324 inhabitants, compared with 2,876,591 inhabitants on January 2017. 53.7 % of the population lives in urban areas and 46.3 % in rural areas. About 30.8 % of the total population lives in the prefecture of Tirana, remaining the most populated prefecture in the country, followed by the prefecture of Fieri (10.4 %), Durres (10.1 %) and Elbasan (9.7 %). Average age of the population has increased in the last 10 years with 5 years. In 2016 the average age of the

country's population went to 37 years old from 32.1 years old that was in 2007. Older people in Albania show a growing tendency from year to year. Reducing the number of young people and increasing the number of the elderly comes as result of lower fertility and increased life expectancy. This shows that Albania is starting to experience the effects of population ageing.

The employment rate for males 15-64 years old in 2017 was 64.3 %, while for females was 50.3 % leading to a gender gap in employment by 14.0 percentage points. The agricultural and services sectors have the highest share of total employment in the country with respectively 38.2 % and 42.4 %, while employment in industry constitute 19.4 % of the total employment in 2017. The following is a short description of the socio-economic situation of the Prefectures included in the Semani Water Basin.

Demographic Sub Division of Semani River Basin

The Semani basin crosses 3 Prefectures; Korça, Fier and Berat Prefectures or counties. Korça County is in the south-east of Albania. The total geographical area of Korça County territory is 3711 km^2. The Region is bordered with Republic of Macedonia in the northeast and east, Greece in the south, with Gjirokastra County in the southwest, Berat County in the west and Elbasan County in the northwest.

The Korça region has an average altitude of 850m above sea level. Korça Field (plain) is one of the biggest fields in Albania. With the new administrative-territorial division, Korça Region has 6 municipalities and 37 administrative units, including 6 towns and 343 villages.

Fier County is in South/Western Albania, in central and Western part of Semani River Basin. It borders the Tirana County in the north, Elbasan County in the northeast, Berat County in the east, Gjirokastra County in the southeast, Vlore County in the south and the Adriatic Sea in the west. The total geographical area is 1890 km^2. Fier is the second region in the country, after the county of Tirana with the largest number of the population, around 11% of the country population lives in this region. The density of the population is 160.7 inhabitant/km^2. According to the new administrative division in the County of Fier, there are 6 municipalities and 42 administrative units, including 6 towns and 279 villages.

Berat County is bordered by the Elbasan County in the north, Fier in the west, Gjirokastra Region in the south and Korça Region in the east. The total territory of the County is 1798 km^2, and the County is lied in Central and South-East part of Semani River Basin. With the new administrative division in the county of Berat there are 5 municipalities and 24 administrative units (including 5 towns and 247 villages). The Historical Centre of the City of Berat, which includes about 490 cultural monuments, the natural beauty of the city stretching along the Osumi River, the slopes of Tomorri Mountain and Osumi canyons are great tourist potential for the county.

Demographic data

As mentioned above, the Semani basin crosses three counties. The Socio-economic and cultural description is based on these counties and is summarised in Table 4-6 below.

In the territory of Korça Prefecture lives 7.5% of the population of Albania. From the last registration in 2011, the population of the region has decreased by about 2.07 %. This reduction of the population over the years has come because of migration abroad, but also the displacement of the population towards the most important centre, such as Tirana and Durres. Most of the population lives in rural areas, 60.2% of the population, while 39.8% live in urban areas. On average, the family consists of 3.56 members. Crude deaths rate (10 deaths per 1000 inhabitants) is higher than the crude birth rate, which on average, accounts 9.5 birth per 1,000 inhabitants during 2016. The average age of deaths is 74.5 years. Sex ratio is 102.7 male for 100 females.

The number of people leaving the country is greater than the number of them coming here. The county represents a negative crude rate of net internal migration of - 10.90 per 1000 inhabitants.

From the last Population and Housing Census the total population of the Fier county has decreased by about 2%. This reduction of the population over the years has come because of migration abroad, but also the displacement of the population towards the most important centre in the country. The number of people moving outside the county is higher than the number of incomers. Incoming/outcoming flows ratio is 42/58 %. The county represents negative crude rate net internal migration of -5.52 per 1000 inhabitants.

In Berati County lives 4.6 % of the population of Albania. Compared to 2011, the population has decreased by 6.2 % of the population. In recent years, the region has been characterized by a depopulation of rural areas towards urban areas due to the lack of infrastructure, difficult living conditions, etc. Despite the internal migration, other factors that has led to a decline in the number of population are migration abroad the county and declining of crude birth rate. Berat is one of the region in Albania with the lowest crude rate of net internal migration, respectively -20.34/1000 inhabitants. The incoming/outcoming flows are at the level of 25%/75%. In rural areas live 55% of the population, while in urban areas 45 %. The crude death rate is 8.7 deaths per 1000 inhabitants, while the crude birth rate is estimated 10.6 birth per thousand inhabitants during the year 2016. On average, the family is comprised by 3.68 members. Sex ratio is 104.8 males per 100 females, higher than the national level and in favour of the male populations.

Table 4-6: Demographic Data on the Semani Basin Counties

Parameter	Korça	Fier	Berat
Surface (km²)	3 711	1 890	1 798
Population	215,872	303,808	133,692
Population density (inhabitant/km²)	58,2	160,7	74,4
Urban Population	39,8 %	39,8 %	45,5 %
Rural Population	60,2 %	60,2 %	54.5 %
Male	109.409	156.579	68.429
Female	106.463	147.229	65.263
Birth	2060	3202	1413
Death	2140	2313	1168

Source: Statistical Yearbook 2017, Instat,

The Semani Basin has an age structure composed by 20.8 % population of the age group of 0-14 years old, 67 % in the age of 15-64 years, and 12.2 % above the age of 65 years. This is shown in Table 4-7 below.

Table 4-7: Age Structure of the Semani Basin Counties

Prefecture	Total			Male			Female			TOTAL
	0-14	15-64	65+	0-14	15-64	65+	0-14	15-64	65+	
Korça	40,134	149,018	26,721	21,048	75,422	12,939	19,086	73,596	13,782	**431,746**
Fier	56,056	208,286	39,467	29,378	107,859	19,342	26,678	100,427	20,125	**607,618**
Berat	24,571	91,534	17,588	12,826	47,008	8,596	11,745	44,526	8,992	**267,386**
TOTAL	**120,761**	**448,838**	**83,776**	**63,252**	**230,289**	**40,877**	**57,509**	**218,549**	**42,899**	**1,306,750**

Source: Statistical Yearbook 2017, Instat,

In Korça, the 15-64-year-old group occupies the highest percentage, 69%. This shows the region's potential related to the active working age group. Group age 0-14 years old, consist of 18.7 % of the total population, while 12.3 % are over the age 65 years. Total dependency ratio is 45 %, this means that 45 persons of inactive working age group should be covered by 100 active working age group.

Most of the population lives in rural areas, 60.2% of the population, while 39.8% live in urban areas. On average, the family consists of 3.78 family members. There is a high male dominance compared to the national level. Sex ratio show male population dominance, there are 106 men/100 females. The average death rate is estimated at 7.6 deaths per 1000 inhabitants, while the crude birth rate is 10.5/birth per 1000 inhabitants during 2016. The average age of deaths is 73.7 years.

The age composition of the county of Fier is dominated by the population of the age group 15-64 years old, which consist of 68.6% of the population, young people (age 0-14 years) account for 18.4% of the population, while the age group over 65 consist of 13 % of total population. Total dependency ratio is 46%. This means that 46 people of non-active age are covered by 100 people of active working age.

The largest part of the population in Berat county is occupied by the age group (15-64), the working age group population, respectively 68.5%. The age group of the elderly (65+) occupy 13.1% and the age group of young people 18.4%. The total dependency ratio is 46%, which means that 46 inactive persons should be covered by 100 active working persons.

4.4.2 Employment, Unemployment and Poverty

In terms of economic development,Table 4-8 below summarizes this information for the three counties within the Semani Basin.

Table 4-8: Economic Development within the Counties of the Semani Basin

County		Korça	Fier	Berat
Labour force participation rate		55.8	63.5 %	59.4
Employment rate		51.5	54.7 %	51.7
Unemployment rate		7.6	13.9 %	12.9
Registered unemployed jobseekers	Total	8,981	13,537	4,936
	Female	4,441	7,299	2,356
Employment in Agriculture sector (%)		53	62 %	54
Employment in Industry sector (%)		14	11 %	17
Employment in Service sector (%)		33	27 %	29

Source: (Anketa Tremujore e Forcave të Punës), Statistical yearbook 2017

The contribution of Korça region to economic growth for 2015 is + 0.06 p.p. The agriculture, forestry and fisheries sector are the higher contributors. The active working age group constitutes 69% of the total population of the region. The participation rate in the labour force is 55.8% of the working age population, while the employment rate is 51.5%. 11545 persons are employed in public administration. Average gross monthly wage per employee in public sector is 51,980. The unemployment rate is 7.6 %. The total number of registered unemployed jobseekers for the year 2016 is 8981, 49% of which are female. Most of the population are employed in the service sector. The main source of income for the population is paid work or self-employment, while the second source of income are pensions. 10.3 % of the population consider social assistance and benefits as the main source of income. In year 2017, 3.7 % of the population are under economic assistance scheme and 2.3 % are people with disabilities.

For the year 2017 In Korça County there are 14032 active enterprises registered, 95% of which have 1-4 employees. Large businesses with more than 50 employees account only 0.4% of the total. 44% of businesses operate in agriculture, fisheries and forestry, 24% in the trade sector. The third by the importance is the activity of tourism/services and food production sector.

In Fier County the GDP has a real increase of 6.0% in 2015. The level of GDP per capita in the Fier region was about 550 thousand LEK, higher than the national level (495 thousand LEK).

63.5% of the population are active participants in the labour force. Employment rate is 54.7 %, higher than the national level (50.3%). The unemployment rate of 13.9 %. 14585 people works in the public administration, while 883 people in the local public administration (District, Municipality, Administrative Unit). Average gross monthly wage per employee in public sector is 51,240 ALL. 54% of registered unemployed jobseekers are females. Most of the labour force is employed in agriculture sector.

Fier Region is the most important throughout the country for the oil and gas industry. It has 80% of oil reserves, 75% of oil production and 90% of gas of the Albania. Refineries process 100% of crude oil in the country. More than 9,000 people are employed in the oil sector.

Gross GDP in Berati County has a real growth of 1.8 % in 2015. GDP per capita in Berat County is about 396 thousand ALL, lower from the national level (495 thousand ALL).

Around 59.4 % of the population is active participant in the labour force. The employment rate is 59.4 %, higher than the national level (50.3%). The employment rate for men is higher than that of women. The unemployment rate of 12.9%, lower compared to the national level of 13.7%. There are 7977 people working in the public administration and 883 people employed in local public administration (County, Municipality, and Administrative Unit). Average gross monthly wage per employee in public sector is 51,100 ALL. 48% of registered unemployed jobseekers are females. 54 % of the labour force are employed in agricultural sector.

From the total active registered enterprises, the most important sector is agricultural, forestry and fishing, 43 % of the enterprises operates in agricultural sector. From the service sector the most important is trade activity with 27 % of the enterprises operating in this field. Small businesses with 1-4 employees account 96% of the total number of enterprises registered for 2016.

The total agricultural area of the Berat Prefecture is 53000 ha. During the year 2016 the total area planted with cereal and other field crops was 17500 ha. Number of production trees in permanent agricultural areas during the year 2016 is 3640 trees. Very important is olive production, as well as production of vegetables in greenhouses without heating.

The most important source of income for 61 % of the household unit is paid work or self-employment. Second, by the importance of incomes are the pensions for 34.7 % of the households.

For the year 2017 there are 1.3% persons that benefit economic aid and 2.8% persons with disabilities benefiting social assistance.

Regarding to active enterprises registered in 2016, the most important sector is the agricultural sector with 44.3% of the total active enterprises, while the second is the trade with 26.8% of the enterprises. In industrial sector operates 5.2% of active enterprises in 2016. 95% of enterprises have 1-4 employees, while large enterprises with 50 or more employed only 0.4% of total enterprises.

Field areas of the region are mostly cultivated agricultural areas. Hilly areas are widely used to produce olives and vineyards, especially the territory of Fier and Mallakastra municipalities. The total agricultural area of the Fier County is 122000 ha. During the year 2016 the total area planted with cereal and other field crops was 91.100 ha. Number of fruit/oil trees in permanent agricultural lands during the year 2016 is 6139 trees.

The most important source of income for 61.4% of households in Fier is paid work or self-employment. While the second source of income are the pensions. Remittances serve as the main source of income for 12.1% of households. 0.75 % of the population are under economic assistance scheme and 2.5 % are people with disabilities.

In terms of those people that have economic hardship, Korça have substantially more people claiming economic assistance. Fier has the highest number of disabled people covered under health insurance (see Table 4-9).

Table 4-9: People with disabilities and claiming economic assistance by County – Semani Basin

County	Individuals claiming economic assistance	Disabled people covered by health insurance in 2017
Berat	1786	3765
Fier	2331	7786
Korça	8000	4955

Source: State Social Service, Annual Report 2017.

Below in Table 4-10 are summarized main sources of incomes in three Counties of Semani River Basin, without considering the employed in private enterprises and local government services. By the table, can be understood, that remittances remain very important for standard life level of the population (with an average of about 10%) in Semani River Basin. The Berati and Fier Counties has higher no. of incomes by self-employment.

Table 4-10: Main Sources of Income by County within Semani Basin

County	Social Assistance and Benefits	Remittances	Pensions	Paid Work or Self-Employment:
Fier	6.06%	12.11%	29.69%	61.4%
Korça	14.68%	6.82%	37.90%	55.5%
Berat	10.34%	10.33%	34.76%	61.0%

Source: https://instatgis.gov.al/#!/l/prefectures/population/prefpop1

4.4.3 Ethnicity and Religion

In Korça County, Albanian language is mother tongue for 96.99 % of the population, meanwhile 1.68 % of the population speaks Macedonian language. The major part of the population of the Korça County is Muslim (59%) and 16.3% of the County are Orthodox. In Fier County, Albanian language is mother tongue for 99.39 % of the population. Most of the population of the Fier County are Muslim (48.5%). 99.55 % of the population of Berati County have Albanian language as their mother tongue. 50.2% of the population of Berati County are Muslims, 7.5% Orthodox, 8.2% Bektashi and 1.1 % Catholic.

Some 80% of Korça County are Albanian by ethnicity. The most represented ethnic group after the population of Albanian origin are Macedonian, comprising 1.78 % and Greek 1.33 %. Based on the Population and Housing Censuses, 77.71% of the Fier County population are Albanian by ethnic affiliation. The ethnic group more represented after the Albanian population are the Roma 0.53 % and the Aromanians 0.53 %. Regarding ethnic and cultural affiliation, 84% of Berati County are Albanian, while the second most represented ethnic group after Albanian are the Aromanian, which comprise 0.47 % of the population. 50.2% of the population are Muslims, 7.5% Orthodox, 8.2% Bektashi and 1.1 % Catholic. This information is contained in Table 4-11 and Table 4-12 below.

Table 4-11: Ethnic and Cultural Affiliation of the Population of the Semani Basin

Counties	Albanian	Greek	Macedonian	Montenegrin	Aromanian	Roma	Egyptian	Other	Not stated
Berat	119 159	180	13	1	670	202	108	36	21575
Fier	241 163	332	18	5	1 553	1640	75	171	65374
Korça	176 719	2 923	3 922	2	2 677	1005	847	84	32178

Table 4-12: Religious Affiliation of the Population of the Semani Basin

Counties	Bektashi	Catholic	Islam	Orthodox
Berat	8.2 %	1.1 %	50.2%	7.5%
Fier	1.0 %	2.0 %	48.5%	13.8%
Korça	2.1 %	1.1 %	59 %	16.3%

4.4.4 Administrative Regions

In 2014, the Albanian Government started to implement a major reform to local administration to improve the local governance and to increase efficiency. This was implemented through Law no.115/2014 which reorganised the 373 former Local Government Units (LGUs) into 61 new LGUs (Municipalities). The GoA has proposed alignment of the current water sector with the newly created LGUs in such a manner that one LGU has only one water supply and sewerage utility, which is responsible for water and sewerage services throughout the territory of the LGU.

Republic of Albania spans 28,748 km². After the implementation of the Administrative Territorial Reform on 31 July 2014, the administrative divisions of Albania consist of two main levels: The Counties and the Municipalities. The country is divided into 12 counties with their own council and administration. The counties are the country's primary administrative divisions and further subdivided into 61 municipalities. The municipalities are the first level of local governance, responsible for local needs and law enforcement. There are about 2980 villages/communities within Albania.

By new administrative reform the Semani River Basin is Shared between three of the main Albanian Counties; Korça, Fier and Berati. The Korça County has 7 Municipalities; Korça, Devolli, Kolonje, Korça, maliq Pogradec and Pustec Municipalities, subdivided in Administrative units that in total have 340 towns and villages. The Berat County is divided in 5 Municipalities; Berat, Kuçove, Polican, Skrapar and Ura Vajgurore, subdivided in Administrative Units that in total have 239 towns and villages. The Fier County has 6 Municipalities; Divjake, Fier. Lushnje, Mallakaster, Patos and Roskovec, subdivided in Administrative Units that comprise 283 towns and villages.

4.4.5 Services

In Semani River Basin, there were historically 33 water supply and sanitation services. However, after the reform as mentioned in Section 4.4.4 above, only 10 water supply and sanitation services will be licensed, i.e. Korça, Berat-Kuçove, Ura Vajgurore, Fier, Roskovec, Patos, Ballsh, Lushnje, Divjake and Maliq (partially).

With respect to the water treatment plants (WTP) in the Semani River Basin, only two WTPs are currently in operation, i.e. in Korça and in Divjake Municipality, close to the City of Lushnja. Regarding wastewater and its treatment, two Waste Water Treatment Plants (WWTP) are in operation at, Policane and Korça. Two further WWTP are proposed at Berat and Kuçove. The operational cost of the existing WWTPs exceed the current financial capacity of water and sewerage utilities, which were facing a financial challenging situation already prior to the construction of WWTPs. In the cities of Maliq, Divjake, Roskovec and Cerrik the wastewater network is

completely missing. The other cities are mainly covered by wastewater network but still sub urban areas are not yet covered with this service. In this condition, the use of septic tanks is the most common solution.

Regarding solid waste collection, treatment and recycling, this is one of the problem sectors within the main urban centres in the basin. There is a lack of solid waste collection in rural areas, inadequate transport and lack of suitable treatment and disposal facilities. Solid waste is deposited into improvised landfills (essentially just dumpsites) often next to river beds and consequently implying pollution to the rivers and groundwater due to their leachate. Fier has 10 non-sanitary solid waste disposal sites, Berat has 5, and Korça has 6. In Fier, the rate of solid waste production per person has increased by 61% from 2005 to 2014 (0.184 kg/person/day to 0.296 kg/person/day, respectively). Likewise, the rate in Berat has increased by 61% (0.2 kg/person/day in 2005 to 0.327 kg/person/day in 2014) and Korça by 55% (0.19 kg/person/day to 0.348 kg/person/day in 2014). This is putting enormous pressure on the river systems.

There are several contaminated areas (hot spots) that have not been addressed and contaminated waste (e.g. inert waste, hospital waste and hazardous waste residue) that are not systematically processed, compounded with legal and illegal disposal of waste in unsuitable areas. In addition, insufficient capacity of exiting landfills exacerbates this situation. Even though the present legal framework is fully transposed to the EU Directives, lack of investments implies that the situation will not improve. The most important “Hot Spot” remains industrial wastes that contaminate soil, waters and air. Such wastes are almost provided by oil refinery in Fier County. The pollution has created substantial ecological problems for the population living around oil refinery and at the Gjanica River, part of Semani river.

In general, in Korça County, the situation of drinking water supply and sanitation is good (see Table 4-13). There are 58.057 household units connected to the water supply network. In the municipality of Korça and Kolonja the population is 100% covered with the water supply service. Only the municipality of Pustec does not have good coverage with these services. The duration of water supply varies from 8.77 hours per day in Kolonje municipality up to 23.72 hours in Korça municipality. As the entire country, also in Korça region the sewerage system remains a problem. For three of the municipalities of the county, this system is totally non-existent, and where it exists, it does not cover the population at 100 % level. The household not connected to the sewerage system discharges the polluted waters into tanks, channels ore streams. There are two waste water treatment plant; One in the north side of the city of Korça, built in 2012 to cover a population of 85,000 inhabitant and the waste water treatment plant in Pogradec city built in 2010, covering 50000 inhabitants.

Table 4-13: Water supply and sewerage service in Korça County

Municipalities	The duration of water supply (hours)	Coverage with water supply (%)	Coverage with sewerage system (%)	Number of connections with water supply network
Korça UK sha	23.72	100	75.52	28,053
Korça village Maliq U sha	14.25	70	0	6,337
Pustec	-	-	-	739
Kolonje UK sha	8.77	100	38.93	2,088
Bilisht UK sha	22.79	77	0	6,099
Pogradec UK sha	23.82	98	73.96	14,741
TOTAL				**58,057**

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The present management of the urban solid wastes in Korça region is based on the accumulation and storage at landfill without any treatment technology. Urban waste is burned, hazardous hospital and industrial wastes are

stored in the same sites with those of municipality, etc., resulting serious threatening of the first ground layer of water catchment for Korça and Lake Ohrid water. The change to the management technology of the solid waste, followed by a recycling process will improve the environmental conditions of the Korça region. Waste collection in cities is estimated to be over 90% and for the whole region 40-60%. The annual amount of household wastes disposed in the landfill is 55900 tonnes of waste. On average is generated 0.3 kg solid household waste per person/per day.

Urban waste production for the city of Korça is about 350 kg/inhabitant/year, of which about 310 kg goes to the landfill site. In Korça administrative units the generation of municipal wastes is estimated at 165 kg /i/year. The waste fee in the city of Korça is 900 lek/family/year, in Pogradec 240 lek/inhabitant/year, Bilisht and Ersekë 600 lek/family/year. The waste collection site is located over the groundwater basin of Korça, near the so-called 'Turan Well Field'. The waste collection site in Pogradec is located approximately 4.5 km from the shore of Lake Ohrid, over a karstic area that communicates with the lake and its water resources. Even in Erseka, the area is located on a karst area, about 1.2 km from the city; in Bilisht is located directly on the banks of the Devolli River, while in Maliq is very close to the banks of the Devolli River.

Drinking water supply and sewerage system is administrated by the Water Supply/Sewerage Company (UK, sha) that operates its activity in all the municipalities of the Fier county (see Table 4-14). Coverage with water supply varies from 54% in the municipality of Patos to 99% in the municipality of Divjake. Water supply and sewerage continues to be a challenge for the region. Most of households that do not have access to the water supply network are supplied by private wells. The duration of water supply is better presented in the municipality of Fier, as the population is supplied with water 19.49 hours per day. Regarding to sewerage system, this service remains unsatisfactory. Sewerage network exists mainly in urban centres, while in rural areas this service is completely non-existent. Even where this system is present, it is blocked or damaged. In general, polluted waters discharge in tanks. In many cases their discharge is made in open drainage channels. No treatment of such waters is done in the whole region and their discharge occurs on superficial water bodies.

Table 4-14: Water supply and sewerage service in Fier County

Municipalities	The duration of water supply (hours)	Coverage with water supply (%)	Coverage with sewerage system (%)	Number of connections with water supply network
Fier Uk sha	19.49	87	38.67	35,265
Lushnje UK town sha	6.86	68	27.22	21,444
Lushnje village U sha	6.35	60	0	-
Patos UK sha	8.67	54	34.54	5,723
Roskovec	-	-	-	3,267
Divjake U sha	4.81	99	0	-
Mallakaster Uk sha	9.43	75	22.09	5,056
TOTAL				**70,755**

Annual Report ERU, 2017

Water supply and sewerage system in the Berat County is under administration of UK (sha) enterprises (see Table 4-15). The population is supplied with drinking water from natural resource of Bogove, Ura Vajgurore and the wells of Lapardha 2, Otllak, Kozare, Banaj and Arrez. In general, drinking water supply appears in good condition, however, not all the population is covered by this service, especially a part of rural areas. On average, the population is supplied with water about 7 hours per day. Regarding coverage with the sewerage service, the situation is better presented in the municipalities of Berat and Kuçove, while in Ura Vajgurore this service is non-existent. The sewerage service exists mainly in the urban areas and partly in any village. In rural area the waste

waters are discharged in tanks or opened channels. The contaminated waters discharge untreated into the Osumi River, a tributary of the Semani.

Table 4-15: Water supply and sewerage service in Berat County

Municipalities	The duration of water supply (hours)	Coverage with water supply (%)	Coverage with sewerage system (%)	Number of connections with water supply network
Berat Kuçove UK Sha	7.36	80	60.15	28,056
Ura Vajgurore U sha	6.29	81	0	4,161
Corovode UK sha	7.51	100	39.23	3,294
TOTAL				**35,511**

Annual Report ERU, 2017

In the Berat County, waste collection and disposal sites are not at satisfactory levels. Mostly, waste collection service is offered at the municipal level and for a part of the administrative units. In the municipality of Berat and Kuçove, the waste disposal site is out of any criteria, as from the geographic position but also from the management of waste disposal. Also, disposal sites are located near the inhabited centres and in the banks of Osumi River, causing pollution of soil layer and groundwater, negative effects for ecosystems and cancerogenic diseases for the population. The annual amount of municipal waste deposited at disposal sites for the year 2017 is 33614 ton. Average amount of solid household waste that a person generates per day is 0.2 kg/person/day.

Table 4-16: Solid Waste Generation in Semani Basin Counties

Counties	Total Municipal waste generated per year (ton)	Total inert remains per year in ton	Average of municipal waste generated per capita/day	Total municipal waste generated in landfills (tons)
Berat	42,300	8,222	0.2	33,614
Fier	141,196	18,337	0.3	83,050
Korça	70,374	23,851	0.3	55,900
TOTAL	**253,870**	**50,410**		**172,564**

Source: Elaborated from NEA 2017

4.4.6 Education

All counties of the Semani River Basin apply the same educational system that starts from pre-school education and goes on with primary/lower secondary education, upper secondary education/high school, university education and post university education. In the central economy period the education up until high school was obligatory. From 1992 till 2000, the education standards retreated, but more recently the situation has improved. Table 4-17 below shows that highest illiteracy rates is in Berat County

Table 4-17: Educational Attainment by percentage – Semani Basin

County	Primary and Lower Secondary	Upper Secondary	University and Post University	Illiteracy rate
Berat	58.6 %	29.85%	6.8%	3.2 %
Fier	57.7 %	30.04%	7.4%	3.17%
Korça	56.5 %	29.42%	9.5%	2.67 %

Source: Census 2011 INSTAT

In Korça, education is provided by 123 education facilities of basic education (8-9 years old) and 37 high schools distributed in urban centres and centres of administrative units. There are also 8 professional high secondary school. For the year 2016 -2017 the number of pupils enrolled in the education system was 32109 pupils. The pupil/teacher ratio in primary education is 11/1, while for high education 16/1. In the town of Korça there is also 'Fan Stilian Noli University', where education is provided for the branches of economics, agriculture, human science, nursing and pedagogy, etc

Related to education level of the population in Korça County, 56.5 % of the population over 10 years old, have completed primary and secondary school, 29.4 % high secondary school and 9.5 % university. Illiteracy rate is 2.67%.

Albanian language is mother tongue for 96.99 % of the population, meanwhile 1.68 % of the population speaks Macedonian language. 80.20 % are Albanian by ethnicity. The most represented ethnic group after the population of Albanian origin are Macedonian, comprising 1.78 % and Greek 1.33 %.

The education system in Fier Region consists in three main levels; pre-school education, 8-9 years education and upper secondary education. In Fier County, most of the population have completed lower secondary school, 57.7 %, 30 % high school and 7.4 % are graduated in university. There are no universities in the region. In total there are 157 basic education schools and 57 high schools, 4 of which are professional secondary schools. The number of pupils enrolled in schools during the academic year 2016-2017 results 49479 pupils. The pupil/teacher ratio in basic education is 12/1, while in upper levels the ratio is 16/1.

Most of the population of Berati County, over the age of 10 years have completed 8-9 years of education, 58.6% of the population, while those who have completed higher education consist only 6.8 % of the population. There are 83 basic education institutions in this County, 23 upper secondary school and 3 professional upper secondary schools. However, the territory is partially covered by these institutions. For the academic year 2016-2017 the number of pupils enrolled in the education system is 22183 pupils. The pupil/teacher ratio in primary education is 12/1, while in secondary education 16/1.

This information is summarised in Table 4-18 below.

Table 4-18: Key data from educational institutions in Semani Basin

School Type		Korça	Fier	Berat
Basic education	Number of schools	123	157	83
	Number of pupils enrolled in private schools	1,063	2,275	551
	Number of pupils enrolled in public schools	21525	32408	14615
	Number of teacher	2,009	2,765	1,269
Upper secondary school	Gymnasium	37	53	23
	Professional	8	4	3
	Teacher pupils enrolled in Upper secondary	674	931	471
	Pupils enrolled in Upper secondary	10 584	14814	7568

Source: Statistical Yearbook 2017

4.4.7 Human Health

Hospital service in Korça County is provided in 4 hospital centres, while primary health care is provided in 39 health centres and 220 ambulances. The ratio health centre and population are 1.8 health centre/10000 inhabitants. In the entire region, there are 511 consultation clinics for women and children. In the region does not operate any

private hospital, while clinics, laboratories and pharmacies are private facilities that also provide health services. The number of Hospital beds per 10000/inhabitants is 37.

The primary health service is provided by 22 health centres and 140 ambulances. There are administrative units where this service is not provided. Population living in this area take health service in health centre of the nearest city or village. Also, in the territory offer health service 304 consultation clinics for women and children. The hospital service is provided in 3 hospitals, located in the centres of 3 municipal units, respectively Regional Hospital in Berat, the hospital in Corovode and Kuçove. The number of Hospital beds per 10000 inhabitants is 28.

There are three hospitals, 45 health centres and 154 ambulances throughout the Fier County. In general, 71% of the villages have a health centre. Emergencies cases are treated in regional hospital. The number of Hospital beds per 10000 inhabitants is 21. The ratio between health centres and inhabitants is 1.5 health centres/10000 inhabitants.

This information for the Semani basin is shown in Table 4-19 below.

