



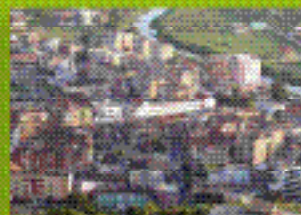
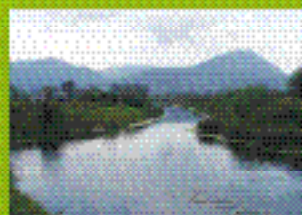
European Commission



Regional Council  
of Lezha



Regional Council  
of Shkodra



# Regional Environmental Action Plan

*Drini River Delta Shkodra - Lezhe*



REGIONAL ENVIRONMENTAL CENTER  
Albania

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European Commission



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*Drini river delta, Shkodra - Lezhe*



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Albania



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In close collaboration with:

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**Bardh RICA**

*Chairman  
Regional Council of Lezha*

Thanks to its natural geographic position, from the ancient times to the present days the Region of Lezha, stands out among regions in the country endowed with strategic and natural values. Located in the midst of land and water resources, the region has rivers and streams, water reserves, mountains and hills which create high levels of biodiversity.

After the 90-s Lezha Region witnessed a dramatic population movement urged by the need to search for better opportunities to improve living conditions. The part of the region most affected by this uncontrolled movement was the coastal area, where the land used for agricultural purposes was filled almost completely with uncontrolled and extra - legal buildings.

As the local government was incapable of managing the change, these developments were left to go uncontrolled which brought negative impacts on all sectors of life in the region. Natural values in the area were highly damaged and some of them estranged forever. The loss and bad management of the agricultural area became a very critical problem for the region. Damages on the irrigation system in agriculture were made worse by the nearly yearly phenomena of floods in the west area of the region.

Motivated by the need to address the demand for services, the Regional Council of Lezha, as a first level institution, worked to enforce the implementation of laws in all sectors and thus became the promoter of regional developments towards improving the situation in the Region.

Environmental values of the area, as the key resources for sustainable development, have been at the focus of this institution's work as demonstrated in the launching of several initiatives of regional and national importance. This is testified by the increasing number of big projects involving urban, water and nature management.

The involvement of the Regional Council of Lezha in the preparation of REAP, is in line with the processes and policies undertaken by this institution to ensure sustainable development of the region towards maximization of tourist values based on the safe management of natural resources.

The Regional Council of Lezha will continue to pay priority importance to opportunities to generate financial resources and to the enforcement of policies in order to implement this document as well as to making this region a positive model of development for the country.

**Lorenc LUKA**

*Chairman  
Regional Council of Shkodra*

Shkodra Region is situated north-west of Albania and is possessed of high human and natural resources. The region stretches along Shkodra Lake, has access to the sea and is possessed of high natural values of which mention can be made of the fact that its northern area has more forests than the other regions in the country.

These advantages have determined the early development of the area. Its inhabitants have historically used natural values and resources in rational and thrifty ways thus making it one of the most developed areas in this part of the country.

After the 90-s, as other regions in the country, Shkodra, too, was involved in the dynamic changes and transformations which brought both positive and negative impacts.

In line with the actual trends of development and integration, the Regional Council of Shkodra, has focused its efforts on ensuring sustainable development for the area. Part of these efforts is the launching and implementation of ambitious projects and investment plans which respect the principles of sustainable development as determined by international conventions and country policies, too.

Participation of the Regional Council in the preparation of several important documents outlining future development, its contribution to the implementation of projects and initiatives towards the social and economic development of the region, are indicators of the promotional and coordination role of the Regional Council as required by nation wide developments taking place in the framework of decentralisation processes.

Thus the collaboration of the Regional Council of Shkodra, for the preparation of Regional Environmental Action Plan for the Delta of the Drini River (Shkodra-Lezha) is in accordance with the mandate of the institution, specifically its responsibility to provide for coordination of projects dedicated to the development of the region.

We place great importance by this project as a tool to give a strong impetus to the development of the selected area especially in light of its great natural and tourist assets and potentials. The rapid development of the area in the conditions of the absence of a such plan "for the protection of nature" poses a high risk for the natural, tourist and human values of the area.

The Regional Council of Shkodra will be involved in the efforts to secure the human and financial resources for the implementation of this plan and to ensure its harmonization with other plans for the development of the area of Shkodra-Lezha.

## Abbreviations

AFADA	Albanian Fertilizers Agribusiness Dealers Association
BOD	Biological Oxygen Demand
CARDS	European Program for Development
Cd	Cadmium
COD	Chemical Oxygen Demand
ELPA	Environmental Legislation and Planning in Albania
EU	European Union
FAO	Food and Agriculture Organization
GTZ	German Organization for Development
INSTAT	Institute of Statistics of Albania
MEFWA	Ministry of Environment, Forest and Water Administration
N	Nitrogen
NGO	Non Governmental Organization
NH <sub>4</sub>	Ammonium
P	Phosphor
Pb	Mercury
PMU	Project Management Unit
Pt	Potassium
RC	Regional Council
REA	Regional Environmental Agency
REAP	Regional Environmental Action Plan
REC	Regional Environmental Center

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## II. Introduction

The preparation of this document is funded as part of the in the framework of EU CARDS programme, as part of the project “Environmental Legislation and Planning in Albania (ELPA) Environmental Action Plan component”, The overall objective of ELPA is to support the Government’s objective of meeting Albania’s sustainable development principles in accordance with EU environmental requirements, and thus to prepare for EU accession talks. This includes the strengthening the technical and administrative capacity of local government’s planning controls and the capacity building for the Environmental Action planning process at regional and local level.

This REAP also links with other components of the ELPA project:-

- The National Environmental Strategy (NES) sets out the environmental policy for all development sectors including sustainable management of environmental resources used for development, and the protection of biodiversity.
- Raising environmental awareness at regional and local levels. The public consultation process involved in the development of this REAP is a key activity required under the EU laws for the development of all Plans.

The Regional Environmental Action Plan process is in line with Albanian government efforts for further developing and strengthening the environmental planning at different levels as required by the SAP and, within this project, as support to the development and drafting the National Environmental Strategy.

The overall goal of this REAP process is to address unplanned development of cities, accompanied by uncontrolled interventions into the existing infrastructure, which has had a negative impact on the environment and public health. In addition, the creation of new population centres and rapid urban expansion, have put huge pressure on an already derelict infrastructure. Outward migration from the mountain areas to the coast has caused particular problems of declining infrastructure in the mountains and pressure on the coastal regions.

Taking into consideration the lack of monitoring and enforcement capabilities, there is a very low awareness of environmental issues amongst business, institutions and public alike. This project has worked to raise the awareness of environment on government and public agendas, and address data collection, monitoring and public information system improvements.

The collection of the necessary data from the different fields in Shkodra - Lezha region began with the physical and geographical features, terrain (geology), natural and underground resources, water, agriculture, biodiversity, forestry, fishery, hydro - geology and demographic data, also the environmental impact of territory planning, energy, urban waste, education etc. Based on these data, an integrated document has been produced with clear focus on nature protection and sustainable development.

This document presents a detailed data’s analysis over last 50 years in different fields, with different physical conditions (marine ecosystems, lowland peri-Adriatic, valley and canyons, lagoons), a coastline of 34 km, Shkodra lake 360 km<sup>2</sup> with many river tributaries. The study area presents an area of great environmental interest for everyone. With a new vision of interdisciplinary development in Albania, different fields influencing each-other are presented in an integrated and harmonized way and in respect with the nature and sustainable development.

The REAP document will serve as a strategy for local and national institutions, business, different organizations, experts and other actors, to develop more further their vision on the exploitation of natural resources in a sustainable manner in Lezha and Shkodra region.

### III The study area

The plan addresses the main problems in the Drini River delta, starting from hydropower plant “Vau i Dejes”, including the area of two branches along Shkodra and Lezha region. This area includes parts of two administrative units, Shkodra Region and Lezha Region.

The Northern border of the study area starts from the Shkodra Lake and Buna river, while the southern border is Mati River in Lezha,, the western border is the Adriatic Sea and the eastern border is Drini river basin. The eastern extension has been made in order to study also the dam of Gjader River, quite problematic in the recent years, as integral water part of rivers Drin, Kir. Bunë and Shkodra Lake.



Map.1: The line in the map shows the area covered by this study

## IV Processes and methodology

The Regional Environmental Action Plan for the lower part of the Drini watershed (Shkoder-Lezhe) has been prepared by local experts from two regions of Shkodra and Lezha, the national experts from Ministry of Environment, Forestry and Water Administration, as well as by the support of international experts from ELPA Project.

This document includes 6 main fields: Geology and Energy, Hydrology, Agriculture and Fishery, Biodiversity and Protected Areas, territory planning and Human Dynamics and Tourism. Developed in three main parts, the REAP is structured in the following chapters: Part One :Situation analysis; Part two , Recommendations and Development Strategy and Part Three; Action Plan , presenting for each topic the identified problems, recommendations and proposed concrete interventions. Special attention is paid to the interaction between different issues.

One of the most important steps of the process has been the discussion of each phase of the document with a considerable number of local experts, specialists and community representatives. Aiming at preparing a comprehensive document where different interests are taken into account. , Several public consultations, institutional communications, round tables and calls for cooperation were held in the two regions so as to promote regional ownership of the Plan.

ELPA project team and REC Albania would like to thank the local and regional actors involved in this process for their generous support and commitment to the REAP process as the first piloted model and prototype in Albania.





## V. Assessment of the situation







## V.1 Geography, geology and energy

### V.1.1 General Analysis of the Situation

The area of Shkodra and Lezha represents an active seismic zone. The movements of earth crust are concentrated in the axis of Merqije - Kallmet.

Large scale and intensive demographic movements towards the low lands are having a serious impact on the fluvial terraces and on the arable land. The eroded soil ends up in the river, sedimenting the river-bed in lower parts of the river system/flow.

Intensive urbanization of the area is the cause of the changes into the underground water regime, which will have negative impacts in the future.

There are constructions (with or without permissions) within the embankments, nearby the areas where erosion is very active. These constructions pose high risks to embankments and to the future urban developments.

A negative impact on the earth crust, geo-dynamic phenomena and geological risk in general is the increase of average weather temperatures by 0.5 grade compared with the past century.

Finally, there is a need for a different management of natural resources: water, land, infrastructure in the entire area, where interventions are planned. Involvement of all responsible authorities and different experts (geology, geography, civil engineers, foresters, environmentalists, architects, tourism experts, etc.) is necessary to ensure the development of the best options possible.

#### V.1.1.1 Energy

##### *Hydro*

Energy situation in Albania and, especially for Shkodra and Lezha is critical. During last 15 years no additional source of energy is constructed, while the consumers' needs are increasing steadily, and so are losses over the distribution grid.

Hydro-energetic potential of Shkodra and Malësi e Madhe is estimated to 5 million MWh per year. 3 million MWh per year are produced in Koman and Vau i Dejës hydro power plant. A number of small hydro-power plants (Selca, Vermoshi, Vukli, Bena, Ndërlysa, and Mosli) produce some 25,000 MWh per year. According to the estimated potential supply, there are two million MWh /year to be produced. Within the project area, the energy resources are concentrated in the Rivers of Drini, Buna, Gjadri and Kiri.

Related to alternative sources of energy, there very favorable conditions and big potentials

##### *Wind*

The area under study enjoys a big potential of wind energy. There are up to 120 windy days per year. The presence of low hills in the area (hills of Mjeda, Plezha, Paçrami, Mabe, and Dajç, etc.) and the concentration of population settlements in their vicinity reinforce this potential.

##### *Solar*

The solar energy is a potential source for then future. There are 226 sunny days per year. However, this source is used very little.

The use of energy sources for heating and cooking shows that the most used source is natural gas (60% of population), wood (30% of population), and electric energy in the third place (10% of population).

### V.1.2 Costal dynamics and land erosion

Erosion is a common occurrence for Mediterranean countries. On the area of the project are present different kinds of erosions: sea erosion, river erosion, soil surface erosion of riverbanks and slopes.

#### *Sea erosion*

It is common in the seashore of Kune Vain and Buna mouth. Along the Lezha seashore, the sea advances into the land by 2.5 m per year averagely. Since 1936, the sea line has progressed by 400 m, meantime the shore lost along Buna mouth is about 500 m.

According to the literature and experts opinion, the sea erosion along Lezha area is due to the reduction of alluvium level of Drini River, 13 folds compare to the 1854 level, when the river is split in two

branches (one joining the Buna River, at 1.5 km out of Shkodra Lake, the second one to the Delta, is more or less a draining canal). A strong impact in this aspect has the hydrotechnic system of the Drini flow (after 1963), with the construction of Hydropower plants. This phenomenon is more visible in the right branch of Drini, flowing directly to the Delta.

The phenomena is under observation (it might be a global change of the seas) in order to better understand the tendency of the sea. The outcomes of the observation will lead the coming planning for the area, in order to avoid permanent buildings along the sea. There are no measures taken yet to prevent the situation, on the contrary the pine forests along the seashore are damaged or are threatened by constructions.

#### *Land erosion*

Estimates conducted at high altitude on amounts of miss-managed land, it follows that 300tons/ha/year at 2 cm depth is the movement of soil in these lands, while the average rate of land erosion on a country scale is 30 tons/ha/year.

Degradation of arable land due to erosion and flooding continues to be one of the most serious problems in the Zadrina area. Due to the sea water floods, especially the flood of December 1999, a big number of forest trees in Kune Vain were damaged.

Decrease of vegetation, disuse of land for agricultural purposes, inappropriate methods of irrigation are factors that reinforce erosion vigorously. There are cases of vast areas being used to graze animals in violation of relevant criteria, stimulating over use and increase of erosion and landscape damage.

Very problematic is the situation along Drini, Buna and Kiri rivers. The rivers and the human impact (taking gravel away, damaging barriers, etc) have caused severe problems to the rivers shore.

#### *Solidity of the slopes*

As result of the tectonic activity of the area, the slopes and rocky massifs are changing and are sliding and braking. Important effects on this process have meteorology, winds, vegetation cover, etc.

#### *Landslides*

Landslides are mostly concentrated in the axis of Merqi - Kallmet

Additionally to the natural hazard listed above, the following issues should be taken into account: Risk of water extraction during the digging processes, avalanche hazard, risk of sea water flowing inland, floods, free flow of sewage water, creation of infectious spots where the solid waste is deposited, industrial facilities and their discharges in the vicinity of drinking water sources, ore dumping from old mines, radon radiation for the area of Shkodra and Koplik, etc.

### **V.1.3 Analysis of key factors**

#### *Geological hazards and environmental effects in the region*

Geological hazards are related to the geo-physical phenomena, taking place in the region. Geological hazards are key factor for the geo-engineering studies (identification of geo-dynamic processes, in order to reduce their negative impacts for different objects).

#### *Neotectonic phenomena in the region*

Neotectonics of albanites is commonly agreed to be Pleis-quaternar, corresponding to the rise of all Albania (Aliaj Sh.). At the beginning of Pliocene period, horst-graben structures are formed, resulting in the formation of several lakes declination, i.e. Zadrina plain.

Plain area comprises the plain of sub-Shkodra, resulting from the sinking of the Pleioquaternar period.

Zadrina graben formation dates to the Quaternary period. The small fleshiness (50-60 ml) and the lack of river terrace are characteristic signs.

#### *Seismics of the region*

The region of Lezha – Shkodër is part of a seismic belt. The seismic activity is estimated to be between the ranges of 7-8 Richter scale.

Two seismic belts intersect in this area: seismic belt Shkodër – Mat – Mokër and second seismic belt Shkodër – Pejë. The seismic belt Shkodër – Mat- Mokër, oriented northwest – southeast cuts diagonally the structures of the area (low plain of SubShkodra, and Zadrima graben. This situation has to be taken into account on the studies of the terrain and urban planning of the area.

#### *Carstic phenomena*

Carstic phenomena are occurring in surface and underground. Most common forms are grooves, holes, caves, funnels, carstic channels, etc. Study of the carst in the region is related to the supply of drinking water for the region.

### **V.1.4 Trend of key natural hazard factors**

Natural hazards (erosion, landslides, human impact, etc) are increasing, posing an increasing risk to the population.

### **V.1.5 List of problems**

Problems	Causes	Impact	Population affected	Level of impact	Prioritizing
1. In poor condition are urban development, urban waste, flood of field area, deforestation.	Accumulation of private investment, destruction of green belts and high levels of water in the urban areas, unapplied of urban plans, lack of institutional cooperation, unstudied population flow (without study plan or investment for high risk zones),. Flooding of area from Drini, Kiri, Gjadri, solid matter being washed off from the mountainous and hilly parts of the region, accumulation and destruction of protected belts and high levels of pollution in the urban areas, lack of investments, poor urban construction. a built up of different issues each needing individual policies and actions	Negative impact on environment, health, loss of oxygen, increase of Co2 etc. The bad management causes polluted water, salted water, emission of hazardous substances in air that risk the health of people and morbidity increase.	Almost all REAP area	High.	* * *  very important (require immediate solution.

### **V.1.6 Interplay with the other topics**

Geological studies and prioritization of areas needs to be done before investments take place in the tourism sector, agriculture, forestry, urban development, energy and water supply sectors.

These studies must include geo- technical condition for construction, mapping erosion areas, study of slides, geo diversity, mineralogy of land area, study on landfills, indicators of water and air pollution (Radon gas), evolution of sea coastline shore, coastline of lake and river too, and reaction of underground floor to seismic movement (earthquakes).

### **V.1.7 What is being done?**

A study is prepared about the possibility of a well situated waste collection plant in Bushati. There are good initiatives in Velipoja about the urban studies, but more efforts must be done.

The Academy of Sciences has prepared a study about the floodings in the area.

Investment funds are committed to reconstruct the dam of Naraci on the Gjader River, which was damaged, posing high risk for the Lezha area in terms of flooding.

## V.2 Hydrology of the region

### V.2.1 General analysis of the situation

Hydrologic system of “Shkodra Lake – Drini River – Buna River”, accumulates the waters in a basin totaling a surface of 19.582 km<sup>2</sup>. This basin with a considerable amount of water, with a high and beautiful relief, intensive and heavy falls and special geological structure, holds substantial hydrological potentials.

In this water network are included: Shkodra Lake, Drini, Buna, Kir and Gjadri Rivers, as well as the hydrological basin around the lake. The small islands of the Delta of the Buna River are considered as very special and attractive.

From the biodiversity aspect and natural productivity, the hydrographic network of Shkodra has special and almost unique values. The high level of water and complicated hydraulic regime is a distinguished attribute of it. The assessment of natural and ecological features of this system against international benchmarks requires all-round attention to consider primarily the various degrees of damage caused by the human activity.

Buna River by conflux with Drini, has a high yearly flow of water measured by an average of 680 m<sup>3</sup>/sec, ranking it between the most watery and important rivers in the Mediterranean area. The hydrologic regime of the Shkodra system is closely connected with the climatic conditions in the area. The climate in the area is Mediterranean subtropical, characterized by a dry and long summer and warm and humid winter. The total days with high temperature ( $T_{max} \geq 25^{\circ}C$ ) varies from 110 to 130 per year. For the entire area of the basin of Shkodra Lake, the average atmospheric fall is by 2170 mm, changing in different geographical areas from 1600 mm to 4000 mm. This is the basin with the greatest fall in the European continent.

The yearlong average flow of Drini in Buna is 352 m<sup>3</sup>/sec, with a total yearlong volume of 11 milliard m<sup>3</sup> of water. The yearlong average flow of suspension alluviums in the Drini River is 438 kg/sec, and the turbulence by 1250 gr/m<sup>3</sup>. The mineralization of Drini waters is low; it fluctuates around the value of 257 mg /l.

Along the old Drini, which crosses the city of Lezha, although there was a dam blocking the water to go into the Buna River (1956), there is water going on it from the underground waters of the Gjadri field. Thus every rise of the water in the main bed of the Drini River increases the amount of water that goes into Lezha's Drini, by filling it with sand and argil, causing floods on the fields of Barbullushi and Kakarriqi during falls. This problem is increased by the wasters of the Gjadri River, which connects to Drini near the Baldre village.

The old Drini crosses the city of Lezha on the west side of the town and streams to the Adriatic Sea in the south of the Shengjini commune, by creating attractive lagoons in the area of Lezha called Kenella, Merxhani, Kune, Vaini, etc, which communicate with the sea through natural and artificial canals.

In the hydrographic system of Shkodra, Shkodra Lake and Buna River accumulates the waters of a basin of 5221 km<sup>2</sup>. Shkodra Lake with a total surface of 365 km<sup>2</sup> and average deepness of 7 m plays a potential natural regulatory role of the natural flow of Buna River, by being a major decanting lake of the solid flow coming from the rivers and streams in the lake. Due to this the waters of Buna until the conflux with Drini River are very clean and the small impurities easily transportable. This situation changes after the conflux of Drini with Buna. Although solid flow is slowed down by the hydropower stations constructed along the Drini River, the connection of Drini with Gjadri and Kir rivers remains a problematic issue. Those two rivers bring a lot of sediments to Drini than to the Buna River. Due to this, the bed of the Buna River is filled with sediments which make navigation impossible, because the depth of the river has been diminished. Furthermore, the river bed has been widened causing more floods in the area. This happens because Buna is a field river. Buna River is 44 km long and the root is 1.2 m/km. Due to this

root Buna has a dynamic shape and creates many curls. The delta of Buna River has many bifurcations because of the presence of islands of Ada, Franc Jozefi, Ishulli pa Emër etj.

#### **V.2.1.1 Floods**

In the area of Shkodra the most affected areas are the communes of Guri i Zi with 600 ha of land at risk, Ana e Malit with 1200 ha, Dajci with 800 ha, Bushati with 800 and Velipoja with 1200 ha of land. This area gets flooded mostly on heavy rains and when the pumping stations are out of work.

