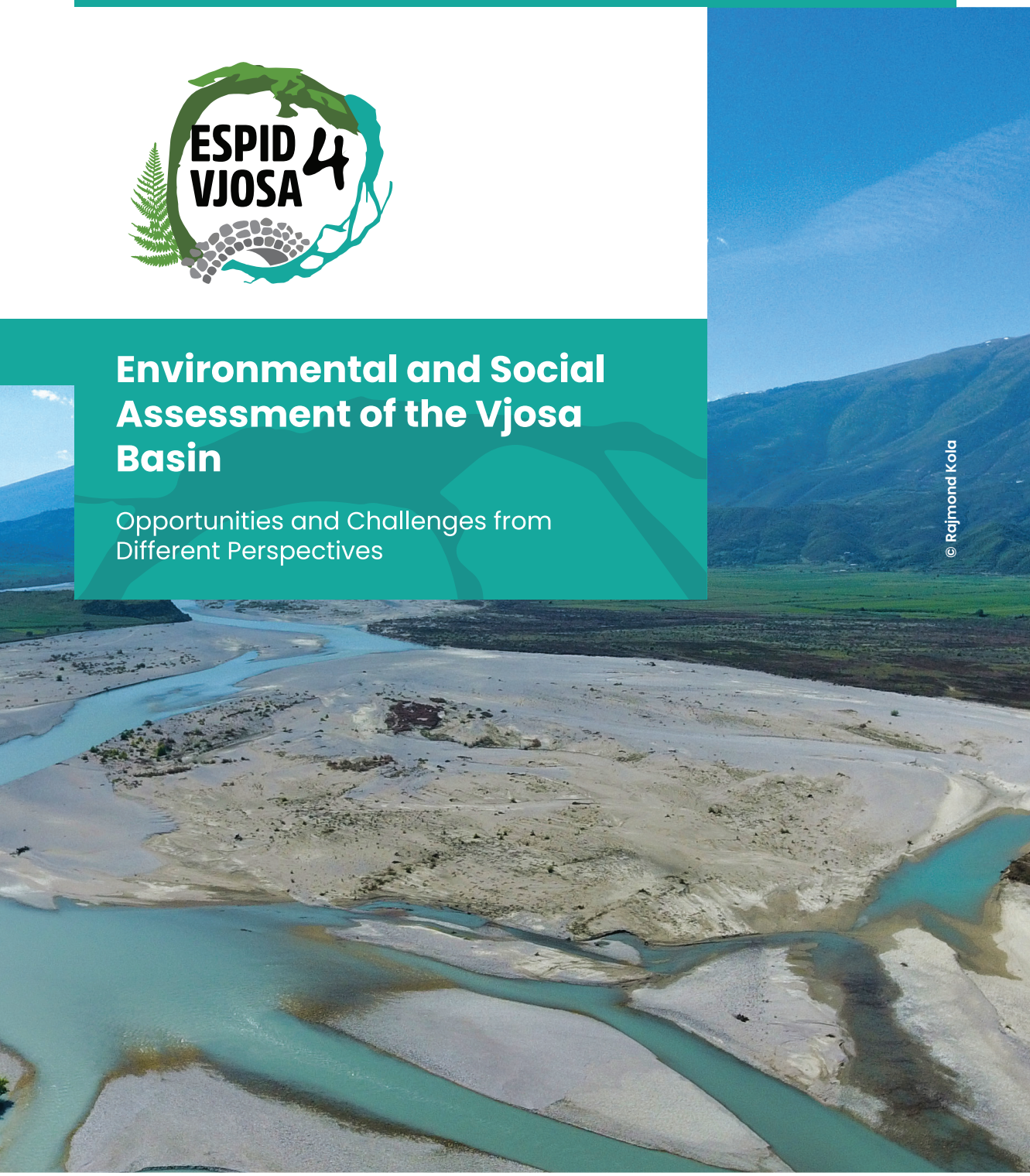
Summary Report

Environmental and Social Assessment of the Vjosa Basin

Opportunities and Challenges from Different Perspectives



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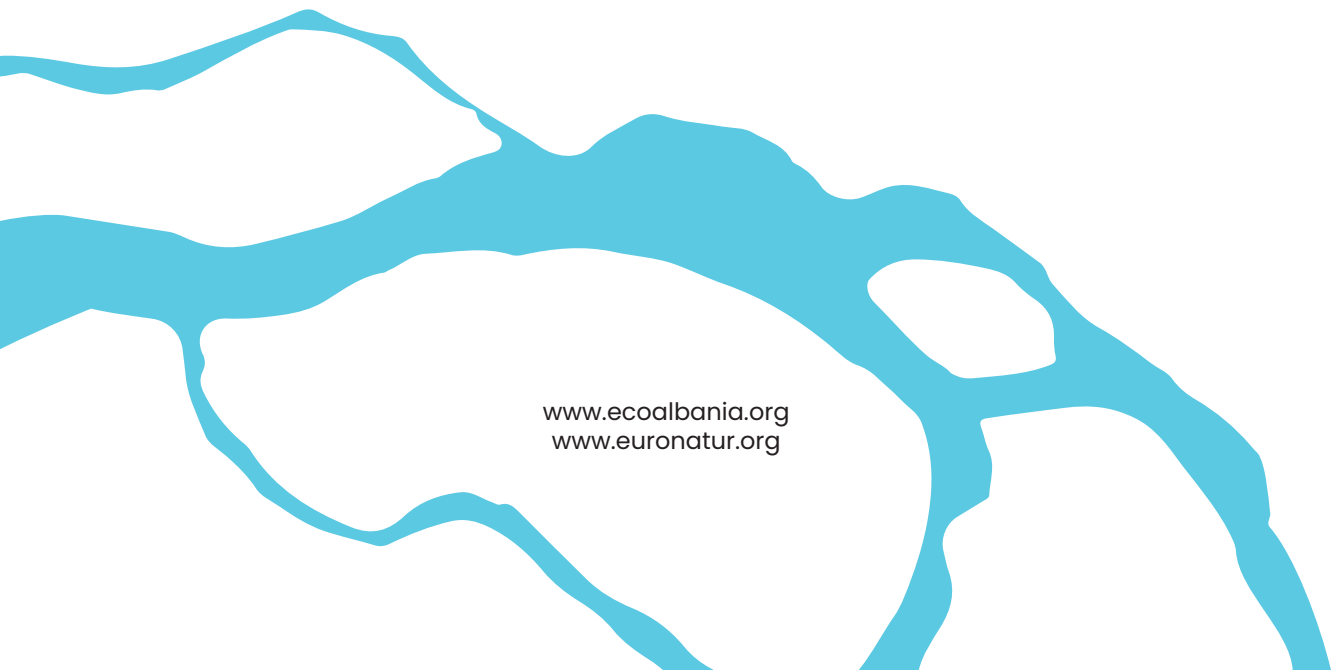

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Abbreviations

ADA	Austrian Development Agency
AKBN	National Agency for Natural Resources
AMBU	Agency for Water Resources Management
AOS	Albanian Ornithological Society
BAU	Business as Usual
CAP	Common Agricultural Policy
CBD	Convention on Biological Diversity
CfD	Contracts for Difference
DCM	Decision of the Council of Ministers
DRR	Disaster Risk Reduction
EC	European Commission
EDA	Expected Annual Loss
EED	Energy Efficiency Directive
EPCA	Electronic and Postal Communications Authority
ESR	Effort Sharing Regulation
ETS	Emissions Trading Scheme
EU	European Union
EWFD	European Water Framework Directive
FEPAs	Freshwater Ecosystem Priority Areas
GDP	Gross Domestic Product
GEN	Global Ecotourism Network
GIS	Geographic Information System
GNSP	General National Spatial Plan
HEC	Hydropower Plant
IFRM	Integrated Flood Risk Management
IGJEO	Institute of Geosciences
IMP	Integrated Management Plan
INCA	Institute for Nature Conservation in Albania
INSTAT	Institute of Statistics
IRENA	International Renewable Energy Agency
IUCN	International Union for Nature Conservation
IWRM	Integrated Water Resources Management
KBU	Watershed Councils
LAG	Local Action Group
LGPs	Local General Plans
LUCF	Land-Use Change and Forestry
LULUCF	Land Use, Land-Use Change and Forestry
MIE	Ministry of Infrastructure and Energy

NANR	Natural Agency for Natural Resources
NAP	National Adaptation Plan
NAPA	National Agency for Protected Areas
NbS	Nature-based Solutions