Table 4-19: Primary and secondary health services in Counties making up Semani Basin

County	Consultation clinics for children	Health centres	Health post	Consultation clinics for women,	Hospitals	Hospital beds	Number of Hospital beds per 10000/inhabitants
Korça	256	39	220	255	4	747	37
Fier	210	45	154	219	3	613	21
Berat	155	22	140	149	3	370	28

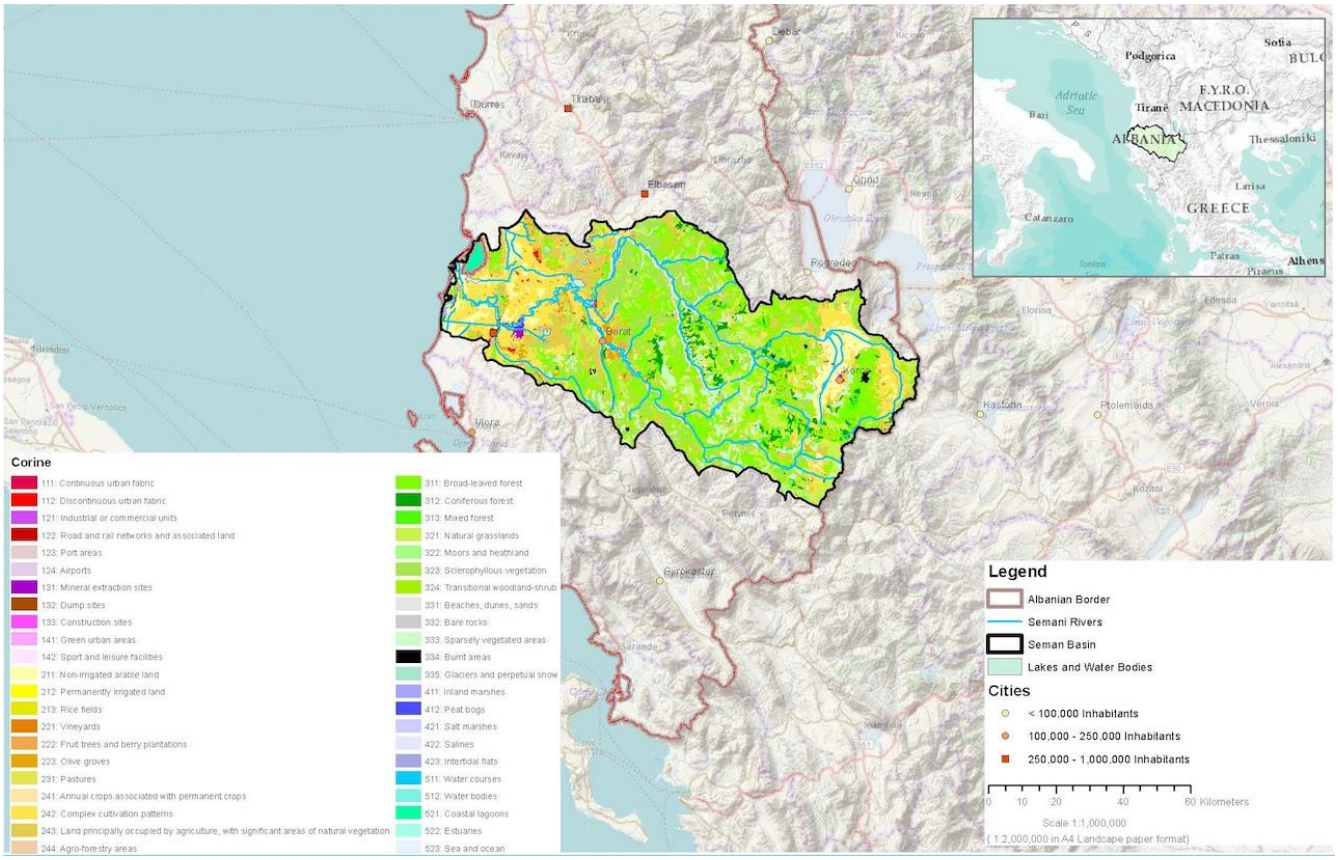
Source: Statistical Yearbook 2017

4.4.8 Land Tenure and Land Use

The land tenure is divided into state lands and private lands. In the agricultural areas, the private land is generally inherited. Nevertheless, under Albanian law, most of the owners of the period before World War II are considered legal owners only for a part of their inherited land. The other lands, or occupied agricultural lands are distributed to the farmers. Between the years 1990-2000, much state or private lands were occupied by illegal developers or families that had no legal claim of hereditary entitlement. Many laws were adapted to regulate this situation and to avoid social conflicts. This process until now is not proceeding satisfactorily and hence land ownership is quite a complicated issue, especially in the cities. In the rural areas, this situation appears better, as most of the owners have a hereditary claim to their land.

Land use, is quite comparative to land tenure with the land use of the state or private lands can be decided by the land owners (i.e. State or Private), but only after approval of the intended use from the state authorities. Most of the agriculture lands are used by private farmers. Also, a part of forests is privatized, or provided for use to the village communities. Notwithstanding, the specific sites, like protected areas, reservoirs, rivers etc. are all state owned, but can be offered or used with a concession to private developers.

A review of the Corine land cover map from the RBMP (see Figure 4-30 below) shows that forest and woodland scrubland predominate in the basin, especially within Albania, whilst pasture and crops are present in the lower part of the basin near to the coast. Water bodies in the form of the three natural lakes and the artificial lakes from hydropower development and the sparsely vegetated areas on high mountain peaks and urban cover associated with the main towns make up the rest of the land cover.



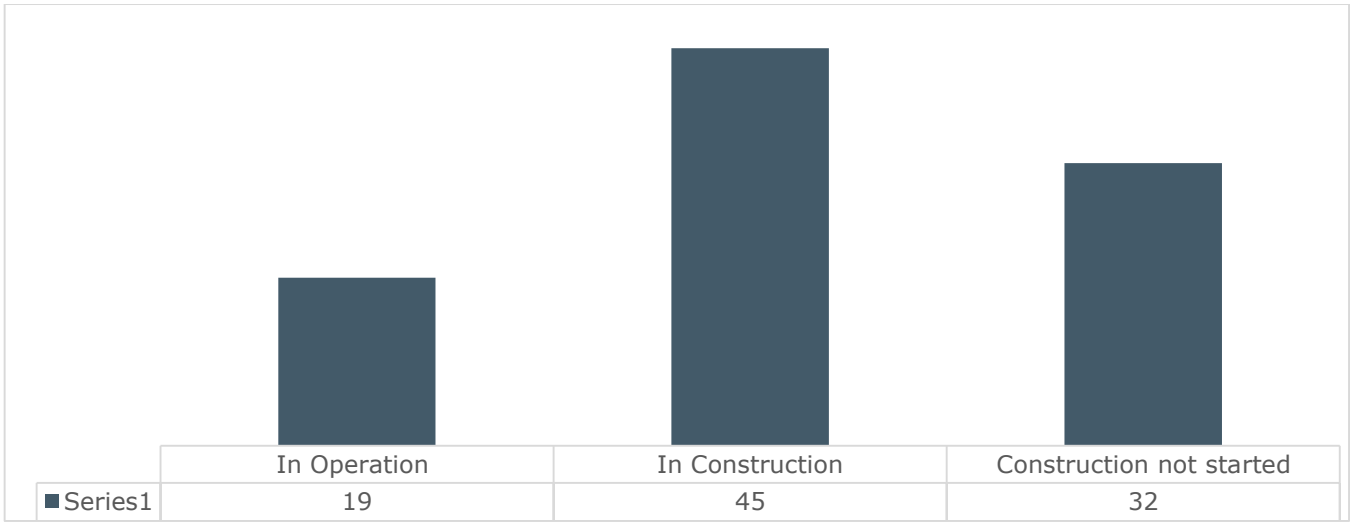
Source: RBMP for Semani River (Mott MacDonald 2018)

Figure 4-30: Corine land cover in the Semani River Basin

4.4.9 Hydropower and Energy

An appropriate description of the hydropower is given in Semani RBMP Draft Report. According to this report, there are two hydroelectricity plants on the river Devolli; one recently in operation and another under construction. The Albanian company Devoll Hydropower, owned and operated by the Norwegian power company Statkraft, has built one hydropower plants near Banje (Banje Hydro Power Plant) and is constructing another one near Moglice (Moglice Hydro Power Plant), with combined capacity 240 MW.

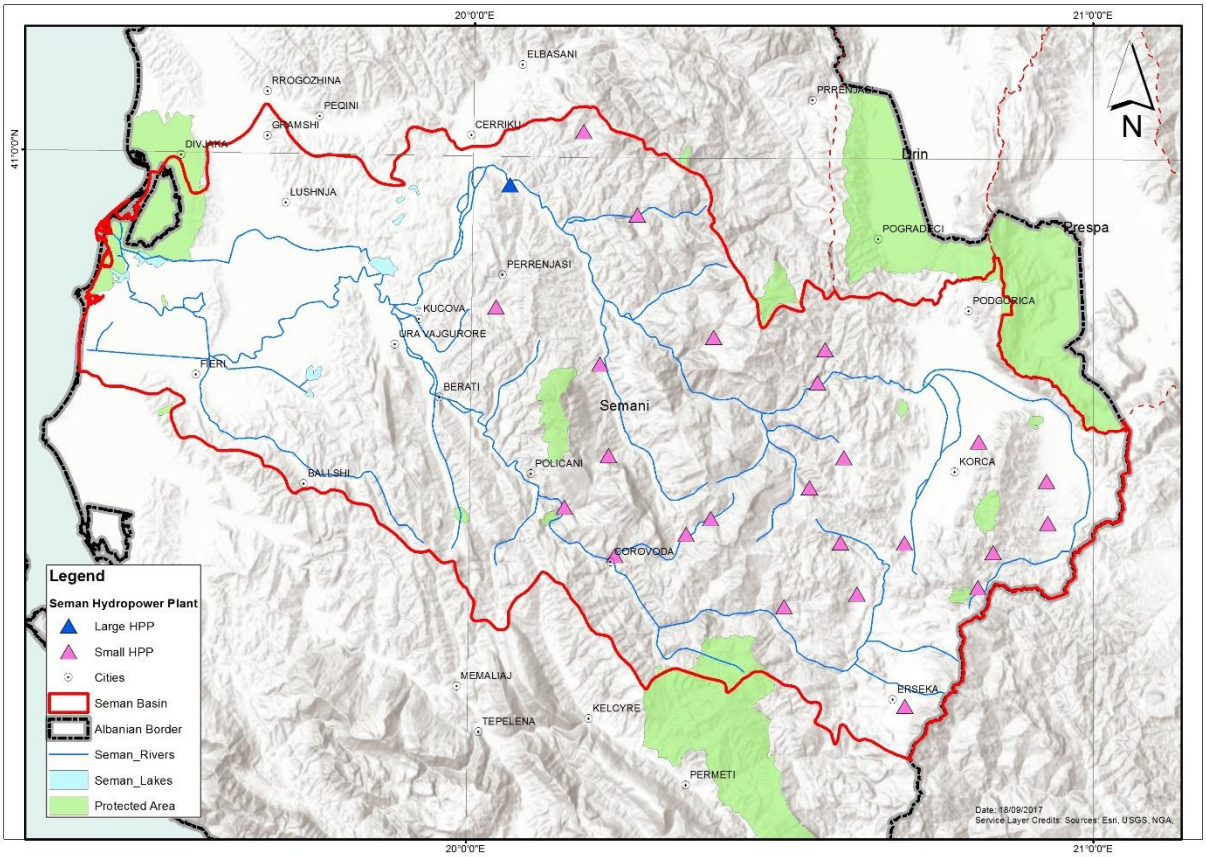
According to NARN at the end of 1st trimester 2018, there are currently 47 concession contracts in place for the construction of 96 Small Hydropower Plants (SHPP) in the Semani River Basin. Some 19 SHPPs are in operation, and 28 SHPPs that are not subject to concessions. It is currently one hydropower dam recently constructed and in operation in the Semani River near Banje (Banje Hydro Power Plant), storing 700 million m³, or about 50% of the annual discharge through the Devoll River. Another hydropower plant is under construction near Moglice (Moglice Hydro Power Plant). The Figure 4-31 and Figure 4-32 below provides further details.



Source: RBMP Semani River (Mott MacDonald 2018)

Figure 4-31: Status of SHPP with concession in the Semani River Basin end of 1st trimester 2018,

According to NANR, in the end of 1st trimester 2018, the 28 SHPPs that are not subject to concession were not yet operational.



Source: RBMP Semani River (Mott MacDonald 2018)

Figure 4-32: Location of most important small and large HPPs in the Semani River Basin

The almost exclusive reliance on hydropower for its electricity supply makes Albania's current annual generation highly dependent on the yearly hydrological variability. During dry seasons, the hydroelectricity can decline by 40% below the long-term generation average (as experienced in 2007) or rise 60% above average in a particularly wet period (e.g. 2010). Dry periods require high cost electricity imports from neighbouring countries to meet the domestic demand load. However, due to power distribution capacity limitations, electricity imports cannot fully supplement domestic generation and the system operator is forced to resort to load shedding during periods of peak demand. In contrast, the exceptionally wet year of 2010 turned Albania into a net electricity exporter for the first time since 1997. Interconnections to the neighbouring electricity systems are of critical importance for Albania's electricity supply security for daily and seasonal load balancing.

Operation of such hydropower schemes, are supposed to deteriorate the biodiversity of the site, create problems with sediments movement in the river body, incite issues relating to changes in temperatures considering climate change effects, incite erosion in the coastal zone in surroundings of Semani River Mouth etc. Following are summarized the hydropower effects in Semani River Basin.

"The Devoll Hydropower Project involves the planning and construction of three hydropower plants along the Devolli River Valley and the necessary transmission lines for connecting the HPPs to the national power network. These schemes are:

1. HPP Banja, located approximately 40 km south of Tirana, Elbasan District.
2. HPP Kokël, location about 30 km above Banja Dam, Gramsh District. and
3. Moglicë HEC, located approximately 5 km above HPP Kokël and Moglicë Dam, located approximately 11 km in the upper part of HEC Moglicë, in the Korça District.

The installed capacity of the three HECs is planned to be around 280 MW.

Based on the Albanian legislation, the law no. 8990, dated 23.01.2003, as amended, as well as International Standards an ESIA was undertaken.

Increasing the number of hydropower plants with or without dam (and reservoir), may create following problems as shown in Table 4-20 below.

Table 4-20: Potential negative impacts on national assets from further hydropower development

NEGATIVE IMPACTS ON			
Environmental assets	**Economic assets**	**Education – recreation**	**Human health due to climate change**
Destruction of landscape values	Deteriorated income from fisheries	Disturbance of visitors by hydropower operation, related traffic etc.	Increase in water temperatures by changing water flows from natural course to pipes (in Hydropower derivation plant without dam).
Fragmentation of habitats and deterioration in the wildlife	Fragmentation of fish habitats	Reduce site potentials for recreation and education	Traditional water distribution and use by local community is reduced causing stress and anxiety
Decrease the sediments running from the river to the Seman delta, inciting erosion in Velipoja beach (Hydropower with dam)	Changes on water flow ratio	The site is no longer natural but a semi managed ecosystem	
Reduce the water level below the "critical ecological level"	Reduced incomes from nature, good climate, historical and cultural tourism	Reduce site potentials for education, recreation and tourism.	Increase the risk of deseases created by dry climate
	Damage accessibility of fishs in river body.		

	Incite the artificial development of biota and fishes of stagnant waters, instead of those natural ones of running waters. Increase the risk from fires		
	Increase migration of local population in urban areas.	Unplanned urban development usually joined by reduction of tourism/recreational potentials in the periphery of the cities an	
	Change in natural heritage on working traditions		
Causing flood or flood risk by mismanagement of dams	Destroing or damaging economical assets of the affected population	Interupt the funcition of the schools, the accessibility with them etc. Reduce site potentials for recreation and education	Incite deseases during the flooding period
	Damaging infrastructure and services		

The studies for EIA refferd to the hydropowers in Semani River, include those of Devolli like Banja, Moglica etc, shown partially the negative and irreversible impacts of the hydropowers, but doesn't reflect their effects, in short, medium and long period regarding microclimate effects, water use, ecological equilibrium and impact in tourism potentials (over all nature and agro-tourisnm), agriculture etc. Important also remains evaluation of social impacts by relocation and changing of working traditions etc. The hydropower of Moglica is going to be constructed over Devolli River, in Moglica commune in Korca Region. The HPP will have a capacity of 172 MW and will produce an average of 475 GWh/year. The dam of Moglica hydropower will be 320m high and 460 m wide. The Moglica reservoir will have a surface of 7.2 km^2. The main issues expected by such construction are:

- Changes on microclimate,
- Changes on land use and traditional working activities and practices for relocated or compensated inhabitants.
- Damaging or relocation of Cultural assets, which will reduce cultural toruism development in the site.
- Changes on ecological status and biodiversity (diverting running waters (river) into stagnant waters (reservoir).
- Habitat fragmentation (dam), reducing also native fish population of running waters.
- Inciting invasion of non native wildlife, almost those of stagnant waters
- Risk of floods in downstream of the dams (bad management of reservoir and dam during atmospheric events), with high risks on human assets and agriculture.
- Sediment control downstream the dam, inciting horizontal erosion

Indipendant EIA evaluators/insitutions, should be part of the EIA revised authorities.

Any new hydropower development should be subject of a "Profound EIA" which should also be viewed in relation to existing previously mentioned hydropower plants due to the cumulative impact that a cascade of hydropower plants can produce. It is critical that the minimum ecological flow to support all benthic life and ensure that biodiversity, tourism and recreation assets are maintained during and after and construction. EIA studies should also be complemented by detailed monitoring data and results on water flow capacities of the River and

tributaries over the past years since monitoring records began to consider the expected effect of climate change on the ecosystem surrounding the dams and reservoirs. The studies should also be supported by a detailed cost benefit analysis.

A new source of energy for the future basin will be Natural Gas which is part of the Trans Adriatic Pipeline Project (TAP). TAP has one exit point for Albania in Fier, which can come into operation, after Albania will establish the appropriate infrastructure. TAP's route through Albania is approximately 215 kilometres onshore and 37 km offshore in the Albanian section of the Adriatic Sea. The onshore section starts in the municipality of Devolli, in the Korça region, at the Albanian border with Greece, and arrives at the Adriatic coast 17 km north-west of Fier, 400 metres inland from the shoreline. Another important energy source remains TECs. The ex-TEC of Fier, is not operating anymore. Another TEC in Korça is planned to be constructed.

The main source used in Korça and Berati Counties for heating and cooking is firewood and Natural Gas. Meanwhile in Fier county is used mainly the electricity, and less the Natural Gas and firewood.

4.4.10 Fisheries

Aquaculture is not well developed; however, plans have been made for the development of aquaculture in some catchment areas of Semani River Basin like; Korça, Berat, Fier and Lushnje. Fishing activity is inspected by the administrate of the Fishing sector in the Ministry of Agriculture and Rural Development, while monitoring (data collection) and control is carried out by a group of inspectors of the Directorate of Fisheries and Aquaculture dependent upon Central Inspectorate. Organizations for Management of Fishery (OMP-community-based public bodies) established in 2002 have the responsibility for the exploitation and maintenance of fishing centres as well as co-management of fishery resources. Currently, only 5 OMPs are active, mainly those of lakes and lagoons. *(National Fishing Strategy 2016-2021)*

Small-scale artisanal fishing in running waters and along the shore is conducted by the community which are fishing almost in the rivers, and artificial lakes and reservoirs for self-consumption or recreation. There is still illegal fishing which damage fish population or reduce their natural reproduction. Nevertheless, Karavasta Lagoon, is considered a natural part of Shkumbini River, this lagoon remains very important for Fier County (Lezha Municipality). Fishing in the lagoon of Karavasta, the Semani River mouth and the Adriatic Sea supports the livelihood of family economic units, both in terms of trade and as livelihood source. The total amount of fish caught from inland and lagoon waters in the region of Fier is 86 tonnes of fish.

Fishing in the river of Semani is primarily conducted as an additional livelihood activity for households in the study area, rather than as the main economic activity. Some families also own boats used for fishing activities. In the village of Kavaklli in Topojë administrative unit, are 25 families who own small boats and fish along the shore close to the mouth of the Semani River. Those that do not own a boat fish uses nets for fishing. Natural lakes and artificial reservoirs in Fier have their OMPs created since 2002. It should be noted that pollution in Gjanica River and in lower part of the Semani River, has damaged seriously the fish population.

Recreational and sport fishing activity continues to remain not well developed in the present. Table 4-21 below provides a summary of the fish caught in 2017 in the three counties of the basin. There are no data on fish caught in Berat County.

Table 4-21: Total Quantity of fish caught in 2017 within the Semani Basin Counties

Counties	Marine	Coastal line	Lagoon	Inland waters	Aquaculture	Molluscs
Berat	0	0	0	0	0	0

Source: Regional Statistical yearbook 2018

Fier	0	102	66	20	0	0
Korça	0	0	0	90	39	0

4.4.11 Agriculture

This chapter is also referred to the agriculture development of three Semani River Basin Counties. The Counties of Fier and Korça are the most important Counties in National level, in respect of agricultural land surface.

In the Fier County, the agriculture is one of the main economic activities, in terms of GDP, employment and macroeconomic development. In total, Fier Region has 121.910 hectares agricultural land or 17.5% of the overall agricultural land surface of the country. The average farm size in the County is 1.52 ha, while the size of the plot is 0.42 ha. As it can be understood by the size of farms and plots, the agricultural lands are quite fragmentized. The field of Myzeqe in Fier is distinguished for high agricultural production. Mainly agricultural land is cultivated with field crop, or 83% of the land surface. Main crops are cereals and wheat. Fier region ranks first place in Albania for the cultivated areas with vegetables in greenhouses. In 2017 were produced 116,445 tons of vegetables, planted in greenhouses. In the recent years it is noticed an increase of the area planted with fruit trees, mainly olive trees and vineyards. The agricultural sector is focused on family farming. Family farms are the most important contributor to food safety, producing food for self-consumption and partly for the market.

Except Fier and Patos municipalities (part of the Fier county), agriculture is one of the main sectors of employment of the population for more than half of the active working age group. About 47.5% of the population of Fier are employed in the agriculture sector. Agricultural production provides about 50% of all own revenues. Agricultural production, forests and fishing has the highest contribution to GDP growth, contributing by 44.7%. Cultivation, including wheat, maize, vegetables, industrial plants and forage crops, covers nearly 86% of the county's agricultural area, while forests cover 14%. Areas that are mainly based on agriculture have a relatively high poverty rate[1].

The administrative unit of Strume has the highest level of poverty in Fier, almost 79% of the population are employed in agriculture. Fier region exports a lot of agricultural and livestock products to other markets within and outside Albania, almost vegetables. The highest share of exported products are watermelons and tomatoes. The territory is also the most important regarding cattle breeding, having the highest number of cattle in the country level, representing 14.5 % of the total country cattle.

The fact that Korça County has the second largest agricultural area in Albania makes the agriculture the most important sector for the region's economy. Korça ranks third with the largest growth in the country, in terms of the agricultural sector, with 41.1% of gross value added (GVA), in 2016. Despite the most important sector of employment of the population in the county of Korça is that of services, which in rural areas agriculture is the basic production for household economy. In the agriculture sector are employed 37% of the population. The county has 90920 hectares of agricultural land, representing 13 % of the total agricultural land of the country. The average farm size is 1.38 ha, while the plot size is 0.22 ha[2]. Such data, are showing that the fragmentation of agricultural land is also very high in Korça County. Agriculture activity is fully privatized, which means that agriculture is owned by family farms. The community is not organized in groups and generally dislikes the unification of the lands. Many farmers own agricultural machinery.

The cultivated land area is increased from year to year. More than half of the land surface is planted with field crops (54%), mainly cereals and wheat. About 3.3% of the agricultural area is cultivated with vegetables. Cultivation of vegetables in greenhouses is not well developed. The area is also known to produce “Moskat” grapes, quality raki and wine derived from it, cherry and pear, tomatoes, peppers and many other quality products enviable for the domestic and external market, as well as higher yields in forage that provide the food base for livestock. Of a good quality are also livestock products. Meanwhile, Korça holds the first place in Albania for surface occupied with fruit trees. The export of apples, in the South-Eastern part of the country re-started in

2011. Initially, Albanian farmers addressed to the markets of neighbouring countries such as; Kosovo, Montenegro or Macedonia. According to the Institute of Agriculture in Korça, apple exports have increased gradually, about ten-fold. Through Greece, apples are also exported to Egypt and Saudi Arabia. In 2015 were exported about 10500 tonnes and in 2016 to April 2017, 9500 tonnes of apple.

In Berat County, the agriculture, forestry and fishery have the greatest contribution to the economic growth of the territory, contributing with 49.6% of gross added value. Except for the Municipality of Berat, in all other municipalities, more than half of the population relies on income from the agriculture sector. 52% of the active working age population across the county are employed in agriculture. The county has 52995 hectares of agricultural land or 7.6% of the total agricultural area of the country. The average farm size is 1.4 ha, while the parcel size is 0.23 hectares, which represent a very fragmented agricultural land farms/plots. As all over the country, in Berat the agricultural sector is strongly focused on family farming. Agricultural products are the main source of livelihoods and the main source of income, especially for the population in rural areas. A part of agricultural products is traded inside and outside the country. Thanks to a very favourable climate, almost all fruits and vegetables of the country are cultivated there. About 39% of the land surface is cultivated with field crops. The county remains in the third place regarding the cultivated area with vegetables in greenhouses, with around 940 ha. The total production of vegetables for the year 2017 is 79,510 tons. The production of olives, figs, vineyards, fruits, vegetables, livestock and their processing industry is very important. Berat is an important olive growing region, ranking the second place, after the region of Fier for the largest number of olive trees. In 2008, Berat constitutes about 22% of the olive market in Albania. In the region there are also many types of medicinal herbs, which are exported outside the country. Similarly, a good part of vegetables planted in greenhouses are exported outside the country.

By the table below, can be noted that Fier has more agricultural land than two other counties of the Semani River Basin. In contrast, Korça County has more Forests, pastures, meadows etc.

Table 4-22: Structure of the land by Semani River Basin counties.

Prefecture	Agriculture land (ha)	Forestry, pasture and meadow, other land (ha)
Berat	53,000	127,000
Fier	122000	67,000
Korça	91000	280,000

Elaborated by Agricultural Statistical yearbook 2016

The following table shows field crops in the Semani River Basin for the years 2009-2017. The table shows very consistent field crop areas throughout the nine year period.

Table 4-23: Arable land with field crops (in 000ha.) in Semani River Basin Counties, 2009-2017

County	2009	2010	2011	2012	2013	2014	2015	2016	2017
Berat	31	30	29.9	27.9	28.1	27.9	28.0	27.5	26.8
Fier	92	92	94.8	89.6	91.0	90.9	90.5	91.2	90.7
Korça	47	47	46.8	46.2	47.8	48.6	47.1	48.1	48.6

Source: Elaborated by Agricultural Statistical yearbook 2017

As it is shown in the following table, Fier County has the biggest surface cultivated by vegetables and higher vegetable production in compares with two other Counties of Semani River Basin. Berati has the smaller surface cultivated with vegetation, but higher production than Korça County.

Table 4-24: Agricultural lands cultivated by vegetables in Semani River Basin Counties, in ha. and ton.

County	Cultivated area with total vegetables, 2017 ha	Production of total vegetables, 2017 Ton
Berat	1,881	121,433
Fier	6,355	405,928
Korça	2,980	85,254

Elaborated by Agricultural Statistical yearbook 2017

By the table below, can be noted that Fier has also the biggest surface cultivated with vegetation in greenhouses and higher production. As it is mentioned above, in Korça county, the greenhouses are not well developed.

Table 4-25: Agricultural lands cultivated by vegetables in greenhouses - Semani Basin Counties, in ha. and ton.

County	Cultivated area vegetables in greenhouses, 2017 ha	Total production of vegetables in greenhouses Ton
Berat	940	79,510
Fier	1,278	116,445
Korça	2	216

Elaborated by Agricultural Statistical yearbook 2017

4.4.12 Tourism

Tourism is one of the most important activities and development instrument in Semani River Basin. Because of the natural and manmade potentials each of the Counties has its priorities in tourism development. All region is characterized by rich historical/archaeological assets. Also, the geomorphologic, biologic and climatic characteristics offers several kinds of nature recreational assets. The riches and diversity of cultural/ culinary/ social and spiritual characteristics, based on unique heritage offers wonderful potentials for tourism and recreation for local/ regional/ national and international tourism users.

All Counties have developed the tourism activity based on:

- Nature Tourism focused in Skiing, mountaineering, recreation in villages and specific landscapes, nature watching, hiking, consumable tourism like fishing etc, in Berati rafting, sea sun tourism in the Semani mouth and Divjake beach etc.
- Cultural tourism based on Historical/archaeological and tourism, religious tourism, cultural and ethnologic tourism, culinary tourism, scientific and educational tourism etc.

The main type of tourism is Mass and Package tourism (including family tourism), followed by individual tourism. Considering the great tourism potentials of the Semani River Basin and needs to generate incomes in a shorter period, especially in the peak period, the mass tourism is characteristic and very frequent. This type of tourism, without a good and careful management may cause deterioration of tourism and recreational potentials, by damaging the values and assets, generating uncontrolled wastes, air pollution by intensive traffic, uncontrolled seasonal movement of population and services etc.

In the Semani River Basin there are some of the most important areas with national priority for tourism development like; the coastal site 2km linear inland by the coastal site, Prespa Lakes, Tomorri Mountain and Osumi Canyons, already summarized at Protected Areas description of this report. Berati and Korça cities remains between the most important tourism sites for cultural tourism visitors. By data collected at the Ministry of Tourism and Environment, results that the visitor number at cultural centres in Berati and Fier is increased in 2018 in compares with 2017 during the summer period. In Korça County, the number of visitors during the summer in 2018 in compares with 2017 is reduced.

4.4.13 Mining

In Fier, the oil industry is the primary type of industry and has been operating in the region for the last 50 years with severe consequences for air, soil and water pollution. Today, although some companies have taken measures to protect the water resources in their areas of operation and prevent the discharge into the Semani River, older operational facilities continue to operate in the old manner. The operation and separation of waters from oil industry are discharged directly to the Semani River and its tributaries or are re-injected in to the subsurface which risks pollution of underground water. A similar situation is present in Berat (mainly in Kuçove) where oil industry continues to pollute the Devoll River and the nearby irrigation channels. The oil industry also began operations in the Berat municipality within the past few years. Data on the impact this industry may have on surface or underground waters of the Berat municipality and city is not yet available.

While Fier and Berat region are rich in oil, the Korça Region is rich in minerals. In the past, mining activity in Korça region was developed around research and exploitation of chromium, copper, iron and nickel, silicate and aluminium ore (bauxite) and lignite. The main plants that have caused environmental issues are the chromium, ferro-nickel, and copper industries, located in Guri i Kuq, Bitinckë, and Rehovë.

Acid mine drainage and solid waste have continuously threatened the water resources in the region. Due to the past mining activity, the region has inherited several mine waste dumps some of which are classified as 'hot-spots'. The main hot spots are regarded as the chromium mine in Rehovë, the ferro-nickel mine in Guri i Kuq, Pogradec which has about 100,000m3 sterile waste deposited in a 3ha area continuously polluting Ohrid Lake, and the Ferro-Nickel Mine in Bitinckë with a 2.2-5 ha dump that stores the Fe-Ni waste. In addition to the hot spot areas, the region has also a dump in Hudenisht Village that stores 300,000 tonnes of mixed material that pollutes Ohrid Lake. Korça also has a coal power plant in Maliq, which has inherited considerable amounts of waste.

Previous studies have shown that copper mining waste and a cooper-enriching factory dump pose a serious threat to the environment, even though the mines are not active today. However, mining continues to play an important role in the Korça region, which is indicated by the increasing number of mines operating in the area. By 2014, 57 mining operations had obtained a permit to operate in Korça region (21 in Korça, 28 in Pogradec, 4 in Devoll and 3 in Kolonje). In addition to mining, Korça has other industries, namely the brick factory in Qatrom town in Korça district, ferro-nickel and chromium plants, a copper-enriching plant, transportation mechanical industry, building industry, beer industry, tanning industry, plastic pipe production industry in Pogradec, plastic assemblage factory in Bilisht, which all have their impact in environment

4.4.14 Other Industry

Industry places also a constant pressure the resources of Semani River Basin. The regions inherit industrial pollution from the past and face serious concerns related to industrial pollution of the present although the type of industry changes from region to region.

In the Korça County the industry's industrial priority sectors in the region are:

The fashion industry: This sector consists of about 31% of the regional economy. Considering the size of the enterprises this sector is one of the main economic activity with the highest number of employees. In most of the cases the enterprises are foreigner and joint, mainly Albanian-Greek enterprises.

Food and beverage industry: Korça region is one of the largest producers of meat and sausages, dairy, alcoholic and non-alcoholic beverages, snail processing etc. The agro-processing sector has been increasing steadily in recent years, being a very important factor related to employment. Processing of fruits and vegetables, processing of milk and its by-products, wine production recently, has recorded a marked increase.

As it is mentioned before, in Korça County, 44% of businesses operate in agriculture, fisheries and forestry, 24% in the trade sector. The third by the importance is the activity of tourism/services and food production sector.

Also, in Fier Region the fashion industry and food and beverage industry are well developed. Still, the main industry remains extraction and treatment of oil. Tourism remains a priority in regional and national level. The agro processing sector is also very important. Small enterprises are extracting olive oil and trading it all around the country.

In Berati region the tourism sector looks very important. Still, the food and beverage industry generate most of the incomes for the county. The production of alcoholic drinks by grapes, is the most preferred in the country market. The fashion industry is also important and is focused almost in tailoring.

In all counties of Semani River Basin, the trade remains very important and crucial activity for population incomes. Referring to the table below, the most active enterprises by economic activity are the agriculture enterprises, trade, accommodation and service ones etc.

Table 4-26: Registered active enterprises by economic activity and in Semani River Basin Counties.