Rivers Kir and Gjadër have bigger flooding potential, due to the larger quantity of sediments deposited in the riverbeds. The dike of Mali i Rrëzuar (Fallen Mountain) has broken and Gjadri River is entering the old riverbed posing critical risk to Zadrima Plain. Kiri River waters are rising, due to the sediments and embankments east of Shkodra are at risk

The area of Lezha gets flooded when Drini reaches its critical level by +2.2 meters. Once this level is reached, the river bursts out of its bed in the Commune of Blinisht, village of Bachel, spilling over on 200 ha of agricultural land. In September 2002, the water level reached +3.04 meters. Over 5000 ha of land were flooded.

In the zone of Torovica with an area of more than 2200 ha, the critical level is measured at -1.7-1.8 meters. Five pumping stations have been established to drain the area. The pumping station in Balldren with 5 pumps with an extraction power of 25 m/cube per second has to operate to irrigate an area of 2200 ha.

A negative impact is produced by alluviums in the river which narrow the irrigation capacity by 40 cm annually, meaning that the bed of the River Drin is narrowed by 40 cm yearly.

The carrying capacity of the River Drin is presently 300m/cube per second, against the 500 m/cube required to irrigate the entire area of Lezha.

Floods have the following causes:

- The pumping stations not being fully operable due to shortages of electricity.
- Failure to clean first, second and third tire irrigation canals causing water to rise beyond normal quotas. Presently, an initiative has been launched to clean first and second canals with budgetary funding. The cleaning of third canals is the responsibility of the farmers themselves and up until now no action has been taken, although the local authorities are expected to take the lead to mobilize local farmers.
- Increased debris falling into the rivers due to the deterioration of mountainous dams. In 2005, the World Bank allocated funding to construct dams and grow forests. Thus an indicial funding of 9 million Lek has been granted to the commune of Kallmet in Lezha area to launch efforts to stall further land slides.
- The depth of the rivers has decreased due to the high level of alluviums, mostly in the Buna River
- Floods are also the direct consequence of illegal constructions over or nearby irrigation facilities.

#### **V.2.2 Analysis of the main factors**

The Drin River of the present days is not similar to the one of the past, because at the Vau Deja's neckband it flows in the southwest direction and creates a conjunction with the Gjadri River, goes through the field of Zadrima, crosses the Lezha town and ends up on the Adriatic Sea on the Drini bay. During a big flood in 1846, Drini was split in two branches by creating a new branch going in the direction of Shkodra where it creates a conjunction with the Buna River, the only rivers coming from the lake. Thus after the branching off at the neckband of Vau Dejes for 1.5 km distance the waters of Drini continue to flow in two directions, one to Lezha and the other one to Shkodra, where it connects with the Buna River. From that time and for many years afterwards, the Drin became a navigable river used for trade purposes with the other countries in the region. The disuse of Buna for navigation caused a big chaos on the hydrologic system of Drini basin as well as for the rivers of Buna and Lezha Drini.



One of the most problematic issues that the area is facing is the land property. In contradiction with the laws land close to the Drini River and other reservoirs in the area is given out to farmers. The law on water basins states that it is not allowed building constructions and/or operating a business within 200 meters of the water bodies, except in cases when there is important justification for it, and the permission must be given by the water authority of the region.

In this respect the government should start the procedures for controlling the situation and finding a solution for the land given in contradiction with the law. Also, a better harmonization of the laws in order to avoid problems of regulation conflicting with one another should be a priority.

### V.2.3 Tendency of the main factor

The hydrologic situation is going worse and needs immediate intervention.

### V.2.4 What is being done

There are many studies carried by the Geological Service about the environmental impact assessment caused by gravel works on Drini and Buna Rivers.

The Ministry of Agriculture and Food together with the Institute of Land jointly are preparing the “Study of the evaluation of the causes, environmental impact, hydrodynamics and rehabilitation of the river beds of the rivers of Drini and Buna”.

### V.2.5 List of problems

Problem	Causes	Impact	Population affected	Level of impact	Priority
Total hydrological chaos on the Delta of the Drini River	Flood of 1846 when Drini was bifurcated in to rivers and conjuncted with Buna River.	Shkodra Lake has lost its normal water regime. Due to the depositions of alluviums by Drini River, the bed of Buna Rivers has raised its level. The waters of Drini Rivers blocks the water to flow from Shkodra Lake to Buna River. The increase of waters on Shkodra Lake causes flooding problems with the irrigating system in the surrounding areas.	Shkodra region, a total surface of 1973 km <sup>2</sup> . A population of 185.395 inhabitants.	Average  It depends on the intensity of the falls. The main problems are the equilibrium of the waters in the system and possible pollution of the underground waters.	* * *  Highly important

Loss of natural and ecological equilibrium because of human pressure.	The hydrological event of 1956 caused big changes on the system. Building of the dams and different intervention by human work has changed the natural flows of the river.	Floods on the sub Shkodra area caused by Drini and Buna Rivers	Shkodra area		
Loss of possibilities to use the potentials (biodiversity, water for agriculture, tourism, water balances, etc) that the system offers in terms of natural and human benefits.	Deviation of the Drini River on 1956 and blocking its natural flow.	Buna Rivers have lost its natural values to be an attractive river to be used for tourist purposes. Drini Lezha is converted in canal collecting the drainage waters and the sewage waters coming from Lezha city and the communes around it.	Lezha district A total surface of 479 km <sup>2</sup> A total population of 67.734 inhabitants.		

## V.3. Agriculture and fishing

### V.3.1. General Assessment of the Situation

The agriculture in the area is the biggest contributor into the economy of the region. About 60% of population lives in countryside and deals mostly with agriculture (the agriculture sector remains undeveloped without any management systems. The villagers use the land mostly to meet their daily needs; only few of them use greenhouses). The agricultural land is very fertile with high productivity yields.

Before the nineties, the agricultural land was drained by a well managed system, composed by underground canals, drainage canals, pumping stations, and rivers. This system is now highly damaged and the situation is very critical; so critical that the area can not produce crops without improving this system.

The table below shows the part of land used for agricultural purposes in the project area. As shown in the table, the agricultural land is divided in flat lands and hills or mountains. Based on the law No. 7501 on the distribution of the land, it was given to the farmers in flat area, hills and mountains; this was done to satisfy the needs for production for all farmers. This division of the land has caused severe problems on drainage and irrigation system, and is expected to be one the main problems for the future developments of agriculture (most of the farmers do not cooperate, for a host of reasons, to implement strategic policies and/or to use new technologies).

Table 1. Area of agricultural land covering all REAP area

No	Communes	Area of agricultural land Ha	Flat land Ha	Land used for agricultural purposes, situated in the mountains and hills
1	Bushat	6,663	6,495	168
2	Berdice	2,396	2,153	243
3	Guri i Zi	2,112	1,654	458
4	Ana Malit	2,579	1,354	1,225
5	Dajc	2,709	2,633	76
6	Velipoje	3,050	2,761	289
7	Kolsh	705	350	355
8	Shengjin	1,020	1,020	0
9	Balldre	2,767	2,767	0
10	Kallmet	1,808	773	1,035
11	Dajc	2,618	2,468	150
12	Blinisht	2,383	1,027	1,356
13	Ungrej	470	0	470

Beside the high productivity of the land and the excellent climatic conditions for the development of the agriculture, the area is facing severe problems due to the flood happening regularly each year, caused by several problems (refer to the data provided by the chapter of hydrology under section dedicated to flood control). Due to this the agricultural land is flooded almost every year which causes the decrease of the production, washing of the land, thus making them less fertile and discouraging the farmers to cultivate it.

The yearly production in the area is as follows:

In the field of Lezha is produced yearly about 13.000 ton of vegetables over an area of 900 ha; 657 ton of fruits, over an area of 172 ha; 970 ton of potatoes, over an area of 107 ha; 9824 ton of bread cereals, over an area of 2994 ha; 115.700 ton of animal fodder, over an area of 4632 ha; 15.554 ton milk by-products; 990 ton of meat by-products. In some areas, farmers also grow tobacco crops. However, the area cultivated with tobacco (this culture) is being reduced increasingly.

The field of Shkodra depression is very fertile with high productivity yields. Thus, the crop of wheat

yields 40-50 kv/ha; corn 70-90 kv/ha; vegetables 250-300 kv/ha, fodder 400-500 kv/ha at harvest time, etc. As it is seen, the area is very productive and offers great opportunities for both agricultural and livestock activities. Most widely cultivated crops are: bread cereals over 28% of arable land; vegetables and potatoes over 16 % of the land; animal fodder in about 51 %; fruit trees, olives, vineyards 3 %; and others (beans, tobacco, etc.) 2%.

The total production from the basin area is sufficient to cover the needs for local consumption for only six months of the year.

The trading points are uncontrolled and in very critical sanitary conditions. The products are traded in very poor sanitary conditions, mostly on the pavements along the streets. Due to several factors, such as land ownership and lack of cooperation between farmers, the trading and marketing is undeveloped. There is no technology for packaging or standardization of the products for internal or for tourist or export purposes.

Although the government of Albania has signed several agreements for the development of free trade market between Balkans countries, the Albanian farmers (including the farmers of the area) are not competitive in the regional markets, posing negative effect to the economy (generally the products coming from the nearby countries are low in price and of good quality) and fulfill the needs of the local population.

### V.3.1.2 Fishing

In the Lezha area, various kinds of fish grow into the River Drin, such as sea bass, eel, etc. Presently an amount of 30 kv of fish is caught yearly.

Two companies possess the fishing permits and ten cultivation spots have been established. Fishing is allowed during certain periods of the year. Fish mainly grow in the mouth of the River and about 85 individuals are employed by the fishing associations.

The River Drin connects to the lagoons in Zaje; from river water and fish is supplied to the adjacent lagoons.

There are two fish processing companies, "Eurofish" situated in the vicinity of the town of Lezha and "Poseidon" in Shengjini village close to the harbor. Both companies discharge the waste water to the canals, which are connected to the Drini River and Kenalla Lake, by causing severe problems for the waters and foul odors in the area.

The discharge of sewage waste of the town of Lezha into the River Drin negatively impact fish growth by raising the level of chemicals and pollution in the waters. In addition to the fact that sewage is dumped in its raw condition, the dumping of urban waste directly into the river by the inhabitants of the towns further worsens the situation. The main problem here remains the discharge of sewage waters of the Lezha town and business entities situated along the river banks.

The water reservoir of Shkodra area formed by the basin of Vau Dejes Hydropower, the basin of the Gjadri River, basins of Spathari, Drini River, Buna River and the seashore of the town of Velipoja, represents a very important hydrological system for the development of the fish sector.

The native species of this reservoir are *Condrostoma*, *Alburnus alburnus*, *Leuciscus cephalus*, *Cyprinus carpio*, *Barbus meridionalis* and *Salmo trutta*.

Since 1990 the number of fish species has been reduced mostly by overfishing without any control and lack of management of the fishing resources. Some of the species are now threatened and a lot of alien species are introduced. The fishing activities in the area are not using the resources in sustainable way, which causes severe problems to the fish populations.

Buna River, which serves as a connection between Shkodra Lake, Adriatic Sea and Drini River, during the hot season favors the life of a lot of migratory and native species.

Buna River has a high level of nutrients (especially after rain falls), making it highly frequented by the marine and lake species; whereas in some cases massive migrations of fish from Buna to the sea and conversely are noted.

Until 1991, as in some other border areas, the complex of Velipoje – Buna River and marshland of Domini, were under military protection. Thanks to this status, the area was highly protected in terms of

biodiversity and human impact on the ecosystems was very limited. After 1991, it not considered as military zone, therefore the human impact increased constantly.

The social problems, combined with weak law enforcement, are the main reasons for intensive illegal fishing through the use of explosives and electric energy. By using all kinds of illegal means for fishing, during year '97 the damages were higher.

Until 1991, the fishing activity was measured at a level of approximately 200-230 ton/year. In the period, 1991-1994, this quantity increased, as a result of using illegal fishing tools and increasing numbers of fishermen in the area. After 1994, it is evident that the pressure has increased, reaching by the year 2002 the amount of approximately 22 ton fish harvested.

### **V.3.2. Assessment of key issues**

#### *V.3.2.1 Productivity*

Although overall satisfactory, productivity is expected to improve in the future. Measures towards improvement include: upgrading the watering and irrigation facilities; use of quality seeds; use of high productivity breeds; procurement of quality inputs and modern technologies and mobilization of farmers into associations or production groups.

The factors that may hinder or favor high productivity and sustainable yields in agriculture and stock-breeding are: watering, irrigation, organization and consolidations of farms.

#### *V.3.2.2 Watering*

Prior to change of system in the country, watering facilities covered 75 % of the land; presently only 46 % of the land is under water. The situation has deteriorated due to the damage wrought on public facilities during the transition period. In the recent years efforts have been made to upgrade farming conditions. However, what is done is very little compared to what should be achieved.

#### *V.3.2.3 Irrigation*

The main issue in the area is to ensure irrigation facilities. However, this has become difficult due to the land fragmentation effectuated by the reform of 1992. Moreover, local communities have not been able to organize themselves into cleaning and maintaining the irrigation canals.

In the recent years, important action has been taken to rehabilitate irrigation systems, World Bank loans have been used in this direction, but still a lot remains to be done.

#### *V.3.2.4 Land fragmentation*

Land fragmentation came as a consequence of the implementation of the land reform in accordance with Law No. 7501. Distribution of the land followed criteria such as location on the field or on the hills; land quality with regard to productivity, access to watering facilities, distance from dwelling places, etc. As a result, households own land in 3-4 places each of 100 – 400 m<sup>2</sup> approximately. This kind of fragmentation is detrimental to rehabilitation, irrigation, watering, use of farming machines, etc. which in turn cause low productivity and high costs. To redress the situation, it is necessary to finish land distribution as soon as possible and to grant title to the farmers so that they take these issues in their own hands. Of importance is to help communities overcome disagreements, conflicts and problems among themselves. These efforts will pave the way for the institution of the land market, i.e. land will be bought and sold. The creation of regulatory mechanisms will lead to land consolidation and the creation of associations and joint ventures as ways towards increasing land productivity.

#### *V.3.3. Trend of the main factors*

As regards, watering and irrigation, the situation is under control and improving as a result of the projects implemented by the World Bank funding. In addition, efforts are being made to involve the community in maintaining water and irrigation systems towards achieving sustainable development in agriculture.

## V.3.4. List of problems

Problem	Cause/causes	Impact	Affected population	Scale of impact	Prioritizing
Lack of irrigation systems in the agricultural lands.	Damage caused to the system during the change of system; communities do not clean and maintain system	Brings negative impacts on agricultural productivity; Upsets the structure of the land; delays the sowing of crops; Produce is damaged; The population's standard of living falls and their health condition worsens	Mainly the population living in the flooded area	High. There are floods every year especially in the fall-winter times, but also in spring. As a consequence crops sown both in spring and fall are damaged	* * *  Rehabilitation of the irrigation system is highly important and requires urgent intervention
A dysfunctional watering system	Destruction and damage during the change of systems; failure of local communities to clean and maintain first, second and third canals	Important impact on the productivity of crops. It causes decline of productivity levels and decline of the farmers' income. Harms animal health. Negative consequences for the living standard of the local inhabitants	All REAP area	High especially during summer time. Lack of access to water facilities causes production levels to fall by 50 %.	* * *  it is a very important issue. More should be done to rehabilitate the system, not just with World bank funding, but through the mobilization of communities themselves.
Fragmentation of agricultural land.	Distributed according to relief conditions: field, hill, mountain; Fertility of the land, access to water and distance from dwelling centers	The impact is highly negative because it causes the increase of labor costs, costs of watering, input costs, etc. This in turn reduces productivity and hinders the use of advanced technology.	This affects the entire population of the region	Impact is high because productive is low while costs are high. Market competition can not be met.	* * *  Very important. There is the need to increase awareness of farmers on the importance of cooperating and organizing into associations and work groups.
Lack of legal fishing associations.	Lack of capacities Lack of control	Loss of species and impoverishment of biodiversity.	All REAP area	High	Highly important



### V.3.5. Interplay with other issues

Shortages and poor quality of agricultural and live stock products cause prices to go up, which affects the general living standard for the population and the cost of spending vacations in the area. Given this situation, tourists, locals and foreigners will opt for other places. Poor quality of products leads to low prices. However, they may also lead to less demand. Scarcity of products leads to higher prices. High prices lead to less demand. Poor quality products at high prices will of course impact negatively tourism demand.

Agriculture is linked with many other sectors, particularly with environmental protection. The growing of crops utilizes various fertilizers and pesticides. These chemicals are an important element in increasing productivity. However, their traces remain on the produce after it is harvested, thus posing hazards to humans' and animal's health. They also pollute the land, the water and the air. Therefore, it is necessary to stimulate a very rational use of such fertilizers and pesticides. A very effective way is to replace chemicals with organic fertilizers to increase production. To fight crop diseases, instead of pesticides, other techniques may be used such as mechanical, physical, biological. The future belongs to sustainable, integrated and clean agricultural products.

The fishing sector including, aquaculture, is closely linked to the tourism (fishing is very attractive for a lot of tourists and is one of the most attractive assets of nature) and economy (along the REAP area, fish is one of the most important nutrients for the people).

### V.3.6. What is been done

The government has designed strategies, programs and projects dedicated to the development of agriculture. Thus, with World Bank funding, work has been launched for the rehabilitation of the watering and irrigations systems. However, the success of these efforts requires that farmers not just cooperate, but co fund the implementation of the project. They are requested to contribute by paying back 300 lek/1000 m<sup>2</sup> of land placed under water.

Other projects such as 2KR are providing loans to farmers to purchase mechanical machines. As of present, 57 tractors are procured totaling an amount of about 107 million lek. The project on Agricultural Services provides credit to upgrade agricultural related services. A total of eight projects have been awarded amounting to 110 000 US dollars.

Other joint efforts are types of cooperative arrangements with NGOs operating in the region of Shkodra such as: LVIA, OXFAM, TEULEDA, GTZ, AFADA, LEA, etc. It is worth mentioning the joint Albanian-Turkish project (TIKA) implemented in Shkodra and Malesia e Madhe "On raising cattle of the Jersey breed", with a budget of 346.370 USD. In the commune of Dajc and Ana e Malit, FAO invested in livestock breeding an amount of 222.360 USD.

As regards agro processing, the region of Shkodra is house to a number of agro-processing industries that meet EU criteria, processing primarily meat, milk, grapes, olives, medicinal and ether-oleous plants.

The national strategy for development provides for measures to support the establishment of fishing associations. Competences are delegated to local level of government in order to relieve procedure of heavy bureaucracy. However, as of presently, nothing is being done in terms of concrete projects.

In the field of aquaculture, free imitative is lacking, due to low levels of knowledge, lack of financial resources and lack of technical and informational facilities.

## V.4. Biodiversity (Protected areas and landscape)

### V.4.1. General evaluation of the situation

As a result of the geographic position, hydrological characteristics, climate and micro climate, relief, etc., the area has a reach biodiversity and beautiful landscape. The number of bog habitats and non bog habitats such as forest, shrubs, pastures and agricultural land give to the area high values of fauna and landscape with national and regional importance.

#### *Sand dunes*

The system of sand dunes in the area being studied area extends along the Adriatic Sea, the Drini bay and into the mouths of Buna and Drin rivers. In general this system is well preserved as regards natural conditions than the others in Mediterranean areas. On the other hand infrastructure development, urbanization and tourism development by human activity represents a permanent and increasing threat for the beach ecosystem and sand dunes.

First sanding belt's indicator species: (*Cakile maritima*) and (*Salsola kali*), come across well developed in northern Velipoja's beach near the Reservoir.

#### *Alluvional coastal forest*

Albanian seacoast's alluvium natural forests represent typical hygrophil forests mostly spread out in the Mat, Drin and Buna Rivers' mouth, on alluvium especially basi lands, with high levels of underground waters and frequently submerged from outflows or tempestuous rain. 10 - 15 years before, forests represented one of the most beautiful and richest assets of the Adriatic ecosystems, almost impassable because of conjunctions between lianas and similar species of basic elements; European cosmopolitan hygrophilous represented from indicator specie (*Alnus glutinosa*) with equal quantity -cover values or almost equal (*Fraxinus angustifolia*) and less number of species (such as *Quercus robur*, *Populus alba*, *Ulmus minor*).

Their situation is better in Velipoja's area.

In the Kune-Vain reservoir, specific conditions for forests extension (alluvial land with a higher level of underground waters that count anytime), does not permit alien species emplacement, or their competition with native species. Presence of such species as *Populus Canadensis* (Patok, Velipoje, etc.), *Robinia pseudacacia* (Velipojë, Kune, Patok) comes as result of incorrect human activity towards afforestation practices in these areas.

#### *Some rare and endangered species*

Realm extension of *Quercus ilex* is determined to be on the seaside area - rarely on Velipoja and Kune-Vain alluvium forests. Conservation and growth of this specie can improve considerably with the designation of some extension areas as zones under higher protection.

#### *Fauna in costal lagoons*

The Museum of Nature Sciences has monitored the fauna of main costal lagoons, which is presented below according the main biological groups.

#### *Mammals*

Table 2. Endangered species of mammals on costal wetlands that were include to the monitoring of year 2002.

Species	Velipoja	Kune-Vaini
Bio indicator's Endangered mammals	4	7
Bio indicator's observed mammals	14	11
Ratio of endangered / observed (%)	28.6	63.6

The situation is more negative in the area of Kune-Vain and Patok's Lagoon where the endangered species are respectively 63.6% and 61.5% of observed and explored populations in these areas. In Velipoja the ratio of endangered species with observed ones is smaller (respectively 28.6%, 29.4% and 38.9%), which speaks of better conditions of this group of animals in this area.

#### *Winter birds*

The complex of Velipoja, which includes the lagoon of Viluni, Reservoir of Velipoja and costal area, has been the object of winter's observation of all the six study expeditions that were undertaken in the period of time of 1993-2002.