NCCS&AP	National Climate Change Strategy and Action Plan
NDC	Nationally Determined Contributions
NECPs	National Energy and Climate Plans
NES	National Energy Strategy
NGOs	Non-Governmental Organisations
NSDRR	National Strategy for Disaster Risk Reduction
NSDI	National Strategy for Development and Integration
NSID	National Strategy for Integrated Development
NSSDT	National Strategy for the Sustainable Development of Tourism
OECMs	Other Effective Area-Based Conservation Measures
PAs	Protected Areas
PoMs	Programmes of Measures
PPNEA	Protection and Preservation of Natural Environment in Albania
PUT	Polytechnic University of Tirana
RAPAs	Regional Agency for Protected Areas
RED II	Renewable Energy Directive
RMBPs	River Basin Management Plans
SACs	Special Areas of Conservation
SDGs	Sustainable Development Goals
SPAs	Special Protection Areas
UNESCO	The United Nations Education, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
USP	Unique Selling Proposition
VRB	Vjosa River Basin
VWRNP	Vjosa Wild River National Park
WFD	Water Framework Directive

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Outstanding Values of the Vjosa River

The Vjosa River, the second-largest in Albania, is renowned for its pristine fluvial ecosystem, which remains one of the last undisturbed river systems in Europe. The river spans 272 kilometers from its source in the Pindus Mountains in Greece (where the river is called Aoos) to its delta in the Adriatic Sea, with 190 kilometers flowing through Albania. Its catchment area covers approximately 6,800 km², of which 4,540 km² lies within Albania, stretching across the regions of Korçë, Gjirokastër, Vlorë, Fier, and Berat. The river's natural dynamics—uninterrupted water flow, sediment transport, and the diversity of habitats—make it a key biodiversity hotspot in Europe.