Active enterprises by economic activity	Berat	Fier	Korça
Agriculture, forestry, fishing	3,545	9,080	6,242
Industry	582	1,060	818
Construction	90	332	205
Trade	2,228	5497	3,384
Transport and storage	324	607	603
Accommodation and food service activities	814	2048	1,421
Information and communication	51	125	108
Other services	666	1748	1,251
Total	**8300**	**20479**	**14032**

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4.4.15 Transport Networks

In general, road infrastructure in Korça county is in good condition. The regional rural roads have a total length of 590.1 km, while the communal rural roads a total length of 436 km. Moreover, investments are constantly made on the roads connecting Korça to the west side of the country, Tirana, as well as with the port city of Durres, along the Corridor VIII. The region is located close to two customs points; that of Kapshtica connecting Albania with Greece and the customs point in Qafe Thane connecting with Macedonia.

The Fier County is a cross point considering its central position in Albanian County. Main highways constructed or under construction coming from the North to the South of Albania are passing in Fier (Levan). This road is named, Albanian North-South corridor. The Fier Bypass, is under construction to avoid the intensity of traffic in the city. The Fier County have 586km roads, or 19.2% of the Road network of Albania. The roads connecting villages with the cities or towns or with each other's, are not in good conditions.

The county of Berat is traversed by the regional route E72, along the Osumi valley and the regional road E74. The total length of the regional rural roads is 63 km, while the length of communal roads is 98.7 km. Recent investments have improved road infrastructure such as the road linking Berat to Lushnja. Also, Berat - Skrapar road axis has been restored by ADF funds.

4.5 THREATS AND STRESSORS

Identifying existing environmental challenges/problems provides an opportunity to define key issues and improve the SEA objectives. Responsible authorities are aware of many environmental challenges/ problems which they currently face. The environmental and social challenges in the Semani basins are summarised in *Table 4-27* below.

Table 4-27: Summary of Environmental and Social Challenges – Semani Basins

Factor	Proximate Causes	Specific Threats
CLIMATE CHANGE	› Decreased and/or unpredictable precipitation › Increase in extreme weather events › Increasing surface water temperature from climate change	› Droughts, fires, heavy rainstorms, flooding › Unpredictable river levels › Increased erosion and sedimentation › Flood enhancement of land-based pollution on river banks › Loss of biodiversity › Increase spreading of invasive species following ecosystems degradation › Lack of adaptation preparedness
UNSUSTAINABLE FISHERIES	› Excessive fishing efforts	› Lack of implementation of adequate regulations › Insufficient capacity for monitoring and control › Loss of fisheries resources › Loss of aquatic biodiversity
UNSUSTAINABLE LAND MANAGEMENT	› Unsustainable agricultural practices › Expansion of badly designed/uncontrolled human settlements › Over extraction of sand and gravel	› Decrease of agricultural production quality › Habitat degradation, reduce groundwater amount by reducing soil infiltration capacity › Excessive erosion and sedimentation, loss of agricultural productivity and human investments by flood, soil slides etc. › Loss of biodiversity, inciting of erosion in coastal sites by reducing of sedimentation in the sea › Loss of ecosystem services, reducing the accessibility between settlements, services and trade/market/users
HABITAT, BIODIVERSITY AND BIOLOGICAL INVASIONS	› Expansion of human settlements › Encroachment (e.g. settlements, agriculture) › Environmental degradation resulting from climate change, unsustainable fisheries, sedimentation, invasions and pollution › Introduction of invasive species	› Habitat degradation and loss of green areas, not sustainable investments of private initiatives, decrease of standard life levels of existing population, social stress, damage architectural and historical/cultural potentials › Loss of biodiversity, life risk and incite of unplanned migration that result on demographic crisis › Loss of ecosystem services › Decrease of ecosystem productivity › Alteration of economic use of invaded areas

Factor	Proximate Causes	Specific Threats
WATER / AIR QUALITY	› Lack of adequate wastewater treatment › Inadequate collection, treatment and disposal of solid waste › Mining/quarrying activities › Agricultural runoff (fertiliser, pesticides)	› Habitat fragmentation, damaging of tourism potentials, stress in urban areas by overpopulation › Decline in water, soil and air quality › Decline in air, water and soil quality, visual disturbance and landscape deterioration › Risks for human health › Loss of biodiversity, increase cumulative pollution and contamination, risk of human life › River pollution and risk on ground water pollution

The following section provides more details on some of these natural pressures (threats) such as fires, floods, soil erosion, earthquakes and climate change.

4.6 NATURAL PRESSURES

4.6.1 Forest Fires

The manmade fires in forests to open pastures are reduced during last years. Still because of the high temperatures, the region of Semani River Basin (Korça, Berat and Fier regions), had the higher risk on fires according the reports of the National Emergency Service for 2017. In Fier County such fires have destroyed shrub vegetation and olive trees. In Berat County the areas threatened by fire are those of mountains or territories with bad road access. This is because reducing the opportunity for firefighting by missing of roads that can be used to rich areas under fire. The regions which are considered in higher fire risk in Berati County are Bogoda, Corovode etc. The same situation is in Korça County. 7 fire areas have been noticed in 2017. The fires nucleus has removed from natural site to the inhabited areas, risking human life and assets.

Photo 11: Fire in coniferous forests in Korça County

Because of this situation, the central and local government, in all Counties under the study, are applying measures to prevent fire phenomenon and/or control fire effects.

4.6.2 Floods

The very specific geo-morphology of the Semani River Basin, as the main part of Albania, as well as intensive rainfalls during the winter/spring, are the main factors which favour floods in Semani River Basin. In 1962, in the lowlands in both sides of Semani River, are flooded 26 738 ha, which were under the water for 35 days. Similar floods, has risked and damaged also settlements and infrastructure, during last 20 years. The main effects of floods are in the un-planned new constructions (after 1990), but also in existing settlements and infrastructure constructed before year 1990. Erosion activity in steep slopes, almost in deforested ones, is joined by washing of soils and sediments and discharging it in in river bodies decreasing flood risk in lower part of Semani River. In the Fier city, during the intensive rainfalls, flood have happened in city pedestrian, by Gjenica river. This river is polluted by the oil treatment plant of Ballsh, so such floods are causing also contamination. Also, river pollution is caused after flood waters return into the river body washing uncontrolled wastes and spills, soils with high content of pesticides and herbicides etc. In the Fier county floods are observed in the city, villages (Sheq I Madh etc.), Frakull and Libofshe administrative units etc. During last 5 years, in the Fier County the floods has damaged the assets of 550 families, from which 60 are relocated during the flooding phenomenon. Also, Berat County is prone to the flood.

Photo 12:Floods in Fier Region

The flood has affected the city itself, Morava village in Otllak, the Municipality of “Ura Vajgurore”, etc. In Berati County, only 12 family’s assets are damaged by flood phenomenon. Korça County, the floods have affected the city only at “Old Pazar” for a very short time. Usually the sites under flood risk are those of Pisar bridge (in Kolonje) and villages in Maliq Municipality. In this county, only 11 families are affected by flood.

The Regional Development Plans of three Counties, has included flood control and emergence system, as a priority of the regional development.

4.6.3 Land erosion

The Erosion in Semani River Basin, like in all Albania, is a negative phenomenon, developed in both sites: inland-soil erosion, including erosion of river bed and slopes, and in coastal area – coastal erosion. The erosion phenomenon is developed in all deforested Semani River Basin slopes. A high intensity erosion is also monitored in Mountains and hills, as well as in agricultural lands. Not only the deforestation during years, but also opening of

new paths and construction of roads has incite erosion in all Semani River Basin. The sediments eroded in agricultural lands and hills are disposed in channels, river and reservoir reducing their deepness. By such sedimentation the deepness of Levan agricultural reservoir in Fier is reduced on about 50%. In Berat County, the erosion activity is observed almost in clay and flysch formations. This phenomenon is more intensive in both slopes of Osumi River (in middle river flow), in the Eastern part of Molishti flow, in Tomorri Mountain etc. The Eastern part of Shpiragu Mountain is deforested because of erosion activity. Korça Country, by its geological construction and soil characteristics, is little less prone to erosion in compares with two other counties. In cases of missing of vegetation cover, in hills and mountains slope in all three counties, the soil eroded is calculated on 20.1-34.2 ton/ha/year.

Man-made factors are also important factors on erosion activity. Extracting of gravels and pits in Semani river basin has been very abundant until 2015. Consequently, the tributaries of the Semani river basin have suffered severe vertical incised erosion of their riverbed. Studies have shown that the situation is critical in Urë Vajgurore (43.2cm deepening), followed by Imësht (34.8cm), Ura e Mbrostarit (19.4cm) and Ura e Kuçit (13cm).

The main factors for this high land erosion in Semani River Basin can be considered:

- Rainfalls,
- Land cover,
- Slope,
- Average altitude,
- River network,
- Deforestation and overgrazing,
- Mismanagement of land

Construction of hydropower, almost of those with dams, will incite erosion in coastal site of Semani river mouth and its body. Such dams, will catch the sediments and avoid sedimentation in coasts, as well as may change the river body morphology.

4.6.4 Climate change

According to the three Climate Change Communications for Albania, the climate change scenarios for Albania leads to an annual increase in temperature up to 1°C, 1.8°C, 3.6°C respectively by years 2025, 2050 and 2100 and a decrease in precipitation up to - 3.8%, -6.1%, -12.5% by the same time horizons. Cloudiness would decrease from -2.6% up to -4.6% related to the 1990 year by 2050 and 2100 respectively. Wind speed is expected to increase up to 1.3 to 2.3% by 2050 and 2100 respectively in relation to the period 1961-1990, especially during summer, because of the increase in the land-sea temperature contrast. An increase in the global radiation and the sunshine hours might be expected due to the cloudiness decrease.

Evapotranspiration is expected to intensify due to the temperature and wind speed increases. A decrease in the rainy days almost at the same range as the precipitation is expected. The total number of hailstorm days is expected to decrease, although an increase in such days during summer might be expected, owing to the temperature rise.

The 3rd National Communication on Climate Change was presented to UNFCCC in October 2016 and included a GHG inventory for the period 2000–2009, with 2005 as the base year. Albania’s coastal areas and water resources, ecosystems, agriculture, energy and tourism are identified as the sectors most vulnerable to climate change. Several priority measures related to GHG reduction and adaptation to climate change are identified in the Third National Communication.

In September 2015, Albania submitted to the UNFCCC Secretariat its Intended Nationally Determined Contribution (INDC), adopted by DCM No. 762 dated 16.09.2015. The Government committed to reduce CO_2 emissions in the period 2016–2030 by 11.5 per cent compared with the baseline scenario. The reduction of CO_2 emissions is also identified under the NSDI-II strategic objective on reaction towards climate change.

In view of implementation of the Paris Agreement, Albania is currently preparing a climate change strategy and a plan on mitigation of GHG emissions, under the IBECA project, and a national adaptation plan (NAP), with the support of GIZ and UNDP. The climate change strategy will aim to be consistent with GHG emission pathways defined in the INDC and to promote sustainable economic growth, by streamlining climate change across sectoral strategic planning. It will also aim to strengthen the awareness and capacity of relevant institutions and interinstitutional cooperation to address climate change issues. It also foresees the establishment of a monitoring, reporting and verification system of GHGs in line with EU requirements, which the NSDIII also recognizes as needed.

A first proposal of a DCM on establishing a mechanism for monitoring and reporting to the national competent authority on GHG emissions and other information relevant to climate change was discussed in July 2016 and approved in 2018. The central part of the plan on mitigation of GHG emissions will be the implementation of the INDC. The NAP will establish an implementation framework, by defining overarching objectives and targets as well as 15 priority actions. The national adaptation plan is also expected to address the mainstreaming of adaptation into relevant sectoral policies.

Water Resources and flooding

The outputs of forecast models predict a small decrease in the long term mean annual runoff, respectively from -9.8% to -13.6% and from -6.3% to -9.1%, for 2025. This fall in precipitation would affect the surface water flow, reducing its amount. Under reduced surface water flow and increased evaporation, the storage of Semani river body and reservoirs will decrease. The ground water supply will be affected by decreased percolation of water, due to decrease in the amount of precipitation, stream flow and losses of soil moisture from increased evapotranspiration. Reduction in ground water supply in combination with the increase of salinity of the ground water supply will bring shortage of adequate quality of drinking water. A sea level rise of 48-61 cm for the year 2100 would result in direct flooding of coastal area. Due to the increasing of the sea level, flooding will be intensified both directly by the sea and indirectly by changes in the water table. In coastal areas and parts of the lower Semani River basin, flooding is expected to occur.

Agriculture

Agriculture in Semani River Basin will also be affected by climate change. These changes will modify rainfall, evaporation and soil moisture storage leading to an increase of the irrigation requirements and a heightened decrease of the capacity of reservoirs and irrigation distribution systems. Notwithstanding, available water resources may be sufficient for irrigation up until 2025. Thus, no considerable impact to the yields of crops like wheat, maize, potato, vegetables, forages (alfalfa etc.) fruit trees etc., may be expected in the short term before 2025. However, with the longer-term time horizons of 2050 and 2100, the impacts are expected to be on the agriculture sector and include:

- Reduction of the extent of arable land due to soil erosion and alteration;
- Changes in the growth cycles, harvest time and the quality of the agricultural production, especially along the coastal area due to an increase in salinity, due to the sea level rise and intrusion of salt water into the soil and phreatic waters; and
- Cultivation of early agricultural products in the open air or in the greenhouses owing to an increase in winter temperatures.

Forests and biodiversity

With the forest sector, changes in vegetation are expected by 2025, 2050, 2100. The species that resist high temperatures and severe long dry seasons would be able to over live. For those that need moisture (silver fir, etc.), the danger of being limited in distribution or disappearing does exist. The species that produce many small seeds and have a high distribution potential (Pinus etc.) would be able to survive and to spread at sea level, whereas oak species which produce big seeds, would occupy new areas only very slowly. By such changes, changes on biodiversity are expected, almost to wildlife.

Energy

Climate change is expected to have significant impacts on the energy sector. The predicted raised temperatures, changes in the amount of precipitation, variation in humidity, wind patterns and the number of sunny days per year could affect both consumption and production of energy.

Climate change is likely to affect the major end uses such as heating and cooling of buildings, water heating and refrigeration. This is expected to result in an increase in energy demand for air conditioning in residential and the service sector. Changes in energy consumption as result of predicted climate changes, will lead also to changes to energy production. Climate changes may be seen primarily in power generation, including hydro power plants, thermal power plants, solar heater systems and wind power plants.

Albania is heavily reliant on electricity production from hydro sources. If a severe drought will happen, it will result in less electricity produced by the hydro power plants. Thus, a heavy reliance of hydro sources may be good for Albania in that is can be seen to reduce greenhouse gas emissions and improve air quality in Albania but can increase vulnerability to climate change.

The efficiency of small hydropower in Semani River Basin are prone on such changes, that’s why the investment for construction of small hydropower may be considered very risky. It is expected that the share between hydro power plants and thermal power plants will lead to significant changes. So, in 1990, 94% of the electricity was generated from hydropower plants and only 6% from thermal power plants, while in 2025 hydro power plants are expected to contribute with 47.68% and thermal power plants with 52.32 % of the total.

Climate change may also affect the supply of energy from solar and wind power. A likely increase in the global solar radiation and the hours of sunshine will lead to an increase of solar energy usage for different energy services, especially for preparation of domestic hot water. Since we are expecting an increasing of the wind speed up to 1.3 to 2.3 %, respectively by 2050 and 2100, compared to the period 1961-1990, it might be of interest to think about introducing more wind power plants in the energy schemes in the future

Public Health

Referring to the likely changes of climate, a series of impacts on public health are expected. Shortage of drinking water of and inadequate quality could be critical especially during summer. Consequently, an increase in cases of contagious and digestive system diseases, etc., is expected. The liquid and solid wastes, if discharged directly into the river and streams/channels, would destroy or strongly modify the biodiversity, reducing fishes and tourism potentials (attractive wildlife).

If these problems are not solved, the impact of climate change would lead to the deterioration of the health of the Albanian population, living in the Semani River Basin. The increase in temperature would affect the physiological and compensatory system of people. Thus, age groups like infants, children and elders where the decrease in compensatory system is common, will have changes in their health conditions. These changes would cause higher incidence of some diseases, influenced by the atmospheric changes. The infections in the respiratory system will be the most visible

Population

The population living in coastal area, particularly in beach areas, are seriously threatened by the predicted change in the sea water level. Houses, hotels, roads and agricultural areas etc., situated on the coast or on the lower zones of the Semani River Basin (excluding the territories under the effect of raising movements) will be susceptible to flooding. The same lot is expected to affect the agricultural activity in lowlands as well as dwelling centres and infrastructure.

5 POSSIBLE TRENDS IN THE FUTURE WITHOUT RBMP (ZERO OPTION)

This chapter has been separated to provide an indication of the potential environmental trends in the Semani river basin without any influence of the RBMP. This is the so called "Zero Option" or sometimes referred to as the "Do Nothing Option".

SEA Law 91/2013 clause 2(c), requires a "description the alternatives considered when designing, revising, modifying or modifying the proposed plan or program, including the non-planning option (zero option), as well as the relevant justifications". The details of the Zero Option are provided in this chapter.

5.1 REVIEW ENVIRONMENTAL BASELINE DATA

A review of the baseline indicators from Chapter 4 was made to answer the following questions:

- How good or bad is the current situation?
- Do trends show that the environmental situation it is getting better or worse?
- How far is the current situation from any established thresholds or targets?
- Are particularly sensitive or important elements of the receiving environment affected, e.g. vulnerable social groups, non-renewable resources, endangered species, rare habitats?
- Are the problems reversible or irreversible, permanent or temporary?
- How difficult would it be to offset or remedy any damage?
- Have there been significant cumulative or synergistic effects over time?
- Are there expected to be such effects in the future?

The time constraints facing this SEA implies that the baseline data is taken from existing information and no field work will be possible to verify this data.

5.2 TREND ANALYSIS

To summarise the overall status of the environmental and socio-economic indicators, the following Table 5-1 and

Table 5-2 provide the current trends in Semani River Basin on the assumption that there is no RBMP implemented and the Zero Option prevails.

Table 5-1: Trends Analysis for Environmental Indicators – Do Nothing Option

PARAMETER/INDICATOR	TREND		COMMENTS
ENVIRONMENT			
Climate change (most pesimistic)	↑	increasing	Greatest climate changes in the eastern part of Basin, whilst smallest changes along the coast. This will occur irrespective of RBMP
Climate Change - Temperature	↑	increasing	Increase in temperarture of between +2.4° C and +4.8° C in the later part of this century will occur irrespective of the RBMP.
Climate Change - Rainfall	↓	decreasing	Generally below average precipitation expected in Albania and will not be affected by RBMP.
Flood/Drought, Forest Fires, Heatwave risks	↑	increasing	Greater probability of risk to flooding, droughts and forest fires occurring. This will go ahead irrespctive of RBMP
Air Quality	↔	No change	In general air quality remains acceptable over the majority of the basin. This is not likley to be affected by RBMP.

PARAMETER/INDICATOR	TREND		COMMENTS
ENVIRONMENT			
Hydrology, Water Resources and Hydropower	↓	No change but risk for overexploitation	In general no change, but there is likley to be an increase in hydropower in the future that may impact the natural assets of the basin.
Geology and Seismic Activity	↔	No change	Geology and seismic activity records no change. The RBMP is not likley to affect this parameter.
Material Assets – Natural Resources	↑	Slight increase	In general more reserves of natural resources are being discovered. RBMP will have no affect on this.
Soils	↔	No change	Soils remain unchanged, no change in soil fertility, although erosion is increasing.
Protected Areas	↑	increase	Protected areas are increasing. More national parks, Emerald /Natura 2000 sites and marine parks likely to be adopted in the near future
Biodiversity	↓	decreasing	General decrease in overall biodiversity due to economic development of Albania. The RBMP will not significantly affect this although its adoption may slow the decline.
Archaeology and Cultural Heritage	↑	Increasing	Number of archaeological and cultural heritage features has been increased by new discoveries. No RBMP will not affect this parameter.
Landscape	↓	Damaged by construction of Hydropower	Landscape has been deteriorated by the constructions of new hydropower schemes. The RBMP will not change this, although resulting reservoirs can have a positive effect.

Table 5-2: Trends Analysis for Socio-Economic Indicators Do Nothing Option

PARAMETER/ INDICATOR	TREND		COMMENTS
SOCIO-ECONOMIC			
Population	↑	slight increase	Population of Semani Basin in 2011 was around 981,000 and there is a slight increase predicted for the future. However there is an overall decrease in rural population
Employment	↔	No change	Generally unchanged, most employed are in the main towns. Service sector provides the most jobs.
Unemployment	↑	increase	General increase in unemployment in recent years, in part due to the global economic downturn. Unemployment in rural parts of the basin is much worse than cities and the coastal belt. More women are unemployed than men. This trend will continue without RBMP.
Poverty	↑	slight increase	There has been a slight increase in the numbers of people living in absolute poverty, especially in rural areas as younger people move away to the cities. No adoption of RBMP will not assist this parameter.

PARAMETER/ INDICATOR	TREND		COMMENTS
SOCIO-ECONOMIC			
Ethnicity	⟷	No change	Generally unchanged in the last 10 years. This parameter will not be affected by RBMP.
Religion	⟷	No change	Generlaly flat, although slight increase in Orthodox Chrisitan and slight decline in followers of Islam. RBMP has not affects on this parameter.
Administrative Regions	⟷	No change	Administrative regions have remained unchanged since 2015 with the demarcation of the new counties.
Education	↑	slight increase	Education rates are improving in all age groups. Girls have better results than boys. RBMP will not affect this.
Human Health	↑	slight increase	Human health is generally improving with death rates falling and incidences of preventable diseases falling. RBMP will not affect this.
Land Use	⟷	flat	Land use is more or less flat, a slight increase in forestry in recent years and also small increase in agriculutral land cover. No illegal constructions
Energy	↑	Increasing	Energy production and consumption is increasing. There is likely to be an increased demand trend in the future
Fisheries	↓	decreasing	Fishery sector has reduced by almost 50% in recent years. Needs significant investment in fleet and infrastructure to improve production
Agriculture	↑	slight increase	Agricultural production is increasing a little, but needs significant investment to develop
Tourism	↑	increasing	Tourism has seen a steady rise and will see increase in tourism among mountain resorts and a move towards all year round tourism. This is likley to go ahead without the RBMP although it may accelerate with adpotion of the plan
Mining	⟷	No change	Mining industry is generally flat with no real increase in activities. The RBMP will not affect this.
Other Industry	↓	decreasing	Industrial output has dropped off significantly in recent years due to the the global recession. This trend will continue irrespective of the RBMP
Transport Networks	⟷	No change	Slight improvement in road infrastructure, but nothing major being built although there are plans for major road routes.

5.3 CLIMATE FACTORS

5.3.1 Adapting to climate change

If the RBMP is not adopted, the implementation of measures to reduce the sensitivity of the infrastructure to climate change will not be systematically addressed during planning and regulation. The main emphasis is placed on reducing the sensitivity to flooding and to extreme climate events. Any new construction or

reconstruction of the infrastructure should be analysed in relation to its sensitivity to extreme weather phenomena, while the financial costs of potential damage to the infrastructure should be assessed in advance.

Based on the analysis of infrastructure sensitivity to extreme weather phenomena, sustainable measures need to be planned to reduce the adverse effects of climate change on infrastructure at economically and socially acceptable levels

In the absence of policies, investment in protection infrastructure and fragmented management of natural resources in catchment basins (which the RBMP advocates), will have adverse effects on the basin such as:

(i) loss on agricultural land and in some inhabited areas near the coast / lowland;

(ii) increased pressure on urban centers for housing, employment and infrastructure;

(iii) the tendency to move more inland to the mountain hinterland, but difficult geographic and climatic conditions, as well as lack of institutional measures to the effects of climate change, will curb the desire for these displacements to take place in a mass and organized manner.

As a result, no RBMP will imply that sporadic displacements will further fragment the territory by endangering the more valuable resources that will be increasingly reduced. People will choose to settle in the most easily accessible areas and with more easily harvested resources, such areas could be prone to flooding.

5.3.2 Mitigating measures to climate change

If the RBMP is not adopted, the relevant infrastructure, considering the projected growth of certain specific sectors, such as transport (especially road) and industry, will not be planned and regulated to eliminate invasions and blockages in the streets, which hinder smoother and less crowded traffic to the environment or eliminate uncontrolled emissions into the air from industrial plants. Implementing measures to mitigate climate change by reducing GHG emissions in the sectors covered by Decision no. 406/2009 / EC will be significantly at risk.

Even in the case of GHG emissions, the greatest contribution to the achievement of the environmental objective regarding the emission ceiling of pollutants from infrastructure interventions is expected to come from the transport sector, and more specifically using more efficient vehicles energy. However, the disorganized and congested traffic of the road network undermines all the effects of using vehicles produced in accordance with technical standards.

Despite technically improved vehicles, traffic congestion in the road network and travel speed increasingly reduced in urban centers would lead to overcoming the maximum emissions of GHG set by 2020.

5.4 AIR QUALITY

If the Plan is not adopted, the relevant infrastructure, taking into account the foreseen growth of certain specific sectors, such as transport (especially road) and industry, will not be planned and regulated in order to help eliminate congestion, which hinder smoother and less burdensome traffic to the environment or eliminate uncontrolled discharges into the air from industrial plants.

Despite the fact that the greatest contribution to achieving the environmental objective in connection with the ceiling of emissions of pollutants from infrastructure interventions expected to come from the transport sector, and more specifically the use of more energy efficient vehicles, the disorganized and congested traffic of the road network undermines all the effects of the use of vehicles produced in accordance with technical standards. Despite the technically improved vehicles, traffic congestion in the

road network and travel speed, increasingly reduced in urban centers, would lead to exceeding the maximum emissions of pollutants, especially NOx and CO.

Improvement of ambient air quality in urban areas and achievement of the standards described in relation to ambient air quality are the main objectives which are based on environmental protection measures in the Plan. If the RBMP is not adopted, the relevant infrastructure will not be planned and regulated and in this way, it will not be possible to reduce the level of emission of pollutants that contribute to the appearance of PM_{10} and $PM_{2.5}$ particulates. Thus, the environmental objective with respect to air quality will not be achieved by 2020.

5.5 WATER

If the RBMP is not adopted, the relevant infrastructure and policy will not be planned and regulated comprehensively. Infrastructure will not be reconstructed or constructed based on needs and opportunities. Therefore, the construction of new infrastructure may not consider the existing natural characteristics (protective surfaces, soil permeability and impact on groundwater quality etc.). Developments will continue and put lives at risk as constructions may be built in flood prone areas.

The risk of accidents involving leakages and consequent pollution that affect the chemical status of surface water and groundwater is significantly greater in the transport sector. If the Plan fails to be adopted, the transport of the most vulnerable goods by road infrastructure will increase the possibility of pollution due to accidents involving the leakage of hazardous substances.

Most importantly of all, the envisaged monitoring will not be realized which is considered essential for the basin to be properly managed in an integrated way for the future, especially with all the competing demands upon it taking place with the looming dangers of climate change.

5.6 SOILS/LAND USE

If the RBMP is not adopted, the actual use of agricultural land and forests will remain at the current levels. The relevant infrastructure will not be rehabilitated, or will built on the basis of an analysis of needs and opportunities and may be unplanned that will have a negative effect on the actual use of space, as well as the volume of actual use agricultural land and forest. There will be more susceptibility to flooding and loss of agricultural production. In addition, more eroision is likely to occur as flood protection infrastrucutre will not be realised.

5.7 USE OF NATURAL RESOURCES

There is also a danger that if the RBMP is not adopted, the relevant infrastructure will not be built or modernized in such a way that excavated soil and construction waste treated, so that most of them will be reused on a construction site infrastructure or recycled into building materials. Infrastructural interventions of unplanned or random nature, also impede the use of large amounts of construction materials produced from site recycling or the processing of other types of waste used for producing construction materials of the same quality as construction materials taken directly from natural resources.

5.8 BIODIVERSITY

By not adopting the Plan, the relevant infrastructure will be unplanned and unregulated. Infrastructure will be reconstructed or constructed based on an analysis of needs and opportunities.

As a result, the space will be fragmented unnecessarily and can affect migratory wildlife routes. Without Action Plan measures the creation of suitable passes for wildlife will not be created and the existing fragmentation will continue (animal crossings are obstructed by fences or animal mortality on the road will increased). If the Plan measures are not implemented, the mortality of animals on the roads and the links between the populations may deteriorate, which may affect the biodiversity of the respective areas.

Without RBMP the noise levels in the natural environment may increase due to randomized development, which will have a permanent negative local impact of wildlife. Consequently, noise in the natural environment will increase due to uncontrolled and unplanned infrastructure interventions.

5.9 WASTE

The waste collection / treatment / recycling sector is among the most sectors problematic in the basin, for its very own, multifaceted nature other sectors (air, land, water, health, etc.). Currently this sector has a range of problems that will continue if they are not addresses in the RBMP. These issues include: the presence of contaminated areas known as Hot-Spots that have not yet been cleaned up; place open deposits (legal and illegal), insufficient capacity of existing landfills or lack thereof where appropriate, waste management is still at low levels; inert waste, residues of hazardous, hospital waste and animal waste are not treated as required legal; lack of landfills for hazardous waste; sharing at source e waste / recycling is still not practiced. The legal framework, although it responds to requests of the EU, cannot change the reality due to lack of investment.

Hence is the RBMP is not adopt this situation, not only will remain problematic, but will worsen further because of uncontrolled developments at all sectors including within the spatial / urban planning. This will be exacerbated in the Semani Basin due to Industrial waste from the oil sector within the basin that are not correctly controlled and will be a cause for concern.

5.10 NOISE

If the RBMP is not adopted, then the measures envisaged for infrastructure and basin development will be uncontrolled. Hence noise levels will increase, especially more due to uncontrolled developments and uncontrolled infrastructure. Therefore, the objective of achieving the EU standard over the noise (LAeq / day at 55dB (A) and LAeq / night at 45 dB (A)) will not be realized. The policies and infrastructure activities envisaged in the Plan will ensure cohesion, efficiency and durability, and increased benefits for users of this infrastructure. If the policy measures of the RBMP are not implemented, the exposure of residents to noise will increase. In accordance with Albanian legislation and EU directives, individual noise sources managers should rehabilitate areas with pollution excessive acoustics. However, effective environmental improvements can be made only through combined, logistical and organizational measures.

5.11 POPULATION AND MATERIAL ASSETS

Despite some recent investments in the local and regional road network of the basin, the quality of the transport infrastructure remains low and there are considerably regional differences in terms of access to markets and basic services.

The quality of service delivery in the rural areas is still low and the share of less the rich population has limited access to social services, especially health and education. Public transport restrictions and high costs affect mobility people and access to employment (i.e. employment) outside the villages. Management of asset continuity, treadmill maintenance and more reliable access to public transport can reduce costs and bring significant benefits just as for families, farmers and firms.

Although the rate of fatal accidents is decreasing (this degree is almost halved over the last decade), road safety is a major social problem and public health. The government is focused on enforcing laws and regulations road safety, rather than giving attention to security audits and improvements dark points, incorporating security standards in design and construction infrastructure, as well as raising public awareness.

If the RBMP is not going to be adopted and the measures will not be implemented, accessibility will remain an important concern, and security issues will continue to be a serious problem as will the incidence of flooding. Consequently, no positive effects on the standard of living are expected in residential areas if there is no RBMP.

5.12 CULTURAL HERITAGE

If the RBMP is not adopted then the planned implementation of infrastructure activities, the integrity and characteristics of cultural heritage areas and units, especially cultural landscapes, historical landscapes, urban heritage areas and their impact areas, and archaeological sites, will be preserved in a greater measure. On the other hand, the development of infrastructure and related policies will not be planned and regulated comprehensively, and the infrastructure will not be reconstructed or built based on an analysis of needs and opportunities. Therefore, unplanned developments which may go ahead without the RBMP will have a negative effect on cultural heritage

5.13 LANDSCAPE

If the RBMP is not adopted and infrastructure activities are not implemented, the integrity and features of extraordinary landscapes and landscape areas with distinct features at the national level will be preserved. The image of high quality landscapes of well-preserved areas and of important cultural elements will be preserved. On the other hand, the development of infrastructure and related policies will not be planned and regulated comprehensively, and the infrastructure will not be reconstructed or built based on an analysis of needs and opportunities. Therefore, unplanned developments will significantly affect the degradation of the landscape and could take place without the RBMP being adopted.

6 BASIS FOR ENVIRONMENTAL ASSESSMENT PREPARATION

Article 10 clause 2 (d) of Law 91/2013 requires "environmental objectives set out at international, national, regional or local level, which relate to the plan or program and the way these objectives have been considered in the proposal". These details are provided in this chapter.