The average for several years of winter birds is 4,340. The maximum number of birds was registered during the year 2001 (nearly 7,900 birds) meanwhile the minimum shift was registered in 1996 (nearly 2,300 birds). During the winter of 2002 the total number of observed birds was lower than the maximum registered in 2001, but this number was not very different from the average over many years. But if we mention that the area of Viluni had not any defense status, this situation seems normal. Frequently the fishing and hunting activities are more concentrated in this area.

In the complex of Kune and Vain during 2002 where observed 32 species of water birds with of total number of winter birds of 2,318 individuals. This is the lowest number of individuals observed since 1995. The number of species during 1995 was around 17,250. It is obvious that the complex is losing its importance for the winter water birds. The number of individuals around 47% is denser in the water surfaces of Vaini lagoon followed by Merxhani. Different from previous years, the number of birds observed in the sea has decreased

*Table 3. Number of winter birds during 1995 – 2002 for the complex of Kune and Vain*

1995	1996	1997	2001	2002
17,250	9,723	10,795	3,370	2,318

#### *Nestle birds*

In the complex of Velipoja the number of nestle species, as in the other lagoons of the country was decreased. The numbers of species observed were 12.

The absence of colonial nestle birds is an indicator of the human pressure and the loss of their habitats.

In all Kune and Vain area are observed (during the summer expeditions) 45 species of birds, of which only few were water birds populations. The frequent nestle birds arrived to 11 species, meanwhile the other species might be spontaneous visitors. In general the total number of birds observed was lower compared to the capacity of the area, although this is a protected area

The causes of this problem are: illegal hunting, catching of species for trade purposes and victimization of the birds. For the moment the illegal hunting is one of the most problematic issues. Every kind of manners and methods are used to kill animals non stop around the year. The "big" animals are the ones which are suffering more.

#### *Amphibians and reptilians*

Along the lagoons are observed 10 species of amphibians and 29 species of reptilians. The area of Kune has the biggest number of threatened amphibians and reptilians (14 species). In Kune the bad situation is progressing. So, the number of *Testudo hermanni* has decreased 2 times compared to 10 years before, the number of *Coluber caspius*, *Coluber gemonensi* and (*Elaphe longissima*), has decreased by 4 times.

#### *Fauna in the Delta of the Drin River*

Birds and mammals are the most attractive elements of the biodiversity of Drini River's valley and its tributaries. This hydrographical system is vital, especially to the mammals. Big mammals consist of: wolf

(*Canis lupus*), jackal (*Canis aureus* L.), boar (*Sus crifa* L.), and otter (*Lutra lutra* L.).

The highest part of the valleys of these mountainous creeks and rivers has not been impacted by anthropogenic factor, therefore remaining favorable environment for reproduction. In the area of interest, there are birds and mammals in special status of protection: boar (*Sus crifa* L.), partridge (*Perdix perdix* L.), and *Streptopelia decaocto* Friv etc. The area is also inhabited by mammals of economic interest and values like boar (*Sus scrofa* L.), (in Molung), fox (*Vulpes vulpes* L.), marten (*Martes faina* Elxl.) *Martes martes* L., *Meles meles* L. fitch (*Mustela putorius* L.) squirrel (*Sciurus vulgaris* L.) otter (*Lutra lutra* L.) and birds: grouse (*Alectoris graeca* Meisner), stock-dove (*Columba* L.), and turtledove (*Streptopelia turtur* L.).

Avifauna of the region is characterized by birds of the kind that live in shrubbery and forests, but also of urban birds (*Athene noctua*, *Falco tinnunculus*, *Anthus campestris*, *Corone cornix*, *Corvus corax*, *Pica pica*, *Passer domesticus*, *Carduelis carduelis*, etc). The most important are the blackbirds (*Turdus merula*), starling (*Sturnix vulgaris*), lark (*Aleuda arvensis*), turtledove (*Streptopelia turtur*), woodpecker, finch, sparrow, bullfinch, etc.

Among reptiles, most common are *Lacerta viridis*, *Podarcis muralis*, *Anguis fragilis*, *Vipera amodytes*, *Natrix* sp., *Coluber* sp. turtle (*Testudo hermani*, Gmel). *Vipera amodytes* can be found at the mountains of Kakarriq and Renc.

#### *Flora in the Delta of the Drini River*

The area under this study is part of Mediterranean shrubs, while forest formations, such as Mediterranean pines in the Vela mountain, or alluvium forests in Kune Vain

Shrubs generally are mixed, but in accordance with the pressure of different biological factors, dominance of several species seems dominant as the altitude decreases.

Large areas, previously with shrubs, in low and hilly lands have been converted to arable land, which has created important impacts on the water regimes of rivers and creeks, running through these areas.

Inclines of the Mountains of Kakarriq, Shëngjin, and Renc west of the delta and those of Molung, Kreshta and Shelbumi on the East are characterized by diverse and attractive flora richness.

In low land and hilly area, due to human impact, the natural values of land are altered in order to ensure land for agricultural purposes. Plains of Zadrima and Lezha are example of this alteration. Vegetation at river side is generally uniform, isolated and damaged. Natural belts have decreased due to different interventions such as, cutting, illegal buildings or use for agricultural purposes.

### **V.4.1.2 Protected areas**

#### *Kune an Vain lagoons*

Kune and Vain is the first protected area in the country declared in 1940 and re-declared in 1960, 1977, 1983 and 1992.

The current status of protection is included on the fourth category of IUCN, which aims protection by management interventions and represents the most attractive and accent area of Drini delta for its biodiversity, which is extended in the two sides of Drini embouchure, with a total surface of 2.300 ha.

The Drini Delta has the status of IBA define for the protection of the birds. The lagoons of Kune and Vain represent a value for Ramsar Convection and are known by the specialists as a privilege of the nature meaning they are eligible for selection in the first place high quality or first among equals for the landscape values by the conference of Alger (1985).

Degradation of the protected area of Kune and Vain is very high and is caused by the: - Damage of flora and fauna, illegal interventions, use of uncontrolled and yearlong fishing practices.

- Illegal buildings in the protected areas and human activity in the area.

- Damage of the hydro communication regime lagoon –sea and lack of investments for this purpose.

#### *Buna River and Velipoja*

Shkodra Lake – Buna River – Velipoja area has a very rich fauna, including species of national and

global conservation concern. According to national and international inventories and existing bibliographical data, in the relevant area have been recorded 216 fauna species with national unfavorable conservation status and 36 fauna species with global unfavorable conservation status.

Since November 2005 the area of Buna River, together with the inland of Frac Jozef, reservoir of Velipoja, Viluni lagoon, beach of Baks-Rrjoll, marshland of Domni and the surrounding areas has the status of "Protected water/land landscape", under the Albanian law for protected areas.

In spite of the fact that for decades the reservoir of Velipoja has been reduced, generally, flora and fauna is well stored. Illegal lumbering and fires are very rare. The combination of diverse types of vegetation, halophilous, psamophilous, typically inshore and hydro-hygrophilous of fresh waters make this area one of the beautiful and most interesting places of Albania. Conservation and protection of this reservoir should be a priority even in the future.

### *Shkodra Lake*

Thanks to the wealth of scientific and economic knowledge on the lake, the information on its biodiversity is particularly rich. Shkodra Lake's biodiversity has developed in unique geomorphologic, geographic, climatic, hydrologic, ecological and other conditions. Total biodiversity is high and the region is considered to be a biogenetic reserve of significance even on European scale. While its biodiversity is used to some extent for food (for example, from birds and fish); biotechnology, herbal pharmacology and medicine, however, make almost no use of the numerous benefits that the lake region offers as a genetic resource.

From a zoo-geographic perspective, the Shkoder Lake region is located in a zone where two major zoo-geographic areas meet — the Palaearctic (Europe, Asia, the Mediterranean and North Africa) and the Palaetropic (Africa). From a more narrow perspective, the Mediterranean and continental Europe, together with some fauna characteristics found in Asia, directly affect this region. These linkages and influences are best illustrated through examples of bird fauna, with incidences of African species

(such as the African cuckoo, African black heron, flamingo and others) and winter migratory species of West Siberia (ducks, geese).

During the last glacial period, the Lake of Shkoder represented an extraordinary refuge for the species of that time. The consequences are obvious today by the large number of relic and endemic animal and plant species inhabiting the area. After the ice age, species such as the turtledove, the Dauric swallow, Syrian woodpecker and Spanish sparrow have come to the region as they expanded their habitats from elsewhere.

Shkodra Lake requires optimal protection, and in the beginning of the 21st century, the linkage between water quality and human health is being ever more increasingly regulated by law. The focus of these regulations is moving towards pollution control, through intensive monitoring over the course of three to five years, the primary aim of which is to define the 'baseline' water quality of Shkodra Lake.

Several factors pose risks to the lake:

- Construction on the banks of the lake. Construction works do not have proper sewage connections or networks, and waste matter goes directly into the lake without prior treatment. As a result, the increase of phosphorus (from detergents and white waters) and other substances leads to lack of dissolved oxygen supplies.
- Illegal fishing methods. Besides the damage caused to the fish populations, dynamite and electricity create the basis for the introduction of harmful, polluting substances of inorganic origin.
- Use of the lake for bathing. During the summer, significant bacteriological pollution, mainly from bathing, can be observed.
- Household use of lake's water. The local population uses the lake's water for household purposes, and the used water is poured back into the lake. In the process, detergents (mainly phosphate) are poured into the water, which increases the content of phosphorus in the lake.
- Industrial pollution. Industrial pollution coming from the region surrounding the lake is a very important factor, as pollutants reach the lake through the air and water. The biggest urban centers are at the same time the main industrial centers, where there is hardly any treatment of wastewaters.
- Pollution from solid waste, and especially pollution from municipal wastewater that is released into the lake, create conditions for the spread of various viruses and bacteriological diseases.



The legal framework on administration, protection and management of zones of interest consists of Law no. 8906, dated 6.6.2002 “on Protected areas”; Law no. 7908, dated 05.04.1995 “On fishing and aquaculture”; Law no. 7875, dated 23 11.1994 “on hunting and protection of wild fauna”; Law no. 8934, dated 05.09.2002 “On protection of environment”; Law no. 7623 dated 13.10.1992 “on forest and Forest Service police”; Law no. 8093, date 21.3.1996 “On water reserves”, changed by the Law no. 8905, date 6.6.2002 “On protection of maritime environment from pollution and damages”; Law no. 8736, dated 1.2.2001; Law 7665, dated 21.01.1993, “on development of areas where tourism is a priority”; decree no. 267, dated 24.4.2003 “On procedures of proposing and proclaiming protected areas and buffer areas”; Decree No. 266, dated 24.4.2003 “On Protected areas administration”

The above laws are facing problems with their implementation, caused mostly by lack of human resources and the willingness of the local authorities to intervene in cases of violations.

#### **V.4.1.3 Forests**

Natural alluvium forests on the Drini delta represent typical hygrophilous forests spreading on alluvium lands, the inner strata of which are rich in soils with high moisture content and high water tables. These lands are frequently flooded in times of heavy rainfall. 10-15 years back, these forests represented the most beautiful ecosystems on the Adriatic Sea. They were very dense, almost impossible to pass through, very diverse, with a combination of species resembling lianas with conventional species, the cosmopolitan European hygrophilous represented by the type of indicator, *Alnus glutinosa*, with coverage almost equal to *Fraxinus angustifolia* and to a lesser extent with trees of the type of *Quercus robur*, *Populus alba* and *Ulmus minor*.

On Molung hills, in Vela, a *Pinus nigra* formation is evident, representing great landscape values

#### **V.4.2. Analysis of Key issues**

Degradation of Kune Vain Lagoon, impoverishment of biodiversity because of:

- Exploitation without any criteria of flora and fauna, illegal interventions, devastating fishing methods, etc.
- Illegal construction in or nearby protected areas, free movement of men and vehicles into these areas.
- Lack of buffer zone for Kune – Vain.
- Disturbance of the water communication regime in the lagoon and lack of investment for rehabilitation.
- High sea erosion, due to reduction of alluviums of Drini River.

Loss of natural values of Drini River (Lezha branch) and its riverbed, loss of biodiversity because of:

- Reduction of fish population and diversity, damages to the habitats of the riversides, overexploitation of flora and fauna
- Destruction and changes of natural habitats in watershed of the Drini River (Lezha)
- The absence of buffer zones, fragmentation of habitats and destruction of ecological corridors
- Overexploitation of natural resources (limestone) and landscape damages.

Issues related to the management of forests:

- Continuous yearlong felling of trees for production of wood material. Illegal trade of timber and non-timber products,
- Damages and lack of forestry belt in both sides of embankment of the river, landscape values loss;
- Occupation of forest surface by legal or illegal quarries, without any appropriate strategy or planning,
- Reduction of forestry areas and insufficient measures for rehabilitation. There are three tree nurs-

- eries, 1.5 ha in total, i.e. insufficient by far to provide tree sapling to cover the needs.
- Erosion is active over a large area
- Weak law enforcement

#### V.4.3. Trends of the key factors

- Degradation of Kune Vain Lagoons, loss of biodiversity is getting worse
- Loss of natural values of Drini River (Lezha) and its riverbed, damages to the biodiversity is getting worse
- Damages and felling of trees for production of wood materials, illegal trade of wood material and timber and non-timber products is getting worse
- Occupation of forest surface by legal or illegal quarries, without any appropriate strategy or planning is getting worse
- Decrease of forests surface is getting worse
- Active erosion in forests is getting worse
- Weak law enforcement is not improving.

#### V.4.4. List of problems

Problem	Cause	Impact	Effected population	Scale of impact	Priority
Loss of biodiversity, degradation of protected area (such Kune Vain)	a. increase of illegal hunting b. lack of capacities of institutions on law enforcement and protection and administration of hunting resources. c. loss of habitats, fragmentarization of habitats, damages to the ecological corridors d. construction within the protected areas. e. low level of awareness of community about protection of fauna and flora values.	Decrease of number of species, especially within the protected area of Kune Vain decrease of their population Deterioration of mammals' number. Damages of the landscape in Kune Vain and on slopes , due to the illegal logging	The population of the region is effected indirectly, as an important potential resource of tourism is damaged.	High	**

Increase of water pollution in Drini River and Kenalla Lake, deterioration of fishing resources	Direct discharge of the untreated sewage water of Lezha, and communes of Shëngjin, Mabë, Balldre, Kallmet, Kolsh in Drini River and sewage water of Shëngjin town into Kenalla Lake.	Deterioration of fishing resources, decrease of number of species and decrease of their population	Shëngjini Commune population, population of Lezha. The population of the region is effected indirectly, as an important potential resource of tourism is damaged.	High	***
Damages of forest formations and deterioration of habitats.	a. illegal logging b. intensive grazing, especially in slopes nearby the urban areas. c. chaotic urban expansion, land occupation by building constructed without any plan or criteria e. exploitation of natural resources without any plan, damaging important values of flora and fauna in Kakarriq Mountain	a+b. damages of tree and bushes vegetation in both sides of Drini River and in slopes of the watershed, damages of pine forest in Vela, and of shrubs and bushes in most of the area Impoverishment of vegetation, due to the overgrazing, especially nearby the urban areas. d. damages to artificial Pine trees forest in Shëngjini Mountain, due to the construction and buildings. e. Damages of shrubs and trees in Kakarriq Mountain because of quarries.	All REAP area	High	***

Erosion, Sea Erosion	a. increase of the level of erosion, especially in terrace slopes b. Deterioration and amortization of protective measures, dikes and dams c. lack of investments for rehabilitation of existing protection forest belts and establishment of new ones. d. lack of protective and anti erosive forestation e. high intensity of sea erosion	Erosion of slope soils. Loss of seashore, loss of high natural values, loss of habitats	All REAP area	High	***
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#### V.4.5. Links with other analyzed issues

Biodiversity issue is interlinked with forest, and especially its indicator of “loss of habitats”. Deterioration of forests and shrubs means loss of habitats and causes the deterioration of the biodiversity and vice versa.

Biodiversity is linked directly with the solid waste and sewage water issues, as the pollution of the water causes loss of biodiversity.

Biodiversity has close connection with tourism development. Lezha is a region with potential for tourism and the main assets are biodiversity values. The tourist attraction will reach minimum limits, if biodiversity and natural loss will occur.

Soil erosion is the main cause of floods in Lezha area. Eroded soil is deposited into the Drini Riverbed. The lack of forests belts in both sides of the river, reinforces the flood potential.

#### V.4.6. What is being done

The area of Shkodra Lake, Buna River and Velipoja bay is designated to be a protected area with different scales of protection assigned to the different parts. In accordance with these developments a lot of area is taken under control by the Ministry of Environment, Forest and Administration of Waters.

The implementation of environmental monitoring and management component for Kune Vain, in the framework of “Integrated management of waters and ecosystems” a World Bank funded project has already started. This project aims at implementation of a management plan for a sustainable development in Kune Vain, focusing at protection and development of natural values of this area.

The project for treatment of sewage water of Lezha and Shëngjin by the artificial wetlands, nearby Kenalla Lake, is planned to start soon. This project is also financed by World Bank.

More than 80% of the Protected Area of Kune Vain is recognized as private property and given back to the owners, contrary to the law. This fact makes difficult, if not impossible, to develop and implement a management plan for the sustainable development of the area.

Within the boundaries of the protected area, there are illegal constructions (recreation, accommodation facilities, and settlements, deteriorating maximally the natural values of this area.

Only small projects have been designed and implemented towards the deepening the riverbed, in the Lezha town and in the mouth of the river.

## V.5. Human dynamics and use of territory

### V.5.1. General Assessment of situation and main contributing factors

The project area includes about 20 administrative units as shown in table 1. The Lezha area includes 1 municipality, 9 communes and 2 towns (Lezha and Shengjin) and the Shkodra area includes (although not in absolute terms of the space) 2 municipalities (Shkodra and Vau i Dejes) and 8 communes.

*Table 4. Change of population according to Civil Registrar Office and forecasted population changes for 2020 given estimated by EPTISA*

Administrative units	Year 2003	Year 2005	Projection for 2020
Municipality of Shkoder	108,994	110,181	138,433
Municipality of Lezhe	23,476	24,668	42,203
Commune of Bushat	17,087	17,332	35,542
Commune of Shenkoll	12,757	13,216	19,732
Municipality of Vau-Dejes	12,296	12,010	20,266
Commune of Guri i Zi	11,730	11,669	15,202
Commune of Shengjin	10,120	10,206	28,767
Commune of Balldre	9,939	9,974	15,316
Commune of Berdice	9,123	9,144	12,911
Commune of Dajç	8,520	8,558	14,584
Commune of Zejmen	8,343	8,642	9,263
Commune of Velipoje	7,953	8,261	10,132
Commune of Dajç	7,011	7,075	14,584
Commune of Kallmet	6,614	6,628	7,596
Commune of Ana Malit	6,301	6,250	6,128
Commune of Hajmel	6,094	6,122	4,257
Commune of Kolsh	5,827	6,206	7,997
Commune of Blinisht	5,189	5,220	5,979
Commune of Barbullush	4,759	4,818	No data
Commune of Mnel-Vig	3,452	3,249	4,565

Commenting on the statistical time-series data, we note that the change between 2001 and 2004 is strangely high. The local authorities have said that the 2001 figures were, in their view, inaccurately low. If the 2004 data are reliable, then this would create a falsely high rate of change between 2001 and 2004. Therefore, we have taken the 1990-2004 (fourteen year) change as the base for projection.

This projection should be treated with caution. It is difficult (in reality, impossible) to make a projection and expect that it will probably come true. Events will depend on uncertain factors, particularly (a) how the economy performs, (because the population will follow jobs) and (b) whether policy goals are successful (or even attempted to). Specifically, population change depends upon the availability of good quality land which may or may not be delivered at the time in question.<sup>1</sup>

As regards the size, functioning and spatial arrangement of the settlements the problems abound.

Due to lack of sustainable economic resources and lack of service delivery networks, the population has the tendency to move out of the rural areas. The tendency to migrate is strongest in the rural

<sup>1</sup> Assumption made by the EPTISA project



mountainous areas, moderate in the hilly areas and more stable in the municipality of Shkoder. (A more detailed analysis of the problem is being conducted in the context of efforts to design the strategic plan on space management under the “Project for the study of regional development” covering the regions of Shkodra and Lezha.

Except for the municipality of Shkoder none of the other local administrative units has plans for regulating the territory or settlements. Lack of such plans has entailed a situation of chaotic buildings spread out irregularly and in such a way that increases the cost of service delivery (health, education, building roads, sewage and water pipes, etc.). The situation is such that it even makes impossible the provision of such services. The spread of settlements threatens to cause the fragmentation of agricultural land and the upset of natural balances of the land (due to uncontrollable solid waste dumping) and of the subsoil due to the collection of sewage in septic holes and the procurement of drinking water through pumping wells. All of these risks may cause in the near future irretrievable damages on the system of underground waters.

#### V.5.1.1 Land requirements

We estimated the population growth and proposed its location. In the tables above we restate this and convert it to needed amount of land on the basis of assumptions of the density of the population.

Table 5. Estimated land needs

Location	Population Growth to 2020	Land Needs (Ha)
Shkoder City and surroundings	33,647	70.1
Bushat	18,250	38.0
Velipoje	19,440	40.5
Shengjin	18,561	38.7
Vau Dejes	4,835	10.1
Lezhe Corridor	42,825	89.2
Lezhe City	17,535	36.5

(\* In the Lezhe Corridor are included the communes of Balldren, Kolç, Kallmet, Blinisht, Shenkoll, Zejmen, Lac, Milot, Mamurras, and Fushe Kuqe, Source: Regional Development Studies Project (EPTISA)

However, some of this supply should be met by the reclamation of derelict land and by the infilling of small vacant plots to be found within built-up areas. If we take for granted a careful programme of this type, then we estimate five percent of needs could be met in this way.

#### V.5.1.2 Employment

Based on data taken from the Regional authorities, the structure of employment in the areas covered by the project is as follows:

Table 6. Employment according to sectors. Self employed people (agriculture are not registered as employed) are not given here.