6.1 ASSESSMENT APPROACH

Strategic Environmental Assessment is, as its name suggests, set at a strategic level, therefore it is not possible for the baseline environment to be described (and assessed) in as much detail as could be done for a project-level environmental impact assessment. Instead, SEA uses a system of *objectives*, *targets* and *indicators* to rationalise information for the purposes of assessment.

To streamline the assessment process, the Consultant has used broad themes, based on the environmental topics listed in the SEA Law (and mirrored in the EU SEA Directive), to group large environmental data sets, e.g., human health, cultural heritage and climate. Assigned to each of these themes is at least one high-level Strategic Environmental Objective (SEO) that specifies a desired direction for change, e.g. reduce CO_2 emissions, against which the future impacts of the RBMP can be measured. These high-level SEOs are then paired with specific targets. The progress towards achieving these specific targets is monitored using environmental indicators, which are measures of identified variables over time.

6.2 SELECTION OF SUSTAINABILITY CRITERIA AND SEA OBJECTIVES

Part of the scoping exercise undertaken by the RBMP Consultant involved meetings with several stakeholders to gain their views and opinions on the RBMP.

Based on the responses obtained, a final list of sustainability criteria and SEA objectives were compiled to form a broad spread across economics, environment, natural resources, social, cultural and ethical themes. The following Table 6-1 therefore provides the selected sustainability criteria and sub criteria.

Table 6-1: Selected Sustainability Criteria

Main Criteria	Sub Criteria
ENVIRONMENT	Protect and maintain the quality of the environment
	Sustainable management of the environment
	Reduce GHG causing climate change
NATURAL RESOURCES	Environmental protection and economic synergies
	Ensure sustainable use– environmental, economic and social impacts are in balance
	Promote sustainable development
ECONOMY	Stimulate innovation and productivity
	Stem outflow of skilled personnel
	Promote local employment
	Accelerate Growth
	Provide indigenous supply of energy/services
SOCIAL/CULTURAL	Reduce Poverty and protect vulnerable
	Ensure quality of Life and GDP growth
	Promote human health
	Promote healthy and equitable development

The selection of SEA objectives was also taken from the discussions with stakeholders and obtaining their opinions and views during the scoping exercise. The following Table 6-2 shows the selected SEA objectives that wee selected based upon stakeholder consultation.

Table 6-2: Selected SEA Objectives

SEA Topic	Selected SEA Objective
Biodiversity, Flora and fauna	SEA Objective 1: Prevention of negative impacts on biodiversity (terrestrial and marine) SEA Objective 2: Protection of existing nature protected areas
Population and human health	SEA Objective 3: Decrease Poverty and Income Gaps SEA Objective 4: Improve human health/quality of life for local communities SEA Objective 5: Increase employment opportunities
Soil/Land Geology/Seismic	SEA Objective 6: Minimise and mitigate against soil pollution, loss of agricultural land and erosion
Water	SEA Objective 7: Improve the decision making process at the river basin level through consideration of the social, economic and environmental costs and benefits SEA Objective 8: Ensure good ecological status of waterresources
Air quality and Climatic factors	SEA Objective 9: Promote forestation and reduce green-house gas emissions whilst guaranteeing resilience to climate change.
Material Assets	SEA Objective 10: To retain the integrity of existing infrastructure in the river Basins.
Cultural heritage and landscape	SEA Objective 11: Preserve historic/ archaeological sites/buildings. SEA Objective 12: Enhance and preserve local structures and various landscapes
Transboundary impact	SEA Objective 13: Provide monitoring, control and reduction of transboundary impact

The SEA objectives are a recognised way of considering the environmental effects of a plan or programme and comparing the effects of alternatives. They serve a different purpose from the objectives of the plan or programme, though they may in some cases overlap with them.

SEA objectives are used to help show whether the objectives of the plan or programme are beneficial for the environment, to compare the environmental effects of alternatives, or to suggest improvements. For example, improving biodiversity may be an objective of both a plan or programme and an SEA, but the plan or programme may also have an objective of protecting specific wildlife sites which may be tested against the objective of whether they improve biodiversity.

6.3 LINKING SEA OBJECTIVES WITH POLICY AND LEGISLATION

This section links the selected SEA objectives with Albanian policy and legislation as well as the obligations specified in the ratified conventions and respective EU Directives. The link between the environmental sectors and the environmental objectives as well as the relevant documents of environmental plans, programs or policies is presented in the following Table 6-3.

Table 6-3: Linking SEA Objectives to Existing Policy

Document	Purpose and Objective	Connection to relevant environmental sector	Link to Environmental Objective
Directive 2009/147 / EC (Birds Directive) on the protection of wild birds. Albania has partially transposed this directive through: - Law no. 68/2014 "On some amendments to Law No. 9587, dated July 20, 2006, "On the Protection of Biodiversity", as amended - Law no. 10006, dated 23.10.2008; "For the protection of wild fauna" and - Law no. 10253, dated 11.3.2010 "On Hunting".	The directive provides a comprehensive framework for protection, management and control of all the wild birds in the EU. Directive instructs member states to take measures to keep the population of all species of wild birds in EU countries. Such measures may include maintenance and / or re-creation settlements in order to keep these bird populations. For all species of birds referred to in Annex I to the Directive as well as for all regular migratory species that they need protection, member states need to create special areas of Protection, or called Natura 2000 sites. In these areas it must be guaranteed that bird populations are in a favourable state. NSDI II sets out as a strategic objective "networking ecological "Natura 2000". During the 2015-2016 period, an amendment on the law "On hunting", which will ensure the full transposition of this Directive into Albanian legislation	Biodiversity Flora and Fauna	SEO1 SEO2
Directive 92/43 / EEC (Habitats Directive) on the conservation of natural habitats and of wild flora and fauna. Albania has partially approximated this directive through the laws: - Law no. 68/2014 "On some amendments and additions to law no. 9587, dated July 20, 2006, "On Biodiversity Protection", as amended; - Law No. 9868, dated 4.2.2008, for some additions and changes to law no.8906, dated. 6.6.2002 "On protected areas" - Law no. 10006, dated 23.10.2008 "On the protection of wild fauna" "; - DCM nr. 866, dated 10.12.2014 "On approving the list of natural habitats, flora, fauna and birds of interest to the European community	The Habitats Directive requires Member States to take appropriate measures to avoid the special conservation areas of the destruction of natural habitats and species habitats as well as the concern of the species for which Natura 2000 sites have been designated in cases when this concern is obviously linked to the objectives of this Directive. This provision applies to the proposed ZAPs as determined in accordance with the Habitats Directive procedures and criteria. NSDI II defines as strategic objectives: - A targeted increase of 17% of the Protected Areas area across the territory, through the expanded and integrated management of protected areas Guaranteeing the protected status for 5% of the threatened species and habitats. In 2014, Law No. 9868, dated 4.2.2008, was passed on some additions and amendments to Law no.8906, dated. 6.6.2002 "On protected areas", which has ensured full transposiiton of this Directive into Albanian legislation	Biodiversity Flora and Fauna	SEO1 SEO2
The Bern Convention (Bern, 1979) (ratified by the Albanian Parliament with Law No. 8294, dated March 2, 1998)	For the preservation of wild flora and fauna and the European natural environment. The main objective is the preservation of wild flora and fauna and natural habitats.	Biodiversity Flora and Fauna	SEO1 SEO2
The Ramsar Convention (Ramsar, 1971) (ratified on 29.3.1996)	The member countries have agreed to:	Biodiversity	SEO1 SEO2

Document	Purpose and Objective	Connection to relevant environmental sector	Link to Environmental Objective
	› determine the wetlands of its territory suitable for inclusion in the list of wetlands of international importance; › formulate and implement plans for the promotion and protection of wetlands included in the List, as well as for the rational use of wetlands in their territory › promote the preservation of wetlands and aquatic birds by creating natural reserve in the wetlands, whether included or not in the List and ensuring their conservation in the most appropriate manner; › take into account its international responsibility for the conservation, management and rational use of water bird migratory groups, such as when determining a listing entry and when exercising its rights to change this List with respect to wetlands in its territory › consult each other on the implementation of the obligations arising from this Convention, in particular where a wetland extends to the territory of more than one State Party or where a water system is divided between some States Parties	Flora and Fauna	
Millennium Development Goals (MDGs)	A baseline report was prepared in 2002. A revision of national MDG targets was carried out in 2009. The Government with UN support prepared implementation reports in 2005, 2010 and 2015 Also, the NSDI-II includes a short assessment of MDGs implementation.	Population and Human Health	SE03 SE04 SE05
The Republic of Albania ratified the UNECE 'Protocol on water and health' on 8 March 2002. The main aim of the Protocol is to protect human health and well-being by better water management, including the protection of water ecosystems, and by preventing, controlling, and reducing water-related diseases	The Protocol is the first international agreement of its kind adopted specifically to attain an adequate supply and safe drinking water and adequate sanitation for everyone, and effectively protect water used as a source of drinking water. Clear developments to this end can be seen by analysing the last summary report submitted by the country in April 2016: › the percentage of samples that failed to meet the national standard for E. coli dropped from 1.9% in 2013 to 0.67% in 2015; › population access to water and sanitation services increased from baseline values; › bathing water quality increased from 45% in 2011 to 68% in 2015.	Population and Human Health	SE03 SE04 SE05
Directive 2006/7 / EC on Water Quality Management of Bathing Waters (Bathing Waters Directive) (transposed into Albanian legislation through DCM No. 246, dated 30.04.2014 "On the Determination of environmental quality standards for surface waters "). Council Directive 98/83 / EC on the quality of water intended for human consumption	The Bathing Waters Directive lays down measures to: a) monitor and classify by quality water for bathing; b) manage the quality of water for bathing; and c) Informing the public on the quality of water for bathing. The purpose (objectives) of this Directive is to "preserve, protect and protect improve the quality of the environment and protect the health of people, by supplementing WFD. Council Directive 98/83 / EC regulates the quality of water used for human consumption. Ensuring that water is pure and does not contain microorganisms, parasites, and any other substances that in certain quantities or concentrations pose a potential risk to human health.	Population an Human Health Water	SE04 SEO7 SEO8

Document	Purpose and Objective	Connection to relevant environmental sector	Link to Environmental Objective
(transposed into Albanian legislation through DCM No. 246, dated 30.04.2014 "On the definition of environmental quality standards for surface water ").	The objective of this directive is to protect the health of people from any negative or contaminant effects of water used for human consumption, ensuring that the water is pure.		
Thematic Strategy on Protection Land - COM (2006) 231. Reference in Albania is contained in Law no. 10431 dated 9.6.2011 "On the Protection of Environment "(Article 18);	Consideration should be given to the positions on which the design is based The Directive defining the framework for land protection and amending Directive 2004/35 / EC. The strategy takes into account a range functions, diversity and complexity of the earth as well as a range degradation processes to which it (the earth) is subjected. The strategic objective is the protection and sustainable use of land, based on the following guiding principles: › Prevention of further degradation and maintenance of land functions when land is used and when land functions are utilized, and when land serves as a receiving environment for the effects of human activity or environmental phenomena; › Restoring degraded land to a functional level consistent with at least the current or target use, having consider the costs of land restoration	Land	SEO 6
Directive 2000/60 / EC (Water Framework Directive) (transposed into Albanian legislation through DCM No. 246, dated 30.04.2014 "On the environmental quality norms for surface waters") Directive 2008/56 / EC establishing the framework for Community action in the field of marine environmental policy (Marine Strategy Framework Directive). Albania plans to fully adopt this strategy during the last quarter of 2016 through a specific DCM "On the Content, Development and Implementation of the Marine Environment Strategy	The directive sets out measures for achieving the strategic status objective good ecological water for 2015. The Law on Integrated Water Resources Management No. 111/2012, in force since December 2013, enabled integrated water resources management (IWRM) as well as transposition of the WFD. Implementation of the WFD requires/implies further legal arrangements. Several provisions have already been settled via subsidiary legislation, but others are still pending. For example, transposition of the several related directives is still at an early stage, including the Directives 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources, 2007/60/EC on the assessment and management of flood risks, and 2008/56/EC establishing a framework for community action in the field of marine environmental policy. The Law on Environmental Treatment of Wastewater No. 9115/2003 was amended in 2013 to revise the size of penalties for administrative offenses such as e.g. uncontrolled wastewater discharges or failure to install wastewater treatment facilities. The directive sets out the framework within which Member States should take the necessary measures to achieve or maintain a good environmental condition in the marine environment by 2020. In accordance with this Directive, strategies have been drafted and implemented marine, in order to:	Water	SEO7 SEO8

Document	Purpose and Objective	Connection to relevant environmental sector	Link to Environmental Objective
	› Protect the marine environment, prevent degradation, or, if possible, restore marine ecosystems in areas affected by harmful effects; › Prevent and reduce interventions in the marine environment with a view to the gradual elimination of pollution and thus ensure that there are no major implications for marine biodiversity, marine ecosystems and black health and are not threatened.		
Directive 2008/105 / EC on environmental quality standards in the field of water policy (transposed into Albanian legislation through DCM No. 246, dated 30.04.2014 "On the determination of environmental quality standards for surface waters")	This Directive lays down environmental quality standards for priority substances and other pollutants as defined in WFD with the objective of achieving a good chemical status of surface waters and in compliance with the requirements and objectives of WFD on the prevention of the emission of substances into water, separating sewage. The DCM transposing Directive 2008/105 / EC into Albanian legislation defines detailed and comprehensive legislation for evaluation of surface water chemical status.	Water	SEO7 SEO8
Directive 2006/118 / EC on the protection of groundwater against pollution and deterioration (transposed into Albanian legislation through DCM No. 246, dated 30.04.2014 "On the determination of environmental quality standards for surface water")	Directive 2006/118 / EC on the protection of groundwater against pollution and deterioration lays down specific measures to prevent and control groundwater pollution in accordance with WFD. These measures mainly include: › criteria for assessment of groundwater chemical status, and › - criteria for identifying and reversing substantial and sustained growth trends, and for setting the starting points for opposing tendencies. Objective: "By 2015, a good chemical status of groundwater should be achieved".	Water	SEO7 SEO8
Directive 2000/59 / EC on reception facilities in the ports of waste generated by ships and residues from cargos. Albania has adopted a respective regulation for this purpose	The purpose of the Directive is to reduce offshore emissions of waste generated by ships and residual cargo residues, in particular illegal discharges. The Objective: "Strengthen the protection of the marine environment by improving the availability and use of the reception facilities in the ports for waste generated by ships and residues from cargos". Implementation of the Regulation transposing this Directive into Albanian legislation contributes to achieving a good ecological status for marine waters.	Water	SEO7 SEO8
Directive 2007/60 / EC on the assessment and management of flood risks (Floods Directive). Albania has partially transposed this directive through: › Law no. 9860, dated 21.01.2008 amending the Law no. 8518, dated 30.7.1999 "On Irrigation and Drainage" › DCM nr. 835, dated 3.12.2004 "On the National Plan of Civil Emergencies"	Developing of 3 (three) National Communication on Climate Change, from 2005-2017. Concerning Albania, at the end of 2015 and during the first quarter of 2016, it is envisaged the adoption of two DCMs: › - DCM "On the conditions and criteria necessary for the establishment, maintenance, management and updating of the National Water Resources Cadastre" › - DCM "On the content, development and implementation of the National Water Strategy, river basin management plans and flood risk management plans." This effort will guarantee full approximation of Albanian legislation with this directive.	Semani River Basin economical development	SE01 SE02 SE03 SE04 SE05 SE07 SE10

Document	Purpose and Objective	Connection to relevant environmental sector	Link to Environmental Objective
› DCM nr. 267 dated 07.05.2014 "On the approval of the list of priority substances in aquatic environments			
Directive 2008/50 / EC on air quality and cleaner air for Europe. Directive 2004/107 / EC on arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air. Albania has come close to full transposition of these directives through: Law no. 162/2014, dated 12.04.2014 "On the protection of ambient air quality" and DCM nr. 594, dated 10.09.2014 "On the Approval of the National Air Quality Strategy.	Directive 2008/50 / EC lays down the following measures: Definition and definition of air quality objectives environment designed in such a way as to avoid, prevent or reduce the harmful effects on people's health and the environment in general; 1. Estimation of ambient air quality in the Member States based on common methods and criteria; 2. Provide information on ambient air quality so that elp fight against air pollution and disturbance monitor the trends and improvements that come as a result of the measures national and Community; 3. Guaranteeing such information on air quality will be made accessible to the public; 4. Maintain air quality where it is good and its improvement in other cases; 5. Encouraging increased co-operation among Member States for reducing air pollution. The objectives of Directive 2004/107 / EC are: (a) Determine a target value for the concentration of arsenic, cadmium, nickel and benzo pyrene in the ambient air for intent avoidance, prevention or reduction of harmful effects of arsenic, cadmium, nickel and polycyclic aromatic hydrocarbons in human health and in the environment as a whole; (b) provide, with regard to arsenic, cadmium, nickel and polycyclic aromatic hydrocarbons, that the ambient air quality is stored there where it is good and has improved in other cases; (c) to establish common methods and criteria for the assessment of concentrations of arsenic, cadmium, nickel and polycyclic aromatic hydrocarbons in ambient air and for the storage of arsenic, cadmium, mercury, nickel and aromatic polycyclic hydrocarbons; (d)ensure that appropriate information on the concentrations of arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air and on the deposition of arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons has been obtained and ensure that it is made available to the public. NSDI II defines the objectives for air emission levels as follows: for NOx - 40 µ / m³ for PM10 - 40 µ / m³ for PM2.5 - 25 g / m3 and 20 g / m3 and SO2 - 125 µ / m³.	Air quality and climatic factors	SEO9
EU Strategy for Adaptation to Climate Change (COM (2013) 216 final).	The overall objective of the EU Adaptation Strategy is to contribute to a more elastic climate for Europe. This means increasing the preparatory work and capacity to respond to climate	Air quality and climatic factors	SEO9

Document	Purpose and Objective	Connection to relevant environmental sector	Link to Environmental Objective
	change impacts at local, regional and national levels, developing a logical approach and improving coordination. Albania has ratified the Vienna Convention and the Montreal Protocol in October 1999 and is a member of the United Nations Framework Convention on Climate Change (UNFCC) since January 1995. Albania has prepared two National Communications in 2002 and 2009, and has successfully finalized the self-assessment for the preparation of the UNFCCC's Third National Communication. In 2016 it is foreseen to complete the drafting of the National Strategy and National Action Plan on Climate Change, with a duration of 2016-2030.		
Decision 406/2009 / EC on Member States' efforts to reduce greenhouse gas emissions to meet the Community's obligations to reduce greenhouse gas emissions by 2020	Decision 406/2009 / EC establishes the minimum contribution of Member States to meet the obligation to reduce greenhouse gas emissions for the period from 2013 to 2020 for greenhouse gas emissions covered by this Decision and the rules for achieving these contributions and their assessment. The commitment to reduce greenhouse gas emissions refers to: › - emissions from the use of fuels at home and in the services sector; › - emissions from the use of fuels in the transport sector; › - emissions from the use of fuels in small and medium enterprises and in the energy sector; › - emissions released from the energy sector; › - emissions from industrial processes; › - use of solvents and other products; › - emissions from agriculture; › - emissions from waste management. Albania has not yet transposed this decision, it is envisaged to be made in 2018. So it falls within the deadlines for the implementation of the Plan, so the provisions of this decision on climate factors need to be addressed ahead in time. Moreover, the NSDI-II sets the target limits for greenhouse gas emissions in 2020 as follows: › A target reduction of 8% of GHGs compared to the scenario base year and › A target reduction of 40% in HCFC (hydrochlorofluorocarbon).	Air quality and climatic factors	SEO9
Directive 2008/96 / EC on road infrastructure safety (fully aligned and transposed through Albanian Instruction no.	The objective of this Directive is to "ensure safe road infrastructure for all road users".	Material Assets	SEO10

Document	Purpose and Objective	Connection to relevant environmental sector	Link to Environmental Objective
9, dated 3.07.2012 "On the road safety audit and inspection			
European Convention for the Protection of the Archaeological Heritage - Malta Convention (MEKVAD) (Albania has adhered to the Law No. 9806 of 17 September 2007)	The Convention refers to the comprehensive concept of archaeological heritage conservation. It establishes the link between conservation of archaeological heritage and spatial planning. The Convention requires each signatory party to: -seek to reconcile and combine relevant archeology requirements with spatial plans by ensuring that archaeologists participate in the design of spatial planning policies and at different stages of implementation of these policies; - ensure that archeologists, urban and spatial planners consult systematically with one another in order to allow for modification of those spatial plans likely to damage the archaeological heritage -Provide sufficient time and resources for an appropriate scientific study to be carried out in the relevant area and to publish the results of that study - ensure that the environmental impact assessment and resulting decisions include full consideration of the archaeological sites and their extent - ensure the in situ conservation, where possible, of the archaeological heritage elements found during the spatial activities; Ensure that archaeological sites are reachable by the public, and that access roads for the admission of a large number of visitors do not harm the archeological and scientific features of these areas and the surrounding environment. Objective: "Archaeological areas and their positioning should be fully taken into account when designing plans and programs and integrating activities. Elements of archaeological heritage found during the conduct of activities in the area should be conserved in situ whenever possible	Cultural Heritage	SEO11
Convention for the Protection of the Architectural Heritage of Europe - Granada Convention (Albania has adhered to the Law No. 9806 of 17 September 2007)	The Convention reinforces the concept of comprehensive preservation of architectural heritage (monuments, architectural units, memorial areas or structures). The Convention requires each participating party to: - implement supervision and procedures of appropriate authorizations in accordance with the requirements for the legal protection of the structures in question; - Prevent damage, destruction or destruction of protected structures. The Comprehensive Heritage Architectural Conservation Policy forces all signatories to: - include the protection of architectural heritage as an important objective in spatial and urban planning; - promote programs for the restoration and maintenance of architectural heritage;	Cultural Heritage	SEO11

Document	Purpose and Objective	Connection to relevant environmental sector	Link to Environmental Objective
	-enable conservation, revitalization and improvement of architectural heritage to become an important characteristic of policies in the field of culture, environmental protection and spatial planning; - where possible within the urban and spatial planning process, encourage the conservation and use of certain structures that do not individually justify conservation status but are important as part of urban or rural development and as a quality element of life; - promote the use and development of traditional skills and materials, which are important for the future of architectural heritage. Objective: "Preservation of Architectural Heritage as an important goal of spatial and urban planning		
National Strategy for Development and Integration, II (NDSI II), 2015 - 2020	The NSDI-II, initially drafted for the period 2013–2020, was approved for the period 2015–2020 in May 2016. It represents a synthesis of sectoral and cross-cutting strategies and other planning documents drafted in the period until the end of 2015. The vision of the NSDI-II is based on the delivery of the main objective, which is integration with the EU, and four strategic policy pillars: (1) ensuring economic growth through macroeconomic and fiscal stability; (2) ensuring growth through increased competitiveness and innovation; (3) investing in human capital and social cohesion; and (4) ensuring growth through connectivity, the sustainable use of resources and territorial development. The six priorities of the Government are: (1) innovative and citizen-centred public services (good governance); (2) recovery and financial consolidation of the energy sector (energy); (3) fostering innovation and competitiveness (FDI and domestic investments); (4) integrated water management; (5) integrated land management; and (6) financial structural reform. There are five strategic objectives of the NSDI-II on environmental protection. These are: i) Achieving measurable results in air quality by 2020, ii) Reaction towards climate change and the contribution to protect the ozone layer by 2020, iii) Intensifying and strengthening nature protection, iv) Strengthened management and conservation of forestry and pasture resources, v) Strengthened water resources management and preservation. Other environment- related objectives are presented in sectoral chapters of the document, especially on agriculture and energy. It is regrettable, however, that the NSDI-II does not include a single quantitative target related to the environment.	Biodiversity Population Land Water Air Climate factors Material assets Cultural Heritage Landscape	All SEOs

6.4 COMPARING SUSTAINABIITY CRITERIA WITH SEA OBJECTIVES

A cross comparison of the sustainability criteria with the chosen SEA objectives was undertaken to assess the degree of coherence/compliance of a compared sustainability criteria with the SEA Objective.

The extent of the compliance was then evaluated and scored on a point scale ranging from "-3" representative of "highly unsustainable" to a score of "3" which was representative of "highly sustainable". The full methodology for this scoring is provided in Annex 3 of this report. The different scores were then colour coded to provide an improved visual interpretation of the results. The allocation of score was undertaken from different members of the SEA consultant team using professional judgement and a final output provided in the form of a matrix. The results are shown in Table 6-4 below.

What is clear from Table 6-4 is that there are two areas of potential conflict in the matrix which show "weak" and "very weak" trends (yellow to orange boxes) that are focused on the environmenal and economy sustainability criteria mainly affecting Biodiversity (BFF) and Water. These are apparent when comparing environmental sustainability criteria with economic SEA objectives and when comparing economic sustainability criteria with environmental SEA objectives involved with such issues as environmental protection and preservation of biodiversity.

Table 6-4: Comparison of Sustainability Criteria against SEA Objectives

Sustainability Criteria	Sub Criteria	BFF		Population/ Human Health			Soil/ Land	Water		Air/ CC	MA	CH + Landscape		TB
		1	2	3	4	5	6	7	8	9	10	11	12	13
ENVIRONMENT	Protect and maintain the quality of the environment	3	3	1	1	-2	2	3	2	2	-2	1	2	2
	Sustainable management of the environment	3	3	1	1	-2	1	3	2	2	-2	1	1	2
	Reduce GHG causing climate change	3	3	0	1	0	1	3	2	3	-1	0	0	1
NATURAL RESOURCES	Environmental protection and economic synergies	1	1	0	0	0	1	1	1	2	0	0	0	1
	Ensure sustainable use – environmental, economic and social impacts are in balance	1	1	1	1	0	1	1	1	2	0	0	0	1
	Promote sustainable development	1	1	0	1	0	1	1	1	2	1	0	0	1
ECONOMY	Stimulate innovation and productivity	0	0	0	0	2	0	0	0	0	1	0	0	0
	Stem outflow of skilled personnel	0	0	2	0	2	0	0	0	0	1	0	0	0
	Promote local employment	-1	-1	2	1	3	0	-1	-1	0	2	0	0	-1
	Accelerate Growth	-2	-2	2	-1	3	0	-1	-1	-1	3	-1	-1	-1
	Provide indigenous supply of energy/services	-1	-1	3	1	2	-1	-1	-1	-1	2	0	0	-1
SOCIAL	Reduce Poverty and protect vulnerable	0	0	3	2	2	1	0	0	1	2	0	0	0
	Ensure quality of life and GDP growth	-1	-1	2	3	3	1	-1	-1	1	3	0	0	-1
	Promote public health	0	0	2	3	2	1	0	1	1	1	0	0	0

Sustainability Criteria	Sub Criteria	BFF		Population/ Human Health			Soil/ Land	Water		Air/ CC	MA	CH + Landscape		TB
		1	2	3	4	5	6	7	8	9	10	11	12	13
	Promote healthy and equitable development	1	0	2	2	2	1	1	1	1	1	0	0	1

BFF=Biodiversity Flora/Fauna, CC= climate change, MA = Material Assets, CH=cultural heritage and TB =transboundary

Key to allocation of Compliance to Sustainability

Not Applicable	Highly Unsustainable	Very weak	Weak	Neutral	Strong	Very strong	Highly Sustainable
NA	-3	-2	-1	0	1	2	3

Table 6-4 also shows good harmonisation (as would be expected) of "highly sustainable" trends (dark blue boxes) when comparing economic and social sustainability criteria with economic and social SEA objectives and when comparing environmental sustainability criteria with environmental SEA objectives.

6.4.1 Interactions (Interrelationships) between SEA topics

Law 91/2013 (in accordance with the SEA directive) requires an assessment of the preferred alternative/option on the likely significant effects/impacts on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors (Chapter 8 of the SEA Report). These effects should include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects. There is a requirement therefore to fill in the table below to assess the interactions between environmental topics and those that do not apply.

	Biodiversity Flora, Fauna	Population/ Human health	Soil/ Geology/ Hydrogeology	Water	Air	Climatic Factors	Material Assets	Cultural Heritage
Population/ Human health	✓							
Soil/ Geology/ Hydrogeology	✓	✓						
Water	✓	✓	✓					
Air	✓	✓	X	✓				
Climatic Factors	✓	✓	✓	✓	✓			
Material Assets	✓	✓	✓	✓	✓	✓		
Cultural Heritage	X	✓	✓	✓	X	✓	✓	
Landscape	✓	✓	✓	✓	X	✓	✓	✓

6.4.2 Assessment of Alternatives/options

The approach used for assessing the alternatives/options will be an objectives-led assessment. Each assessable option will be assessed against each of the objectives in terms of how it achieves the objective. The option is then allotted an assessment rating for the purposes of comparison. The assessment carried out will be primarily qualitative in nature, with some based on expert judgement. This qualitative assessment compares the likely impacts against the SEOs to see which options meet the Strategic Environmental Objectives and which, if any, contradict these. Further details are provided in the next chapter.

7 ALTERNATIVES-OPTIONS CONSIDERED

In addition to Chapter 5, this chapter provides a description of the alternatives in line with SEA Law 91/2013 clause 2 (c) that states: " Describing the alternatives considered when designing, revising, modifying or modifying the proposed plan or program, including the non-planning option (zero option), as well as the relevant justifications". These details are provided in this chapter.

7.1 RBMP OPTIONS (SCENARIOS)

The RBMPs for Semani River does not provide any alternatives to the "plan" per se. What it does provide are four scenarios/alternatives (options) that the SEA has utilised in the assessment. These are based upon water supply and water demand that have been calculated using the RBMP Consultant's MIKE BASIN modelling software. This includes the "baseline scenario which in this case we can assume to be the so called "zero" option or sometimes referred to as the "do nothing" option which has already been covered in Chapter 5. The four alternatives (including the zero option) are as follows:

- **Zero (Baseline Scenario) option** - Present climate, present demands: This option assumes that the hydrological conditions affecting surface water and groundwater availability are similar to conditions that have been observed in the recent historical record. Consumptive and non-consumptive demands are equal to current demands. This option establishes a baseline approximating present conditions that is used to estimate the impact of changes expected in the future.

- **Option (Scenario) 1** - Present climate, future demands: This option also assumes that hydrological conditions affecting surface water and groundwater availability are similar to conditions that have been observed in the recent historical record. Consumptive and non-consumptive demands are equal to projected future demands. This option estimates the impact of demand growth on the basin water balance if significant changes to the climate do not take place.

- **Option (Scenario) 2** - Future climate, present demands: This option assumes that hydrological conditions affecting surface water and groundwater availability reflect changes to the climate that may be expected in the future. Climate changes are estimated using global and regional climate models. Consumptive and non-consumptive demands are assumed to equal current demands, except in the irrigation sector, where consumptive water use requirements are assumed to change because of changes to rainfall and evaporation resulting from climate change. This option estimates the impact of climate change on the basin water balance assuming no other changes to consumptive and non-consumptive water demands.

- **Option (Scenario) 3** - Future climate, future demands: This scenario assumes that climate change will affect hydrological conditions and that consumptive and non-consumptive water demands will also change in the future. This option estimates the joint impact of climate change and changes to demand patterns.

7.2 ASSUMPTION OF THE DIFFERENT OPTIONS

The assumptions that have been used are based upon water supply and water demand at the present and in the future over the irrigation, domestic and industrial uses and hydropower sectors (see **Error! Reference source not found.**).

Table 7-1: Assumptions of Different Options

Water Use	Assumptions			
	Baseline Scenario Present Climate, Present Demands	**Scenario 1 Present Climate, Future Demands**	**Scenario 2 Future Climate, Present Demands**	**Scenario 3 Future Climate, Future Demands**
Irrigation	No water demand deficits are simulated in the baseline scenario	Deficits are simulated in Catchment 21 in the present climate, future demands scenario. Catchment 21 is in the headwaters of the basin. Smaller and less frequent deficits are also simulated in catchments 24, 25, 27, and 31. [5]	Irrigation deficits simulated in the Semani basin are limited to Catchment 21. However, deficits are reduced, as the impact of climate change is smaller than the impact of increased demands	Irrigation deficits are simulated in several catchments. Simulated deficits increase significantly in catchment 21 because of climate change. Deficits are also simulated in catchments 24, 25, 27, and 31. In all cases, deficits increase relative to the present climate, future demands scenario.
Domestic and Industrial	No water demand deficits are observed at any of the domestic and industrial locations	No water demand deficits are observed at any of the domestic and industrial locations	No water demand deficits are observed at any of the domestic and industrial locations	No water demand deficits are observed at any of the domestic and industrial locations
Hydropower	No hydropower facilities are simulated in the Semani basin in the baseline model	Minimal changes in power deficits are observed in the present climate, future demands scenario.	No hydropower facilities are simulated in the Semani basin in the future climate, present demands scenario.	Simulated power production at the Banja and Moglice hydropower plants is reduced under climate change.

Source: After Mott MacDonald RBMP for Semani Rivers – Table 4.2

7.3 IMPACT OF THE DIFFERENT OPTIONS

The first issue to consider is the Do-Nothing Option with the Adoption of the RBMP. Table 7-2 below provides a rapid assessment of the comparison between these two options.

For the purposes of this assessment:

- plus (+) indicates a potential positive impact,
- minus (-) indicates a potential negative impact,
- plus/minus (+/-) indicates that both positive and negative impacts are likely or that in the absence of further detail the impact is unclear, and
- A neutral or no impact is indicated by (0).

Table 7-2: Review of Do Nothing with Adoption of RBMP

Options	BFF	PHH	S	W	AQ	CF	MA	CH	L
Do Nothing	-	-	-	-	0	0	0	0	0
With RBMP	0	+	0	0	0	+	+	-	-

**Key: BFF – Biodiversity, Flora and Fauna; PHH – Population, Human Health; S – Soils; W – Water; AQ – Air Quality; CF – Climatic Factors; MA – Material Assets; CH – Cultural Heritage; L– Landscape.*

[5] The location of catchment numbers in Semani Basin can be viewed in Figure 12.1

The adoption of the RBMP will have some benefits compared to doing nothing. Many of these factors have already been highlighted in Chapter 6 and will not be repeated here. The trend of continued development within the river basin without a specific plan will have negative consequences for biodiversity, flora and fauna, population and human health, soils, and water. All other parameters are neutral.

Adoption of the RBMP however, will have positive consequences for the population and human health, climatic factors and material assets. Biodiversity, soil, water and Air Quality will be neutral as the current situation in the basin is very bad and will only improve slightly. Cultural heritage and landscape are considered negative as further infrastructure developments contained in the RBMP may negatively impact upon there parameters.

When reviewing the different scenarios mentioned in **Error! Reference source not found.** above these are based upon deteriorating climate change features. A brief assessment of the four scenarios is shown in Table 7-3 below. In summary, Scenario 1 is the most optimal.

Table 7-3: Review of RBMP Scenarios

RBMP Scenarios	BFF	PHH	S	W	AQ	CF	MA	CH	L
Baseline	0	+	0	0	0	+	+	-	-
1	0	+	0	0	0	+	+	-	-
2	0	+	-	0	0	+	+	-	-
3	-	-	-	-	0	+	+	-	-

**Key: BFF – Biodiversity, Flora and Fauna; PHH – Population, Human Health; S – Soils; W – Water; AQ – Air Quality; CF – Climatic Factors; MA – Material Assets; CH – Cultural Heritage; L– Landscape.*

8 IMPACT ASSESSMENT OF PREFERRED STRATEGY

SEA Law 91/2013 clause 2 (h) requires that the SEA Report address " Possible negative environmental impacts, including impacts on biodiversity, human health, soil, water, air, climatic factors, cultural and archaeological heritage, landscape or interaction between these factors". These details are provided in this chapter.

As mentioned in the previous chapter, there is either the adoption of the RBMP or the Do-Nothing Option. The adoption of the RBMP is the preferred Strategy.

Chapter 6 has provided a description of the likely impact of doing nothing, this chapter provides an impact assessment of the adoption of the RBMP. The methodology undertaken for the assessment is described in Annex 3. To assess the potential effects of different components of the preferred strategy followed under the RBMP on the environment and on local social and economic conditions it is necessary to examine the characteristics of each impact using the scale provided in Table 8-1 below.

Table 8-1: Scale for Assessing Environmental and Socio-Economic conditions

Parameter/ Indicator	Category	Description of quantitative-qualitative grading/marking system for each parameter/indicator
The following parameters and indicators are taken in turn and marked qualitatively and quantitatively: POPULATION HEALTH EMPLOYMENT INFRASTRUCTURE FLORA-FAUNA LAND USE – SOILS GEOLOGY – SEISMIC WATER DRAINAGE AIR CLIMATE MATERIAL ASSETS CULTURAL HERITAGE LANDSCAPE	LOCATION	Low (L): the development impact has low sensitivity on parameter/indicator Moderate (M) the development impact has moderate sensitivity on parameter/indicator High (H): the development impact is highly sensitive on parameter/indicator
	SCALE	Local (L): The impact is noticeable on parameter/indicator at local level Municipal (M) The impact is noticeable on parameter/indicator at municipal level Regional (R) The impact is noticeable on parameter/indicator at regional level National (N) The impact is noticeable on parameter/indicator at national level International (I): The impact is noticeable on parameter/indicator at international level
	MAGNITUDE INTENSITY	Just Detectable (1): The impact is just noticeable on parameter/indicator Very small (2): The impact is very small on parameter/indicator Small (3): The impact is small on parameter/indicator Modest (4): The impact is modest on parameter/indicator Large (5): The impact is large on parameter/indicator Very Large (6): The impact is very large on parameter/indicator Exceptionally Large (7): the impact is exceptionally large on parameter/indicator
	PROBABILITY	Highly Unlikely (1): The impact on parameter/indicator is highly unlikely to occur Very unlikely (2): The impact on parameter/indicator is very unlikely to occur Unlikely (3): The impact on parameter/indicator is likely to occur Neither unlikely or likely (4): Impact on parameter/indicator is neither likely or unlikely Likely (5): The impact on parameter/indicator is likely to occur Very Likely (6): The impact on parameter/indicator is very likely to occur Almost certain (7): the impact on parameter/indicator is almost certain to occur
	FREQUENCY	One off (1): The frequency of impact on parameter/indicator will only occur once? Repetitive (2): The frequency of impact on parameter/indicator will be repetitive?
	REVERSIBILITY	Reversible (1): Is the impact on parameter/indicator reversible? Irreversible (2): Is the impact on parameter/indicator irreversible?
	DURATION/ PERMANENCE (only applies if Reversible)	Immediate (I): Is the impact effect on parameter/indicator immediate? Short Term (ST) Is the impact effect on parameter/indicator short term (weeks/months)? Medium (M) Is the impact effect on parameter/indicator medium duration? (up to 1 year) Long term (LT): Is the impact effect on parameter/indicator long term duration (years)?
	CUMULATIVE/ SYNERGISTIC EFFECTS	No cumulative effects (NC): Are no cumulative effects on parameter/indicator likely? Cumulative effects likely (C): Are cumulative effects on parameter/indicator likely?
	ADVERSE/ BENEFICIAL/ MIXED	Beneficial (BE): Is the impact beneficial on parameter/indicator Mixed (M): Are there mixed effects from the impacts on parameter/indicator? Adverse (Ad): Is the impact adverse on parameter/indicator?

Taking the above scale into consideration, the following Table 8-2 provides indication of the impact assessment on the environmental and socio-economic parameters due to the implementation of the RBMP in the Semani Basin.

Table 8-2: Impact Assessment of the RBMP for Semani Basin

PARAMETER	LOCATION	SCALE	MAGNITUDE/ INTENSITY	PROBABILITY	FREQUENCY	REVERSIBILITY	DURATION / PERMANENCE	CUMULATIVE / SYNERGISTIC EFFECTS	ADVERS / BENEFICIAL/ MIXED
BIODIVERSITY FLORA / FAUNA	High sensitive effect on flora and fauna especially in protected areas in Semani Basin – current and planned dam with down-stream effects due to climate change	Effect could be overall regional significance - knock on effects on Karavasta – Ramsar site are very important	If PoM is implemented in the RBMP very large changes will occur where any new dams or flood control measures are included. This may significantly affect wetlands downstream	Almost certain that impacts occurring will affect aquatic life downstream	Repetitive events on annual cycle and fish migrations depends on dam operations. Water level oscillations in rivers	Irreversible - endemic species might become extinct and then cannot be replaced	NA as irreversible impact	Cumulative effects likely as flora and fauna, food chain, migratory routes etc are generally interdependent	Generally adverse effect with any introduced PoM in terms of environmental sustainability
POPULATION	Moderate sensitivity. Basin is home to several large settlements.	Impact will be experience at Regional Level	Impact will bring about modest to large changes	Likely probability of impacts occur-ring	Any changes because of PoM will be one off event	Any infrastructure associated with the RBMP once built will be irreversible hence this will always impact on the population	NA as irreversible impact	HPPs, flood control infrastructure will encourage more development of the area i.e. more recreation/ tourism which is potentially cumulative	Generally, beneficial effect to the area for population
HUMAN HEALTH	Low Sensitivity Health effects due to noise, dust only expected to be short term during construction – stress possible on directly affected people	Impact of health issues would only affect local level	Small effects on noise dust just detectable, but maybe more a problem for transport, moving through the Basin	Likely probability that scale and impact prediction will occur	Frequency of health effects will be repetitive events	Impact of health issues has reversible effects	Short term effect of noise, dust and traffic primarily during construction stage from PoM on RBMP.	Cumulative effects likely through improved health care, sanitation facilities of population	Mixed effects -short term adverse on health but beneficial effect long term
LAND USE/ SOILS	Moderately sensitive effect on land use	Effect on land use at regional level. PoM (flood control etc) may take land	Impact will bring about modest changes	Very likely probability that scale and impact prediction will occur	The impact on land use would be a one-off event	Irreversible cannot be replaced	NA as irreversible impact	Cumulative effects as improved land use will create other opportunities	Mixed effect – possible loss of land - adverse effect, but improved productivity planned with remaining land use -beneficial
GEOLOGY/ SEISMIC	Moderately sensitive effect on geology	Effect on geology could be regional	Small changes likely to be experienced	No definite probability yet as more reliable monitoring data is necessary	Effects would be repetitive due to the nature of seismicity	Effect on geology irreversible	NA as irreversible impact	Cumulative effect possible	Generally adverse from threat of seismic activity and landslide

PARAMETER	LOCATION	SCALE	MAGNITUDE/ INTENSITY	PROBABILITY	FREQUENCY	REVERSIBILITY	DURATION / PERMANENCE	CUMULATIVE / SYNERGISTIC EFFECTS	ADVERS / BENEFICIAL/ MIXED
WATER SUPPLY	Highly sensitive due to downstream effects, and karstic groundwater systems	Effects could be regional	Large Effects could result downstream	Almost certain that effects on scale and magnitude will occur	Effects would be repetitive due to the cyclical nature of flow	Impacts are reversible	Medium term impact	Cumulative effect moving progressively downstream in the basin	Mixed - Beneficial for water supply -Possibly adverse downstream
DRAINAGE/ WASTEWATER	Sensitive due to the low-lying nature of the lower parts of the basin.	Effects could be regional due to low lying areas in the lower basin of Semani Buna.	Large Effects could result downstream	Almost certain that effects on scale and magnitude will occur	Effects would be repetitive due to the cyclical nature of flow	Impacts are reversible	Medium term impact	Cumulative effect moving progressively downstream in the basin	Generally Beneficial for wastewater and drainage. PoM will assist flood control and WWTP will improve quality of wastewater
AIR	Low sensitivity from development except dust during construction and air emissions from machinery and traffic,	Effects on air would be on a Local scale, traffic would be reduced	Effects if they occur would be just detectable	Likely probability that predicted effects would occur	Repetitive event on air	Impacts are reversible	Immediate	No cumulative effects	Generally, beneficial to mixed
CLIMATIC FACTORS	High sensitivity, warmer seasons, more erratic events,	International effects which are happening irrespective of RBMP	Large effects especially on agriculture and water supplies.	Almost certain that the predicted events from climate change will occur.	Repetitive events on climate.	Impacts are reversible	Long term duration 1-5 years	Continual	Generally mixed. Some negative effects due to climate change on irrigation and water stress. PoM of RBMP will enable some benefits such as improved water storage and better water quality if correctly implemented.
MATERIAL ASSETS	Moderate sensitivity regarding loss of some buildings	Effects on buildings would be on a Regional scale	Modest changes in the affected area due to inundation	Likely probability that scale and impact prediction will occur	The impact on the property would be a one-off event	The effects on material assets would be irreversible	NA as irreversible impact	No cumulative effects	Generally mixed effects adverse in terms of property loss but beneficial in terms of future development opportunities

PARAMETER	LOCATION	SCALE	MAGNITUDE/ INTENSITY	PROBABILITY	FREQUENCY	REVERSIBILITY	DURATION / PERMANENCE	CUMULATIVE / SYNERGISTIC EFFECTS	ADVERS / BENEFICIAL/ MIXED
CULTURAL HERITAGE	High sensitivity regarding cultural monuments in the Basin	Effects on cultural heritage can be on a National scale due to their importance	Effects would be Modest	Likely probability that scale and impact prediction will occur	Repetitive effects to change in micro-climate	The effects on cultural heritage would be irreversible	NA as irreversible impact	No cumulative effects	Generally adverse effects as erosion on cultural heritage
LANDSCAPE	High sensitivity due to the nature of certain areas within the Semani Basin	Effect on landscape at National level. Landscape has a high amenity value	Large changes would result from any inundation from HPP or flood control and changes to amenity value	Very likely probability that scale and impact prediction will occur	The impact on the landscape would be a one-off event	The effect on landscape would be irreversible	NA as irreversible impact	No cumulative effects	Generally mixed effects adverse in terms of PoM from HPP and flood control but beneficial in terms of any created spaces that have an amenity value
EMPLOYMENT/ ECONOMIC ACTIVITIES	Moderate sensitivity regarding employment on location.	PoM of the RBMP would have national impact for employment. opportunities	Modest changes likely within the affected area	Likely probability that scale and impact prediction will occur	Employment will be repetitive event throughout the development. More work during PoM construction but then lower numbers after	Employment characteristics are reversible	If employment was stopped this would have immediate effect	Cumulative effects likely as employment creates more opportunities for sustainably development	Generally, beneficial effect in terms of sustainable objectives
INFRASTRUCTURE	High sensitivity as infrastructure included in PoM.	Regional Effect on infrastructure through PoM under the RBMP	Very large changes will occur due to new infrastructure because of PoM.	Very likely probability that scale and impact prediction will occur	The impact once undertake would be a one-off event	The effects on infrastructure would be irreversible	NA as irreversible impact	Cumulative effects likely as infrastructure will provide basis for other opportunities (tourist facilities, more trading etc)	Generally, beneficial effect in terms of sustainable objectives

9 TRANSBOUNDARY ISSUES

SEA Law 91/2013 clause 2 (i) requires that the SEA Report address " Possible negative consequences in the cross-border environment (commonly referred to as "transboundary" issues), in case of implementation of Article 17 of this Law"

The Semani Basin does not have any transboundary issues as the basin is entirely within the confines of Albanian territory and the river flows into the Adriatic Sea.

Notwithstanding, Albania has ratified in 1990 the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention). The Barcelona Convention had various Protocols on dumping and coastal zone management and these have all been ratified by Albania since that time.

The Barcelona Convention can be regarded as a corner stone for the promotion of environmental protection and integration in the Mediterranean.

Article 4.3(e) of the Barcelona Convention, requests the Contracting Parties to promote the integrated management of the coastal zones, considering the protection of areas of ecological and landscape interest and the rational use of natural resources.

10 GUIDELINES AND MITIGATION MEASURES

SEA Law 91/2013 clause 2 (j) requires that the SEA Report address "the measures envisaged to avoid or mitigate as far as possible the consequences of impacts on the environment during the implementation of the plan or program". These details are provided in this chapter.

10.1 INTRODUCTION

This chapter proposes potential mitigation/optimisation measures that can prevent, reduce or eliminate to the highest possible extent, any significant negative impacts on human health and the environment that can be caused by the implementation of the Draft RBMP. In addition, any positive optimisation measures that can enhance already positive impacts are documented.

A major advantage of SEA over project EIA is that is allows consideration of a wider range of mitigation measures, particularly measures to prevent impacts at an earlier more appropriate stage of decision making. It can also allow more sensitive areas to be avoided and environmentally beneficial developments to be promoted. It also allows for a wider range of specific environmental/ sustainability measures to be taken.

Broadly speaking, avoidance of impacts altogether is preferable than reduction, which in turn is preferable to reparation and compensation. Hence, the mitigation hierarchy approach can be employed both for the basis for strategies/plans and deciphering sustainable measures both for the short- and long-term in the River Basins.

The approach, which is rooted in ecological (biological) concepts, is increasingly applied in social impact assessment and management to instil the concept and practice of working to: Avoid, Minimize, Rectify, Reduce or Offset.

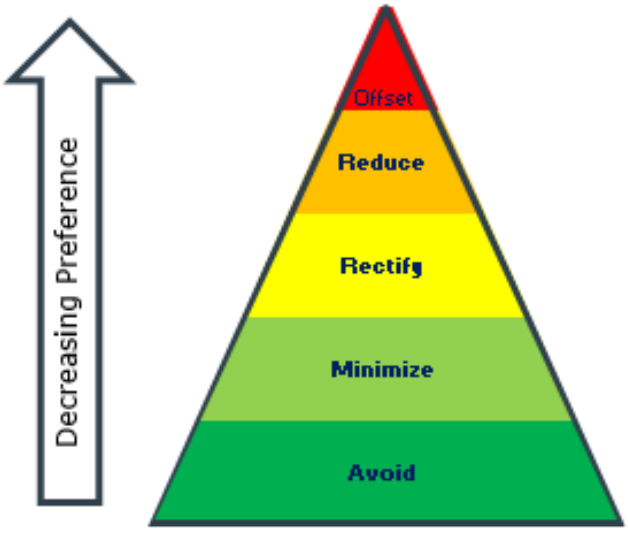


Figure 10-1: Mitigation Hierarchy Approach

10.2 SUMMARY OF POTENTIAL IMPACTS AND MITIGATION MEASURES

The following Table 10-1 provides a summary of the possible impacts and mitigation measures that are likely because of implementation of the RBMP in the Semani River Basin. It is important to note that this list is not exhaustive. However, by applying the general guidelines and safeguards measures mentioned in the following sections, this will help to achieve the SEOs. Many of the more specific mitigation measures may only be prepared as part of the individual ESIAs associated with specific projects within the RBMP. Following are some general orientation points on measures that should be taken to prevent or minimize cumulative impacts.

- Profound ESIA of all activities that can affect protected areas or sites planned to be included in such category
- Finding ways to avoid contamination from oil extraction and/or treatment, ex. by injection of waters with high level of oil remains etc in exploited sites etc.
- Planning and construction of waste water plants considering the population during tourism pik. Reusing of the cleaned waters for agricultural purposes, avoiding overexploitation of groundwaters in coastal areas.
- During the time of planning and construction of waste water plants, applying of natural filters (planting of canebrakes) in existing channels, before discharging in natural water bodies
- Planning and construction solid waste treatment plans, or temporary disposal sites, to avoid pollution by municipal solid wastes, calculating the plant capacity in the period of tourism flux

- Defining and planning of cleaning actions of industrial remains all over the basin, which may affect the basin by free swirling of contaminated soils by water during rainfalls, and discharging of polluted waters in streams and river.
- Preparation of profound action plans for development of sustainable tourism, in bases of expected effects of climate changes, risk analyses, define the restrictions for development of other industries which are not in line with risk analyses (environmental and financial) etc.
- Monitor and control of overusing of pesticides/herbicides in agricultural lands.
- Preparation and implementation of actions for development of small agro-bio industries, in bases of local, regional, national and international market and demands,
- Revising of EIAs and environmental permits for HEC construction, based on present water status and minimal ecological water demand, considering wildlife and fish requirements, agricultural water demands, and nature tourism development. Such studies should be oriented by a cost benefit analyses, considering long term negative effects in natural sources and population/recreation demand, international market of energy, and other options for production and consumption of renewable energy.
- Planting of streams and river valleys with native grass, bushes and where posibile with native trees that are water resistant with tubular roots.
- Preparation of biodiversity risk study and mitigation measures, due to planned activities for water extraction, HPPS dams and other infrastructure construction, to control flood and erosion effects, and include the cost of the mitigation measures in the cost of planned activites for protection and development.
- Preparing a document for risks on cultural assets by effects of climate change, and implementing protection measures

Table 10-1: Summary of Impacts and Mitigation Measures

Topic/Indicator	Possible Impact	Mitigation Measures
Biodiversity – Flora and Fauna	Loss of species through lack of baseline data	Undertake appropriate biodiversity surveys in the Semani RBMP area that may be affected due to new developments within the basin
	Loss of indigenous vegetation due to new constructions that are required under the RBMP	Develop nursery for indigenous plants so that there is wider variety (in terms of maturity) of planting in affected areas and sites designated for planting due to developments under the RBMP.
	Disturbance to natural habitats due to developments resulting from developments planned under RBMP	Careful placement of new works using seasonal working where necessary for rare and sensitive species Always ensure minimum environmental flow in the rivers. Control the discharges of un-cleaned water direct in soils or water courses of Gjanica River
	Potential loss of wetlands, fish spawning areas and fish migration disturbance in rivers	Ensure protection status of remaining wetlands. Control illegal gravel extraction from river beds and river banks Control seasonal flow and water release patters from dams
Population / Human Health	Potential health and safety hazards from noise, dust, lighting, traffic accidents due to busier roads,	Maintain strict health and safety regulations. Ensure noise suppression barriers or tree belts surround new construction developments Use dust suppression (watering) throughout new construction developments Use non-intrusive lighting in operational areas Use traffic calming measures on population prone areas. Fence off hazardous areas
Soils/Land	Loss of land/housing due to infrastructure developments	Use public owned land as much as possible Provision of proper compensation according to legal statutes in force

Topic/Indicator	Possible Impact	Mitigation Measures
	Soil erosion and contamination	Protect topsoil and preserve for any new infrastructure developments Introduce reforestation policy in upper parts of basin to prevent erosion Ensure farmers plough and till across slopes and not up and down slopes Ensure speedy cultivation of exposed areas from new infrastructure developments. Control pollution sources from oil products and unplanned waste disposal
	Sedimentation of reservoirs, lakes and rivers	Revegetate exposed areas. Construct sediment traps/weirs on rivers Undertake sediment dredging routines in reservoirs and channels
Water	Pollution from construction, solid waste, accidental oil spills, wastewater etc.	Organise proper solid waste collection systems Arrange waste recycling Construct WWTPs for urban centres Control water pollution from waters contaminated by oils (this is important in Ballsh area)
	Contamination of groundwater	Establish groundwater protection zones around aquifers used for water supply Control soil and surface water pollution by oils and other wastes
	Flooding of urban low-lying areas	Avoid construction in flood prone areas. Construct appropriate flood defences in urban areas to withstand 500-year events considering climate change
	Improved water resources management function due to RBMP	Increase potential for irrigation, flood control, water supply, eco-tourism.
Air Quality	Dust and fumes during construction of infrastructure associated with RBMP developments	Control dust from any construction developments through wet suppression, reduction in speed limits
	Damage to human health from airborne particulates especially $PM_{2.5}$ and PM_{10}	Prepare detailed program of measures to reduce particulate matter
Climatic Factors	Severe impacts from extreme weather events such as flooding, wild fires and droughts due to climate change	Determine civil emergency measures to mitigate impacts from extreme weather Improve design infrastructure
	Inundation from sea level rise at coast	Improved monitoring of key parameters associated with climate change
Material Assets	Illegal mining of gravel material from river beds that can exacerbate erosion	Stronger enforcement through improved legislation and policing
	Degradation of existing infrastructure in RBMP area	Make improvements to the ancillary infrastructure associated with RBMP developments
	Poor planning of resettlement infrastructure	Ensure new settlements as near as possible to existing ones. Ensure inclusive planning of new social infrastructure.
	Unsightly/vacated buildings in zones earmarked for development.	Ensure proper demolishing of condemned buildings.
Cultural heritage	Loss of prehistoric/archaeological sites that may be important due to lack of baseline knowledge.	Implement chance find safeguard measures as stipulated by GoA and World Bank Undertake appropriate archaeological survey at any known sites of cultural heritage that are threatened due to a change in land use.
	Inundation of burial sites within settlements affected by RBMP developments e.g. HPPs, flood protection schemes etc.	In the unlikely event of any reinterment, to be undertaken in a considerate manner with full discretion and respect of affected families and relatives.
Landscape	Localised visual impacts of completed works associated with the RBMP e.g. flood control barriers, dams etc.	Improve dam profiles Careful decommissioning of construction areas and disposal of waste/spoil Screen works areas with plants that can be adapted to local conditions. Avoid alien/invasive species

Topic/Indicator	Possible Impact	Mitigation Measures
	Impact on natural landscape from loss of trees, vegetation etc. due to RBMP development works	Replace lost trees, revegetate work areas Fence any temporary building areas

10.2.1 Biodiversity – Flora and Fauna Mitigation Strategy

To permanently maintain the natural environment and biodiversity together with flora and fauna, the following mitigation measures should be undertaken:

- Exploitation of existing infrastructure takes precedence over the construction of new infrastructure;
- If activities in a specific environment cannot be avoided, priority should be given to the least influential variants so that wild animal migration is enabled (e.g. through tunnels and other paths) to allow more routes of migration);
- Avoid fragmentation of habitats and species by creating appropriate passages for wildlife should be provided, that are consistent with best European practices.
- Before any new construction is planned, a baseline study should be carried out providing results of any existing studies in summary form. This would facilitate the appropriate integration of a structure into one place (form, size, and arrangement of the object and its surroundings).
- The plans also need to allow for passage of small animals (amphibians, small mammals, reptiles) based on existing studies or, if necessary, additional research.
- Project development should be avoided in areas with precious natural features (PAs) or areas demarcated as Natura 2000.
- The project implementation period should be adjusted according to the life cycles of animals and plants, especially during reproduction, breeding, growth, and wintering; and adapting to plants by facilitating seed production, natural planting and other reproduction formats.
- Respecting the concerns about the life cycles of animals and plants will increase the probability of reaching or maintaining a favorable state of the population. In addition, the opportunities for achieving the target for biodiversity conservation will be higher. Therefore, the spatial intervention of the infrastructure envisaged in the proposed areas for protection should be avoided to prevent potential conflicts and negative impacts in achieving environmental conservation objectives.
- As far as possible, the new infrastructure should not interfere with watercourses and shorelines. Such activities can significantly affect the ecological status and reduce environmental protection.

10.2.2 Population and Human Health Mitigation Strategy

Impacts on population and human health come from pollution of water supplies from solid waste generation, noise and air (dealt with separately under 10.2.5). Any proposed developments around the RBMP undoubtedly carry the consequence of increased generation of quantities of solid waste that can infiltrate into groundwater layers and create pollution. Further, use of hazardous chemicals can also contaminate water supplies and increase risks of carcinogenic diseases some distances away from the point sources of pollution. This poses a risk to human health that needs to be mitigated. Unsightly waste disposal can also detract from tourism and overall economic development.

All EU directives related to contamination dangerous land will be adhered to. Mitigation measures to be envisaged and implemented regarding waste management are as follows:

- Rehabilitation /clean-up of environmental hot spots, urban renewal and reuse of brownfield sites creating green areas of recreational value for the city,
- There is need to designate legal and illegal solid waste areas in the basin.

- Inventory of landfills, as well as prioritization, planning and reporting should be done. Recommendation of institutional arrangements and financial requirements to achieve this.
- Drafting of standardized projects and technical support should be provided for waste areas by the local authorities
- There is a need for sufficient budgets for waste management, that also include the private sector
- There is a need to consider the possibility of setting up a central industrial landfill for storage solid industrial wastes after their treatment with the methods defined by Basel Convention, avoiding depositing on urban landfills
- Need for planning the appropriate areas for the location of the recycling areas, composting, while considering the impact on the environment as a priority.
- There is need to create the right conditions for international donors (especially from EU funds) to finance the necessary infrastructure for appropriate solid waste disposal.
- Need to strengthen the mechanisms for better collection of tariffs and enforcement of penalties.

Noise mitigation measures for human health include:

- Use of construction equipment and machinery manufactured in accordance with noise emission rates from construction machinery, in accordance with the rules on Noise Emissions from Machinery Used in Open and Open comply with the relevant EU directives;
- Proper maintenance of plant, to minimize the noise generated by the operations on ground, and in all cases, in accordance with Albanian rules;
- Construction sites and transport routes should be solved in such a way
- Acoustic pollution from the transport machinery, operation of the equipment on the site and construction of buildings, not exceeding limit values in nearby buildings;
- Any plant, such as generators or pumps, that is needed for use after official working hours, will be surrounded by an acoustic barrier or portable deflector
- Implement temporary measures to protect populated areas from noise near construction sites and transport routes where threshold values have been exceeded.
- Respect of time limits for construction near populated areas;
- The public and residents of the area will be informed in advance when they are carried out works that emit considerable noise;
- No machinery or equipment will be used on the works site that raises public concern due to noise
- Reduced noise from its sources can be achieved mainly through the modernization of equipment in use, reorganization of traffic flows and delivery schedules, infrastructure interventions, etc. The NSDI II goal regarding noise values in 2020 is to reach the target of minimum of 56 dB / day and 45 dB / night.
- Measures to prevent the diffusion of noise into the environment (noise barriers / embankments and passive protection) are mainly used to protect the environment from noise caused by the transport sector. The measures are mainly suitable for the protection of areas with a high population density along the road network,

10.2.3 Soils and Land Mitigation Strategy

Any construction because of the RBMP may cause extensive permanent impacts in the change of land use. Therefore, it is important when planning infrastructure integration into the environment, that sustainable land management and environmental protection are guaranteed.

Control discharges from oil refinery in Gjanica river body, and cleaning of soils contaminated by oil in the past, remains crucial for improvement of Semani River Basin.

Activities on agricultural and forest land should be reduced to the lowest level possible, and high priority should be given to planning activities on the ground with poor production potential, and land outside dense forest areas or forest areas with important functions. Any new infrastructure should be developed in a way that landslide risks are kept to a minimum.

A policy of recycling on the use of natural resources should be employed. This should be supplemented with guidelines to promote recycling and reuse of construction waste in the construction or the reconstruction of new infrastructure.

Works on polluted soils should be treated in a different manner. If detected then they should be removed and an artificial, geomembrane, clay layer, must be placed which should be planted grass and tree. This artificial land should also cover contaminated surfaces that will not be moved. Any polluted materials (soils and waste) should be removed and deposited/buried in pre-allocated places that are completely isolated from groundwater.

In coastal areas where there is likelihood of wave erosion and sediment movement there is need to ensure protection using light and temporary barriers like filling sand bags, protection via wood and textile technology etc. In sites that infrastructure or facilities are in risk of erosion, stabilization of embankments through selection of less erodible material (e.g. gabions, large boulders), especially around bridge buttresses should be implemented. Discharges and exits from drains or culverts must have broken stones laid down to reduce erosion especially when installed near road formations. Where exposed swards are provided they need to be stabilized before the start of seasonal rains.

Reforestation of River valleys remain a crucial step for erosion control.

10.2.4 Water Mitigation Strategy

Construction of infrastructure within the Semani River Basin need to ensure there is no pressure or limited pressure exerted on water resources and thus prevent negative impacts on water quality (especially for drinking water). Any new developments within the basin should avoid completely flood prone of erosion prone areas. If construction of infrastructure in such areas is unavoidable, then there must be evidence that the level of flood risk will not grow.

When planning interventions in extremely high-risk areas, with productive aquifers present, it is necessary to study and plan solutions with appropriate technical measures to prevent negative impacts during construction and exploitation, as well and in case of extraordinary events (e.g. accidental leakage of hazardous substances).

If the implementation of a specific project will significantly affect an aquifer, during the design of the project documentation a groundwater damage assessment should be made. Appropriate technical solutions should be planned to prevent negative impacts on bathing water, during construction phases and infrastructure utilization, as well as in cases of exceptional occurrences (e.g. spills of hazardous substances).