Employment sector	Shkodra area	Lezha area
Governmental sector	70 %	50 %
Private sector (non farming)	30 %	50 %

The existence of a large informal sector which feeds on black labor, coupled by self employment in farming on the edge of sheer survival, makes it difficult to come up with accurate data concerning employment rates. Self employment in farming, especially in the rural areas, contributes to the false raise of employment rates and has no impact whatsoever on the improvement of the households' living conditions.

#### V.5.1.3 Water supply systems and new water supply sources

#### V.5.1.3.1 Lezha area

The main water sources constituting the hydrographic net in the area of Lezha are the Drin and Gjader rivers, plus the stream of Manatia in the Commune of Kolsh and the stream of Vome in Kalivaç, in the commune of Ungrej).

This basin spreads in the area of Shengjin-Zadrima-Bregu i Matit and supplies drinking water to the towns of Lezha and Shengjin as well as to the entire villages on the field. The amount of utilized water, including for technological purposes, is 400 l/sec. The main water supply facilities are the one in Barbulloje and Rrila. The feeding area is mainly the bank of the river Mat southwards. Estimated water reserves are 2500 l/sec. Many wells have been drilled on this field and provide a free flow of 10-60 l/sec. But the waters are also utilized to water agricultural lands as well as to dilute the salty waters of the lagoons to reduce the saltiness especially at times of the year when evaporation is highest.

The increasing utilization of underground waters often creates hydrodynamic and hydro chemical misbalances and creates conditions for waters to be polluted by human activity.

The basin belongs to the gravel water collecting deposits whose thickness gradually grows in the direction of the River Mat up to 180-200 m. They are covered by clay and sub-clay layers measuring up to 45-50 m in thickness.

The risk of superficial pollution is low thanks to the thick screening cover, long distance from the feeding source and the artesian nature of the water holding layers.

Examination results show that the sources feeding into this basin are of two kinds: waters with less hardness and low mineral content and hard waters with high mineral levels. The first kind is mostly encountered in Barbullonja. The element of  $\text{NO}_2$  is encountered in the waters of Barbullonja and those surrounding the Hunter's Island. Examination also reveals that mineralization is on the rise especially as regards content of Na (Natrium) and Cl (Chlorium). Examinations conducted with regard to microelement content, showed no presence of microelements in these waters.

Underground waters abound in the area of Lezha. They are usually of good quality, but in some of the populated zones they are little known. The most pressing problems that have been created of late relate to the danger of these waters being infiltrated by salty waters, due primarily to over-exploitation. About 20 % of the amount of underground waters is used for plant watering in farming.

The preservation and monitoring of the quality of underground waters is indispensable in order to ensure the supply of the population with drinking water of acceptable quantity and quality.

A good part of the population in the area of Lezha is supplied with drinking water from sources and springs. This is particularly true in the northeastern part of Lezha.

Two of the communes, Kallmet and Kolsh, are supplied by sources.

The supply of drinking water through pipes inside the homes and in their backyards as well as the good bacteriological properties of the water have a positive role on the prevention of diseases, quality of health and everyday life's activities. The Municipality of Lezha is close to achieving normal standards of 24 hour supply (interruptions happen during intervals of electricity cuts or breakdowns in the system). Thus, about 38.5 per cent of households in the area of Lezha have in-house water plumbing, 27 per cent have water plumbing in their backyards and 14.2 per cent are supplied by wells and cisterns. In about 20 per cent of the households water supply installations are missing; of these 90 per cent are in the countryside.

In the urban zones, the number of households with in-house water plumbing is two times as high as in the rural zones, but this does not mean that they have running water all the time. The number of households with water plumbing in the backyards in the rural zones is seven times as high as in the urban zones.

Also, it must be pointed out that the population share with access to the sanitary system of drinking water lives in the urban zone and accounts for 29.62 per cent plus another 20 per cent that lives in the rural zones that are covered by urban or rural water supply systems, thus constituting only 49.62 per cent of the population.

The remaining part of the population that obtains water from natural sources or that procures it from small drilling works has been largely negligent of the sanitary issues of drinking water. Neither have responsible institutions been paying due attention to this issue.

The main characteristics in the case of the area's underground waters are that :

- The main reserves of drinking water are concentrated in the soft quaternary deposits, thus being readily prone to pollution;
- They lend themselves to easy exploitation which favors quick changes in the chemical properties of the water;
- Their main feeding sources are the rivers, where most of the waste from human activity is discharged.

*Table 7. Main characteristics of the water supply facilities*

Name of the water supply works	Type of Source	Destination	Type of supply
Municipality of Lezha	Wells	Drinking water	Mechanical
Commune of Shengjin	Depot	Drinking water	Free flowing
Commune of Kolsh	Sources	Drinking water	Mechanical
Commune of Zejmen	Wells	Drinking water	Mechanical
Commune of Shenkoll	Wells	Drinking water	Mechanical
Commune of Kallmet	Sources	Drinking water	Free flowing
Commune of Balldre	Depot	Drinking water	Mechanical
Commune of Dajç	Wells	Drinking water	Mechanical
Commune of Blinisht	Wells+Sources	Drinking water	Mechanical+Free flowing
Commune of Ungrej	-	-	-

As derived from the monitoring of superficial waters, it can be said that costal waters are polluted with untreated urban and rural used waters. As a consequence, waters have a high chemical and biological need for oxygen, ammoniac and phosphates. Nitrates persist to be in low concentration levels. On the other side, the monitored waters display high levels of fecal pollution. Compared to the period 1999-2000, all indicators display a slight rising tendency.

#### *V.5.1.3.2 Shkodra area*

The area under consideration is considered to be rich in water reserves.

Water is procured from underground and ground sources.

The water procured in this way is used for drinking, irrigation, technological production and every other possible usage. It is generally accepted that usage of water is uncontrollable especially as regards underground sources, which is expected to bring about serious consequences in the regimen of waters in general.

From information obtained in the communes (pertaining to the area covered by the project, except for the municipality of Shkodra) about 10-20 per cent of the population is supplied by the official water system. This is an indication of the sanitation conditions for the overwhelming population.

Chemical examinations and quality monitoring exercises have revealed that the water of the River Drin is of good quality and with stable mineral content of low concentrations of metal. As a result, there are no restrictions for usage in agriculture or for other purposes. The quality of ground waters is usually fair close to the basin up in the mountains. The lowland area displays problems that may relate to the infiltration of salty waters. However, this remains to be explored in more detail.

The percentage of population with access to drinking water differs greatly from commune to commune in the examined area.

The situation of water supply systems, as is the case allover the country, is poor. The water supply pipes are old, in poor condition, and often disrupted by illegal intrusions.

The table below summarizes the condition of water supply systems in the above mentioned communes.

Of concern remains the consumption of drinking water as it is directly pumped from the wells under household possession, without any sanitation control whatsoever.

Overall, the water procured in such ways is usually drinkable. However, there are cases as in the commune of Dajc where the water displays traits of sulphuric presence.

Given the lack/poor condition of sewage pipes, the situation becomes even more problematic.

Almost 80-90 per cent of population's needs for drinking water are met through procuring water outside sanitation control.

*Table 8. Condition of water supply systems in the local government units covered by the project*

<b>Municipality/commune</b>	<b>No. of water supply facilities</b>	<b>Out of operation</b>
SHKODER	1	-
Vau i Dejes	7	6
Bushat	9	8
Berdice	6	5
Guri i Zi	3	2
Hajmel	4	1
Mnel-Vig	-	-
Ana Malit	5	4
Dajc	9	6
Velipoje	1	1

#### *V.5.1.4 Waste and sewage*

##### *V.5.1.4.1 Lezha area*

##### *Urban waste*

Urban waste is created by households, the public administration offices and agencies, the construction sector, the fish processing industry, the beer industry, the various service industries, etc. Waste is collected without any prior sorting and the problem becomes very serious since hazardous materials (such as batteries, chemicals, etc. are also thrown together with other urban waste. Only the municipality of Lezha and the Commune of Shengjin have, even if formally, established waste collection and transportation systems through their own communal enterprises or through subcontracting private companies. The rural areas (communes of Blinisht, Dajç, Balldre, Kallmet, Ungrej, Zejmen, Shenkoll and Kolsh) have not as yet established any kind of organized system for waste collection and transportation. This has created an abnormal situation which needs to be solved urgently on priority basis.

Besides, tourism development continues to add to the problems of waste management on the beaches.

It is estimated that the towns of Lezha and Shengjin taken together create about 8760 tons of waste yearly. Solid urban waste is not managed in any way that it complies with environmental requirements and standards. As of presently, no landfill has been built to deposit urban waste as required by environmental standards. The burning of garbage and waste in their points of collection in open air has become common practice and a source for releasing hazardous and dangerous poisoning substances such as dioxins.

In the summer time, the number of inhabitants in the town of Lezha (23476 inhabitants) and Shengjin (10120 inhabitants) triples due to the influx of tourists. Solid urban waste in the town of Lezha amounts to 22 tons daily, whereas Shengjin produces 2 tons of solid waste per day. The point designated for the depositing of such waste is in a distance of 1.5 km from Lezha and offers very poor sanitary and environmental standards. A part of urban waste, including solid waste created by demolition and construction work, is thrown along the banks of the River Drin or the Lake of Kenalla.

Economic activities in the city of Lezha, the intensive agricultural works taking place on the alluvial zone as well as the progressive growth of the population entailing a boom of construction work in the future, represent real and potential threats to nature's balances and the preservation of biodiversity and water ecosystems.

As a consequence, the region is being confronted by inadequate ways of waste management not just in the cities, villages and roads, but furthermore in the places designated for their collection.

The most common elements of waste are: food remainders (over 45 %), paper waste, glass, metal, textiles, plastic, stone and wood.

Considerable amounts of urban waste have been deposited by the sides of roads thus filling and blocking irrigation canals sometimes with hazardous materials (construction materials, chemicals, household waste, etc.) and substances.

Of alarming nature in the case of all places designated for waste collection is the setting of fires that substantially pollute the air (these fires release dioxin which is a very toxic substance). Fires are mostly set by garbage scavengers while attempting to recuperate cans and other aluminum packaging which they sell to make a living. Waste burning is sometimes effected by people living in the vicinity simply to reduce the volume of garbage as the local authorities do not take any steps to crash them to the ground even if by using simple vehicles such as tractors or other heavy machines.

These waste collection places are not in any way restricted and humans and animals enter freely thus increasing exposure to risk and hazards. Technological tools for waste management are lacking. Even human labor can not be afforded due to shortage of resources, but also because whatever resources there are, they are not efficiently managed.

Landfills represent a very appropriate technology for the area of Lezha for the reasons listed below:

- The area is rich in lands containing lime which offers all the necessary sanitation conditions for waste depositing.
- The construction of landfills according to standards and requirements is the best ecological way for waste management and processing.
- the costs of processing are as low as 23-29 USD/ton; the cost of constructing a landfill is several times lower than the cost of setting up a waste management establishment.
- Well sited, planned and managed Landfills have only limited (minimal) impacts on the environment.
- There are in the area of Lezha barren lands that may serve for burying waste.

#### *Sewage systems*

Urban sewage is responsible for discharging into ground waters about 98 per cent of the NBO and all other pollutants, with the exceptions of fat and oils which are mostly the responsibility of the fish processing companies. These companies discharge about 20m<sup>3</sup>/day of fat and oil, although two of the three major companies have installed systems to treat technological waters prior to discharge.

The amount of sewage discharged daily in the towns of Lezha and Shengjin is respectively 1150m<sup>3</sup> and 380m<sup>3</sup>. Lezha sewage is discharged in the River Drin, whereas sewage from the town of Shengjin is discharged in the Lake of Kenalla in the vicinity of Kune-Vain.

Content of sewage in the town of Lezha is typical for discharges of this nature, but organic matter and food elements are in levels lower than those of other European countries: COD =168-240mg/l, BOD=70-118mg/l, TDS=0.36-0.77gr/l, SS=50-346 mg/l, P-total=2.4-22.5mg/l, N-total=16.04-34.02mg/l and Total coliform =431,000-17,900,000.

The same situation is with regard to discharges in the town of Shengjin: COD=160-164mg/l, BOD=66-67mg/l, TDS=0.375-0.8gr/l, SS=28-102mg/l, P-total=12.2-13.75mg/l, N-total=20.14-28.5.

It should be pointed out that the natural zone of the Lake of Kenalla contains a free flowing stream of carstic waters that spring from the top of the hill and from the lagoon. This is a transitory water surface, polluted by the direct discharge of sewage coming from the town of Shengjin. As a consequence of the pollution, marine life is in serious risk of extermination as species have difficulties to reproduce themselves.

*Table 9. Liquid pollutants estimate for the town of Lezha:*

<b>NBO5 ton/year</b>	<b>Nt ton/year</b>	<b>Pt ton/year</b>	<b>Fat and oil ton/year</b>	<b>Pb. Kg/year</b>	<b>Cd Kg/year</b>	<b>9PAH kg/year</b>	<b>PAH [B(a)P] kg/year</b>
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1,529.4	246.3	27.3	4.73	30.74	3.42	0.376	0.00028
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During the time of this assessment, close to the mouth of the River Drin there were encountered organic substances in high levels (proteins 61%, carbohydrates 34%, and lipids 5%). These values are 3.5 times as high as levels encountered in other areas in which there is no human activity. Also, in these areas there has been noted an increased presence of active photosynthetic elements (0.94 mg/m). Bacterial biomass and its density in the sediments were within the highest range of norms characteristic for inhabited centers, river deltas and sea ports.

As regards the physical condition of sewage systems in the rural areas, it must be said that there is no sewage infrastructure at all. In 90 per cent of the cases, sewage is treated in septic holes. In the smaller zones, sewage is discharged directly in the water streams and sometimes in canals dug specifically for this purpose.

The greatest problematic areas are the fields in which underground waters abound, especially close to the marshlands and swamps. Here, following heavy rainfall, once the soil has been soaked through, the underground waters come up on the surface.

For all of these reasons, it is necessary to carry out a detailed study and analysis to identify a feasible solution addressing the specificities of the terrain.

#### V.5.1.4.2 Shkodra area

##### *Sewage pipes*

The condition of sewage pipes is worse than water supply pipes.

Without exception, all the communes under consideration have no system of sewage pipes except for the communes of Ana e Malit and Dajc, which may boast of 5-10 per cent of their area being covered by sewage pipes. Even in these cases, sewage are collected in open space and are discharged in the closest water streams (the River Drin and the River Buna respectively) or in common big holes that produce harmful consequences and pollute the environment.

*Table 10. Sewage pipes according to local government units*

*Condition of sewage pipes in the municipalities and communes of the area under consideration*

No.	Municipality/ commune	Sewage pipes/km	Not maintained/rehabilitated
1	SHKODER	148	148
2	Vau i Dejes	0	0
3	Bushat	8	0
4	Berdice	0	0
5	Guri i Zi	0	0
6	Hajmel	0	0
7	Mnel-Vig	0	0
8	Ana Malit	7	7
9	Dajc	1.5	1.5
10	Velipoje	0	0

*Source: Extracted from general information submitted by local units under the Regions of Shkoder, January 2005*

As seen from the statistics, sewage pipes do not exist in the majority of the rural areas. Even where there are such pipes, sewage is discharged in its raw condition in the water streams that cross the settlements. In the hot season, the hazards increase as the environment is badly polluted and health risks abound.

It is of priority need to include the building of sewage systems in the plans for territorial regulation that need to be developed in the near future.

#### V.5.1.4.3 With regard to the municipality of Shkoder

##### Sewage pipes

The sewage pipes system in the municipality of Shkoder consists of 18 km of secondary pipes, 10.5 km of main collector pipes and 6000 collection holes. Disposal is carried out by pumping stations with a maximum capacity of 650 l/sec.

From the secondary pipes, sewage passes into the main collectors to be collected in the main pool situated in the entrance to the town. From the pool, sewage is pumped into the River Drin. Electricity shortages create problems and cause to discharge sewage into the Lake of Shkodra as it is collected without any prior processing. There are two spots for sewage discharge in the Lake of Shkodra.

About 35 per cent of the zones use septic holes. The rest of 65 per cent have sewage pipes systems in highly amortized condition.

The two tourist quarters of the town of Shkodra, Shiroka and Zogaj, do not have sewage pipes systems.

Where there are systems they conform to the blueprints of the years 1970-1980.

Currently, a feasibility study of sewage works with funding from the Austrian government is in the process.

However, illegal and abusive constructions continue to remain a problem and so does the uncontrolled expansion of informal areas.

A positive development is represented by efforts to solve the problem of collection and disposal of used waters.

To date, collection and disposal of used waters has been a serious problem as it often causes blockages of sewage holes entailing the burst of sewage on the ground, to say nothing of the ensuing pollution of underground waters.

##### Waste

Table 11. Condition of waste collection places in the REAP area (under consideration)

No.	Municipality Commune	Waste collection places
1	SHKODER	Problematic
2	Vau i Dejes	None
5	Bushat	None
6	Berdice	None
7	Guri i Zi	None
8	Hajmel	None
9	Mnel-Vig	None
10	Ana Malit	None
11	Dajc	None
12	Velipoje	None

None of the local units, with the exception of the municipality of Shkoder has a specially designated waste collection place, while there is no talking of waste processing and waste treatment.

Waste is sporadically disposed in the river and stream beds.

Presently, a study is being carried out about establishing a waste disposal place for the Municipality of Shkoder and the commune of Bushat in cooperation with and with the funding of a foreign donor.

In the municipality of Shkoder

- The daily amount of urban waste is 100-110 ton.
- There is no specially controlled and managed ground for the depositing of urban waste.
- The burning of waste is a serious threat to the environment in the city of Shkoder.
- Steps should be taken to secure funding for the implementation of the project of the landfill for

urban waste management in the former military site as foreseen in the framework of the project LIFE by the European Community.

- The service of waste collection and disposal is not extended to the quarters of Shiroka and Zogaj, even though they are under the jurisdiction of the city of Shkoder.

The designation of a place for waste collection and waste management is of priority importance for the municipality. Manner and duration of treatment will be resolved in the context of the project.

Funding and continuity of the project are issues that should be covered jointly by central and local funding.

### V.5.2. List of problems

#### Human dynamic and use of the territory

Problem	Cause	Scale of Impact	Affected Population	Impact	Prioritizing
1- Uncontrollable movement and massive internal migration from rural into urban areas	<ul style="list-style-type: none"> <li>- Economic hardships and lack of basic means for normal life</li> <li>- Incomplete implementation of the law on land distribution</li> <li>- Lack of incentives and clear policies for the development of agro business industries that would motivate people to remain in the area.</li> <li>-Lack of urban planning in the prospects for development</li> <li>-Fragmentation of the land and impossibility to rationally use it</li> <li>-Traditionally urban areas are seen as offering increased opportunities to improve living standards</li> </ul>	Medium (The area covered by the project is relatively better off as regards income generation as compared to the rest of the region of Shkoder)	100%  About 197,000 inhabitants of the municipalities and communes involved in the project	<ul style="list-style-type: none"> <li>- Unforeseen overpopulation of special zones</li> <li>- Insufficient infrastructure to accommodate movement rates (road health, education, water supply, sewage pipes, etc.) which causes their speedy degradation.</li> <li>- Negative impact on the environment given the uncontrollable growth of urban waste, sewage and solid waste.</li> <li>- Unemployment increase in the urban areas.</li> <li>- Increase of abusive constructions and worsening of property conflicts</li> <li>- Discouragement of the population as regards hopes for service delivery improvements</li> <li>- Decrease of public safety to certain degrees and in certain ways</li> <li>- Lack of accurate information on the size of population, which hinders the institution of measures to improve the situation while creating premises for mistaken forecasts and planning.</li> </ul>	Very important, Immediate resolution required

2- Illegal constructions and the change of land from agricultural into construction grounds without any established criteria. The need for construction grounds especially along the side of the road, has caused the abuse and misuse of agricultural land.	<ul style="list-style-type: none"> <li>- Lack of local plans for territory regulation setting the yellow line for new constructions</li> <li>- Lack of plans for expansion of settlements and the creation of new habitat centers.</li> <li>- Increase of demand for greater living space; abandonment of the tradition of several generations living together in extended families under the same roof</li> <li>- Reasons that relate to communal culture and mind set with regard to private property</li> </ul>	<p>High</p> <p>90 % of the area involved in the project consisting mainly of rural zones.</p> <p>The situation is very serious Especially in the touristy zone of Velipoja</p>	100 %	<p>The phenomenon has inflicted the entire area.</p> <ul style="list-style-type: none"> <li>-Fragmentation of the agricultural land leading as a consequence to the problems and obstacles to automation of agricultural works</li> <li>-Severe damage and stoppage of irrigation and drainage systems</li> <li>- Increase of illegal constructions and expansion of illegal settlements</li> <li>-Increase of construction and maintenance costs of water supply systems, sewage pipes, electricity grids, cleaning service delivery, etc.</li> <li>-In many of the cases, the delivery of such systems is made impossible which increases negative impacts on the environment</li> <li>-Increased household expenditure to achieve access to basic services such as health, education, recreational, etc.</li> <li>- Declining school enrollment rates.</li> <li>- Increase the unemployment of the females</li> <li>-Creates social problems</li> </ul>	Very important; requires well thought out solutions both from the point of view of cost/benefit analysis and time dimension which needs to be urgent
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3- Inadequate employment structure with high percentage in the state sector compared with the private sector and with slow employing rhythms	<ul style="list-style-type: none"> <li>-Lack or irregular energy supply</li> <li>-Slow intertrade within the region, although the geographic possibilities exist</li> <li>- Incomplete road infrastructure for stimulation of business creation</li> <li>-Lack of stimulating measures for business, which needs regional focus not only national thinking</li> </ul>	High	59 %	<ul style="list-style-type: none"> <li>- Increase of poverty because of the decrease of income</li> <li>-Artificial increase of the employment in the public administration</li> <li>-Increase of immigration, especially by the departure of active labor forces.</li> </ul>	Highly important
4- Unexplored management with consequence in water resources especially underground waters	<ul style="list-style-type: none"> <li>- Increase of the demand for water for household and business purposes</li> <li>-Lack of adequate water infrastructure</li> <li>- Lack of studies in accordance with population movements</li> <li>- Lack of awareness about the problems rising by the inadequate use of water resources</li> </ul>	<p>Average</p> <p>Because it is not a problem for the entire the area</p> <p>Irreparable ecological damages</p>	70 % of the area under the project	<ul style="list-style-type: none"> <li>-In the human health, because the use of drilling for fresh water is out of sanitary control and the possibility for water processing in those cases is impossible</li> <li>-It damages the natural equilibres</li> </ul>	Important