Impact of pollution can be avoided by adopting good management practices, such as:

- Preventing deposit of harmful products at distances less than 50 m from the river banks
- Storage facilities should be enclosed and covered to prevent contamination;
- Side channels will be built before the actual road construction, to prevent it pouring of road leaks during construction, in the river, or drainage channels;
- Casting of concrete should be done using the appropriate armor for it avoid contamination;
- When discharging water from a site the outflow rate into a river should be controlled, so that it does not cause local flooding in the water course or erosion;

- In case of serious spillage of chemicals or liquids during construction, a program of measures for surface and groundwater must be developed. Taking in situ groundwater measurements covering pH, turbidity and electrical conductivity should be made and analyzed in accordance with Albanian legislation.
- An emergency action plan should be prepared to control the discharges of old contaminated by oil in Gjanica river body.
- An action plan should by also prepared and implemented for cleaning of soils/lands polluted by historical discharges of remains from oil refinery activities.
- Impacts in water quality may be avoided by control of overexploitation for energy production by small hydropower plants and agriculture use.
- Additional studies should be done to reconsider the minimum ecological equilibrium for the planned and approved HECs, that hasn't start yet the implementation.
- A cost benefit analyses should be done for proposed HECs to consider the incomes and benefits from them and negative impacts in agriculture, micro-climate, tourism potentials, international market etc.

10.2.5 Air Quality Mitigation Strategy

General guidelines and mitigation measures in the areas of excessive air pollution, need to consider the Albanian NSDI II objectives and the allowed emission standards, defined by the EU, WHO and relevant Albanian legislation. A detailed program of measures to reduce particulate matter pollution should be prepared for problem areas associated with any PM_{10} and $PM_{2.5}$ emissions. Priority in the selection procedure should be given to the variants that offer the greatest improvement in ambient air quality. Continuation and increasing monitoring programs of all air emissions should be encouraged, especially in urban areas. Consideration to the use of low emission public transportation vehicles.

10.2.6 Climatic Factors Mitigation Strategy

General guidelines and mitigation measures regarding climate change need to consider the targets set in the Albanian NSDI II up to the year 2020 for reducing carbon emissions. The strategy needs to consider the protocols for determining civil emergency measures to avoid or mitigate impacts from extreme weather conditions. It needs to define the criteria and policies for the introduction of contemporary technologies in agriculture as well as the best practices of organic farming. There is a need to integrate climate change issues into the political and legal framework by specifying the institutions and responsibilities for identifying, implementing and monitoring mitigation / adaptation measures to climate change.

In terms of climate change adaptation, specific plans and projects should be designed in such a way as to ensure us of effective resources that predicts the envisaged sensitivity of the infrastructure to climate change, natural disasters and anthropogenic disasters which should be recorded properly. Hence when new infrastructure is planned, full risk assessments should be undertaken so that better resilience of the infrastructure to climate change can be made especially regarding precipitation, flooding, high temperatures and heat waves, droughts, sea level increases and storms.

10.2.7 Material Assets Mitigation Strategy

General guidelines and mitigation measures for new infrastructure developments are expected to generate an increase in noise levels in the surrounding environment. To avoid one the deterioration of the environment where living in the area around these developments, this fact should be kept in mind when it comes to verification of development opportunities at later stages, in the context of securing a multimodal connection to the surrounding region.

Specific projects should also focus on ensuring that new infrastructure is put in place available to all users. This is expected to encourage active involvement community within infrastructure systems, to make it more accessible to all layers and social categories. When new policies and projects are planned, priority should be given to

improving ties and development in less developed areas. Implementation of projects of this nature will improve access, and thus contribute to faster economic development in less developed areas in terms of illegal gravel and quarrying activity within the basin, there is a need for stronger enforcement through legislation and policing.

10.2.8 Cultural Heritage Mitigation Strategy

The development of the envisaged infrastructure could affect cultural units and areas, particularly in terms of degradation of landscape characteristics of suburban areas cultural heritage, damage to cultural heritage sites as well as destruction of archaeological remains by vibrations during the construction of objects that can to cause damage to cultural heritage sites. To avoid these impacts, the following should be considered:

- The priority is not setting up new infrastructure in cultural heritage areas. The integrity and the features of cultural landscapes, areas of influence, must be preserved architectural heritage and archaeological remains.
- In the framework of preserving archaeological remains, environmental activities are considered acts destructive (e.g. digging). There will have to be a lot of preliminary research archaeological, whose results will have to be considered when determined setting up new infrastructure. It will also be necessary to apply conservation measures archeological remains.
- Findings of great importance may require a change of preparatory work (project) for a task. in case of detection of findings or residues archaeological site, the relevant authority shall immediately be notified. The area will then be studied and possibly encircled; not allowing any further development in that area until the issue is resolved in accordance with established procedures

In cases where archeological sites may be jeopardized by construction activities, the site will be protected to prevent unintended damage or the like resulting in neglect of archeology.

- By integrating the envisaged infrastructure into the infrastructure, the improvements inside existing corridors or structures have priority over new constructions.
- All construction work will be limited within the works corridor. In case that more space or activity related to building outside the corridor is needed the relevant national authorities shall be informed in advance

10.2.9 Landscape Mitigation Strategy

In cases where the specific project overlaps with any existing agricultural or rural landscape, an approach should be pursued aimed at protecting rural and residential values and enrichment of landscape along the sides of the road. The objectives of the strategy should be to:

- Develop a landscape whose characteristics relate to the model, scale, and scale diversity of existing landscape characteristics;
- Minimize visual interference and minimize the negative nature of any obstacles visual; and
- To protect, restore or enlarge the existing landscape elements, directly affected by the proposal.

10.2.10 Mitigation Strategy from HPPs

A very important mitigatioin strategy should be focused on impacts caused or may caused by existing HPPs or others planned and approved for construction in the table below are given same guidelines for mitigation strategy by HPPs operation. As it is mentioned in above chapters, a specific study should be required for re-assessment of effects of HPPs considering also, health, recreation and economical effects, cost benefit analyses, other energy production alternatives, energy market in the region etc.

Table 10-2: Summary of Impacts and Mitigation Measures

Impacts and their sources	Effects in human health, assets and infrastructure and natural environments	Effects in recreation and tourism activities	Mitigation measures
Inciting coastal erosion by trapping sediments in dams Fragmentation of fish habitats and changes in natural habitats (from running waters to stagnant waters (artificial reservoirs and lakes) by bulding of and operation of dams.	Risk of coastal infrastructure, Damage of natural forests Damage native species of woldlife and incite introducing of new ones.	Reduce tourism and recreation potentials by advancement of the sea and reduce of sand surface Damage nature tourism and education potentials	Open paths for free water flow during all year. Build of control doors to block such paths and discharges waters in artificial lakes in case of atmospheric events in western part Start applying of light coastal protection, with free filling with sand, send bags or wood and textiles out the period of sea sun tourism, every year in eroded areas
Risking by floods of western sites by discharging of reservoir/lakes in period of atmospheric events	Damage and destroy human assets and infrastructure Distribution of wastes washed during floods in solid waste disposals and wastewater collectors	Damage economical, cultural and recreational human assets. Damage inland fauna and flora, overall carnivores and inland birds nests	Well management of Dams and reservoirs to consider the flood risks. Cleaning up of the sediments in artificial reservoirs/lakes to increase reservoir capacity and re-establish the reservoir capacities. Define the need sources for energy and contract with energy importers to ensure the needed energy during rehabilitation of existing reservoirs Planting of resilient trees and vegetation in coastal sites Review the construction of HPPs considering also side effects in health and economy
Risk of braking of dams by overfilling of reservoirs with waters, which will be joined by catactrophic events expressed in floods in lower areas			

Reduce surface water use for agricultural purposes	Damage agricultural pollution	Reduce incomes by agro-bio-tourism	Leaving of free waters in natural streams used for also for irrigation Review the construction of HPPs considering also side effects in health and economy
Changes in micro climate by passing of waters in pipes, reduction of evaporation and increase of temperatures during the summer	Damage of human health, agricultural production, and inciting energy use for colling of houses etc.	Reduce tourism and recreation activities during heat waves.	Planting of resilient vegetation to decrease extreme heating of soils and lower air Review the construction of HPPs considering also side effects in health and economy

11 MONITORING OF ENVIRONMENTAL IMPACTS

SEA Law 91/2013 clause 2 (l) requires that the SEA Report address "a description of the measures envisaged for monitoring the effects on the environment during the implementation of the proposal ". These details are provided in this chapter.

Monitoring of impacts is extremely important for the implementation of the RBMP and must be in accordance with Law 91/2013 and Directive 2001/42 /EC. Such monitoring must be undertaken thoroughly to identify unanticipated negative effects, at an early stage to make mitigation and adaptation possible.

11.1 MONITORING PROPOSED WITHIN THE RBMP

Monitoring requirements under the EU WFD have meant that the Law on Integrated Water Resource Management amended by Law No. 6/2018 on some amendments and additions to Law No. 111/2012 “on the Integrated Water Resources Management”, has given the Water Resources Management Agency (WRMA) the primary responsibility for designing Water Monitoring Programmes for river basins. The Law also gives the River Basin Councils the primary responsibility for implementing the Water Monitoring Programmes in compliance with the WFD at the basin level. Consequently, both WRMA and the RBCs are the key monitoring institutions for surface and groundwater monitoring for the Semani River Basin. The National Environmental Agency monitors water at the national level.

Present monitoring undertaken within the Semani Basin is woefully inadequate and needs substantial improvement to meet the WFD standards.

11.1.1 Surface Water Monitoring

The assessment of water quality in surface is based on analysis of the existing water quality database. This includes the identification of causes of water quality problems, including issues of industrial and agricultural pollution, and upper catchments degradation caused by erosion and sediment load into the basin. Table 11-1 below provides monitoring results for stations within the Semani Basin

Table 11-1: The monitoring stations and results for 2015 for the Semani River Basin

Code	Stations	O_2	BOD_5	NH_4	NO_2	NO_3	P-Total	Class
Dv1	L.Devoll, Kozare	8.7	16.0	0.425	0.003	0.47	0.039	IV
Os2	L.Osum, Uznove	9.2	5.3	0.076	0.005	0.30	0.031	III
Os3	L.Osum, Ura Vajgurore	8.1	8.3	0.326	0.010	0.37	0.037	IV
Gj4	L.Gjanice	4.5	19.3	0.793	0.066	1.26	0.072	V
Se1	L.Seman, Mbrostar	8.1	4.8	0.264	0.001	0.77	0.073	III
Se2	L.Seman, Mujalli	7.5	5.0	0.210	0.011	0.84	0.050	III
EQS[6]	Class III (Moderate)	>5	<7	<0.6	<0.12	<4	<0.2	
EQS	Class II (Good)	>6	<3.5	<0.3	<0.06	<2	<0.1	

Specifically, there is sufficient dissolved oxygen (DO) to sustain aquatic life (above 5 mg/l) in the Semani water in all stations except for the Gjanica River in Fier, which indicates signs of an anoxic section of the river. The highest concentration of DO is measured in Uznove, Osumi River. A gradual decrease in DO is noted from Devoll to Gjanice, which is then followed by an increase in Semani/Mbrostar. The water at Semani/Mujalli indicates the lowest DO concentration, although still within the EQSs.

The level of BOD5 indicates waters with moderate quality (Class III) in Uznove, Mbrostar and Mujalli. The water quality deteriorates further in the rest of the stations, in Gjanice, Devoll and Ure Vajgurore, where the BOD5 levels indicate waters of poor and very poor quality having BOD5 concentrations above 7mg/l. Significantly high

[6] AKM 2015, State of the Environment Report, 2015

concentrations of BOD5 in Semani River clearly indicates the presence of industrial and municipality wastewater discharges along all sections of Semani River Basin. The most severe levels were recorded at the Gjanica and Devoll river stations.

NH4 concentration is also high in the river, showing traces of pollution from fertilizers, industrial and urban wastewater, landfill and animal wastes. Ammonia nitrogen concentrations reach the highest levels in Gjanica River and Devoll. Only the monitoring stations at Mbrostar and Mujalli indicate water of good quality. As for nitrate, the concentration increases gradually from Devoll reaching the highest peak in Gjanica River. The other monitoring stations indicate good water quality. Nitrate and total Phosphorus measured in the river basin are within the EQSs.

In summary, the monitoring data of the Semani River Basin for the year 2015 indicate a river with 'moderate to poor' and 'very poor' water quality. The presence of high levels of nitrates, BOD5 and low levels of oxygen in some stations indicate pollution caused by discharges from municipality wastewater, industrial effluents, agricultural run-off, animal discharge, etc. The most affected rivers are Gjanica, Devoll and then Osumi, which raises concerns about the ability of these rivers to sustain aquatic life.

The WFD requires Albania to establish a surface water monitoring network that provides a coherent and comprehensive overview of ecological and chemical status in the Semani Basin. The ecological status of water bodies in a River Basin is defined based on biological, hydro-morphological and general physical-chemical quality elements.

The primary objectives of the Semani River Basin monitoring programme are the following:

- Collect physical-chemical, hydro-morphological and biological data to determine water quality status to assess the degree it supports aquatic life;
- Collect physical-chemical, hydro-morphological and biological data to support an analysis and development of the Programme of Measures and the development of the water monitoring programme in the coming years;
- Collect physical-chemical, hydro-morphological and biological data over the long term to determine trends in water quality that could also support programmes of measures and the Monitoring Programme;
- Identify point source and diffuse source pollution to support protecting measures;
- Measure the effectiveness of the Programme of Measures to improve water quality in the coming six years (the normal cycle for RBMP).

The proposed surface water monitoring for the Semani Basin is based on three priorities as shown in Figure 11-1 below.

High priority: Priority 1 stations need to be monitored because they are the most important stations. They are mainly located downstream of centres of high human activity. Most of these stations have several consecutive years of data. The proposed date of monitoring commencement is 2020;

Medium priority: Priority 2 stations need to be added to the monitoring network to provide comparable data to measure pollutant impact assessment; and

Low priority (Reference Conditions): Priority 3 stations are included in the monitoring network to identify the overall quality status of water bodies and include relatively unimpacted waters and comply with WFD requirements.

It is to be underlined that 2 additional analyses should be carried out in Gjanica and lower part of Semani, related to pollution from oil (PCBs and PAH).

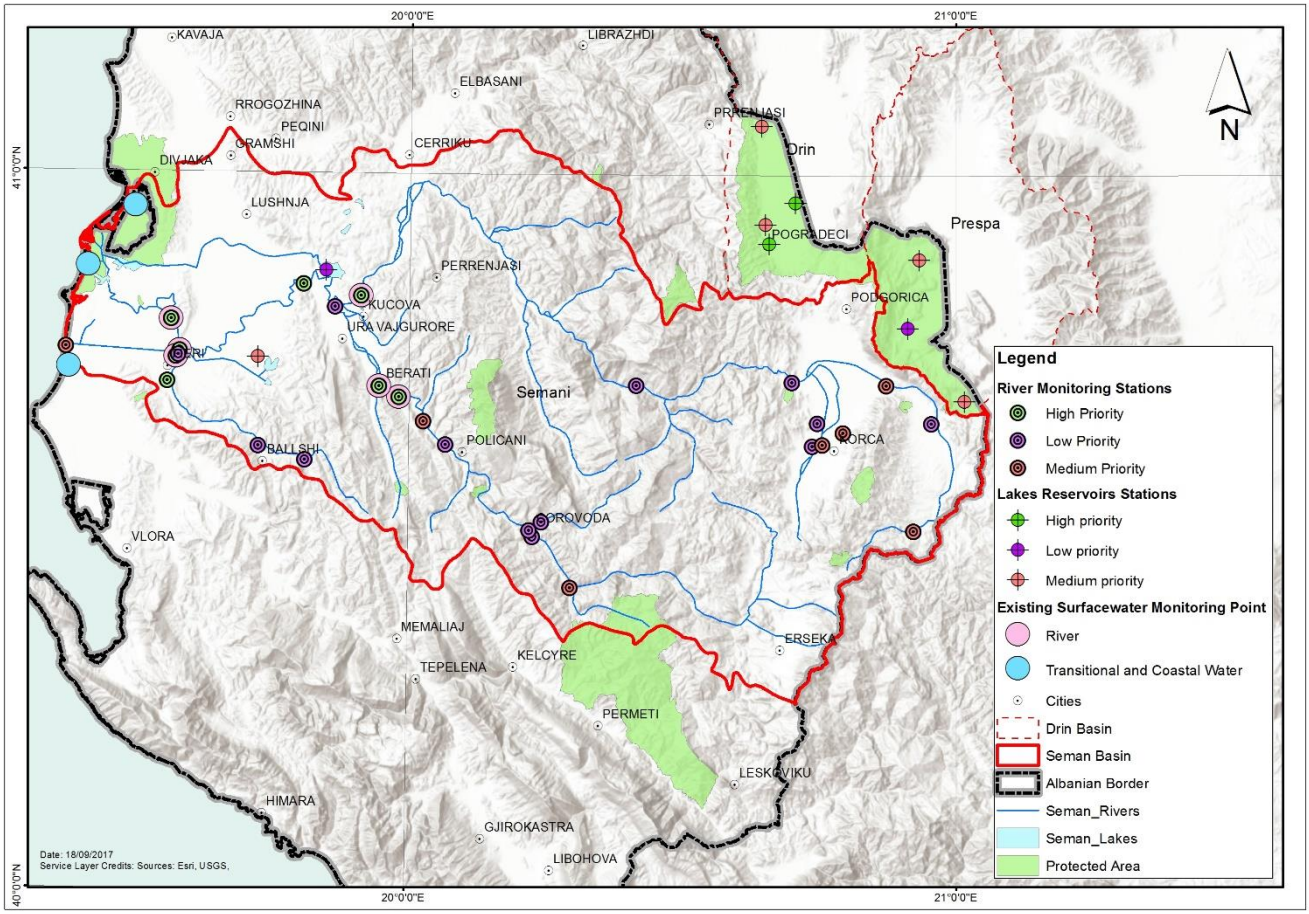


Figure 11-1: Proposed surface water monitoring sites in the Semani River Basin

11.1.2 Groundwater Monitoring

The groundwater monitoring in the Semani River Basin is based on the national monitoring network. This serves as the basis for future monitoring of groundwater bodies in the River Basin, although it requires adjustments to meet WFD requirement. As part of the National Monitoring Programme, groundwater monitoring in the Semani River basin includes 8 monitoring stations for physical-chemical parameters and 5 monitoring stations for the hydrodynamic parameters.

A monitoring system should be implemented to evaluate the groundwater contamination from the remains of oil refinery and its evolution before and after control/cleaning action plans are implemented.

11.1.3 Criteria for Monitoring Points

The criteria for selecting monitoring points have been modified to meet the needs of the Semani River Basin, to be able to provide an assessment of the overall surface water and groundwater status. Several criteria have been identified that are principally based on the need to protect human health and environment.

In this SEA, a system of monitoring of the main environmental impacts has been prepared that are expected to be caused by the implementation of the RBMP. These impacts have been identified during the evaluation of the environmental impacts of the RBMP (see Chapter 8). The monitoring system includes all indicators relevant for each environmental segment (e.g. biodiversity, air quality, climate change, land, water, landscape, cultural

heritage, etc.) and identifies the authority and responsibility for measuring any proposed environmental indicators.

Data collection is suggested to rely on two sources:

- Data obtained from the measurement of the environmental parameters;
- Evaluation of environmental indicators.

The process of data collection through measurements can be accomplished by including Regional Authorities (Qarks), but also State Institutions (MoTE), Local Government, scientific and professional research institutions as well as public utilities (landfill, water supply - sewerage, etc.).

The evaluation and measuring of environmental indicator is a complex process; it is a process that is performed regularly and for the most part on an ongoing basis.

From this point of view, we must rely on experience and monitoring systems used by other structures, emphasizing, on the one hand, monitoring the implementation of necessary measurement standards from other structures, and mainly from operators (through their involvement in the process of issuing relevant environmental permits), and on the other hand, focusing on the process of collecting, processing and distributing data.

Regional authorities should play a key role in the administration and data distribution process. In this context, the relevant authorities should operate as a collection centre, for analysis and dissemination of information. Specifically, the role of Regional Authorities should include the following:

- Collecting data from measurements carried out by public and private sector whether on a permanent or temporary basis,
- Collection of basic data that is undertaken by public utilities (e.g. landfills, water supply and sewerage, OSHEE, protected area management structures, etc.).
- Obtaining basic data collected by the public administration
- Obtaining basic data collected by scientific and research institutions or other organizations.
- Analysis and synthesis of data, to draw conclusions on the environmental situation within a given area.
- Setting the time periods for monitoring purposes
- Distribution of data through relevant reports, in accordance with the appropriate legislation in force.

The SEA report therefore aims at:

- Meet the requirements of legislation,
- Inform the parties involved in the planning and monitoring process for implementation of the RBMP (decision makers),
- Inform the public affected by the RBMP.

The table below presents the proposed Environmental Monitoring Program of the RBMP. The table is compiled according to the following environmental sectors:

- Biodiversity
- Population
- Health of people
- Fauna
- Flora

- Land
- Water
- Air
- Climatic factors
- Material assets
- Cultural heritage (including architectural and archaeological heritage)
- Landscape
- Links between these environmental sectors

For each environmental sector, relevant monitoring indicator, the structures responsible for monitoring, the environmental parameters and the monitoring frequency are provided.

As previously mentioned above, it is emphasized that monitoring the impacts of the EMP will be undertaken, where possible, using data deriving from:

- The existing environmental monitoring system from the MOTE or other institutions. Some parameters that are measured and have data available are:
  - Air quality (pollution level),
  - Water quality (surface water, groundwater, bathing water at the coast).
- Special and independent studies to identify environmental impacts within the framework of other programs or projects.
- Reports prepared by different contractors / consultants that may contain raw data obtained from specific EIA projects funded by the State budget or foreign donors concerning developments in the Basin.

Table 11-2: Environmental Monitoring Program for RBMP Semani Basin

No	Topic	Indicators	Monitoring Authority	Parameter to be monitored	Monitoring Frequency
1	Biodiversity – flora and fauna	1.Habitat types and their surface, distribution, 2.Flora/vegetation species per family/class 3.Fauna species per each class 4.Protected Areas 5. Consumable activities 6.Farm animals 7.Agricultural crops, fruit trees etc.	1.Ministry of Tourism and Environment 2.University of Natural Sciences, Faculty of Biology, 3.Natinal Agency of Protected Areas. Regional Directorate of Protected Areas 4Regional Environmental Inspectorates 5.Ministry of Agriculture 6. Regional Directorates of Agriculture in Municipalities	1. Specific Habitats, their changes and status according Albanian Red Book 2. Flora and fauna for systematic group, 3. General no. and distribution of species with specific status (in %) according Word, European and Albanian Red list 4. Changes in population of species with international/local experience 5. Size (in ha.) and distribution, changes during the time of PAs, and their evolution according Albanian Legislation and Programs for PAs, international conventions, EU Directives, 6. Change of animal migration tracks 7. Regional Development Plans and related SEAs. 8. Illegal activities and consumable activities (Fishing and hunting) 9. Breeds of farms animals, number, autochthon breeds and introduced ones etc.	Habitats – every year Flora/vegetation and fauna – every season and yearly reports
2	Population – health and people	1. Significant demographic Indicators 2. Significant health and socio-economic indicators 3. Gender 3. Waste management	1. Regional and Albania INSTAT Ministry of Health Institute of Public Health and 2. Regional Directorates of Hygiene 3. Municipalities 4. Regional Environmental Inspectorates	1. Changes on population no. and migration, ratio of birth/deaths, gender ratio, incomes, occupation and poverty structured by gender, size and composition of labor force, changes in public services, changes on indicators of vulnerable population, minorities, and other vulnerable population etc. 2. Changes on population health status, health services, education and education institutions all those structured in gender. 3. Changes on social/economical and demographical status of women, women households, etc. 4. Solid waste illegal dumping, operation of solid disposal sites, solid waste transport, characterization of solid wastes generation and management (municipal (waste/capita) and industrial remains, recycling capacities and market of recycled materials), 5. Waste water management, discharges, and functioning of existing waste water networks.	Yearly
3	Land	1.Land use 2.Loss of soils and lands 3.Land quality	1. Municipalities 2. Ministry of Tourism and Environment 3. Ministry of Agriculture and rural development 4. Regional Environmental Directorates and National Environmental Agency 5. National Agency of Territorial Planning 6. Albanian Geological Service	1. Changes on land use and land structure, territorial development, infrastructure etc. 2. Erosion and landslides activity 3. Level of use of pesticides/herbicides, pH, Conductivity, N, P, K, 4. Land pollution by organic and inorganic elements, track elements, inorganic dissolvable elements, Organic matter, total organic Carbon, etc. 5. Texture, permeability, geomorphology, temperature, water capability etc.	Yearly
4	Water	1. Surface Water quantity and quality a. Running waters, b. Lake and reservoirs c. Coastal waters and lagoons 2. Ground Water quantity and quality a. Aquifers and other groundwaters resources	1. National Agency for Water Resources 2. Institute of Geology, Environment, Waters and Meteorology 3. National Environmental Agency 4. National Environmental Inspectorate 5. Regional Environmental Agencies and Inspectorates, 6. Municipalities 7. Institute of Public Health 8. Albanian Geological Service	1.Surface Waters a. Changes on hydrodynamics (discharges and flows, velocity, level etc. of river streams and channels etc.), Physical parameters; TDS, TSS, smell, color etc. Chemical Inorganic parameters like Mg, $CaCO_3$, As, Cu, Mn, Cd, Ni, Zn, Pb, TBT, conductivity, pH, salinity, COD, BOD, hardness (mg $CaCO_l$/ml), and Ammonium, Nitrates, Nitrites, Organic Azot, Phosphates, Phosphorous and absorbed Silica. b.Organic parameters like PCBs, PAH, pesticides, herbicides, biological indicators etc. c. Algae, Phytoplankton and Chlorophyll, Conductivity, salinity, total dissolved solids, Dissolved oxygen, pH, E Coli and other microbiologic parameters, heavy metals and organic matter, pesticides/herbicides.	Seasonally

No	Topic	Indicators	Monitoring Authority	Parameter to be monitored	Monitoring Frequency
				2. Ground water (a) Main cations and anions: K, Na, Mg, Ca, Fe, NH4, HCO3, Cl, SO4, NO3, NO2, PAH etc. Physical proprieties; pH, T, Specific conductivity Groundwater level	
5	Air	1. Physical Indicators 2. Chemical indicators	1. Institute of Geology, Environment, Waters and Meteorology 2. National Environmental Agency	1. $PM^{10-2.5}$, main direction, frequency and velocity etc. 2. Inorganic matter (Pb, Cd, As, Zn, Fe, Mg etc.) 3. Organic matter like gases; CO, NO_X, O_3, SO_2, and other indicators like Benzene, toluene, ethyl-benzene, Xylene-BTEX, VOC, PAH and PCBs, etc.	Seasonally
6	Climate	1. Hydro-Meteorological indicators 2. Land indicators, - Climate change 3. Biological indicators – Climate change 4. Disasters – Climate change	3.National Environmental Agency 4.Environmental and Tourism Ministry 5.Agricultural and Rural 6. Development Ministry 7.Institute of Public Health 8. Ministry of Defence	1. Changes on water resources (surface and groundwaters), water temperatures and evaporation, air temperatures, humidity, dry, wind parameters, albedo and solar radiation etc. 2.Loose on land and changes on inland and wetland surfaces 3. Evaluation of results from biodiversity monitoring of changes on biodiversity (migration tracks, and change on population ratio, distribution of indicator species etc.) 4. Floods, fires and dry events and changes during the time	<u>Climate</u> 1. Hydrometeorological indicators - Daily <u>Climate change indicators</u> 2. land indicators-Yearly 3. Bio-indicators - Assessment of changes every 5 years 4. Floods, 2/year Winter/Spring Fires and dry 1/year (Summer season) Hydrometeorological indicators – Yearly
7	Material Assets	1.Natural Sources 2.Constructions 3.Infrastructure 4.Facilities	Municipalities	1. Risks or damage of mines, water and mineral and energy sources, woodlands planned for timber or fire wood, etc. 2. Buildings, settlement, service centers, etc. 3. Road net, electric net, Dams, drinking water and sewage net, disposal sites, irrigation and draining systems, Soil and land protection works/tools. 4. Vehicles, markets, warehouses, park cars, etc.	Yearly
8	Cultural Heritage	Historical assets Cultural assets Recreational Assets	1. Municipalities, 2. Ministry of Culture 3. Ministry of Education 4. Institute of Cultural monuments 5. Regional agencies of cultural monuments, 6. Agency of Archaeological Service 7. Regional Agencies of Archaeology 8. National Center for Inventory of Cultural Assets	1. Museums, archaeological and historical monuments and other assets, like ancient constructions and roads etc. 2. Traditional libraries, religious assets, Theatres etc. 3. Recreational facilities based on traditions like stadia, sport palaces, recreative parks etc.	Yearly
9	Landscape	1.Natural landscape 2.Traditional 3. recreational landscapes, 4.Manmade specific landscapes 5.Well managed landscapes	Municipalities	1. Beautiful landscapes, not affected by intensive human activities, 2. Recreational sites where applied traditional recreation activities 3. Recreational open sites and territories 4. Manmade parks or decorative gardens. 5. Landscapes changed successfully from man by amelioration of topography, increasing or providing the green cover, etc.	Yearly

11.2 ORGANISATION OF THE MONITORING

The implementation of the RBMP for Semani River Basin will need to be monitored responsibly.

Current responsibility for monitoring of indicators is split between many different stakeholders at the national and at the municipal level. There will be a need to get answers to the following questions:

- Do the monitoring agencies have a budget for monitoring activities?
- Will the investors for any developments within the RBMP be responsible for funding monitoring?
- Should the costs for monitoring be included in any tenders for RBMP developments?
- Will the monitoring be outsourced to a private company?
- Who will be responsible for monitoring social indicators?

12 NON-TECHNICAL SUMMARY OF THE SEA REPORT

SEA Law 91/2013 clause 2 (m) requires "a non-technical summary of the SEA's preliminary report". These details are provided in this chapter.

This is a non-technical summary of the environmental report for the Semani River Basin Management Plan. The environmental report presents the results of a strategic environmental assessment (SEA) carried out as part of the preparation of the RBMP. The environmental report and this non-technical summary are required to be published with the draft RBMP, in order that people can understand and comment on how the environmental effects should be considered in the development of the final RBMP. The final RBMP for Semani will be published after the Environmental Report and SEA are approved by the Government of Albania.

12.1 THE SEMANI RBMP

The Preparation of a River Basin Management Plan (RBMP) for the Semani River Basin is part of the institutional support for Integrated Water Resources Management (IWRM) component of the Albania Water Resources and Irrigation Project (WRIP). The WRIP is financed by the World Bank, the Swedish International Development Cooperation Agency (Sida) and the Government of Albania and is designed to lay the foundations for more rational and accountable water resources management.

In developing a RBMP, it is necessary to recognize that Albania is a candidate for membership of the European Union (EU) and that the EU has specific requirements for such a plan. The RBMP has been developed in line with the requirement of the EU Water Framework Directive (2000/60/EC) (WFD). The WFD is the main EU legislation which member states and aspiring member states need to adhere to to protect and improve the water environment. To meet these requirements the MARD have published the draft Semani RBMP that set out the actions required to bring inland surface, groundwater and coastal waters where the Semani River exits to the Adriatic Sea to agreed quality standards.

The following information has been detailed in the Semani RBMP and arranged according to the general requirements of Annex VII of the EU WFD. This includes:

- A description of the legal acts governing the water management in the Semani River Basin.
- A description of the general characterization of the River Basin, which includes a description of the surface waters and delineation of the catchments using the DHI MIKE HYDRO Basin model, the Corine landcover, and the impact of climate effects on the current and future water balance of the basin.
- A summary of the significant pressures on the River Basin, which includes impacts of pollution to surface waters and groundwaters from agriculture, erosion, hydropower plants and solid waste. This section also includes the model results, which provide estimates of the present and future consumptive water demands by the main water using sectors, including irrigation, and estimates of river flow requirements for the non-consumptive use as hydropower.
- The identification of the Protected Areas in the River Basin detailing areas for the abstraction of water intended for human consumption, the protection of economically significant aquatic species, recreational and bathing Waters, and the protection of habitats or species.
- A plan of action for monitoring of surface and groundwaters according to the requirements of the WFD.
- A summary of the status of surface waters and groundwaters in the river basin based on available data.
- The status of the water infrastructure in the River Basin in terms of water and wastewater treatment, irrigation and hydropower.
- The historical and current situation with regards to floods in the Basin, which provides an analysis of the gaps required to bring about effective flood management together with recommendations to meet the requirements of the EU Floods Directive.
- The designation of Environmental Objectives (EOs), together with a list of actions and measurable indicators, that are required to be carried out to achieve the EOs.

- An economic analysis of water use, trend projections, water and wastewater service costs and the current cost recovery of water services in the basin.
- A proposal for the Programme of Measures (PoMs) required in the River Basin to meet the EOs. The PoMs are divided into of 'basic' and 'supplementary' measures, which are, in the absence of determination of ecological status, based on components of the National Sectoral Water Plan relevant to the River Basin.
- A summary of the training and capacity building held for the Administration Office of Basin Water (former River Basin Agency) and Ministry staff involved in the management of waters and identifies the key issues via consultations with a wide range of Stakeholder groups in the River Basin.

The PoMs have been developed directly in line with the RBMPs own Environmental Objectives (Eos) reflecting the seven distinct categories of the EOs, each of which is inclusive of 'basic' and 'supplementary' measures as follows:

- To promote the sustainable use of water resources, their fair distribution among users, maximizing economic benefits in respect of environmental conditions and sustainable management principles
- Preservation and achievement of minimal "good" ecological and chemical status for surface water bodies that have "less than good", "poor" or "very poor" status. (rivers, lakes, transitional / transitional waters, coastal, artificial and highly modified water bodies
- Prevention of pollution to avoid a deterioration of groundwater quality and to attain a good chemical status in groundwater bodies
- Preservation and achievement of minimal "good" quality for bathing water (internal, coastal and transitional)
- Reduction of flood risk and losses for life, livelihoods, health, economy, cultural and environmental assets of persons, businesses and communities
- Improvement of the safety of irrigation dams
- Preservation and/or reduction of the rate of erosion in rivers

To mitigate current and future problems in the River Basin, an action plan is proposed for the implementation of the PoM in the Semani River Basin from 2018-2030. The action plan is required for the main and supporting institutions to cooperate and coordinate resources to achieve effective water management in the Semani River Basin in the future. The PoM is also developed with an orientation for gender mainstreaming in line with the requirement of Law No. 9970/2007 on gender equality in society.

The total cost for the implementation of the PoM for the Semani River Basin is €512,700,000 with approximately 11% of these costs attributed to 'supplementary' measures. These costs will then be revisited at the end of six years, the intended cycle for the RBMP before it is updated, which is another requirement of the WFD and aligned with the national water strategy. The final RBMP will need to consider the affordability of the PoM and set out the longer-term objectives for the water environment that are not affordable now but may be in future planning cycles. As a plan to improve the water environment, its effects on people and the wider environment are expected to be positive, but the SEA process ensures intended or unintended consequences for people and the wider environment are considered.

12.2 THE SEMANI RIVER BASIN

The project area for this assignment is essentially the Semani river basin in the central part of Albania. It is the third largest of Albania's six main river basins, stretching across Berat, Fier, Elbasan and Korça Districts.

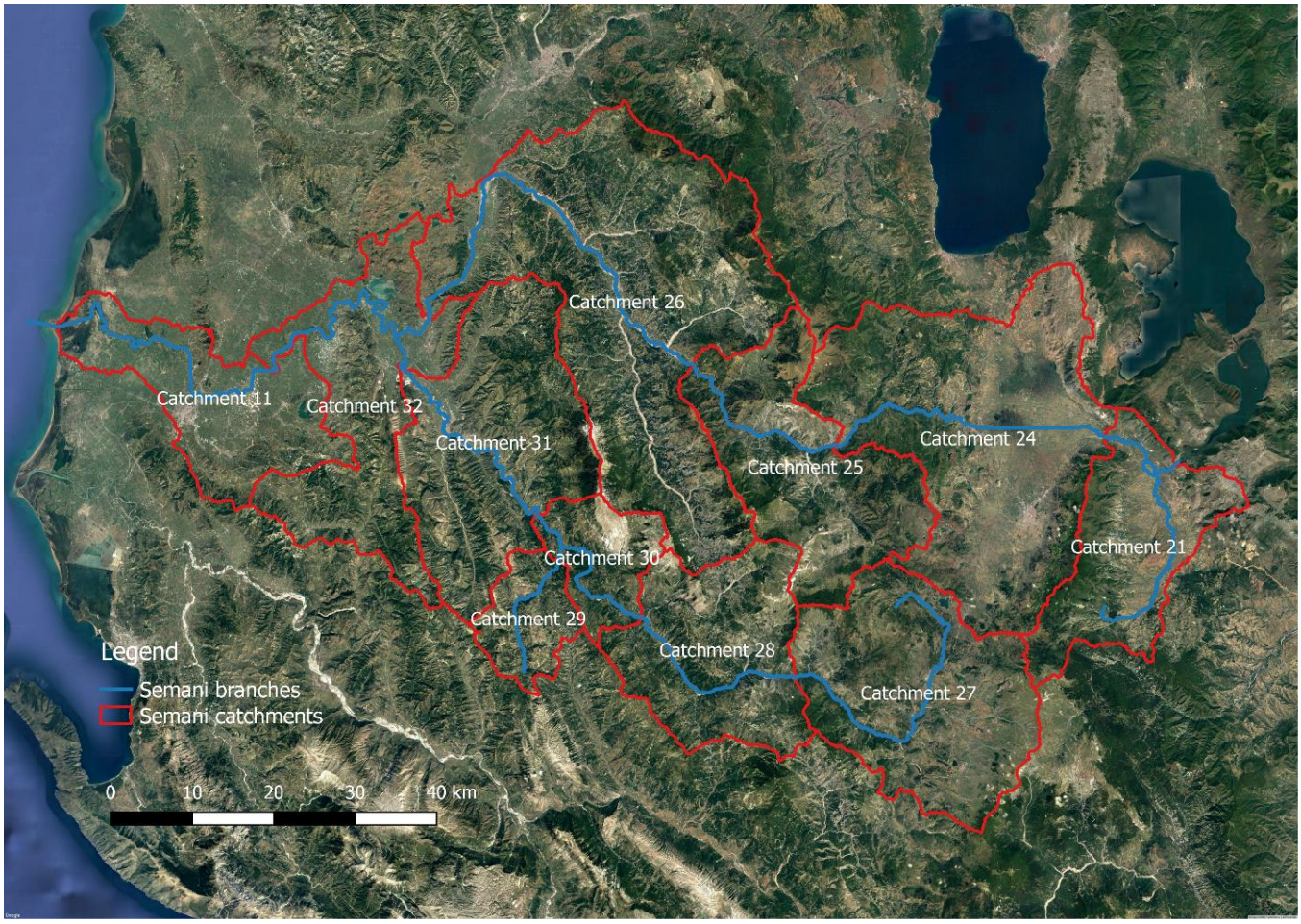
The basin has four main rivers (Semani, Osumi, Devoll and Gjanica), with a drainage area of 5649 km^2 and an average height above sea level of 863 metres. Rainfall in the River Basin averages 1084 mm/year, resulting in a perennial average flow is 95.7 m^3/s. Approximately 60% of water is provided by the Devoll catchment area. On average, the waters have a relatively high mineralization of 440 mg/l. Average water temperatures range from 6.8°C in January to 25.5°C in August.

The following Table 12-1 provides details of the main characteristics of the river basin while Figure 12-1 provides the spatial extent of the basin.

Table 12-1: Main characteristics of the Semani River Basin

River	Main tributaries	Length (km)	Drainage Basin Area (km^2)	Mean Altitude (masl)	Average flow ($m^3 \cdot s^{-1}$)
Semani	Main branch	281	5,649	863	95.7
	Devoll	196	130	960	49.5
	Osumi	161	2,073	852	32.5

Source: after Draft RBMP for Semani River



Source: RBMP for Semani River (Mott MacDonald 2018)

Figure 12-1: Location Map of the Project Area

The Semani River is 281 km long, discharging its waters in the Adriatic Sea, south of the lagoon of Karavasta. Before reaching the sea, the Semani River joins the Gjanica River, which traverses through the city of Fier. The Devoll River, which originates from the southeast slopes of the Morava mountain range, is one of the two main branches of Semani. The Devoll River is 196 km long with a catchment area of 3139 km^2 and an average height above sea level of 960 metres. The Devoll River has an average flow of 49.5m^3/s, mainly fed by surface waters. The Osumi River is the second main branch of Semani River. It is 161 km long with a catchment area of 2150 km^2 and an average height above sea level of 828 metres. The average perennial flow is 32.5 m^3/s with a low flow of 17.5 litres/s/km^2. The Gjanica River, although not regarded as a main tributary, is regarded as the most polluted river in Albania with contamination originating from oil extraction around Patos-Marinza and from the Oil Refinery Plant in Ballsh. Furthermore, after passing through Fier (before joining the Semani River), untreated urban wastewater in combination with untreated industrial wastewater is readily discharged. It is estimated that every month approximately 12,587- 18,091 m^3 of liquid wastewater is discharged into the Gjanica River

containing hydrocarbon and industrial oils (benzene, toluene, ethyl-benzene and xylene). Besides causing damage to the natural aquatic flora and fauna, the use of surface waters for irrigation and livestock is also compromised.

In Albania, the Semani basin supports around 916,255 people (INSTAT 2011), the principle settlements being Berat, Skrapare/corovode, Policane, Korça, Maliq, Devoll/bilisht, Ura vajgurore, Kuçove, Fier, Lushnje, Divjake, Patos, Roskovec, Mallakster, Cerrik and Gramsh.

The Semani River Basin is characterised by three main types of aquifers: Quaternary, Carbonate and Magmatic. Groundwaters of importance are in the quaternary basin of Korça, the Berati aquifer, the Rrogozhina groundwater body, the carbonate aquifer and the magmatic aquifer.

By new administrative reform the Semani River Basin is Shared between three of the main Albanian Counties; Korça, Fier and Berati. The Korça County has 7 Municipalities; Korça, Devoll, Kolonje, Korça, maliq Pogradec and Pustec Municipalities, subdivided in Administrative units that in total have 340 towns and villages. The Berat County is divided in 5 Municipalities; Berat, Kuçove, Polican, Skrapar and Ura Vajgurore, subdivided in Administrative Units that in total have 239 towns and villages. The Fier County has 6 Municipalities; Divjake, Fier. Lushnje, Mallakaster, Patos and Roskovec, subdivided in Administrative Units that comprise 283 towns and villages. There are two main Hydro Power Plants (HPP) located in the Semani River Basin. The HPP in Banje is in operation while the HPP in Moglice in the construction stage. There are also 29 smaller concessional Contracts of HPPs on different streams and branches of the River Basin, for the construction of 62 HPPs. In total 0.95 km^3 of water are used annually in the Semani River Basin for energy production.

There is a total of 211 irrigation reservoirs in Semani River basin. However, due to erosion in the basin and the resultant sedimentation, the actual volume of water available for irrigation is only approximately 50% of design capacity of reservoirs with an average total of 0.73 km3 of water used for irrigation. An overview of water resources and the water use in the Semani River Basin is shown in Table 12-2

Table 12-2: Overview of water resources and water use in the Semani Basin

Area	
Surface (km^2)	5,649
Water Resources	
Number of main rivers	1
Number of tributaries	2
Length of main river (km)	281
Average annual flow (m^3/s)	83.2
Surface water quality	Moderate
Number of large lakes	-
Number of agricultural reservoirs	211
Number of main aquifers used (World Bank, 2012)[2]	2
Water Use	
Agricultural reservoirs	High Use
Number of Major Hydropower Plants	1 + 1 under construction
Number of Small Hydropower Plants Concessions	47 for a total of 96 HPPs [7]
Potable (Drinking) Water	High
Use by industry	High use
Potential for pollution hotspots	Medium

[7] 1st trimester 2018, information provided by NANR

Number of Protected Areas	11
Importance of forest coverage	Moderate importance
Other uses	Fishery
Risk of droughts	Medium
Risk of flooding	High
Demographics	
Number of inhabitants (2011 census)	916,255

Agriculture is a critical element of the rural economy and is the predominant rural land use. Historically, mining and oil extraction and refinery is also important across the region.

The surface water quality, is good in the Eastern Part, upper streams of Devolli and Osumi and not good, in central and western part, due to pollution from municipal solid wastes wastewaters and waters contaminated by oil productions.

Climate change projections are indicating that temperatures will rise in general throughout all the seasons over the next 30-80 years. This is especially pronounced in the summer season. One consequence of this will be on the demand for irrigation water. A second consequence will be an increase in the frequency and intensity of summer thunderstorms. The temperate increases in spring also will have an impact on flooding, as many floods are a combination of rainfall and snowmelt. Although general precipitation is expected to decrease in all seasons over the coming century, the number of extreme precipitation events can be expected to increase in terms of magnitude and frequency, overall the reduced levels of precipitation will also lead to an increase in the number of consecutive days without precipitation (drought).

12.3 STRATEGIC ENVIRONMENTAL ASSESSMENT

There are many benefits that people receive from the water environment. For example, it provides drinking water, irrigation for crops, food (fish), a basis for recreation and tourism and an important part of the character of the landscape and supports wildlife habitats. To determine which measures are worthwhile, the RBMP identified the changes to these environmental benefits that would result from the PoM in the draft RBMP. The SEA process assessed these effects in further detail to ensure they achieved positive outcomes and minimised adverse ones.

The SEA process focussed on the combined effects of the PoM across the basin, rather than individual measures at specific locations which are more akin to a specific EIA of a proposed development. The SEA reviewed the Do-Nothing option and assessed it in relation to alternatives. There is only one alternative. There is do nothing or there is adoption of the RBMP. Table 12-3 below provides a summary of the review on main environmental and socio-economic parameters.

Table 12-3: Review of Do Nothing with Adoption of RBMP

Options	BFF	PHH	S	W	AQ	CF	MA	CH	L
Do Nothing	-	-	-	-	0	0	0	0	0
With RBMP	0	+	0	0	0	+	+	-	-

**Key: BFF – Biodiversity, Flora and Fauna; PHH – Population, Human Health; S – Soils; W – Water; AQ – Air Quality; CF – Climatic Factors; MA – Material Assets; CH – Cultural Heritage; L– Landscape.*

The adoption of the RBMP will have benefits compared to doing nothing. The trend of continued development within the river basin without a specific plan will have negative consequences for biodiversity, flora and fauna, population and human health, soils, and water. All other parameters are neutral.

Adoption of the RBMP however, will have positive consequences for the population and human health, climatic factors and material assets. Biodiversity, soil, water and Air Quality will be neutral as there are no perceived direct benefits from the RBMP adoption due to the current state of pollution within the basin. Cultural heritage and landscape are considered negative as further infrastructure developments contained in the RBMP may negatively impact upon there parameters.

The following Table 12-4 is the summary of the likely effects considered at the scale of the RBMP.

Table 12-4: Summary of effects and mitigation for SEA factors

SEA Factor	Summary of Effects	Mitigation and Opportunity
Water	Local positive effect associated with longer-term improvements in the quality of fresh water, providing benefits including increased availability of potable water for consumption. Local positive effects on the ability of ecosystems to purify water through natural processes associated with measures to create and improve existing wetland habitat. Local negative effect to some users on the availability of water for abstraction associated with measures to manage abstraction rates.	The negative effect on the availability of water for abstraction for some users could be partially mitigated through water efficiency measures to reduce the demand for water locally and thus potentially reduce abstraction restrictions and the negative effect on individuals. In some cases, an alternative supply could be sourced to mitigate the impact of a restriction in supply.
Population and Human Health	Significant positive effects on people, health and the local economy through a better-quality water environment and improved opportunities for recreation and leisure. Local positive effect on human health due to improved water quality by reducing the risk of sickness or ill health due to issues such as bacterial contamination of bathing water. Local positive effect on the local economy where water quality increases the likelihood of financial investment.	The provision of outdoor greenspace is an important component for individual health and wellbeing. By improving the quality of the water environment, this will provide further opportunities for quality outdoor environments for use and enjoyment. This could include improved access to rivers, lakes and the coast.
Soils	Local positive effect on the long-term health on soils through measures to restore upland peat soils and improvement in the health of agricultural soils through more sustainable land management. Local positive effect on the rates of soil erosion associated with measures to manage erosion Positive effects on soil quality	Maintaining the appropriate soil quality Control the soil contamination by industrial activities
Biodiversity, flora and fauna	Significant positive effect on biodiversity particularly on aquatic habitats and species. This is associated with improvements in water quality due to measures to reduce pollution and an increase in the quantity of available habitat for wildlife	Avoiding fragmentation and rehabilitation of green cover and natural habitats
Cultural Heritage	Local negative effect locally where measures modify or remove historic features especially those associated with the management of water for supply, transport and power	Mitigation for this negative effect includes sympathetic design to avoid or minimise the effects on heritage and where it is not possible to completely avoid negative effects,

SEA Factor	Summary of Effects	Mitigation and Opportunity
		careful recording and local preservation of features and artefacts of heritage interest
Landscape	Local positive effects associated with measures to naturalise the water and soil environments and make improvements to landscape and townscape.	Improving green cover, soil and water quality by pollution control and planting of native vegetation
Material Assets	Local positive effect on managing the damaging effects of flooding on people and property.	Opportunities exist to use water quality improvements as a mechanism to encourage investment and development in water-side areas judging by the success of recent initiatives in other parts of the RBD.

Overall, the Semani RBMP is anticipated to have a positive effect on people and the wider environment. These positive effects are largely associated with measures to improve the sustainability of agricultural management practices, addressing pollution in urban areas and improvements to corridors. Where negative effects have been identified, mitigation is proposed to manage these effects. Where there are opportunities to increase the positive effects, these have also been recorded.

The SEA review found that the draft RBMP aligns very well with the objectives of other plans and programmes in the basin, particularly those aimed at promoting sustainability and nature conservation. It has also been developed in coordination with the planned draft flood risk management plan to ensure continued alignment of the respective flood risk and water environment objectives.

The MoTE through the EPA will monitor the effects the RBMP is having on the environment. The main mechanism will be through the RBMP that will report annually on the status of rivers, lakes, groundwater, estuary and coastal waters.

13 CONSULTATION PROCESS

This section of the report is only able to be prepared once the public consultation of the Draft SEA Report has been completed. Law 91/2013 clause 4 c) states: "the final report of the SEA, including the requests and opinions given by the consulted stakeholder group".

TO BE COMPLETED AFTER PUBLIC CONSULTATION

14 ANNEXES

Annex 1: List of Albanian Environmental Legislation

Annex 2: Relevant International Conventions

Annex 3: SEA Approach and Methodology

Annex 4: Protected Areas

Annex 5: Endemic Flora within Albania

14.1 ANNEX 1 – LIST OF ALBANIAN ENVIRONMENTAL LEGISLATON

Laws

1995

Law on Protection from Ionizing Radiation, No. 8025/1995, amended No. 9973/2008, No. 10137/2009, No. 26/2013

1999

Law on the Production, Transportation and Trade of Oil, Gas and their By-products, No. 8450/1999, amended No. 71/2014

2002

Law on Protection of the Marine Environment from Pollution and Deterioration, No. 8905/2002, amended No. 30/2013

Law on the Tax System, No. 8977/2002

2003

Law on Protection of Transboundary Lakes, No. 9103/2003

Law on Environmental Treatment of Wastewater, No. 9115/2003, amended No. 34/2013

2005

Law on Forests and the Forestry Service, No. 9385/2005, amended No. 48/2016

2006

Law on Biodiversity Protection, No. 9587/2006, amended No. 68/2014

2007

Law on Evaluation and Management of Environmental Noise, No. 9774/2007, amended No. 39/2013

2008

Law on the Rules and Procedures of International Trade of Endangered Species of Wild Fauna and Flora, No. 9867/2008, amended No. 5/2015

Law on National Taxes, No. 9975/2008, amended No. 127/2016

Law on the Protection of Wild Fauna, No. 10006/2008, amended No. 41/2013

Law on the Production, Transportation and Trade of Biofuels and Other Renewable Fuels, for Transport, No. 9876/2008, amended No. 143/2014

Law on Tax Procedures, No. 9920/2008

2009

Law on Licences, Authorizations and Permits, No. 10081/2009, amended No. 37/2016

Law on Public Health, No. 10138/2009, amended No. 52/2013

Law on the Protection of Medicinal Plants, No. 10120/2009

2010

Law on Mining, No. 10304/2010, amended No. 134/2014

Law on Health and Safety at Work, No. 10237/2010, amended No. 161/2014

Law on Hunting, No. 10253/2010, amended No. 43/2013

2011

Law on Environmental Protection, No. 10431/2011, amended No. 31/2013

Law on Environmental Impact Assessment, No. 10440/2011, amended No. 12/2015

Law on Environmental Permits, No. 10448/2011, amended No. 60/2014

Law on Integrated Waste Management, No. 10463/2011, amended No. 156/2013, No. 32/2013

Law on Protection from Non-Ionizing Radiation, No. 10469/2011, amended No. 27/2013

Law on the Use of Fertilizers for Plants, No. 10390/2011

Law on Plant Genetic Material, No. 10416/2011

Law on Accession to the Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone, No. 10476/2011

Law on Inspections, No. 10433/2011

2012

Law on Integrated Water Resources Management, No. 111/2012

Law on the Transport of Dangerous Goods, No. 118/2012

Law on Fisheries, No. 64/2012

Law on the Pre-University Education System, No. 69/2012

2013

Law on Strategic Environmental Assessment, No. 91/2013
Law on Concessions and Public–Private Partnership, No. 125/2013
Law on Civil Service, No. 152/2013

2014

Law on the Right to Information, No. 119/2014
Law on Public Notification and Consultation, No. 146/2014
Law on Protection of Ambient Air Quality, No. 162/2014
Law on the Territorial and Administrative Division of Local Government Units, No. 115/2014
Law on Prohibition of Hunting, No. 7/2014
Law on Territorial Planning and Development, No. 107/2014

2015

Law on Biocidal Products and Services in Public Health, No. 95/2015
Law on Local Government, No. 139/2015
Law on Energy Efficiency, No. 124/2015
Law on Tourism, No. 93/2015
Law on Strategic Investments, No. 55/2015
Law on the Energy Sector, No. 43/2015

2016

Law on the Moratorium in Forests, No. 5/2016
Law on the Moratorium on Hunting, No. 61/2016
Law on Organic Production, Labelling of Organic Products and Their Control, No. 106/2016
Law on Chemicals Management, No. 27/2016
Law on Energy Performance of Buildings, No. 116/2016
Law on Aquaculture, No. 103/2016
Law on International Agreements, No. 43/2016
Law on Safety of Material and Equipment Working under Pressure, No. 32/2016

2017

Law on Promotion of the Use of Energy from Renewable Sources, No. 7/2017
Law on Protected Areas, No. 81/2017

Decisions of the Council of Ministers (DCM) and other subsidiary legislation

1990

Decree on accession to the Convention on International Civil Aviation, No. 7438/1990

1998

DCM No. 145 dated 26.02.1998 “On the approval of the hygiene-health regulation on control of drinking water quality, projection, building and monitoring of drinking water supply systems”

2002

DCM No. 435 dated 12.09.2002 “On approval of norms for emissions into the air”

2003

DCM No. 584 dated 28.08.2003 “On approval of the Regulation on the Council of Ministers”
DCM No. 248 dated 24.04.2003 “On approval of temporary air emissions norms and their implementation”

2005

DCM No. 177 dated 31.03.2005 “On allowed norms of liquid releases and the zoning criteria of receiving water environments”
DCM No. 99 dated 02.18.2005 “On approval of the Albanian Catalogue for Classification of Waste”, amended by DCM No. 579 dated 03.09.2014
DCM No. 453 dated 23.6.2005 “On approval of the list of equipment using substances that deplete the ozone layer which production and import is prohibited, and procedures for re-loading of existing equipment”, amended by DCM No. 353 dated 29.04.2015

2007

Guideline No. 6 on Approval of Rules, Content and Deadlines for Drafting of Plans for Solid Waste Administration Regulation No. 1 on Treatment of Construction and Demolition Waste from Creation and Transportation to Disposal
DCM No. 147 dated 21.03.2007 "On the quality of gasoline and diesel fuel"
Joint Order No. 6 dated 09.10.2007 "On collection and storing the data on fuel quality"
Joint Guidance No. 8 dated 27.11.2007 "On noise limit values in certain environments"

2008

DCM No. 994 dated 02.07.2008 "On public participation in environmental decision-making", amended No. 247/2014
DCM No. 1553 dated 26.11.2008 "On the establishment of the National Designated Authority under the Clean Development Mechanism, in the framework of the Kyoto Protocol"

2009

DCM No. 1189 dated 18.11.2009 "On rules and procedures for drafting and implementation of the national environmental monitoring programme"
DCM No. 1304 dated 11.12.2009 "On adopting the regulatory model of water supply and sewerage"
Order No. 1 dated 03.03.2009 "For the duties of environmental entities to ensure participation of the public and environmental NGOs in the process of environmental impact assessment"

2010

DCM No. 797 dated 29.09.2010 "On adopting the hygienic-sanitary regulation for administration of bathing water quality"
DCM No. 546 dated 07.07.2010 "On the hunting season in the Republic of Albania"
DCM No. 10 dated 07.01.2010 "On the approval of the Regulation on licensing and inspection of activities with ionizing radiation"
DCM No. 543 dated 07.07.2010 "On the approval of the Regulation on safe handling of ionizing radiation sources"
DCM No. 587 dated 07.07.2010 "On the monitoring and control of noise levels in urban and tourist centres"
DCM No. 686 dated 02.06.2010 "On the establishment of a national body for investigation of accidents and incidents in civil aviation"
Guideline No. 2 on Organization and Functioning of the Regional Environmental Agencies
Guideline No. 5 on Standards and Procedures Applying to Simple Environmental Permit for Activities that Create Noise Pollution
Regulation on Hospital Waste Management No. 798 dated 29.09.2010
Guideline of the Minister of Public Works and Transport No. 2 dated 11.02.2010 "On technical inspection of road vehicles"
Order of the Prime Minister No. 139 dated 01.07.2010 "On the implementation of the monitoring process of the sector and cross-cutting strategies"

2011

DCM No. 835 dated 30.11.2011 "On the approval of hygienic and sanitary regulation of swimming pools''
DCM No. 590 dated 18.08.2011 "On the approval of the Regulation on the protection of workers occupationally exposed to ionizing radiation"
DCM No. 591 dated 18.08.2011 "On the approval of the Regulation on permitted levels of radon concentration in buildings and water, guide levels of radionuclides in building materials, and permitted levels of radionuclides in food and cosmetic products"

2012

DCM No. 16 dated 04.01.2012 "On public access to environmental information"
DCM No. 781 dated 14.11.2012 "On the quality of certain liquid fuels for thermal, civil and industrial use, as well as for use in water transport (sea, river and lake)"
DCM No. 765 dated 07.11.2012 "On approval of rules for separation, collection and treatment of used oils"
DCM No. 178 dated 06.03.2012 "On waste incineration"
DCM No. 177 dated 06.03.2012 "On packaging and packaging waste"
DCM No. 452 dated 11.07.2012 "On landfill of waste"
DCM No. 705 dated 10.10.2012 "On waste management of end-of-life vehicles"

DCM No. 866 dated 04.12.2012 “On batteries, accumulators and their waste”
DCM No. 957 dated 19.12.2012 “On waste electrical and electronic equipment”
DCM No. 313 dated 09.05.2012 “On approval of the Regulation on protection of the public from discharges into the environment, and determination of the sampling, regions and measurement frequency”
Guideline of the Minister of Public Works and Transport No. 9 dated 03.07.2012 “On audit and inspection of road safety”
Order of the Prime Minister No. 12 dated 02.02.2012 “On preparing and drafting the National Strategy for Development and Integration (NSDI) for the period 2013–2020”
Order of the Prime Minister No. 93 dated 07.08.2012 “On preparation of national sector and cross-cutting strategies for the period 2013–2020, as well as other strategic sectoral documents for the period 2013–2020, in the framework of the preparation of the National Strategy for Development and Integration 2013–2020”
Order of the Minister of Health No. 365 dated 03.08.2012 “On approval of the list and use of substances for use as disinfectants and rodenticides in public health”

2013

DCM No. 117 dated 13.02.2013 “On the main criteria defining when certain types of scrap metal cease to be waste”, amended by DCM No. 52 dated 05.02.2014
Order of the Minister of Environment No. 1 dated 07.01.2013 “On the minimum requirements for strategic noise mapping”
Order of the Minister of Environment No. 2 dated 07.01.2013 “On the indicators, assessment methods, rules and technical methodological requirements for noise value assessment, as well as for verification of the interventions performed for the improvement and resolution of the situation”
Order of the Minister of Environment No. 1280 dated 20.11.2013 “On approval of the Red List of wild fauna and flora”
DCM No. 229 dated 20.03.2013 “On approval of the Regulation on protection from medical exposure to ionizing radiation”
DCM No. 402 dated 08.05.2013 “On the designation of management measures for the sustainable exploitation of fishery resources in the sea”
DCM No. 407 dated 08.05.2013 “On establishing a control system for ensuring compliance with the rules of the fisheries management policy”
DCM No. 302 dated 10.04.2013“On establishing a system to prevent, deter and eliminate illegal, unreported and unregulated fishing and establishing schemes for fish catch certification”

2014

DCM No. 247 dated 30.04.2014 “On determination of the rules and requirements of procedures for public information and involvement of the public in environmental decision-making”
DCM No. 865 dated 10.12.2014 “On reduction and stabilization of fluorinated greenhouse gas emissions”
DCM No. 229 dated 23.04.2014 “On approval of the rules for non-hazardous waste transfer and other requirements for the information to be included in the transfer document”
DCM No. 371 dated 11.06.2014 “On approval of the rules for hazardous waste consignment and the consignment notes”
DCM No. 418 dated 25.06.2014 “On the separate collection of waste at source”
DCM No. 608 dated 17.09.2014 “On development of necessary measures for collection and treatment of bio-waste as well as criteria and rules to reduce the amount of bio-waste going to landfill”
DCM No. 641 dated 01.10.2014 “On approval of rules for waste export and transportation of non-hazardous waste or inert waste”
DCM No. 177 dated 26.03.2014 “On the establishment, content, functioning, duties and responsibilities of the national commission for transboundary water administration”, amended No. 223 dated 11.03.2015
DCM No. 267 dated 07.05.2014 “On adoption of the list of priority substances in aquatic environments”
DCM No. 246 dated 30.04.2014 “On defining the environmental quality norms for surface waters”
DCM No. 866 dated 10.12.2014 “On approval of the list of natural habitats, flora, fauna and birds of European community interest”
DCM No. 419 dated 25.06.2014 “On approval of special requests to review applications for environmental permits of types A, B and C, for the transfer of licences from one subject to another, the relevant conditions of

environmental permits, and the detailed rules for their review by the competent authorities for the issuance of these permits by the NLC"
DCM No. 417 dated 25.06.2014 "On the environmental permit fee"
DCM No. 47 dated 29.01.2014 "On rules for the organization and operation of the National Environment Agency and Regional Environmental Agencies"
Order of the Prime Minister No. 121 dated 20.03.2014 "On the re-organization of the cross-sectoral working group, Man and Biosphere"
Order of the Prime Minister No. 155 dated 25.04.2014 "On establishment and functioning of the Inter-Ministerial Working Group on Climate Change"