5- Lack of organized water systems. Inadequate control of the drinking water systems	<ul style="list-style-type: none"> <li>- The area has been always rich with fresh water and this idea has never been taken in consideration.</li> <li>- Extension of informal area because of the population movement.</li> <li>- Total absence of planning, for rural area where there is a great need for those systems</li> <li>- Lack of funds.</li> <li>- Incomplete decentralization of powers over the delivery of this service</li> <li>- Unclear competences on managing this problem</li> <li>- Un unified systems and usually personal interferences in the system covering the area.</li> </ul>	High	<p>90 % of the rural population under the project.</p> <p>70 % of population are liable to the uncontrolled drinking water</p>	<ul style="list-style-type: none"> <li>- Increase the costs for fresh water and the use of it.</li> <li>- High health risks because of use of uncontrolled water</li> <li>- Social problems</li> <li>- High impact of the business market</li> <li>- High impact on the sanitary service, ambulances, hospitals, etc.</li> <li>- Increased probability of infections</li> </ul>	Highly important
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Political instability and lack of security continue to be a problem.	<ul style="list-style-type: none"> <li>- political stability weak</li> <li>- lack of fair competition in real life situations</li> <li>- lack of law implementation</li> </ul>	High	All the REAP area	<ul style="list-style-type: none"> <li>- insecure investment climate</li> <li>- high levels of fiscal evasion</li> <li>- increased poverty levels</li> </ul>	***
Lack of an appropriate strategy for integrating environmental protection in the school curricula	<ul style="list-style-type: none"> <li>- lack of inter-ministerial coordination and lack of integral studies</li> </ul>	High	All REAP area	<ul style="list-style-type: none"> <li>- poor management of the environment</li> <li>- degradation of aesthetic values</li> <li>- declining standard of wellbeing</li> <li>- lack of civil participation in the resolution of environmental problems</li> </ul>	***

### Urban waste and sewage pipe systems

1- Urban waste is collected in open space; it is left untreated in big concentrations close to inhabited centers	<ul style="list-style-type: none"> <li>- Increase of population density particularly in the area of Shkodra and Velipoja</li> <li>- Increased consumption</li> <li>- Lack of integrated plans for the designation of waste collection and treatment places</li> <li>- Issues of unsolved land ownership rights; The impossibility of the government to provide final settlements through compensation of expropriation land this is a separate issue and needs separate treatment</li> <li>- Low levels of community awareness; poor environmental education</li> <li>- Lack of financial resources to fund the commission of studies</li> </ul>	High	100% of the community	<ul style="list-style-type: none"> <li>- On the health of communities, thereby increasing the incidence of infectious diseases as a result of waste decomposing in open space and even in spontaneously created places</li> <li>- Negatively impacts the environment by increasing pollution of the air, water, etc.</li> <li>- Upsets ecosystems</li> <li>- Negatively impacts economic development by reducing tourism; tourists are alienated due to pollution and poor waste management.</li> </ul>	Very important; requires urgent solution
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2- Pollution caused as a consequence of lack of sewage pipe systems	<ul style="list-style-type: none"> <li>- Total lack of sewage pipes almost in the entire communes</li> <li>- Poor tradition of the existence of these systems in the rural areas.</li> <li>- Total lack of financial resources to commission the survey of needs and constructions of sewage systems</li> <li>- Lack of genuine urban plans integrating the construction of sewage systems.</li> </ul>	High	85-90 per cent of the community	<ul style="list-style-type: none"> <li>- Increases the risk for pollution of drinking waters.</li> <li>- Increases the risk for the spread of infectious and contagious diseases</li> <li>- Causes environmental pollution</li> <li>- Causes the pollution of underground waters</li> <li>- Negatively impacts the development of fauna.</li> <li>- Upsets natural landscapes and negatively impacts the development of tourism</li> </ul>	Very important; requires solution urgently
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### V.5.3. Connection and interplay with other issues

Human dynamic and use of the territory, as it is today, has a negative impact on the town's development. Illegal buildings are sometimes constructed just above water and sewage collectors and irrigation canals are filled with debris and inert materials thus causing frequent flooding of the area in the rainy seasons. Tourism is also badly affected because of being chaotically developed and not based on well studied plans. Population dynamic affects forests and green belts by causing them to shrink. Sewage systems also suffer because of overtaxing the amortized infrastructure and solid waste grows progressively. The impact of human dynamic on agriculture is positive because it leads to a more rational utilization of agricultural land. However, there are also negative impacts on the farming land because of illegal constructions and over exploitation.

Waste and sewage in their present condition impact negatively the dynamics of population activity and the use of territory, because a polluted environment causes problems with the population health and causes people to move. Tourism is also negatively impacted because poor waste and sewage management alienates tourists. The dumping of sewage and waste in the sea, lagoons and/or rivers seriously upsets the balance of ecosystems and negatively impacts the growing of fish and marine life. The random collection and depositing of waste threatens the region's hydrology as both ground and underground waters are polluted and poisoned.

#### V.5.4. Trends of the main factors

Human dynamic and use of the territory

- a. Human dynamic and use of the territory appear steady in the urban areas, while experiencing progressive worsening in the rural areas.
- b. Population changes appear to be improving while demographic structure appears to be stable.
- c. Migration is stable
- d. In accordance with Government policy, employment rates in the public sector are declining, whereas employment rates in the private sector are increasing.
- e. The system of drinking water and new water sources are declining.

Waste and sewage

- a. Condition of waste management systems in each of the administrative units is getting worse
- b. Existing fields of waste collection are getting worse
- c. Sewage systems in each one of the administrative units are on the not functioning even where there is any.
- d. Collectors and related works in the sewage systems are deteriorating.
- e. Final distribution of agricultural land and implementation of the property restitution law – Stable (meaning no further progress made)
- f. Pollution of lagoons, river, underground water etc., caused by sewage waters - worsening

#### V.5.5. What is being done

Notwithstanding efforts by the specialists to create awareness that the situation can not be left to go uncontrolled because pollution levels are constantly growing, the movement of the population continues to be uncontrollable. Illegal constructions continue to grow even on very environmental sensitive and inappropriate grounds. Master plans for development are developed as yet.

Regarding the regional planning, there is a study on waste collection aiming at the establishment of a proper landfill, near Bushati village, covering the waste collection not only from Shkodra area, but also supporting Lezha area. At the moment no implementation has started due to lack of investment funds. Sewage systems are generally lacking; there are areas without sewerage system in place. Recently, a study is commissioned on the systematization of sewage in the towns of Lezha and Shengjini, while there is no plan of conducting similar studies for the rural zones in the area. Sewage treatment facilities remain novelties. A project on semi natural treatment of sewerage of Lezha town and surroundings based on the use of wetland is under implementation.

There are few campaigns aiming at building public awareness and public understanding of environmental problems. They are mainly organized by NGOs and civil society groups, featuring low level of coordination and efficiency on reaching the positive change in community's behavior patterns.

## V.6. Tourism

### V.6.1. General Analysis of the Situation

Tourism sector should be developed as a primary sector, as nature's endowment, but also as a necessity dictated by the geographical position of the Region. Tourism will bring economic prosperity in the region due to impacts on the development of other sectors of economy such as agriculture, transports, trade and industry.

Actually, tourist products are consumed only inside the country, by inhabitants, not by foreigner tourists, who visit the region mainly for business affairs.

Main stakeholders which should be part in the development of tourism in the Region are communes, municipalities, prefectures, Shkodra University, private business and community. It is necessary that these stakeholders draw a Tourism Development Strategy for the Region.

Regarding to the natural offer in the Region, here could be developed four main types of tourism: Highland tourism, as this region is near Albanian alps; coastal tourism, thanks to the wonderful coastline; lake tourism, because here is the greatest resource of the Balkan region, i.e., the Shkodra Lake; townie tourism, as the city has a lot of characteristic households and several historical and cult objects.

In this Region, tourism could be held up even by the development of agriculture and farming which could serve its function, especially since the villages of this area have had high efficiency in these sectors before '90-s.

Also, human potentials, in quantity and quality, favor the development of tourism and hospitality services for foreigners.

Private initiative dominates in tourism sector in the Region, as all accommodation structures and tourist agencies which are the result of these initiatives.

Below is a description of possibility and chances for tourist development:

*Municipalities of Shkodra and Lezha*

- Objects of cultural and historical tourism (castles), lake and river landscapes, etc.

*Municipality of Vau i Dejës.*

- Area with special touristy feature like mountain, lake, river landscape.

*Commune of Ana e Malit.*

- Nature and historical tourism area. It's important to mention the Oblique Church, a unique place for Muslim and catholic religion people.

*Commune of Dajç.*

- Considering the natural resource of Buna shore and the historical places of this commune, tourism is an important activity. There are many historical places in the commune of Dajç, like objects from the antique civilization of Belnit/Pentar; church of Shirqit build in the third-fourth century, reconstructed in the eighth century by Great Helen (wife of Serbia's King), etc. The Port of Shirqit and the Port of Pulajt have been known as points of commercial activity in the area. They were most significant during the 1416-1417 period, but were mentioned again in 1485 for their importance in the Turkish registers, and rehabilitated in 1560.

*Sea shore from Mati river mouth to Buna River mouth.*

- Coastal Tourism and development of tourism industry. Natural tourism - The combination of nature's resources like forestry, wetlands, Lagoons, natural monuments, mountain landscapes, etc.

- *Commune of Guri i Zi.*

- Natural tourism: the famous cave of Gajtani - unique in Europe, Jubani, island of Sardë or Shurdhah, Lake of Vau Deja with surface 24.7 km<sup>2</sup>.

- Historical Tourism: Caste of Gajtan - Illyrian civilization, Gothic city at Sardë. Along the lake are scattered some small ancient castles, mention can be made of the castles of Darje, Drishti, Sarde, Dalmace and Sapa.

- During 2004 Sarde was visited by 1.900 tourists. In 2005 this number is about 1.200 tourists.

*Vau Dejes reservoir and the area along the mountains*

- High natural values and historical values, too.

*Renci mountain*

- High tourist values (beautiful landscape). Possibilities to develop tourist villages with low impact on

the nature and protecting the seashore.

*Vela village*

- Landscape tourism

Lezhë-Shëngjin-Kunë Segment 10 km in length connects to the port of Shengjin and to the coastal area. The improvement of the road condition to bring it up to the required standards will positively impact business growth, including tourism development.

The segment running from the highway to Tale (coastal area) is 14 km in length and connects the area of Zejmen - Shenkoll to the highway and the seaside. Improvement of the road condition will create opportunities for business development, particularly the development of tourism which is one of the region's comparative advantages with potential capacity for local income generation.

*Table 12. Number of visitors in the area for the last 3 year*

Year	Number of visitors
2003	36,600
2004	59,300
2005	83,400

Given the poor condition of tourism offered at the moment in this area, the most of potential lies with destination of tourists from Kosovo and Macedonia.

Natural resources and the wonderful landscape are the biggest comparative advantage for the development of tourism in these areas but there is a need for investments and the need for commitment by the local authorities to prepare and implement comprehensive strategies.

## **V.6.2. Analysis of the main issues**

### *Strengths*

The wealth of natural beauties and high diversity of tourist choices;

Traditional hospitality;

Qualified labor power (a new branch of tourism in the Economic Faculty, Shkodra University, will be opened with an enrollment of 90 students per year)

The presence of several climate types.

### *Weaknesses*

The lack of infrastructure and superstructure (existing hotel services are not at required levels)

The lack of a law for asset management in the seacoast areas – the problem of ownership in seacoast, where Velipoja and Shengjini are the main immediate problems to resolve; illegal construction without any kind of planning (owners that become holder of land start building based on their desire often in violation with the future interest of the area).

## **V.6.3. Tendency of the main factors**

With regard to the development of tourism in the future, all factors mentioned above, positive and negative, are advancing very slowly. The inefficiency of government intervention is a reality. As a result, natural degradation is getting worse; ownership problems are causing negative effects. New constructions which are made every day without any legal project remain the most serious problem.

Below is a detailed presentation of each of the factors:

The richness of natural offers and its high diversity – Stable (relatively)

Traditional hospitality – Stable

Qualified labor power – Stable

The lack of infrastructure and superstructure – Improving (relatively)

The lack of National Park Status for Shkodra Lake - Improving

The lack of regulatory plans – Getting worse

The lack of a law for assets in the seacoast areas – Getting worse



#### V.6.4. List of problems

Problems	Cause	Effects	Population affected	Level of impact	Level of priority
Poor tourist infrastructure and the lack of city planning studies for tourism development	The absence of attention from local and central institutions to forego with tourist area studies. The absence of investments for rehabilitation and new investments.	Illegal constructions, outside technical criteria, unseasonable. Damage of natural, archeological and historical objects.	All area	High	Very important
Coastal erosion	Reduction of water flow from Drin river.	Sea entrance in sand, turning it in a water place.	All coastal area	High	Very important
Agriculture production with closed cycles (only for self consumption and very little for the market)	The impossibility to go to the market as result of high agriculture production costs. Non-pursuit a clear policy for gathering agriculture and farming productions.  Poor road infrastructure and the long distance from the city.	Insecurity in sowing new agriculture cultures and breeding of farming.	All area	High	* * * Very important

#### V.6.5. What is being done

Both regions have prepared their strategy for development, but nothing has been done to implement them.

The University of Shkodra launched in September 2002, the new program on tourism which is expected to provide proper qualifications for specialists in this field. In 2006, the first graduates of Marketing – Tourism received their diplomas. The University contributes also to the development of tourism in the region.

GTZ is implementing a project to create a logo to support the development of hotel services in Velipoje. The project will also provide for informative publications about accommodation structures in Velipoja, and is presently researching the situation on the ground.

Organizations like Sarda and PZHR (Efforts for Rural Development) have conducting a number of activities (about 8 in the year 2004-2005) to attract tourists, mostly foreign tourists, through the promotion of resources and rare values of the commune of Guri i Zi.



## VI. Recommendations





## Geology and energy

1. Considering the tendency for permanent geological movements, the presence of two massive seismic splits, the sliding phenomena active throughout the area, the inclination of the sea to “acquire” ground, the penetration of salted waters and the heavy exposure of rocks to the natural phenomena causing them to weaken, the Regional Environmental Action Plan recommends: a) avoiding all initiatives for permanent construction along the seaside (especially along Shengjini, Tale and Velipoja communes), due to the high risk of sea rise (extend the buffer zones of the wetlands, as the main protectors for preventing buildings around the potentially flooded areas); b) the initiation of capital investments to construct mountainous dams to prevent debris from being discharged into the rivers of Gjader and Kir; b) the cancellation of large investment works that have not taken count of the strong seismic activity of the region at the magnitude of 7-8 degrees on the Richter scale and of the two tectonic splits crossing the area; c) the constant monitoring of the status of the museum values endangered by geological workings (such is the case of the Castle of Lezha which stands on a mountain that is considered to be “exhausted”); d) the carrying out of preliminary studies for roads’ or buildings’ construction along the belt of Merqie-Kallmet due to the sliding of the land which is more striking in the overlapping front and constantly made worse by the sliding plans and the permanently active sliding occurrences.

## Hydrology

1. In consideration of the situation created with regard to the damage caused to the banks of the River Gjader from the village of Kalivac up to its joining the river Drin in Vau i Dejes due to the damage of the barriers and the steep flow of the water from the source of the river to its arrival in the field, the Regional Environmental Action Plan recommends: a) the implementation of measures to rehabilitate the banks of the River Gjader by planting forests and erecting barriers to avoid the threats that the river may cause to the villages on its banks; b) the implementation of the World Bank project to rehabilitate the damn of the river Gjader in the field spots where the danger of its overflowing the banks and flooding the area is greatest.
2. Due to the serious damages caused to the banks of the river Kir, the high levels of erosion with which it threatens the city of Shkoder and the substantial amount of sediments that it washes off into the river of Buna (thus causing the elevation of the riverbed) coupled with the flooding of the villages situated on its banks, the Regional Environmental Action Plan recommends: a) a quick intervention to fortify the banks of the river Kir; b) the institutionalization of due licensing procedures and close monitoring of the companies that exploit river gravels (to be allowed only in the areas in which the risk of the river gathering speed due to deepening of the bed is lowest), in order to reduce the amount of sediment washed off by the river.
3. Given the high levels of erosion in the lake of the Hydro-Power Station of Vau i Dejes and the amount of dreg carried into this lake by torrents descending from the surrounding mountains and in view of the need to prevent problems that may emerge in the future, the Regional Environmental Action Plan recommends: a) the conduct of special research to study the possibility of cleaning the lake; b) the filtering of sediment before its flow into the lake; c) the forestation of areas threatened by high erosion levels as well as the re-forestation of the deforested areas with priority for those areas in the catchments.
4. Taking count of the upset hydrological balance of the river, especially of the drying-out of the River Drin in the area of Lezha, the river’s chaotic flow through the area of Shkodra, the over-sedimentation of the Buna river, the flooding of the area due to the slow flowing of the rivers of Drin and Buna, the loss of biodiversity and depreciation of the tourist values and resources of the area of Lezha due to the lack of a normally flowing river, the Regional Environmental Action Plan, based on other numerous studies carried out on this issue by the Research Institutes of

the Academy of Sciences recommends: a) the restoring to its formal condition of the previous bed of the river Drin by cleaning it from debris and soil accumulated over the years while making at the same time the necessary corrections and adjustments to shorten its length and increase its geodesic and hydraulic slope. This adjusted and rehabilitated bed should be used to accommodate the main body of the waters of the River Drin which is normally quite stable and within the parameters of the transportation capacity for river beds, should it be accordingly adjusted. These changes will restore and improve the irrigation functions of the Drin River in the area of Lezha along the entire spread of the field. In addition, the revitalization of Lezha's Drin will protect the field areas from the elevation of salt levels as a result of the sea waters infiltrating deeper into the territory.

5. Taking stock of the range of problems characterizing the river Buna, mainly its being overfilled with dreg and sediment, the creation of abrupt turns that cause the river to overflow the banks and cause large scale economic and social problems, and the high levels of erosion on the banks of the river and in view of the existing legislation concerning areas placed under state protection, the Regional Environmental Action Plan recommends: a) the exploration of possibilities to grant for concessionary use the narrowest segments of the flow (as regards especially the river Buna) as well as the turns created along the itinerary of the flow. Exploitation of these points should be planned for the driest periods of the year. The activity may be regulated and governed by the Drin and Buna Basin Management Agency which may proceed through the solicitation for review of projects by private subjects seeking permits to engage in business activity that may be located on such points. The Agency should request that subjects pay due heed to problems described above; b) the placing under control of the gravel extracting businesses in the Shkodra's Drin in accordance with relevant legal provisions.
6. As a result of the growing pressure of illegal constructions and the unresolved land ownership issues, the irrational and dangerous exploitation of water reserves and the use of the rivers to dump waste and sewage, the Regional Environmental Action Plan recommends: a) the resolution of ownership issues and the implementation of the legislation concerning the management of water basins to ensure compliance with requirements relating to distance from water banks to the benefit of long term sustainability of water systems for both communal and environmental values.
7. In view of the severe problems caused by the torrent of Manatia at the entrance of the city of Lezha, the Regional Environmental Action Plan, based on findings by previous studies of the Institutes of the Academy of Sciences, recommends: a) the implementation of measures to prevent illegal constructions along the banks of the torrent in order to avoid the flooding of the area lying below the city of Lezha.

## **Agriculture and Fishing**

1. Taking into consideration the massive flooding of the arable lands throughout the area caused by the hydrological upset of the rivers Drin, Gjader and Bune, the gradual disappearance over time of Lezha's Drin, lack of maintenance of the irrigation canals and the of water pumping stations in the area, the Regional Environmental Action Plan recommends: a) the implementation of recommendations contained in the hydrology part of this present document, especially the recommendations about the flood control, as key options to addressing the existing situation; b) channeling the flow of Zadrimë waters into the River Drin and providing for Drin waters to be discharged into two or more additional points, near the bridge of Spathari (as shown in the map 7); c) the provision of a dedicated electricity line for the pumping stations in the region (as with the Balldre Station), priority being accorded to the Pumping Station in Tale, since it is designed to cover a substantial area.



2. In line with the World Bank's project to clean and rehabilitate irrigation canals in the entire area, the regional Environmental Action Plan, recommends: a) the serious commitment of the local government units to ensure maximum efficiency of the investment; b) building awareness among local communities on the need to become part of the solution by making their own contribution to the implementation of these projects.
3. Due to the increase of the erosion levels of the agricultural land in the entire region under consideration as a result of the inadequate watering techniques which rely on flowing streams, the Regional Environmental Action Plans recommends: a) the gradual transition into watering of arable land with rain-like sprinkling facilities towards reducing erosion and land impoverishment, sparing the water supply available and contributing to the growth of agricultural productivity in this area.<sup>1</sup>
4. Given the problems created by the abuse of land, the bad management (by using different technologies, plants, etc, without any supervision by the specialists) of the farms, the fragmented and inefficient use of agricultural products, the Regional Environmental Action Plan recommends: a) the finalization of the project of immovable property (i.e. land) and the submission of documentation in the Office for Registration of Immovable Property; b) encourage the development of the land market by stimulating the organization of farmers into large farms and farming associations as models of operation that provide guarantees for the efficient use of land, compliance with environmental standards and productivity of agricultural investment.
5. Taking heed of the existing situation of fishing in the region created as a result of uncontrollable fishing practices in all seasons through the use of explosive substances especially in areas of high susceptibility, the Regional Environmental Action Plan recommends: a) the prevention of intensive fishing in the areas placed under protection (lagoons of Kune-Vain, Vilun, River Buna and the Marshland of Domni) and the re-designation of places in which fishing activities will continue to grow (based on fishing regulations and the legal provisions concerning protected areas); b) creation of fish reservoirs in the lake of the Hydro Power Station in Vau i Dejes; c) capacity building for adequate fishing through the provision of technical-professional expertise in both fishing and aquaculture techniques (through the implementation of training programs) and the provision of funding for the development of rural family and collective aquaculture; d) the increase of control by the Fishing Inspectorate of Shkoder and the publication of fishing schedules over periods appropriate for the activity. These schedules will be publicized in public places and fishing will be allowed only for subjects that have acquired fishing permits.

## Biodiversity and protected areas

1. In view of the intensive activity growing daily in the entire area, the new local constructions and especially in view of the objects of strategic importance established in the region, the Regional Environmental Action Plan recommends: a) the implementation of the laws concerning the Assessment of Environmental Impact and Strategic Environmental Assessment for the activities and interventions carried out in the area as well as the implementation of all Conventions to which Albania adheres (for example, the Espoo Convention concerning long distance polluting sources); b) the suspension of all initiatives not having obtained relevant environmental permits.
2. Taking due heed of the considerable landscape values of the area, the huge damage that is being caused over the entire territory by the stone quarrying works, the Regional Environmental Action Plan recommends: a) the review of all permits granted and the termination of illegal activities in stone works as an immediate measure to put an end to severe problems especially in the

<sup>1</sup> Rain-like watering systems rely on pipes to carry water and powerful sprinkles to shed water like rain. These systems are widely used nowadays in agriculturally advanced countries. Farmers are spared the hard labour of opening and closing secondary and tertiary canals and land previously taken up by such canals is made available for planting.

mountains of Rrenc and Kakarriq and in the area of entrance to the city of Shkoder; b) the total discontinuation of the practice of issuing permits for stone quarries in the entire area.

3. Taking special count of the positive development of the introduction into the category of protected areas and the inclusion into the Ramsar Convention of the complex made up of the Shkodra Lake, the Buna River, the Mountain of Rrenc and their surrounding areas (see Map), the Regional Environmental Action Plan recommends: a) implementation of the laws concerning these areas including as a first step the gradual elimination of activities like the quarries in the Mountain of Rrenc and of the fishing industries in the lagoon of Vilun, and the launching of such works as the systemization of the sewage pipes crossing the villages in the protected area, the revisiting and implementation of the urban study of Velipoje, the exploring of the possibility of designating another area for dumping the sewage of the city of Shkodra, etc.; b) the consolidation and continuous upgrading of capacities of the Regional Environmental Agencies for Shkodra and Lezha; c) the launching of awareness campaigns and education programs throughout the area about the status, rights and obligations of communities with regard to regional development.
4. In recognition of the negative impacts wrought on the lagoons of Kune Vain and the Lake of Kenalla, the Regional Environmental Action Plan recommends: a) the transfer into complete governmental property of the lagoons of Kune Vain by decreeing the cancellation of illegal capture of property and building the awareness of legal owners on the need to establish and implement utilization criteria of such property and towards the conclusion of joint agreements for territorial management;<sup>2</sup> b) the demolition of illegal constructions within the territory of these lagoons; c) the implementation of the pilot plan of the ELPA project to scale up the degree of protection for these lagoons (from level IV to level II) and the placing of more of the area under protection; d) the solid implementation of the World Bank Sewage Project, especially as regards the of solving the problem of the sewage depletion into the Drini river by Lezha city; e) the prevention of tree felling and the carrying out of interventions to revitalize the forest belt along the coastal line as the only ready available measure for the protection of the area from sea erosion; f) the strict implementation of the decrees on the creation of tourist villages and all kinds of constructions to be made in the area, together with the design of an urban regulation plan for the commune of Shengjin.
5. Given the great importance of the flora and fauna for the reduction of erosion and protection of sweet waters, the Regional Environmental Action Plan recommends: a) revitalization of the waters of the river Drin (refer to recommendations under Hydrology).
6. In view of the aggravated levels of erosion, the increasing damages to the landscape and to the forests in the area, the regional Environmental Action Plan recommends: a) the cancellation of the tree felling activities throughout the area; b) the institutionalization of a movement concerning a possible project on the confiscation of wood made carbon.
7. Based on the fact that fragmented farming increases the risk of pollution and the probability of the impossibility to implement policies and measures towards sustainable development, the Regional Environmental Action Plan recommends: a) the resolution of land issues and the encouragement of big farming establishments as well as the creation of farmers' cooperatives as the best way to an efficacious agricultural activity that is friendly to the environment; b) the application of the sprinkling techniques in land watering as an efficient way to protect land from erosion and impoverishment.
8. In due consideration of the vast environmental and landscape resources, the regional Environmental Action Plan recommends: a) the introduction of the area of Vela in Category V of protected areas.
9. Prompted by the extraordinary medicinal and natural resources of the Mountains and Rrenc

<sup>2</sup> Law Nr. 8906: "Concerning protected areas", articles 18 and 19.

and Kakarriq especially with regard to sage (*salvia officinalis*), the Regional Environmental Action Plan recommends: a) the conduct of an inventory of the plants growing in the area; b) the establishment of criteria for the harvest of the plant to ensure its sustainable growth and to encourage its rational exploitation towards allowing for its constant replenishing; c) the use of this plant as an important crop that may be planted on the eroded slopes of mountains or on mountains sides with reduced vegetation.

10. Paying due attention to the growing need of the country for electricity and energy; given that the area represents one of the parts of the country endowed with the greatest number of sunny and windy days, the Regional Environmental Action Plan recommends: a) the large scale application of solar technology (for heating and cooking in the families and in the hotels or other industries. The technique is successfully applied around the villages of Prespa Lake, for heating and cooking in the households and hotels) starting from the fact that the region of Shkoder- Lezhe has a Mediterranean climate with about 226 sunny days per year which can be normally converted into energy; b) the use of wind energy as an endowment of the region's relief made up of soft hills and plenty of local winds blowing in about 120 days per year (see Map for priority spots). This will promote the use of renewable energies, which do not pollute and are cost efficiently.<sup>3</sup>

## Human dynamics and use of the territory

1. In view of the lack of territorial regulation plans in the entire area under consideration; the loss, or transformation of the land; the uncontrollable construction activity; the growing need for services both locally and regionally; the still high influx of population settlings in this area; the need for the protection of natural resources; and in light of the need for integrated development plans for the area, the Regional Environmental Action Plan recommends: a) sustainable physical development - buildings and urban development requires consideration of choice of materials so they come from sustainable sources and are energy efficient in their production, and do not cause environmental costs when the building is obsolete and materials reclaimed or disposed of.; - minimize need for access between land uses and activities that require road construction and transportation that have environmental implications; b) the design of a comprehensive plan for urban development reflecting the current trends of population movement as well as the overall development trends of the zones with a view to preventing the creation of informal areas; b) the design of regulation plans including provisions for necessary infrastructure works and networks for each of the dwelling areas as an integral part of the Regional Plan while relying strongly on the natural endowments of the area (tourist, agricultural, commercial, etc.). These plans should accommodate the region's demographic growth by providing for the expansion of the dwelling areas. They should also take count of economic development trends by making provisions for the creation of industrial, commercial and other business concentration areas, c) the allocation of resources based not on historical trends, as the practice has been so far, but based on a careful prioritization of the development needs of each area in accordance with its natural development potentials.
2. In view of the abundance of social conflicts (such as those between the state and land owners, between/among owners, between informal/illegitimate and legitimate owners), the weak implementation of laws, a disabling climate for long term sustainable investment, the plundering of natural resources, the inadequate and abusive administration of the resources of the area, etc., the Regional Environmental Action Plan recommends: a) increase the role of the local authorities

<sup>3</sup> A recent estimate made by the Directorate of Geology of Shkodra has shown that the installation of wind turbines in the region of Shkoder-Lezhe would greatly relieve the energy crisis, while the investment has a high return rate. Thus, one wind turbine costs one million dollars and maintains about 35,000 inhabitants. The investment pays itself off in 2-3 years).

- to control the “trade market” of the land, especially when given for contraction purposes, till the central government issues the final resolution of land distribution issues and the creation of favorable conditions (real planning for the cities and villages; better perception of the needs for new towards an efficient use of the land enhanced primarily by reversing the further fragmentation of the land; b) the translation of development plans into genuine and realistic projects that should be reliable and well coordinated so that an enabling business environment is created in both the rural and urban areas towards the reduction of population movements for pure economic reasons only; c) the implementation of friendly policies towards the encouragement of foreign direct investment and local investments, too, that would contribute to job openings in accordance with the areas’ natural endowments; the empowerment of the various social groups through provision of training programs based on the need of local labor markets and the long term development perspective of the area; d) the strengthening of decentralization with regard to the delivery of various communal services (such as waste collection), while at the same time putting in place (enforcing the existing state control bodies or changing the status of them in monitoring bodies, such as the private companies on EIA providing reports to the governmental bodies) strong implementation and monitoring systems concerning the quality of such services.
3. Based on the high risk posed by the seismological activity of the area (see recommendation with regard to geological issues), the Regional Environmental Action Plan recommends: a) that construction permits (for public and private buildings, infrastructure works such as canals and roads) be reviewed and endorsed by the Geological Directorate of the Region; b) the careful screening of constructions in the area surrounding the Mountains of Rrenc and Kakarriq and in the suburbs of the city of Shkoder as these zones are characterized by strong seismic activity measuring up to a magnitude of eight degrees on the Richter scale; c) the careful monitoring of road works in the segment of Merqie-Kallmet due to the highly active land sliding phenomenon.
  4. In view of the uncontrollable situation as regards the collection and depositing of waste, and the very problematic conditions of places designated for waste collection and depositing in the cities of Shkoder and Lezhe, the huge mountains of garbage created throughout the area, the high pressure created as a result of the growing demand placed on the water resources and the water supply system of the area, and in view of the possible alternatives to the solution of this problem, the Regional Environmental Action Plan recommends: a) the closure of the present landfills in the region especially in the area of Shkoder and Shengjin; b) the construction of a regional landfill as the best option for waste management for the entire region; c) the exclusion of the area of Lezha from the possibility of building the landfill due to the high incidence and activity of underground waters (the landfill established for the Region of Korca with funding from the Swedish Government may be taken as an example)<sup>4</sup>; d) the creation of a regional landfill in the commune of Bushat as the best site to accommodate it (on the hills of Plezha (as shown on Map 1). The estimates show that such a landfill may be suitable for functional use over the next 50 years for the entire region. It also complies with standards and criteria for the protection of underground waters and surrounding landscape; e) the exercise of closer monitoring and supervision of the performance of the cleaning companies in the two cities as well as the application of stricter and stringent policies with regard to waste collection mainly in the big dwelling centers and in the protected areas (as indicated on Map 2).
  5. In view of the total lack of sewage collection systems in all of the local administrative units of the area; the high risk of pollution of underground waters of the region; the high pollution levels of the Shkodra Lake and Buna River (in the vicinity of the City of Shkoder due to the dumping of sewage into both the lake and the river); the pollution of the River Drin especially in the segment

<sup>4</sup> The Qark of Korca has started the implementation of the first sanitary landfill near to the city of Maliq supported by the German company KfW and the first management system for the cities and communes of the region, supported by the Swedish Government. Those two initiatives will coordinate their activities by establishing a common system for waste management in the region, with just one landfill for waste collection, treatment and deposition. This type of investment can be the most suitable for the region of Shkodra and Lezha, by solving the one of the biggest problems, affecting waters, biodiversity, tourism and life of the communities in the area.

from the city of Lezhe to its delta in the Adriatic Sea from the dumping of sewage of the city of Lezha; the pollution of the Adriatic Sea (the port of Shengjin) and the Lake of Kenalla from the dumping of sewage of the commune of Shengjin (80 per cent of the sewage flows into the Adriatic Sea and 20 per cent in the Lake of Kenalla); and the damage caused to the lagoons of Kune-Vain and to the lagoons' biodiversity by the dumping of sewage, the Regional Environmental Action Plan recommends: a) the active involvement of the administrations of the city of Lezha and the commune of Shengjin to successfully solve the issue of sewage treatment in the context of the World Bank Project on the establishment of a sewage processing plant (system of legatines) to be established in the surroundings of Shengjin; b) the construction of a sewage treatment plant in the city of Shkoder and the cancellation of the practice of dumping sewage waters into the Lake of Shkodra; c) given the multitude of problems and the limited financial resources that do not allow for the construction of sewage plants in each of the administrative units in the area, the option should be explored to construct septic holes in accordance with filtering systems for communes and villages which can not connect to the broader system.

6. Based on the rich underground water resources of the area under consideration, on the one side, and the overexploitation of the underground waters of the village of Barbulloje due to the large number of uncontrollable drillings and the increasing saltiness as well as the increasing levels of NO<sub>2</sub> in this area and in the vicinity of the Hunter's Hotel, on the other side, the Regional Environmental Action Plan recommends: a) the establishment of control systems for drinking water in all of the communes of the region by using the same system (licensing) done for the EIA inspectors and the improvement of the conditions of the clean water pipes in the cities of Lezha and Shkoder; b) the implementation of special geodesic works in the tourist area of Velipoje-Shengjin (the carstic field of Pentar in Lezha). Likewise, the experience gained so far in Velipoja (with regard to the productive utilization of water holding strata of 7-12 mm depth consisting of rough sand beds of sweet waters) should be extended in Shengjin, too. Measures should also be taken to protect these water-holding strata from pollution agents.
7. Taking note of the abuse of standards and criteria for green and open space in all of the area's administrative units, as well as the non observance of the environmental requirements in the urban constructions, the Regional Environmental Action Plan recommends: a) the expansion of green areas especially in the cities of Shkoder and Lezha and in the dwelling areas with substantial numbers of inhabitants; b) the creation of massive parks for walking or recreation purposes in the cities of Lezha and Shkoder; d) the imposition of standards regarding the creation of green belts around the various industries in the region, especially those industries with greater impact on both the environment and the population's health like stone quarrying works, industrial complexes, raw materials processing plants, etc.

## Tourism

1. In consideration of the fact that tourism in the area of Shkoder-Lezhe is under extraordinary pressure exerted by both the governmental authorities and private entities through bad management and abusive practices, the Regional Environmental Action Plan recommends: a) a progressive model for tourist industry development starting with firm and steady steps that rely initially on family tourism and gradually passing into medium-size tourist establishments. In the future, the gradual development of the other sectors of the economy contributing to tourism development will contribute to the expansion of the tourist offer; b) the urgent design of master plans for tourism development that respect environmentally friendly criteria (such plans should take in consideration of the cost which is a protected area and high risk for sea erosion. Also, a good perception of the needs for the future and the demand for green areas, streets, buildings etc, should be in focus of the planners and policy makers); c) investments in infrastructure (such walking roads along the seaside, reconstruction of the existing roads, tourist villages along the Renci mountain, etc) (in view of the validity of the option of the Lezhe-Shkoder corridor connecting to the beach of Ulqinj); d) the allocation and implementation of investments

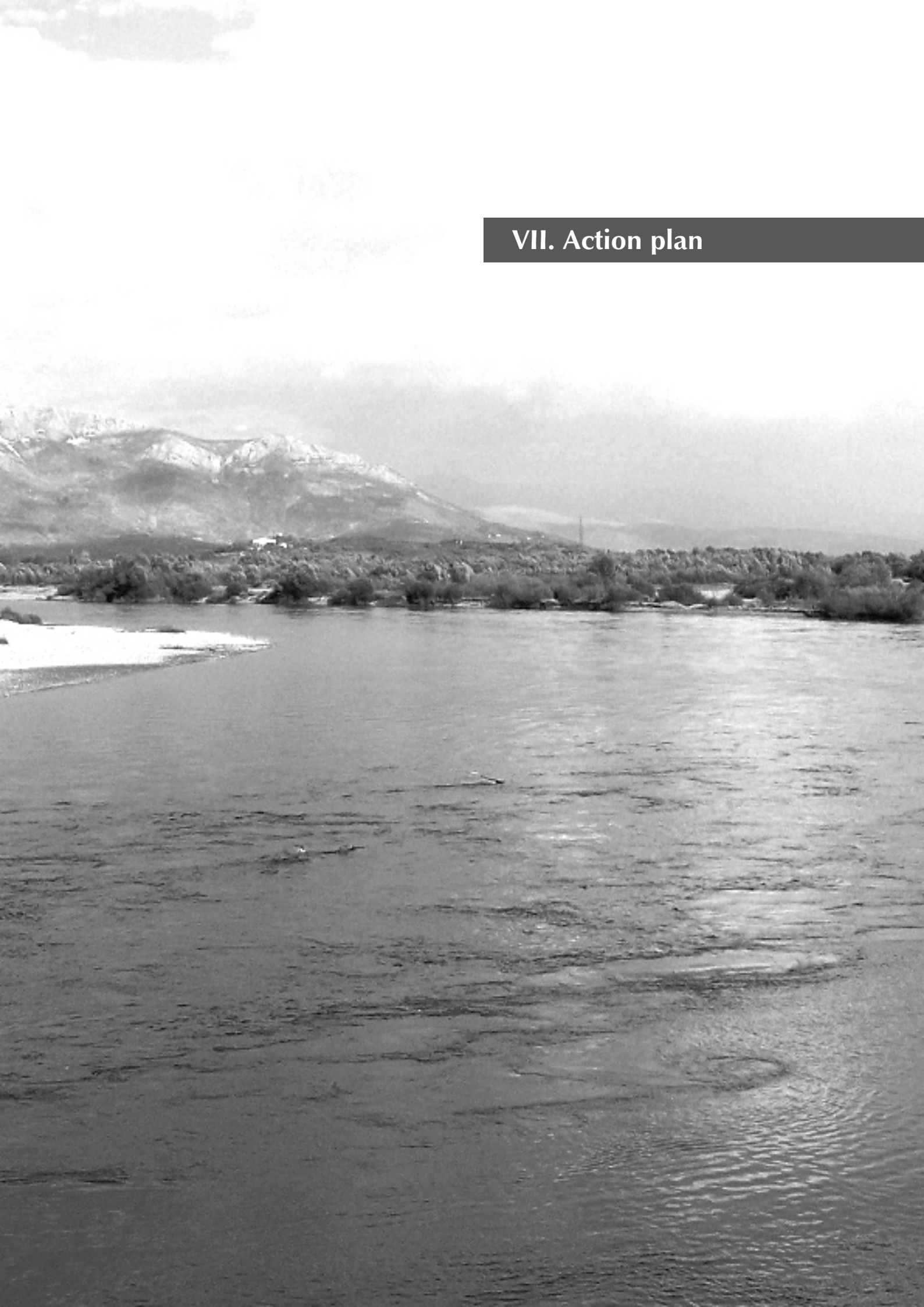


in respect of the criteria governing the protection and enhancement of cultural and historical values. The other strategic interventions mentioned above such as the possibility to turn the river Drin into an year-round flowing river, the construction of a regional landfill, the campaigns on public awareness and public education about the importance of sustainable environment will contribute to the continuous and durable development of tourism in the area.

2. Based on the fact that the area offers an abundance of tourist opportunities, the Regional Environmental Action Plan recommends: a) the exploration of other potentially tourist areas in the region especially in view of the Governmental strategy for the promotion of historical and cultural tourism; b) the institutionalization of measures to protect the castles and Lezha and Shkodra as unique historical, cultural and tourist values; c) the introduction into the list of touristy areas of the lake of Vau i Dejes for its landscape, cultural and recreational values, mostly as a sun-bathing (recreational) resort d) the introduction into the list of areas of important cultural and tourist values of the banks of the river Gjader and of the village of Vig.