2015

DCM No. 352 dated 29.04.2015 "On air quality assessments and requirements concerning certain pollutants"
DCM No. 1075 dated 23.12.2015 "On measures for the control of volatile organic compound (VOC) emissions resulting from the storage of petrol and its distribution from terminals to service stations"
DCM No. 762 dated 16.09.2015 "On approval of the Intended Nationally Determined Contribution for the United Nations Framework Convention on Climate Change"
DCM No. 387 dated 06.05.2015 "On approval of rules to control the disposal of PCBs, decontamination or disposal of equipment containing PCBs and/or disposal of used PCBs"
DCM No. 742 dated 09.09.2015 "On the functioning and management of the pollutant release and transfer register, the adoption of the list of activities and pollutants that are the subject of this register, and the form of the declaration for data on releases and transfers of pollutants to be completed by the operator"
DCM No. 220 dated 11.03.2015 "On approval of the procedure and criteria for granting an ecolabel, its use and its availability, and the composition and functioning of the commission to issue ecolabels"
DCM No. 633 dated 15.07.2015 "On approval of procedures and requirements for granting eco-management and audit schemes"
DCM No. 127 dated 11.02.2015 "On requirements for the use of sewage sludge in agriculture"
DCM No. 215 dated 16.03.2016 "On establishment of the Green Guard task force to take emergency and protective measures for prevention of damage, reduction of forest loss and rehabilitation of public and private forests"
DCM No. 507 dated 10.06.2015 "On approval of the detailed list of plans or programmes with significant adverse environmental effects, to be subject to the strategic environmental assessment process"
DCM No. 219 dated 11.03.2015 "On rules and procedures for consultation with stakeholders and the public and public hearings during the strategic environmental assessment process"
DCM No. 620 dated 07.07.2015 "On approval of rules, responsibilities and detailed procedures for strategic environmental assessment in a transboundary context"
DCM No. 598 dated 01.07.2015 "On rules and procedures for environmental impact assessment in a transboundary context"
DCM No. 686 dated 29.07.2015 "On the rules, responsibilities and time frame for the environmental impact assessment procedure"
DCM No. 102 dated 04.02.2015 "On the establishment, organization and functioning of the National Agency of Protected Areas and regional administrations of protected areas"
Order of the Prime Minister No. 129 dated 21.09.2015 "On institutional and operational measures for implementation of the sectoral approach and establishment of integrated policy management groups"
Order of the Prime Minister No. 47 dated 08.04.2015 "On setting up a working group on verification and evaluation of implementation of legal obligations for environmental rehabilitation of companies that operate in the energy and mining sector"
Decision of the National Water Council No. 4 dated 12.02.2015 "On the establishment, organization and functioning of the thematic subgroups in the field of integrated water management"
DCM No. 386 dated 6.05.2015 "On the establishment and organization and structuring of the State Water Inspectorate"
DCM No. 575 dated 24.06.2015 "On requirements on management of inert waste"
DCM No. 1104 dated 28.12.2015 "On approval of the requirements for the prevention and reduction of discharges of ship-generated waste and cargo residues into the sea"

DCM No. 360 dated 29.04.2015 “On approval of the list of persistent organic pollutants and the establishment of measures for their production, import, trade and use”

2016

DCM No. 488 dated 29.06.2016 “On the classification, labelling and packaging of chemicals”
DCM No. 665 dated 21.09.2016 “On the import and export of hazardous chemicals”
DCM No. 487 dated 29.06.2016 “On biocidal products classification”
DCM No. 428 dated 06.08.2016 “On the establishment of a state database for digital mapping of waste landfills”
DCM No. 379 dated 25.05.2016 “On approval of the Regulation on drinking water quality”
DCM No. 342 dated 04.05.2016 “On approval of territorial and hydrographic boundaries of water basins in the Republic of Albania and composition of their councils”
DCM No. 852 dated 07.12.2016 “On the establishment, organization and functioning of the Agency for Energy Efficiency”
DCM No. 438 dated 08.06.2016 “On the criteria and rules for forest exploitation and sale of timber and other forestry and non-forestry products”
DCM No. 653 dated 09.14.2016 “On some amendments to Decision No. 584 dated 28.08.2003 of the Council of Ministers ‘On approval of the Regulation on the Council of Ministers’, as amended”
DCM No. 47 dated 29.03.2016 “On some amendments to the Order of the Prime Minister No. 33 dated 12.03.2015 ‘For approval of the structure and organigram of the Ministry of Environment’”
DCM No. 63 dated 01.27.2016 “On the reorganization of operators that provide drinking water supply, collection, removal and treatment of wastewater services”
DCM No. 484 dated 29.06.2016 “On the protection of workers from exposure to risk from asbestos”
DCM No. 489 dated 29.06.2016 “On approval of the list of substances of very high concern (SVHC), criteria for inclusion of substances in the list of SVHC and issuing of a conditional authorization to continue using the SVHC”
Order of the Prime Minister No. 119 dated 22.07.2016 “On some changes and additions to the Order of the Prime Minister No. 33 dated 12.03.2015 ‘On the approval of the structure and organization of the Ministry of Environment’, as amended”
Order of the Prime Minister No. 49 dated 29.03.2016 “On approval of the structure and organization of the State Inspectorate of Environment and Forestry”
Order of the Prime Minister No. 50 dated 29.03.2016 “On approval of the structure and organization of the National Environment Agency”

Strategic documents

2000

National Biodiversity Strategy and Action Plan (DCM No. 532 dated 05.10.2000)

2003

National Energy Strategy for the period 2003–2015

2004

National Strategy for the Development of Forests and Pastures for the period 2004–2014 (DCM No. 247 dated 23.04.2004)
National Civil Emergency Plan (DCM No. 835 dated 03.12.2004)

2005

National Action Plan for Pollution Reduction in Coastal Areas of the Mediterranean Sea from Land-based Sources for the period 2005–2014

2006

National Action Plan for Reduction and Disposal of Persistent Organic Pollutants (DCM No. 860 dated 20.12.2006)

2007

Environmental Cross-cutting Strategy for the period 2007–2012
Agriculture and Food Sector Strategy for the period 2007–2013
Sector Strategy on Tourism for the period 2007–2013

2008
National Strategy for Development and Integration for the period 2007–2013 (DCM No. 342 dated 12.03.2008)
2009
Strategy for Science, Technology and Innovation 2009–2015 (DCM No. 863 dated 29.07.2009)
2011
National Waste Management Strategy and Action Plan for the period 2010–2025 (DCM No. 175 dated 19.01.2011)
National Waste Management Plan for the period 2010–2015 (DCM No. 175 dated 19.01.2011)
National Strategy of Water Supply and Sewerage for the period 2011–2017 (DCM No. 643 dated 14.09.2011)
Hydro-chlorofluorocarbons Phase-out Management Plan 2011–2040
National Action Plan for the Management of Environmental Noise (DCM No. 123 dated 17.02.2011)
National Energy Efficiency Action Plan for the period 2011–2018 (DCM No. 619 dated 07.09.2011)
National Strategy on Road Safety 2011–2020
Mining Strategy for the period 2010–2025 (DCM No. 479 dated 29.06.2011)
Strategy for Health System Adaptation to Climate Change
2012
National Emergency Plan for Responding to Marine Pollution
2013
Mati River Basin Management Plan 2013–2019
Programme of Official Statistics for 2012–2016 (Decision 3/2013 of the Assembly of the Republic of Albania)
2014
National Strategy for Air Quality (DCM No. 594 dated 10.09.2014)
Inter-sectoral Strategy for Agriculture and Rural Development for the period 2014–2020 (DCM No. 709 dated 29.10.2014)
Business and Investment Development Strategy for the period 2014–2020 (DCM No. 635 dated 1.10.2014)
2015
National Plan of European Integration 2015–2020 (DCM No. 74 dated 27.01.2016)
National Programme for Environmental Education in High Schools for the period 2015–2017
National Cross-cutting Strategy on Decentralization and Local Governance for the period 2015–2020 (DCM No. 691 dated 29.08.2015)
2016
National Strategy for Development and Integration for the period 2015–2020 (NSDI-II)
National Transport Strategy and Action Plan for the period 2016–2020
National Action Plan on Renewable Energies for the period 2015–2020
Document of Strategic Policies for Protection of Biodiversity for the period 2016–2020
Social Housing Strategy for the period 2016–2025
General National Territorial Plan “Albania 2030”
Integrated Cross-sectoral Plan for the Coast
Integrated Cross-sectoral Plan for the Economic Zone Tirana–Durres
Strategy for Development of Pre-University Education for the period 2014–2020 (DCM No. 11 dated 11.01.2016)
Albania’s Economic Reform Programme 2016–2018 (DCM No. 52 dated 27.01.2016)

14.2 ANNEX 2- RELEVANT INTERNATIONAL CONVENTIONS

Origin Date	Name of Convention	Albanian Date	Status
1971	RAMSAR Convention on Wetlands of International Importance Especially as Waterfowl Habitat	1995	Ac
1972	(PARIS) Convention concerning the Protection of the World Cultural and Natural Heritage	1989	Ra
1979	(BONN) Convention on the Conservation of Migratory Species of Wild Animals	2001	Ra
1991	LONDON) Agreement on the Conservation of Populations of European Bats (EUROBATS)	2001	Ac
1992	(NEW YORK) Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS)		
1973	(WASHINGTON) Convention on International Trade in Endangered Species of Wild Fauna and flora	2003	Ac
1995	THE HAGUE) Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA)	2001	Ra
1996	(MONACO) Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS	2001	Ra
1985	(VIENNA) Convention for the Protection of the Ozone Layer	1999	Ac
1987	(MONTREAL) Protocol on Substances that Deplete the Ozone Layer	1999	Ac
1989	(BASEL) Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	1999	Ac
1992	(RIO DE JANEIRO) Convention on Biological Diversity	1994	Ac
2000	(MONTREAL) Cartagena Protocol on Biosafety	2005	Ac
2010	(NAGOYA) Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization	2013	Ac
2010	(NAGOYA - KUALA LUMPUR) Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety	2013	Ac
1992	(NEW YORK) United Nations Framework Convention on Climate Change	1994	Ac
1997	KYOTO Protocol	2005	Ac
2012	Doha Amendment to the Kyoto Protocol		
2015	Paris Agreement on Climate Change	2016	Ra
1993	Rome Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas	2005	At
1994	PARIS) United Nations Convention to Combat Desertification	2000	Ac
1997	(NEW YORK) Convention on the Law of Non-Navigational Uses of International Watercourses		
1998	ROTTERDAM) Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	2010	Ac
2001	(STOCKHOLM) Convention on Persistent Organic Pollutants	2004	Ac
1969	LONDON) European Convention on the Protection of the Archaeological Heritage (revised in 1992	2008	Ra
1976	(BARCELONA) Convention for the Protection of the Mediterranean Sea against Pollution	1990	Ac
1976	(BARCELONA) Dumping Protocol (as amended in 1995)	2001	At
1995	(BARCELONA) Specially Protected Areas and Biodiversity Protocol (replacing the 1982 Specially Protected Areas Protocol	2001	Ra
1996	(IZMIR) Hazardous Wastes Protocol	2001	Ra
2008	(MADRID) Integrated Coastal Zone Management Protocol	2010	Ad

Origin Date	Name of Convention	Albanian Date	Status
1979	(BERN) Convention on the Conservation of European Wildlife and Natural Habitats	1999	Ra
1979	(GENEVA) Convention on Long-range Trans-Boundary Air Pollution	2005	Ac
1991	(ESPOO) Convention on Environmental Impact Assessment in a Transboundary Context	1991	Ra
2003	KIEV) Protocol on Strategic Environmental Assessment	2005	Ra
1992	(HELSINKI) Convention on the Protection and Use of Transboundary Watercourses and International Lakes	1994	Ra
1999	(LONDON) Protocol on Water and Health	2002	Ra
1992	HELSINKI) Convention on the Transboundary Effects of Industrial Accidents	1994	Ra
2003	(KIEV) Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters		
1994	(LISBON) Protocol on Energy Efficiency and Related Environmental Aspects	1997	Ra
1998	AARHUS) Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters	2001	Ra
2000	FLORENCE) Convention on European Landscape		

Ra = Ratified, Ac = Accession, At = Accepted

14.3 ANNEX 3 - SEA APPROACH AND METHODOLOGY

Introduction

In undertaking the approach to the assignment, the SEA was designed and undertaken in line with the Albanian SEA Law 91/2013, the EU SEA Directive and in line with international best practices especially World Bank regulations and the Organisation for Economic Cooperation and Development (OECD) publication "Applying Strategic Environmental Assessment to Development Co-operation" guidelines. Furthermore the preparation of the SEA has been aligned as much as possible, with the requirements contained within the Consultant's TOR.

The SEA has focused on the Draft RBMP and those issues that are expected to have the most significant environmental implications. The SEA has reviewed the proposed solutions in these areas, commented on the fundamental importance of improving energy efficiency to reduce poverty and improve the quality of life of poorer social groups, their environmental impacts and proposed appropriate courses of action to avoid, reduce and/or mitigate negative impacts and enhance positive ones.

The SEA approach considered: Scoping, Analysis and Assessment and Reporting and Consultation

Scoping

The majoroity of this exercise was already undertaken by the RBMP Consultant. Important documentation was reviewed which was provided by the MARD.

The SEA needed to be based on a thorough understanding of the potentially affected environment, social and economic system. Hence a descrption of the baseline data was prepared and is contained in Chapter 4 of this report. Such data included biodiversity data (flora and fauna), soil, geology, water (hydrology /hydrogeology/ water quality), air, climate factors, materials resources, cultural heritage, architectonic and archaeological heritage and landscape. In addition, baseline data needed to include information on employment, livelihood, social status, health, poverty, population growth, gender, education, land ownership etc.

Due to the limited time and budgetary restroction no sites visits were made to view the areas of the main developments associated with the Draft RBMP and particularly the environmentally sensitive sites.

Given the clear emphasis in Albania on the principles of sustainable development as set out in Albanian legislaton and the recently adopted IWRM Strategy that strives to place equal weight upon four pillars for water management, namely:

- Water for Energy
- Water for Environment
- Water for Food and
- Water for People

The SEA needed to actively engage key stakeholders to identify significant issues associated with the Draft RBMP. This was obtained rom the focus group discussions that were provided by the RBMP Consultant. Finally in the scoping stage (which culiminated in the submission of the Inception Report), the SEA Consultant agreed the content of the SEA Report.

Analysis and Assessment

The second part of the SEA consisted of an analysis and assessment phase. Each main component of the Draft RBMP was reviewed to identify:

- Potential impacts of planned activities and projects on local population and environment and
- Potential avoidance, mitigation and enhancement measures

It was also important that the analytical and assessment techniques, which were based upon the principals of the Albanian SEA Law and also from the OECD Development Assistance guidelines, were clearly defined.[8]

The identification of existing environmental/socio-economic challenges/problems provided an opportunity to define key issues and improve the SEA objectives. Any potential problems were looked for on the basis of:

- earlier experience with issues identified in other plans and programmes;
- identification of possible tensions with other plans, programmes and environmental protection objectives;
- identification of possible tensions between current or future baseline conditions and existing objectives, targets or obligations; and
- Consultation with relevant stakeholders.

The identification of environmental problems/challenges was based on evidence related to baseline information received. During preparation of SEA were developed general and specific objectives of environmental protection which are of importance for the Draft RBMP and aimed at achieving sustainable development. The SEA objectives were derived from consulting with the different stakeholders through the focus group discussions obtained from the RBMP Consultant and from review of the environmental objectives that were established in existing Albanian law, key policies, and strategies. During preparation of the SEA existing environmental protection measures and objectives set out in international, national or regional legislative instruments were also reviewed and assessed.

The raw environmental baseline data obtained was assessed so that enough information was obtained for the SEA to answer the following questions:

- How good or bad is the current situation?
- Do trends show that it is getting better or worse?
- How far is the current situation from any established thresholds or targets?
- Are particularly sensitive or important elements of the receiving environment affected, e.g. vulnerable social groups, non-renewable resources, endangered species, rare habitats?
- Are the problems reversible or irreversible, permanent or temporary?
- How difficult would it be to offset or remedy any damage?
- Have there been significant cumulative or synergistic effects over time?
- Are there expected to be such effects in the future?

Sustainability criteria (based on the four pillars mentioned above) were drawn from the Albania SEA Law 91/2013 and the relevant National Sustainaility Strategy.[9]

The sustainability criteria were amalgamated into a single checklist, against which it is possible to judge the performance of the various SEA objectives mentioned above. An example of a checklist is shown in Table 1 below.

Table 1: Checklist for Assessing SEA Objective Performance against Sustainability Criteria

[8] There appears to be no prescribed methodology in Albania for SEA.

[9] In June 2014, Albania received EU candidacy status. In September 2015, Albania adopted the Sustainable Development Goals (SDGs), alongside all other Member States of the United Nations. In early 2016, the Government issued its National Strategy for Development and (European) Integration (NSDI II) 2015-2020. These key events and ambitions underpin the United Nations' Programme of Cooperation for Sustainable Development (PoCSD) with the Government of Albania for sustainable development. Albania's objective of European integration is a main driver of a broad programme of reform and is a shared political priority.

SUSTAINABILITY CRITERIA	Sub Criteria	SEA OBJECTIVE				
		1	2	3	etc	etc
ENVIRONMENT	Protect and maintain Environment Sustainable manaagement of the environment Reduce GHG causing Climate Change					
NATURAL RESOURCES	Environmental and economic synergies Ensure sustainable use are in balance Promote Sustainable development					
ECONOMY	Stimulate innovation and productivity Stem outflow of skilled personnel Promote local employment Accelerate Growth Provide Indigenous supply of energy/ services					
SOCIAL AND CULTURAL	Reduce Poverty and protect vulnerable Ensure quality of life and GDP gorwth Promote human health Promote healthy and equitable development					

Performance of the SEA objectives is measured on a seven point scale (See Table 2). Expert judgement is used to allocate the scale rating and the process is therefore subjective, but the basis of the scaling is transparent and is open to challenge and revision.

Table 2: Scale for Assessing SEA Objectives against Sustainability Criteria

Not Applicable	Highly Unsustainable	Very weak	Weak	Neutral	Strong	Very Strong	Highly Sustainable
NA	-3	-2	-1	0	1	2	3

The sustainability criteria are appropriate for reviewing broad strategic objectives of the RBMP. Specific attention was given to factors such as, population, human health, fauna, flora, land, water, air, climatic aspects, material resources, cultural heritage, including architectural and archaeological heritage, landscape and relations between these factors.

When undertaking the SEA assessent the following questions also need to be raised:

- **Location**: Is the effect likely to occur within sensitive or non-sensitive environmental areas (e.g. National Parks, Emerald sites, historic or cultural sites etc.)?
- **Scale**: In terms of the extent of its effects, is the impact likely to be experienced only at the local or at municipal, regional, national or international (transboundary) level. How many people are likely to be affected by the impact?
- **Magnitude / Intensity**: Is the impact likely to bring about small, modest, or large changes within the affected area?
- **Probability**: How likely is it that the impact prediction given under scale and intensity will occur in practice?
- **Frequency**: Does the impact occur in a single, isolated event or is it a succession of events?
- **Reversibility**: If the impact occurs is it likely to be reversible or irreversible?
- **Duration/ Permanence**: If reversible, is the anticipated impact likely to have an immediate, short term (1-5 year), medium term (5-10 year) or longer term (>10year) effect?
- **Cumulative and synergistic effects**: Is the impact likely to trigger other changes and effects or combine with impacts relating to other development proposals to create cumulative effects?
- **Adverse, Beneficial or mixed**: Are the effects of a specific impact likely to be adverse or beneficial in terms of the overall sustainability objectives?

Input data from the environmental baseline are generally inadequate, hence during the preparation of the SEA, expert judgement and the precautionary principle (one of the principles of the SEA Directive) was relied upon.

During preparation of SEA necessary mitigaton measures were reviewed with the objective of preventing, reducing or eliminating to the greatest possible extent any adverse impact on human health or the environment resulting from the implementation of the Draft RBMP. In addition measures that could be undertaken to promote the positive impacts of the implementation were assessed.

As the Draft RBMP is likely to have significant environmental effects, it is important that the implementation of the project is monitored before, during construction and at the operational stage, to identify any unforeseen adverse effects and to enable appropriate remedial action/mitigation to be undertaken, i.e. to improve positive effects.

Reporting and Consultation

The findings of the SEA have been written up in a draft report that will be presented for public consultation in meetings at a date to be determined in the future. Comments from the public meetings will be carefully considered and if found appropriate modifications to the report will be made.

14.4 ANNEX 4 – PROTECTED AREAS

The register of Protected Areas relevant from the aspect of habitat and species conservation in the Semani River Basin

No.	Cat.	Region (Qark)	District	Protected Area	DCM Approval Date	Surf (ha)	PAMP	Emerald Network	RAMSAR	IBAs
1. National Park (NP)										
1	II	Korçë	Korçë	Fir of (Bredhi) Drenovës	DCM nr. 96, date 21.11.1966	1,380.00				
2	II	Korçë	Korçë	Prespa National Park	Order of the Minister of Environment no. 1792, dated 09.05.2014					
3	II	Fier, Tiranë		Divjakë-Karavasta	DCM nr. 687, datë19.10.2007	22,230.20	Yes[10]	Yes	Yes	Yes
		Fier	Lushnjë	Divjakë-Karavasta	DCM nr. 687, datë19.10.2008	19,411.10		Yes	Yes	Yes
		Fier	Fier	Divjakë-Karavasta	DCM nr. 687, datë19.10.2009	2,074.50		Yes	Yes	Yes
		Tirane	Kavaje	Divjakë-Karavasta	DCM nr. 687, datë19.10.2010	744.6		Yes	Yes	Yes
		Fier	Lushnjë	Divjakë – Karavasta	Order of the Minister of Environment no. 782, dated 30.12.2015					
4	II	Gjirokastër, Korce		Bredhi i Hotovës-Dangelli	DCM nr. 1631, datë17.12.2008	34,361.10		Yes		
		Permet	Permet	Bredhi i Hotovës-Dangelli	DCM nr. 1631, date 17.12.2008	33,165.30		Yes		
		Korce	Kolonje	Bredhi i Hotovës-Dangelli	DCM nr. 1631, date 17.12.2008	1,195.80		Yes		
5	II	Berat, Elbasan		Tomorri Mountain	DCM nr. 432, date 18.07.2012	24,723.10		Yes		
	II	Berat	Berat	Tomorri Mountain	DCM nr. 432, date 18.07.2012	8,398.40	Yes[11]	Yes		
	II	4	Berat	Tomorri Mountain	Order of the Minister of Environment no. 2027, dated 31.12.201					
2. Managed Nature Reserve (MNR) / National Nature Park										
1	IV	Korçë	Devoll	Cangonj	Reg. MB nr.1, date 27.7.1977	250				
2	IV	Berat	Skrapar	Bogovë	Reg. MB nr.1, date 27.7.1977	330				
3	IV	Korçë	Korçë	Krastafillak	Reg. MB nr.1, date 27.7.1977	250				
4	IV	Berat	Berat	Balloll	Reg. MB nr.1, date 27.7.1977	330				
5	IV			Guri i Nikës						
3. Protected Landscape (PL)										
1	V	Korçë	Devoll	Nikolicë	DCM nr.102, date 15.01.1996	510				
2	V	Korçë	Pogradec	Pogradec (Ohrid L)	DCM nr. 80, date 18.02.1999	27,323.00				
4. Protected Area of Managed Nature Reserve (PAMNR)										
1	VI	Korçë	Kolonjë	Piskal-Shqeri	DCM nr. 102, date 15.01.1996	5,400.00				
2	VI	Korçë	Pogradec	Guri i Nikës	DCM nr. 102, date 15.01.1996	2,200.00				
EMERALD* Network (Areas of Special Conservation Interest -ASCI)										
1	II			Prespa National Park		27,750		Yes		

[10] Management Plan approved by Order of the Minister of Environment no. 782, dated 30.12.2015

[11] Management Plan approved by Order of the Minister of Environment no. 2027, dated 31.12.2014

No.	Cat.	Region (Qark)	District	Protected Area	DCM Approval Date	Surf (ha)	PAMP	Emerald Network	RAMSAR	IBAs
2	II			Divjakë Pine Trees National Park		1,250		Yes		
3	II			Tomorri Mountain National Park		4,000		Yes		
4	II			Bredhi i Hotovës-Dangelli		14,973		Yes		
5	V			Morava protected Landscape (proposed)		29,155		Yes		
6	II			Karavasta (proposed National Park)		19,677		Yes		
RAMSAR										
1		Fier	Lushnje, Fier	Karavasta Lagoon and The Pine trees of Divjaka**	DCM nr. 413, date 22.08.1994	20,000.00			Yes	
2		Korë	Korçë, Devoll	Prespa Lakes*	DCM nr. 489, date 13.06.2013	15,118.60			Yes	
Important Bird and Biodiversity Areas (IBAs)										
1				Large Prespa Lake						Very Important
2				Karavasta Lagoon						Very Important
3				Small Prespa Lake						Less important
4				Semani Delta						Less important

14.5 ANNEX 5 – ENDEMNIC FLORA WITHIN ALBANIA

No	Taxon Name		Conservation Status	Family Name
1	*Acantholimon albanicum*	Schawarz & F.K. Meyer.	EN A1b	*Acanthaceae*
2	*Alkanna sandwithii*	Rech. fil.	DD	*Boraginaceae*
3	*Arenaria cikaea*	F.K.Meyer	DD	*Brassicaceae*
4	*Aster albanicus Degen. subsp. paparistoi*	Qosja.	EN A1b	*Asteraceae*
5	*Astragalus autranii*	Bald.	DD	*Fabaceae*
6	*Campanula comosiformis*	(Hayek & Janch.) Frajman & Schneew.	EN A1b	*Campanulaceae*
7	*Campanula aureliana*	Bogdanović, Rešetnik, Brullo & Shuka	CR	*Campanulaceae*
8	*Campanula skanderbegii*	Bogdanovic, Brullo & D. Lakusic	CR	*Campanulaceae*
9	*Carduus quercifolius*	F.K.Meyer	DD	*Asteraceae*
10	*Carex markgrafi.*	Kuk	EN	*Cyperaceae*
11	*Centaurea candelabrum*	Hayek & Kosanin.	EN A1b	*Asteraceae*
12	*Tanacetum albanicum.*	Markgraf	DD	*Asteraceae*
13	*Euphorbia cikaea*	F.K.Meyer	DD	*Umbelliferae*
14	*Brachypodium serpentini*	C. E. Hubb.	VU A1b	*Poaceae*
15	*Gymnospermum maloiKit*	Tan & Shuka	CR B1	*Berberidaceae*
16	*Hypericum haplophylloides*	Halacsy et Bald.	CR A1b	*Hypericaceae*
17	*Ligusticum albanicum*	Jav.	CR B1	*Umbelliferae*
18	*Melampyrum doerfleri*	Ronniger.	DD	*Scrophulariaceae*
19	*Noccaea albanica*	F.K.Meyer	DD	*Brassicaceae*
20	*Noccaea cikaea*	F.K.Meyer	DD	*Brassicaceae*
21	*Onosma mattirolii*	Bald.	VU A1b	*Boraginaceae*
22	*Orobanche nowackiana.*	Markgr	DD	*Orobanchaceae*
23	*Ranunculus wettsteinii*	Dorfl.	CR B2a	*Ranunculaceae*
24	*Ranunculus hayekii*	Dörfler	CR Bl	*Ranunculaceae*
25	*Scilla albanica*	Turril	VU	*Liliaceae*
26	*Sesleria albanica*	Ujhelyi	DD	*Lamiaceae*
27	*Stachys sericophylla*	Halacsy.	DD	*Lamiaceae*
28	*Tulipa albanica*	Kit Tan & Shuka	CR B1	*Liliaceae*
29	*Veronica saturejoides subsp. munellensis*	M.A.Fisch.	VU A1b	*Scrophulariaceae*
30	*Viola acroceraunensis*	M. Erben.	VU A1	*Violaceae*
31	*Viola raunsiensis*	Becker & Kosanin	EN A1a	*Violaceae*
32	*Wulfenia baldaccii*	Degen.	VU A2c	*Scrophulariaceae*

CR = Critically Endangered, EN = Endangered, VU = Vulnerable, DD = Data Deficient
Further sub division of coding found http://www.iucnredlist.org/static/categories_criteria_3_1#critical

14.6 COMMENTS FROM AMBU AND OTHER STAKEHOLDERS

Name of Institution and Reviewer	Details of the Comments made in Albanian	Details of the Comments in English	Response/ Action Taken In Albanian	Response / Action Taken in English
INITIAL COMMENTS TO FIRST DRAFT OF THE SEA				
AMBU email dated 10th December 2018 from Arduen Karagjozi		Comments from Water Resources Management Agency for Semani RBMP SEA: 1. The implication with some strategic documents should be updated and completed;		Thank you for the comment. We have taken into cinsideraiton al lthe important strategic documents affecting the RBMP for Semani Basin.This can be found in Section 2.6 of the SEA document and a full listing of relevant strategies are found in Annex 1.
AMBU email dated 10th December 2018 from Arduen Karagjozi		2. The General Local Development plans prepared and approved for some municipalities within the basin, should be reflected an taken in consideration (they have they own SEA) http://planifikimi.gov.al/index.php?id=732		Thank you for this link to the General Local Developemnt Plans. All relevant documetns for the municipalities within theSemaniBasin have been reviewed and taken into consideration within the updated SEA document
AMBU email dated 10th December 2018 from Arduen Karagjozi		3. The impact of the Big dams of HPP Banja and Moglica should be taken in consideration (they have they own SEA);		This has been done and the SEA for the specific big dams have also been reviewed.
AMBU email dated 10th December 2018 from Arduen Karagjozi		4. Some evaluations about the status of ecological flow should be indicated and oriented within this document;		See section 4.4.9 which has been expanded to evaluate the status of ecological flow vis a vis HPP
AMBU email dated 10th December 2018 from Arduen Karagjozi		The detailed comments documents can be found on the link below.		Individial balloon comments are dealth with below.
Arduen Dec 10 2018 Page 9		Local General Development plans, prepared for municipalities within the basin shold be taken in consideration and avaluated from the SAE point of view and ho they intercact with RMBP.		Already done section has been provided for the Local General Development Plans. Chapter 2.6.6. Stil should be mentioned that such plans and Strategic Assessment remains in general terms. Specific important parts are already considered in chapter 9, 10 and 11.
Arduen Dec 10 2018 Page 9		National strategy for integrated water resources management need to be referred and compared. http://www.qbz.gov.al/botime/fletore_zyrtare/2018/PDF-2018/52-2018.pdf		Already done in chapter 2.6.1 We have included a section on IWRM Strategy
Arduen Dec 10 2018 Page 9		National Strategy for energy 2018-2020 has been approved. Need to be compared to this version. http://infrastruktura.gov.al/wp-content/uploads/2018/11/Vendim-i-KM_480_31.07.2018.pdf		Already done in chapter 2.6.4 . The National Strategy for Energy 2018-2030 (not 2020 as indicated) has been included and the 2003 Energy Strategy taken out

Name of Institution and Reviewer	Details of the Comments made in Albanian	Details of the Comments in English	Response/ Action Taken In Albanian	Response / Action Taken in English
Arduen Dec 10 2018 Page 12		One of the additional studies is exactly that should give clear conclusion and solution for ecological flow impact.		Aded some text which is adapted from RBMP Section 4.2.4
Arduen Dec 10 2018 Page 20		Timing for consultation should be realistic Drini should be referred to in other document		Agree completion in early 2019 Agree that the Drini needs to come out
Arduen Dec 10 2018 Page 28		Locate on map all monitoring station refered on water quality data as below.		Ok this will be done
Arduen Dec 10 2018 Page 75		Review the graph 45 cannot be smaller than 19		Thank you the graph has been corrected.
Arduen Dec 10 2018 Page 77		ave you taken in consideration the SEA for Devolli, Moglica HPP!??? What are their conlusion and main concerne.		Yes we have indicated that ecological flow will be affected
Arduen Dec 10 2018 Page 88		NAP for climate change shoud be refered an avaluated here.		Done. Some text on National Adaptation Planhas been included – see section 4.6.5
Arduen Dec 10 2018 Page 92		RBMP with ecological flow criteria is strongly affectin the biodiversity!!!!		The RBMP is aligned to the WFD and hence it is in order. It is really important to improve monitoring network in the basin if you want ot have a better handle on the status of ecological flow
ADDITIONAL COMMENTS TO THE REVISED DRAFT OF THE SEA				
AMBU email dated 25th January 2019 from Arduen Karagjozi		First let me thank you for the reviewed version of the document. As we see the main of our comments has been reflected and we think that we can progress with the other steps, in the way that we can reach the timeline. In the mean time we have made also dome last comment that can be reflected during consultation phase, related to further specific elaboration of conclusions of GLP etc. The commented version: https://we.tl/t-sCPyp14uff		Thank you for the revised comments that will be taken into consideration in the final version that will be produced following the consultation phase.
Arduen Jan 25th 2019 Page 14		More conclusion can be added for each one of them specifically. Example: Which are the main conclusion fromBerat GLP that should be taken in consideration in relationship with Water resources management!??		The conclusions of the General Local Plans, Territorial Development Strategies and related SEAs are reflected in the final version of the document.
Arduen Jan 25th 2019 Page 78		A more clear conclusion of specifically EIA for Devolli and Moglica should be presented here.		Thank you more conclusions are provided in the final version of the SEA for Semani RBMP, at the page 78