## VII. Action plan





## Geology

Problem	Actions	Priority and Time Frame	Responsible bodies and possible collaborators	Positive effect
Geological risk, flood problems, erosion, urban development and infrastructure	<ul style="list-style-type: none"> <li>a. Enforcement of the competences of the Directorate of Geology to certify the construction intervention in the area</li> <li>b. Preparing detailed geologic-engineering, environmental, tourist and urban plans.</li> <li>c. Direct investments for forestry and marine dams to prevent the erosion in whole area</li> </ul>	<p>* * *</p> <ul style="list-style-type: none"> <li>a. within 3 years</li> <li>b. within 5 years (at least starting the preparation of the plans)</li> <li>c. within 5 years</li> </ul>	Local authorities Government of Albania through the line ministries	<ul style="list-style-type: none"> <li>- Protects the natural values of the whole area under study.</li> <li>- Gives to the region a good input towards sustainable development.</li> <li>- Ensures future investments and creates new opportunities especially for the mountains area</li> </ul>

## Hydrology

Problem	Actions	Priority and Time Frame	Responsible bodies and possible collaborators	Positive effect
Hydrologic chaos in the whole area. Drin, Buna, Kir and Gjader rivers as well as the Shkodra lake.	<p>a. A detailed analyze of current situation in Drini delta (analyzing the studies made by different actors, and defining the most appropriate interventions)</p> <p>b. The compilation of studies and projects for a complete solution of hydraulic chaos in Drini delta and beyond</p>	<p>* * *</p> <p>a. within 3 years</p> <p>b. 5 years</p>	<p>Specialized research institutions</p> <p>Donors</p>	<p>- With the problem solution will create the aquatic improvements in entirety of Shkodra lake, Buna and Drini rivers;</p> <p>- Will improve waters and the quality of underground waters.</p>
The damage of Drin, Buna, Kir and Gjader embankments as a result of high erosion caused by rivers themselves.	<p>a. Licensing the companies for collecting gravel near hot spots along rivers to deepen the bottom of Buna and Gjader rivers, and organize the flush flow especially of Kir river.</p> <p>b. The construction of protective barrage along Kir, Gjader, Buna and Drini rivers.</p> <p>c. The construction of mountain barrages in all area to prevent the rivers overcharges alluvium as well as the suffusion of Vau i Dejes lake.</p> <p>d. Planting trees along the river banks</p>	<p>* * *</p> <p>a. within 3 years</p> <p>b. within 3 years</p> <p>c. within 5 years</p> <p>d. within 3 years</p>	<p>Ministry of Environment, Forestry and Water Administration.</p> <p>Local authority</p>	<p>- Regulate the water system in all area, which are responsible for environmental, agricultural, and human development, there</p>
Whole areas submerged and liable in region.	<p>- Return to identity of Lezha's Drini by deepening it.</p> <p>- A study to release Drini river – Shkodra lake</p> <p>– Buna river, system constructing a commanding a water – gate near Spathar's barrier, stepping down a part of water in Lezha's Drin.</p>	<p>* * *</p> <p>10 years</p>	<p>Albanian government</p> <p>Ministry of Environment, Forestry and Water Administration.</p> <p>Local authority</p>	<p>Prevention of flood.</p> <p>Regulation of all ecosystems in whole areas.</p>

## Agriculture and fishery

Problem	Actions	Priority and Time Frame	Responsible bodies and possible collaborators	Positive effect
Lack of drainage systems.	a. Encouragement of community to cooperate and co-fund b. Cleaning up of drainage I and II canals every 3 - 4 years, while drainage III canals must be cleaned up every year. c. Undertaking an inventory (needs assessment) on the actual situation of the drainage system. d. Studies on efficiency operation of drainage system. e. Preparation of projects and fundraising for full rehabilitation of drainage system	* * * a. starting from 2006 b. starting from 2006 c. within 2 years d. within 2 years e. within 3 years	Board of drainage system, local government, donors, Association of Water's User (AWU) World Bank project (PMU)	Improvement of land structure and fertility, more opportunity for early sow, increase of productivity, increase of outcomes; therefore increase of farmers well being.
Malfunction of irrigation system.	a. Identification of priority facilities b. Continuation of third project of World Bank c. Accumulation of farmer's financial contribution of 300, lek/dyn from framers d. Better operation of Water User Association (WUA)	* * * a, b, c, d, starting from 2006	Local governance, Association of Water's User (SHPU), World Bank project, Donors.	Increase of agriculture production quantity and quality, reduce of production cost, increase of farmers income, reduction of poverty
Fragmentation of arable land.	a. Meetings with farmers in the region to build awareness on benefits of private farms; Establishment of farms that include no less than 10-50 ha arable land b. Encouragement of land market and its consolidation c. Resolve of all problems that exist now on land ownerships d. Registration of land on ZRRPP	* * * a. starting from 2006 b. starting from 2006 c. within 3 years d. within 4 years	Local governance, Farmers community Donors, NGOs, Directorate of Agriculture, Food and Consumers protection (DAFCP).	Growth of productivity and quality of agriculture product. Reduce fixed costs as result of scale economy. Access of new contemporary technology, Building trust among the farmers helps in addressing the development issues, Increasing marketing capacities, pricing policies; and facility on credit, economic growth for farmers on region.

Lack of organization skills on fisherman associations	a. Meeting with local governance and fishers. b. Establishment of legal association of fishers.	* * * a. within 2006 b. within 2 years.	Inspectorate of fishing. Local government Community of fishermen.	Sustainable management of fish's resource.
Lack of fish farms.	a. Preparation of projects encouraging the establishment of fish farms (such as trout farm) c. Establishment of farms for species of carp fish.	* * a. within 2 years b. within 2 years	Inspectorate of fishing. Fishery experts. DAFCP REA. Local community that will profit from project.	Employments. Recreation Production Ecological sustainability



## The Biodiversity and protected areas

Problem	Actions	Priority and Time Frame	Responsible bodies and possible collaborators	Positive effect
Impoverishment of biodiversity, degradation of protected area Kune-Vain	<ul style="list-style-type: none"> <li>a. Halt the hunting for 5 years in the protected area of Kune-Vain.</li> <li>b. Demolition of illegal constructions in Kune – Vain.</li> <li>c. Increase the capacity of operational staff in Kune-Vain</li> <li>d. Establishment of visitor centers</li> <li>e. Increasing the capacity of responsible authorities in implementing laws, protecting fauna and administration of hunting founts.</li> <li>f. Awareness campaigns and initiatives for community of villages of Ishull Lezhe, Shengjin, Barbulloje and Tales, aiming protection of Kune-Vain.</li> </ul>	<p>* * *</p> <ul style="list-style-type: none"> <li>a. Starting from 2006</li> <li>b. within 2 years</li> <li>c. within 2 years</li> <li>d. within 3 years</li> <li>e. continuously</li> <li>f. within 2 years</li> </ul>	<p>Directory of Nature Protection (Ministry of Environment, Forestry and Water Administration),</p> <p>Kune – Vain staff,</p> <p>Construction Police,</p> <p>Commune Shengjin,</p> <p>Shenkoll,</p> <p>REA Lezhe.</p>	<p>Growth of habitat and populations, especially of birds in Kune-Vain, growth of fauna diversity, and increase the protection of endangered species.</p>
Increase of pollution in rivers Drin, Bune, Kir and Gjader, in Lakes of Shkodra and Knalles, in Kune Vain wetland, resulting in decreasing of their biological diversity	<ul style="list-style-type: none"> <li>a. Construction of a sewage system for Shkodra city, away from the lake.</li> <li>b. Construction, in the framework of regulatory plans, of sewage system and landfills in all villages of the region, especially those near water resources (implementing modern practices of septic sewage holes).</li> <li>c. Periodical control and ensuring of high standard technologies for activities that release untreated waters in lakes and rivers.</li> </ul>	<p>* * *</p> <ul style="list-style-type: none"> <li>a. 5 years</li> <li>b. 5-10 years</li> <li>c. continuously</li> </ul>	<p>Region of Lezha and Shkodra</p> <p>Ministry of Environment,</p> <p>Forestry and Water Administration.</p> <p>Municipalities and communes of region in the project,</p> <p>Regional Directories of Water and Sanitation,</p> <p>Community of area</p>	<p>Protection of one of the richest hydro systems in Albania and in Balkan from degradation and increase of environmental, tourist and human values in the region.</p>

Damage of wood formations and degradation of habitats	<p>a. New forestations in eroded areas, especially across river Gjadër and banks around the draw (with priority on the strip Merqj-Troshan, forestry economy of Kakarriq)</p> <p>b. Identification of buffer areas in both sides of the rivers Drin, Bune, Kir and Gjadër (50-100 m) and recreation of green belts in both sides of these rivers.</p> <p>c. Improvements of habitats with new forestation in protected area of Kune – Vain.</p>	<p>* * *</p> <p>a. within 3 years</p> <p>b. within 5 years</p> <p>c. within 5 years</p>	Ministry of Environment, Forestry and Water Administration (Directory of Forestry and Directory of Nature Protection), Region of Lezha and Shkodra	Increase of vegetation, improvement of habitats and recreation of new green belts as main keys for improvement of biodiversity. Improvement of landscapes and protection of Drin river from flood prevention.
High level of coastal erosion	<p>a. Construction of protected buildings in forestry economy, rehabilitation of existing barriers.</p> <p>b. Construction of protected buildings from coastal erosion in Kune – Vain and protection of forestry belts in Shengjin and Velipojë.</p> <p>c. Cleaning of river Buna from Kir river alluviums.</p>	<p>* * *</p> <p>a. within 3 years</p> <p>b. within 5 years</p> <p>c. within 10 years</p>	Ministry of Environment, Forestry and Water Administration, Communes of Shengjin and Velipojë.	Protection of sea coastal from advance of sea towards seashore. Protection of soil from increasing of salinity.

## Human dynamics and use of territory

Problem	Actions	Priority and Time Frame	Responsible bodies and possible collaborators	Positive effect
Lack of master plans on urban developments for the whole area (the preparation of such master plans are on the process for Velipoja and Shkodra).	a. Development of urban master plans of Municipality and Communes, based on the environmental, economic and social conditions and perspective projections (This process shall take into consideration recommendations of EPTISA project on an integrated development, and follow all the necessary procedures on obtaining the environmental permit and Environmental Impact Assessment)	* * * For communes of Velipoja and Shengjini, within 2006 For Municipality of Lezha and Shkodra, within 2 years	Regional Councils of Lezha and Shkodra Municipalities Communes and other interested stakeholders	<ul style="list-style-type: none"> <li>- Designing of those plans will guide developers and constructors to better distribute and cover public services.</li> <li>- Better management of environmental resources.</li> <li>- Decrease of potential sources of pollution</li> <li>- Decrease the level of migration of population</li> <li>- Improvement of quality of life through strong communities.</li> <li>- Development of Agriculture and livestock, sustainable tourism, etc.</li> </ul>
Overexploitation of underground waters	<ul style="list-style-type: none"> <li>a. Inventory of water sources</li> <li>b. development and implementation of an effective and continuous management and monitoring program for water resources, especially of underground waters.</li> <li>c. Feasibility study and river basin management plan for the Drini River</li> </ul>	* * * a. within 3 years b. within 3 years c. within 5 years	<ul style="list-style-type: none"> <li>Ministries of line</li> <li>Directorates of water supplies and sewage</li> <li>Municipalities</li> <li>Communes</li> <li>Community</li> <li>Donors</li> </ul>	<ul style="list-style-type: none"> <li>- Rehabilitation and preservation of water resources</li> <li>- Continuity on prevention of water pollution</li> <li>- Development of tourism</li> <li>- Development of agriculture and related businesses</li> </ul>


Lack of waste management facilities, landfill in whole area. Serious environmental and health problems, due to illegal dumping of the waste in Shkoder and Lezha, as well as in all communes.	a. construction of regional landfill for all the area (Bushati area) a. Rehabilitation of existing illegal dumpsites in Shkodra, Lezha, and Shëngjin.	* * * 5 years	Regional councils of Lezha and Shkodra	- protection of environmental values of the area - improved quality of life - improvement of tourist image of the area
Lack of stability for local administrations. Continuous displacement of experts, impeding the continuity of the work.	a. Application of strict criteria on employment and performance evaluation. b. Protection of staff from the political effects and impacts of political changes.	* * * 3 years	Central government Local government Political Parties	- better management of services, works and projects - encouragement of experts on undertaking and successful implementation of local initiatives - improvement of capacities of local staff
Low level of awareness of the public and local administration	a. Public awareness on good management of natural resources b. Capacity building programs for local government, central government, interested stakeholders and civil society, on public participation on development of strategic developments plans, monitoring and EIA.	* * * a. continuously b. starting from 2006	Ministry of Environment, forests and Water administration Municipalities, Communes, NGOs, Media	- capacity building for human resources - increased participation of community in sustainable management of environment - prevention and mitigation of environmental problems - improvement of aesthetical values
NGO sector under-developed; low level of capacities and awareness of media on dealing with environmental issues	a. Capacity building on public participation on environmental assessment and decision making b. Financial support to NGOs aiming at increase their activities and outputs c. Capacity building for journalists on environmental issues.	* * 3 years	REC Ministry of Environment, forests and Water administration Ministry of Finance Donors	- human resources development - public awareness - capacity building on environmental field - professional approach of media of environmental problems
Lack of practices, tools and educational programmes on environmental protection	a. Integration of environmental education in school curricula at all levels b. Application of walking excursions for school children's c. Concrete initiatives with children on establishing environmental centers around protected areas	* * * 2 years	Ministry of Environment, forests and Water administration Ministry of Education and Sciences Regional directorates of Education. REA	- Provides environmental suitability through a future civic and educated society - Provides a good resources for the tourists

## Tourism

Problem	Actions	Priority and Time Frame	Responsible bodies and possible collaborators	Positive effect
Uncontrolled tourism, damage of the natural values and territory. Loss of touristy values.	<ul style="list-style-type: none"> <li>a. Adoption (following revision) of the master plan for Velipoja and preparing the master plan for Shengjini as immediate intervention to protect these high potential tourist assets.</li> <li>b. Solving the issues of the land ownership in the costal zones.</li> <li>c. Preparation of qualitative guides (guides for visitors and more especially for developers) for all the area and new possibilities offered in the region.</li> </ul>	* * * a. within 1 year b. within 2 years c. within 2 years	Ministry of Tourism, Culture, Youths and Sports. Ministry of Territory Adjustments and Telecommunications. Local authorities in respective units. Local NGOs Private business.	Protects and improves the natural and tourist values of the area, by increasing the income for the population and employment in the area. Gives a new input to the trade market, agriculture, local artisan values, etc.
Damage of the historical and cultural values of the area	<ul style="list-style-type: none"> <li>a. Reconstruction according to required parameters (according to the national institute of monuments standards) of the Castles of Shkodra and Lezha</li> <li>b. Preparation of qualitative guides for the knowing historical values and including the historical values found along Gjadri river (near to the Vig village) and Vau Dejes reservoir.</li> </ul>	* * * 5 years	R.C. of Shkodra and Lezha Ministry of Tourism, Culture, Youths and Sports	Protects the historical values and promotes new touristy areas.





An aerial photograph showing a wide river and a large lagoon system. The river flows from the bottom left towards the center right, where it meets a large, irregularly shaped lagoon. The surrounding landscape is a patchwork of agricultural fields, with a prominent straight road or canal running diagonally from the top left towards the bottom center. In the background, a range of mountains is visible under a hazy sky.

## **Interbasin communication**

Mati River and Patoku lagoon



## 1. General information on the area

### 1.1 Population and living conditions

The commune of Fushe Kuqe is composed by 5 villages, Adriatik, Patok, Gorre, Gurrez and Fushe. In total the population of the commune reaches the number of 7600 inhabitants. The main populated villages are Gurrez and Adriatik, whereas fewer inhabitants live in the Patoku village. Having moved in more than one century ago, 60% of the population of the commune comes from the areas of Malesi e Madhe, northeastern parts of the country, Kurbin, Kosovo etc. Population density before the 90-s was 50 inhabitants per meter square. After the 90-s very large demographic changes have affected the area. It is obvious that these changes have caused negative impacts on the socio-economic structure of the commune, mostly relating to land use.

The agriculture and livestock are priority sectors for the inhabitants of the commune. The land mostly is planted with wheat, legume, potato and alfalfa.

	Year/unit	Commune of Fush-Kuqe
Population INSTAT	2001	6,129
Females INSTAT	2001	3,214
Households INSTAT	2001	1,402
Population Civil Registrar	Dec.2003	7,737
Females Civil Registrar	2003	3,885
Households Civil Registrar	2004	1,798
Land distributed	hectares	2,447

Table 1 - Population growth and land distribution

Entire planned mixed population until year 2020 (local + residents) accommodated within the Fushe-Kuqe gateway village (approx. 32ha) is about 2,300 people. Resulting gross housing density is about 70 people per hectare (camp site not included). Houses should be max. 2 to 2.5 storey high (incl. the ground floor) and located on large plots of land. Construction frontline from the edge of sidewalks along the main access road should be min. 7m setback.

## 2. Fushë-Kuqe and Patoku basin

The commune of Fushe Kuqe extends over a surface of 3300 ha. The surface of the lagoon, including the surrounding area (the bay) is around 480 ha and its basin is around 800 ha, of which 450 are agricultural land, 200 ha forest and 150 pastures.

The lagoon itself is divided in two parts by a dike. This is the point where the road from Laçi reaches before going towards the sea. The north area is about 70 ha and the south part is 270 ha. This lagoon is divided by the sea by a sand strip, which is enlarging. There are three canals connecting the lagoon with the bay. The upper part has one communication canal and the lower part has two communication canals.

Around the lagoons are some marshlands as the land is in almost the same level to the sea and the drainage system is not working properly.

This is a flat area with high geological values.

### 2.1 Underground waters

A comparison of the results of analysis of water samples taken over 1999-2000 and 2001-2002 reveal that there are no substantial changes in the chemical content of underground waters. On the other side comparison with samples taken earlier in the basin of Fushe Kuqe reveals that the intensive exploitation of the basin especially in the area Lac-Fushe Kuqe has incurred a small increase in chlorine content.

There is moderate risk of pollution from ground activity.

Pollution may come from the feeding zone north of the basin (bed of the Mati River) which up until now remains unpolluted, but may become polluted by heavy metals coming from ore extraction. The risk may increase due to the constant exploitation of the river bed for gravel extraction.

The greatest risk of ground pollution comes from residual waste deposited with the Chemical Fertilizer Plant in Lac. The greatest risk coming from constant exploitation is the general increase of mineral content (mainly Na and Cl), that result from the development of the depression cone on the South West where there is a prevalence of high mineral content waters.

At this basin, two types of underground waters are encountered. Pollution is detected respectively in Gurez and Adriatic, mainly with NO<sub>2</sub>, NH<sub>4</sub>, which is an indication of violation of no trespassing rules.

The main recommendation is for monitoring to continue as this is the basin with the greatest underground reserves and a high and constant rate of exploitation.

## 2.2 Drinking water

In the area of Lezha, two communes are supplied with water coming from sources: Kallmet and Kolsh; in the area of Mirdita the entire commune of Selita; and in the area of Kurbin, Gjorm and Vilez are supplied from water sources.

Water is not supplied 24 hours a day, but averagely 4-10 hours a day. Lezha town has the best situation as regards water supply for the population: water is supplied 12-24 hours a day.

## 3. Biodiversity

The Region of Lezha, notwithstanding its rather small extension (about 1462 km<sup>2</sup>), is a place with rich flora and fauna. The variety of climate, topography, geology, geomorphology, etc., creates conditions for a wide variety of flora and fauna habitats. Thanks to its access to the Adriatic sea, the Region of Lezha is distinguished for a rich sea and beach biodiversity. Its territory accommodates almost all of the habitats to be found on the Albanian land such as: Forests (broad leaves, needle and mixed, semi natural forests, planted forests), bushes and shrubs (evergreen and changing leaves of makia), grass growing lands (pastures) and marshlands, river and water streams, lakes, reservoirs, canals, coastal lagoons, and salted swamps, sand dunes, river deltas, hydrophilic vegetation, etc.

The area to the south of the Mati River is one of the least impacted coastal zones along the Adriatic coast. The coast line is very dynamic and facilities for tourism developed in the 1950 and 60s have been destroyed through the process of erosion and formation of sand banks elsewhere. The area is a rich fishery and a number of bars and restaurants have been developed along the only access road into the lagoon system. The area has limited attraction to families as there is no accessible beach. It is envisaged that the area will remain primarily a day visiting area for eating and drinking in an attractive wetland landscape. Facilities for special interest nature based tourism related to hunting; fishing and bird watching would be developed. It is imperative that new development is not allowed to encroach on the woodland and wetlands in order to retain the environmental quality of the area.

Coastal lagoons of Kune –Vain and Patok are the most preferred by the water wintering birds. Globally endangered species like the Mediterranean turtle *Caretta caretta*, and *Monachus monachus*, have a habitat in this region, too, whereas *Pelecanus crispus* has either disappeared or has become a rare visitor (it was a systematic visitor until the year 1994). Almost all over the mountainous area, *Canis lupus*, which has disappeared from the greatest part of Europe, is a permanent dweller. Another of the species having the same fate with the wolf in Europe, the big mammal *Ursus arctos*, is encountered in the highlands of Orosh and the Mountain of Scanderbeg.

The existing policies and practices of development in this region have had and still have the same impact on the natural and semi natural ecosystems resulting in species disappeared, species disappearing or species endangered or degraded.

The newly created conditions in the market economy make even more urgent the study of the present situation of the plant and animal taxa in order to be able to identify the endangered species and design protection and prevention programs and measures.

Kind	Kune-Vaini	Patoku
Endangered bio-indicator mammals	7	8
Observed bio-indicator mammals	11	13
Ratio endangered species/observed species (in%)	63.6	61.5

*Tab.2 - Kinds of endangered mammals of the coastal legatine areas involved in 2002 monitoring (Regional Environmental Agency of Lezha, 2006)*

Lagoon	Number of water wintering birds	No. of individuals of water wintering birds	No. of water nesting birds
Velipoja	35	3,788	12
Kune- Vain	32	2,318	12
Patoku	24	3,178	5
Karavasta	52	35,670	22
Butrint	40	14,103	9

*Tab.3 - Number of wintering and nesting birds in the lagoons (Regional Environmental Agency of Lezha, 2002)*

## 4. Recommendations

1. Development of infrastructure through road improvement, rehabilitation of the water supply system, rehabilitation of the irrigation system (particularly the rehabilitation of the irrigation grids of the River Drin), rehabilitating the pumping systems, progressively increasing supply of electricity are among steps that need to be taken. Priority attention should go to efforts to reduce by half of the number of people who have no access to drinkable water of quality standards and the elimination of flooding disasters.
2. The promotion of the development of small and medium size industrial enterprises, along with the growth of local production, to create favorable conditions for native and foreign investment, as well as development and implementation of development programs dedicated to small and micro businesses run by young people.
3. A small gateway settlement is proposed on the access road to the lagoons. Tourism accommodation and other services should be focused in this gateway, together with some simple service facilities for car parking, picnic areas, toilets, and temporary catering outlets from where visitors can enjoy the nature.
4. As a result of the analysis and classification of the environment, the coastal and wetlands from Shengjin to Ishmi River is proposed to be designated as a Managed Natural Reservation (Category IV). In effect, this is simply a continuation of the existing management status of the Kune-Vaini reserve and Patok-Fushe Kuqe area as an area of management of habitats and species. It only extends the area under Category IV management to include the linking section of wetlands behind the beach in the Tale area which was proposed for this level of protected areas status in the approved National Biodiversity Strategy and Action Plan (1999).
5. Accommodation should be offered for daily visitors commuting mainly from the Tirana area.
6. The area should be adequately provided with necessary services oriented toward the concept of

'tourism gateway'. Several facilities such as some small scale tourism accommodation and other mini size and low density establishments for those visitors seeking to be overnight in the area (holiday residents) may include a few mini size hotels, several nice villas for rent, a camp site for caravans, a tourist information centre, bars, cafes, restaurants, local bazaar / souvenir shops, etc.

7. An adequate system for the collection/disposal of solid wastes (garbage, etc.) should be in place and waste water and sewage treatment plant planned for investment funds.
8. Local traditions in folk music, dancing, cooking and handicrafts should be maintained, developed and commercialized for visitors. These activities will help to generate additional income and other employment opportunities. Farmers should keep and their local tradition in agriculture and animal farming. Only those new farming methods that are environmental-friendly should be promoted.
9. For the protected areas:
  - (i) Differential prohibition of hunting in the legatines for a period of 3-5 years, in order to create possibilities for wild fauna to recuperate itself and later embark on a controlled hunting activity on the basis of objective conditions for harvesting fowl; (ii) Designing management plans for protected areas; (iii) Increase control on the part of the various inspectorates having jurisdiction over these activities for the purpose of effective administration towards long-term control minimization of negative impact on the fauna; (iv) Cancel all kind of human activity that may disturb the birds' livelihood in the areas known as reproduction and growth sites. Disturbance during reproduction periods may cause abortions and deaths resulting into a lessening of the species population; (v) Put up tables and notices asking for fowl protection and non-disturbance of the birds; (vi) increase environmental awareness about the ecotouristic importance of the birds; (vii) Take measures to prohibit fishing in the low sea waters, due to the negative consequences on the life of sea mammals, like dolphins. There are cases when dolphins fall in the fishermen's net die and are washed off on the shores; (viii) Fishermen should be educated about the role and importance of sea mammals for sea life and human economy. Increase awareness of the population on the importance of sea turtles as globally endangered species, through TV channels, publications, etc. Fishermen should be educated to put sea turtles back into the sea. Sea mammals and sea turtles should be considered the symbols of sea assets and sea beauties; (ix) Prohibit fishing with the aid of explosives; (x) Prevent the uncontrollable massive concentration of mussels in all of the sites, especially during reproduction periods.
10. Patok lagoon:
  - (i) The Fushe-Fuqe tourism service gateway village is obviously planned to serve primarily as a logistic support area for 'special interest' tourists (mostly day visitors) interested in nature based tourism (birdwatchers, etc.), people seeking solitude, fishermen, etc. (ii) The area inside Patok lagoon is not only quite environmentally sensitive but, due to very shallow waters, muddy land, etc., it's not appropriate for sun and beach tourism. (iii) The plan does not therefore foresee the presence of any permanent structures (accommodation, etc.) Very few temporary structures inside the Patok lagoon (the existing fish restaurants, bars, etc.) may be allowed under strict license and follow up of their business activity. Illegal/informal development (especially the permanent structures) should be immediately removed. In order to control access inside the lagoon complex an entrance gate should be established at proposed new centralized parking areas. Cars, vans, motorbikes, etc. should be allowed to enter against a reasonable entrance fee. (iv) Assumed average number of day visitors until year 2020 is about 1,600 people, mostly arriving by private cars or 1,400 people approx. (700 parking places). The rest of 200 people are assumed to arrive by small shuttle buses (30 seats) and minibuses (6 seats), which implies planning of some additional parking space. Locals and holiday residents are assumed to use local minibuses and bicycles (no private cars). Therefore, total number of distant day visitors, resident day visitors and locals inside the Patok lagoon may reach on an average summer day between 3,000 and 3,500 people in year 2020. Additional parking needs during peak days (on Sundays) could be fulfilled along

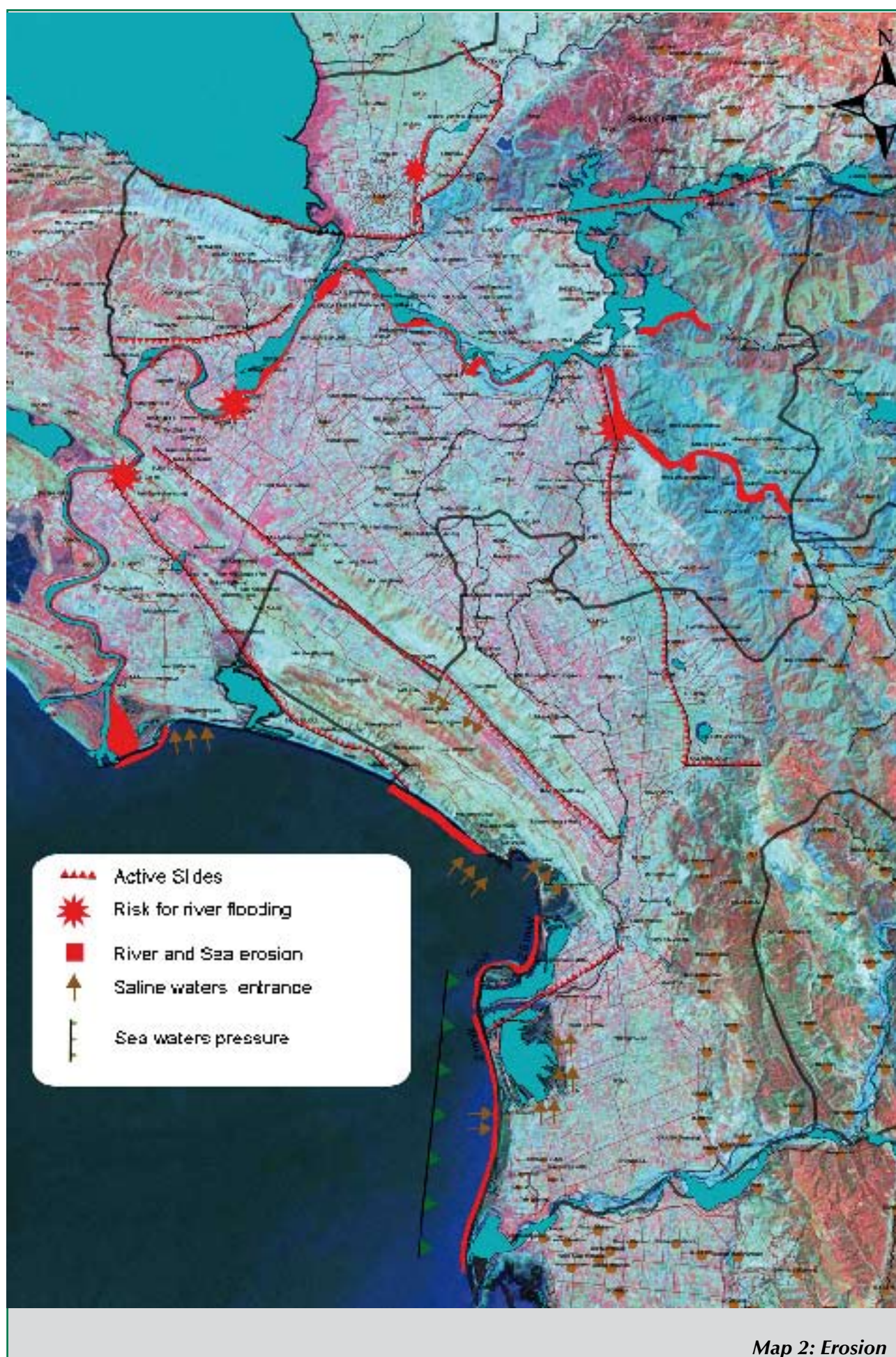


the main access road and inside the built-up areas of Fushe-Kuqe gateway village. (v) The existing access route inside the Patok lagoon should be converted into a gravel road. No upgrading (widening and asphaltting) should be planned until a proper management plan for Patok lagoon is prepared and approved. Finally, this route may be totally closed for motorized vehicles (incl. motorbikes) and allowed only for bicycles and battery powered trams. All vehicles will by then (say by year 2010) park outside Patok lagoon at assigned parking places at entrance gate. (vi) Planning for other low impact temporary structures inside Patok lagoon, which apparently are quite important should also include: interpretation services, information signs, ambulant refreshment, toilets, etc.



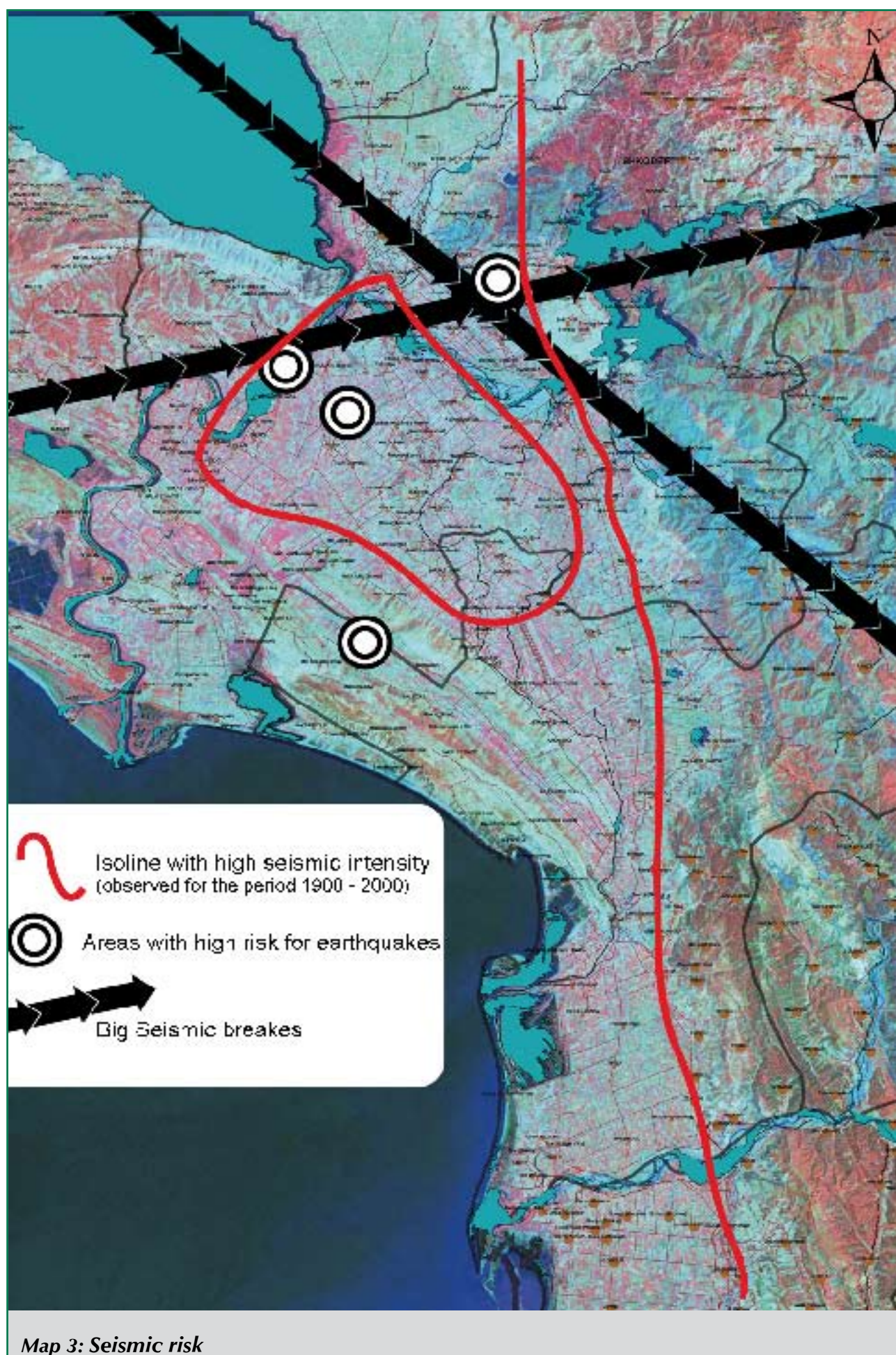


# Maps



Map 2: Erosion





Map 3: Seismic risk





Buna river and Viluni Lagoon



Gjadri River and Vaut te Dejes Lake



Drini river of Lezh, Kenalla river and Kune-Vain Lagoons



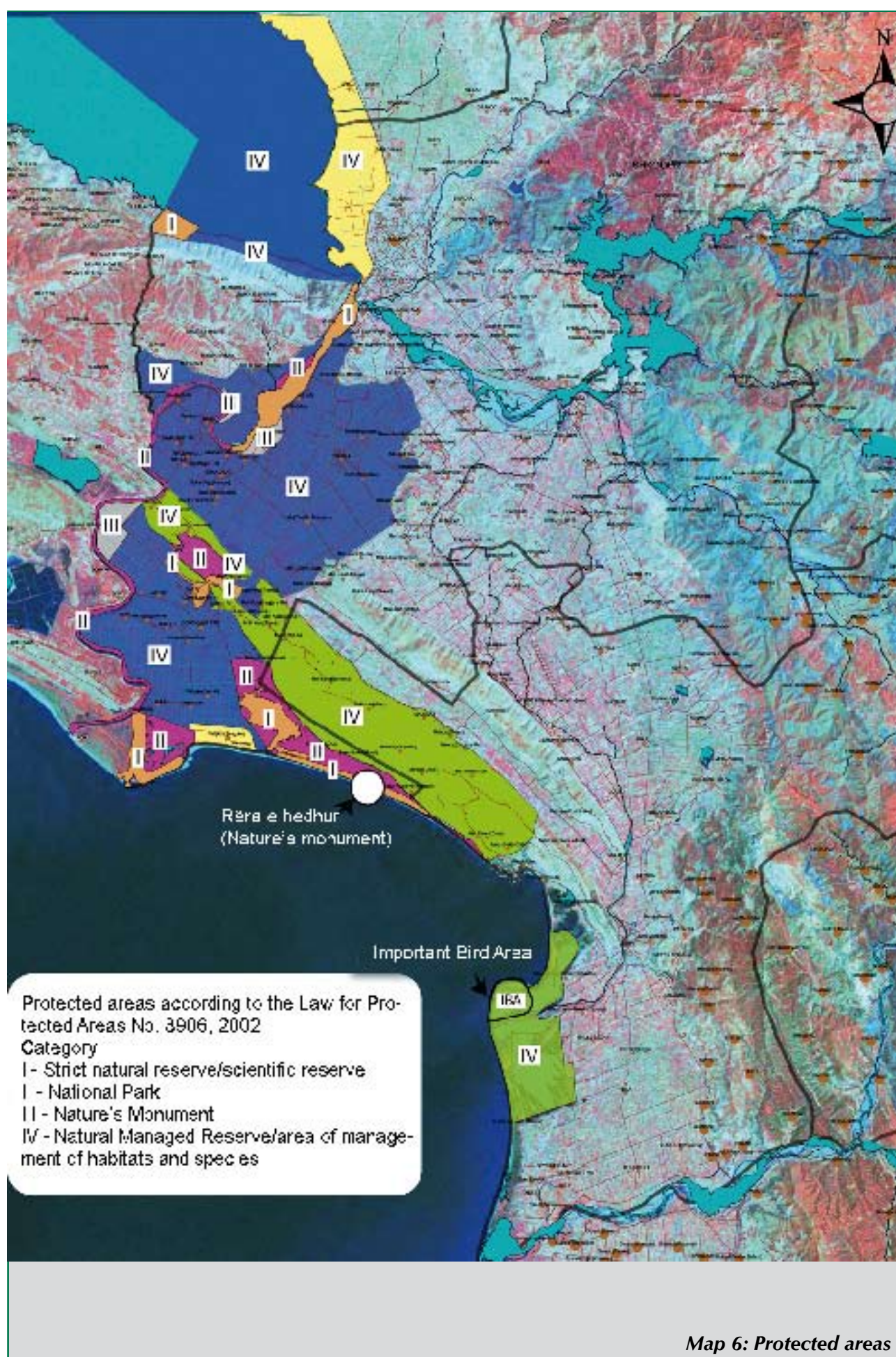
Kiri river and Shkodra Lake

**Map 4: Main water reserves in the area**

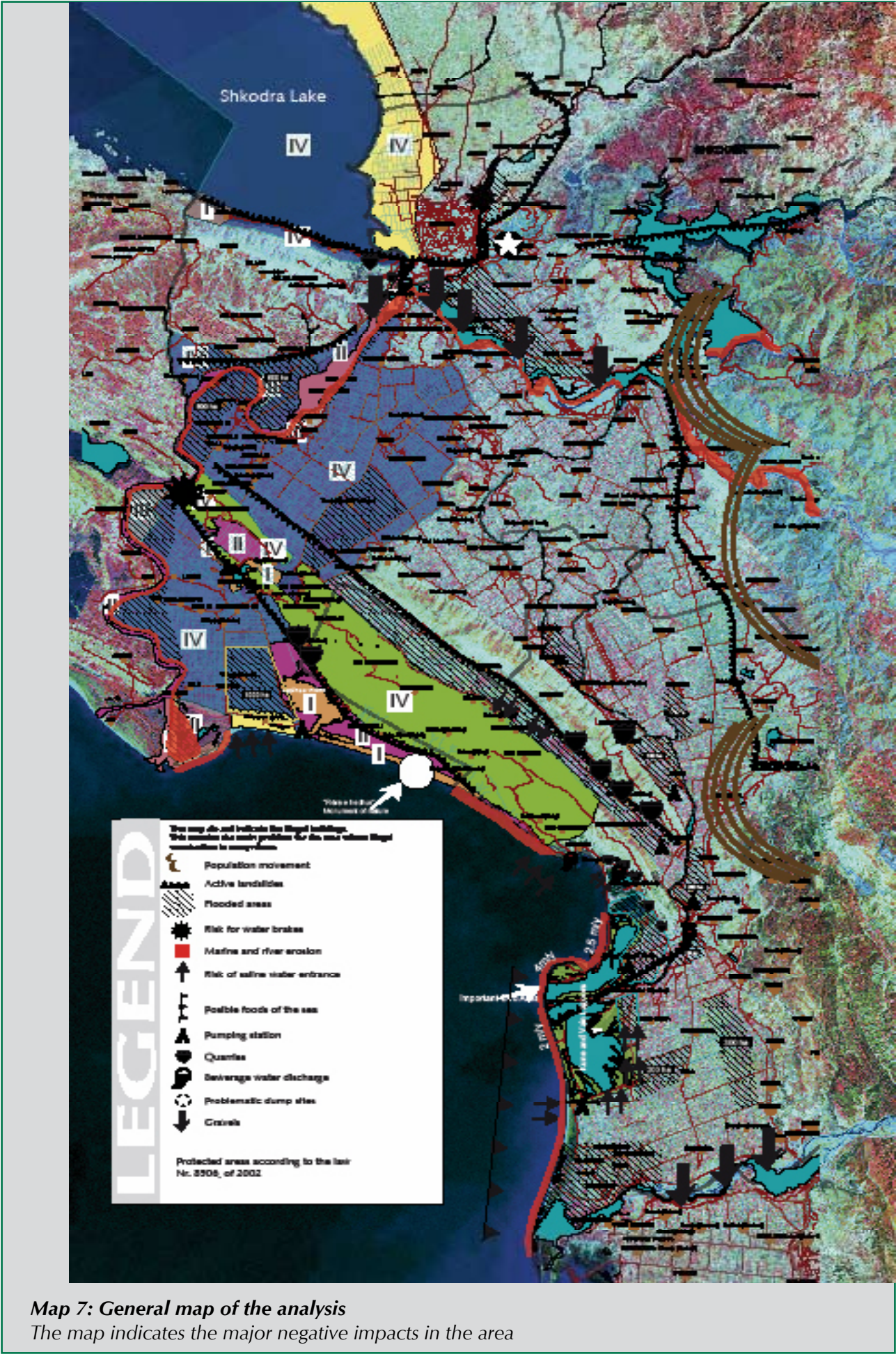




*Map 5: Floodings*







*The map indicates the major negative impacts in the area*





**Map 8:** Earthquakes history in the region showing the most active and risky areas  
(data originally provided by Google)



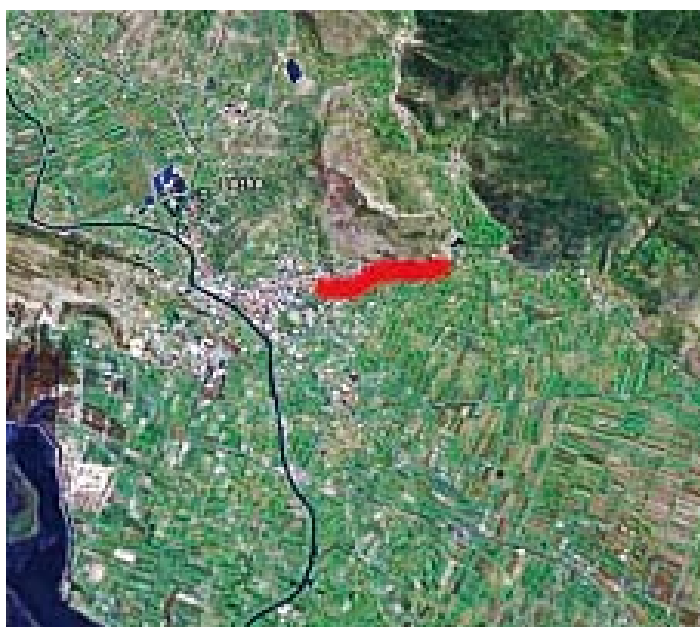
**Map 9.** Kiri river banks over eroded posing high risk to the city of Shkodra



**Map 11.** The red circles in the map show the potential water flow by the damage of the river banks where intervention is needed



**Map 12.** The red circles in the map show the gravel industry along the Drini River, which needs control and an EIA for their activity



**Map 13.** In red color the torrent of Manatia, overbuild by illegal houses, posing high problems to the water flow.

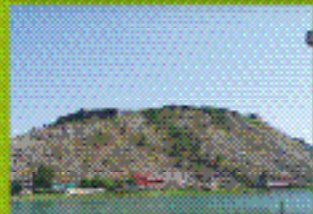
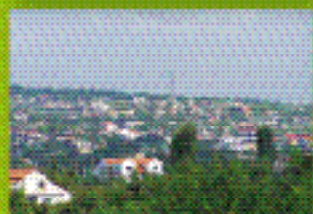


**Map 14.** The hills where the wind turbines can be placed









# Regional Environmental Action Plan

*Drini River Delta Shkodra - Lezhe*