The Vjosa River is a natural sanctuary for varied biodiversity components, supporting over 1,687 species, including 1,034 animals and 653 plants. Many of these species, such as 39 on the IUCN Red List and 119 on Albania's Red List, are endangered or at risk. Vjosa's river system, particularly its floodplains and dynamic flow regime, provides vital habitat for species that have disappeared from other European rivers, reinforcing its exceptional conservation value.

Size and Composition of the Vjosa Wild River National Park

The Vjosa Wild River National Park (VWRNP) was established in March 2023 and spans 12,727 hectares. It includes not only the main Vjosa River but also three free-flowing tributaries: Drino, Kardhiq, and Shushica. This makes the VWRNP unique, as it primarily comprises the river itself, adjacent floodplains, and riparian habitats, rather than the broader Vjosa Valley. The river's uninterrupted flow and sediment transport processes are critical for maintaining its ecological balance. In total, the national park protects around 400 kilometers of free-flowing river systems, including tributaries that contribute to Vjosa's ecological integrity.

The park's core zone (92.9% of its total area) is strictly protected and includes the river's active channel, floodplains, and riparian habitats. A smaller sub-zone (7.1%) allows for low-impact, traditional activities, such as agriculture and animal husbandry, under sustainable development guidelines.

The Vjosa River Basin is not only an ecological treasure but also a region rich in cultural heritage. Within the Vjosa Wild River National Park (VWNRP), there are ten significant cultural monuments, including ancient bridges, aqueducts, and a thermal bath (other cultural monuments, features, also intangible cultural heritage is located outside the boundaries of the VWRNP, thus in the wider Vjosa River Basin). These historical structures reflect the deep connection between the river and the civilizations that have flourished along its banks. The riverine landscape, shaped by the Vjosa and its tributaries, is a defining feature of the area, influencing the location and preservation of these monuments. The natural scenery enhances the cultural

significance of these sites, making the river and its surroundings not only a natural but also a cultural landmark of profound importance. The interaction between the river's dynamic environment and these monuments underscores the deep historical relationship between human development and the natural landscape.

While the VWRNP does not have an official buffer zone, the adjacent land use significantly impacts its protection. Collaboration with private landowners, local municipalities, and other sectors is essential to ensure that the surrounding areas serve as a de facto buffer, safeguarding the river from external threats.

Threats to the Vjosa River

The Vjosa River faces several major threats that could disrupt its unique natural dynamics:

Hydromorphological Interference: Any construction, such as dams, hydropower plants, or flood protection infrastructure, poses a direct threat to the free-flowing character of the river. These activities could severely alter the river's natural processes, potentially leading to ecosystem degradation.

Water Extraction: Agricultural, domestic, and industrial demands for water have led to significant water extraction from the river and its tributaries. Without careful regulation and monitoring, this could disrupt the flow regime and impact the surrounding biodiversity.

Gravel Extraction: Unregulated gravel extraction has already caused damage to the river's morphology and its species, particularly fish and aquatic plants. Although some extraction sites have expired licenses, they continue operating, exacerbating the issue.

Pollution: Untreated wastewater from villages, industries, and fish farms, along with agricultural runoff, contribute to water pollution in the Vjosa and its tributaries. This threatens water quality, particularly in certain areas, such as the Drino River near Gjirokastër.

Tourism: While tourism, especially rafting, has grown rapidly, the lack of regulation for these activities may negatively affect the river's ecosystems. Unregulated rafting, camping, and other recreational activities could disturb wildlife and degrade riparian habitats.

Climate Change: Rising temperatures, increased droughts, and more frequent floods due to climate change may profoundly impact the river's natural dynamics. Increased water demands for agriculture and tourism, along with potential flood protection measures, may further strain the ecosystem.

Institutional Challenges: The effective management of the VWRNP requires improved coordination between various agencies and stakeholders. Insufficient capacity for law enforcement, monitoring, and collaboration with Greek authorities (where the

river's headwaters are located) poses additional challenges to the park's long-term conservation goals.

The outstanding ecological and biodiversity values of the Vjosa River, combined with the threats from human activity and climate change, highlight the urgent need for robust conservation and sustainable management strategies. The core area, the river flow and the adjacent land, is now protected and needs an effective management. Efforts should be invested to secure adequate protection of the entire Vjosa River Basin – establishment of the UNESCO Man and Biosphere Reserve seems an excellent idea.

This document has been drafted within the framework of the project "ESPID for Vjosa – Enhance Science-Policy Interface Development in the Vjosa River Basin". The project precisely aims to create an enabling space for exchange between the scientific community, civil society and decision-makers in the framework of decision-making processes and policies of the Vjosa River Basin governance.

Implemented in the period 2022-2025, which also includes the time of the most intensive actions regarding important developments in the Vjosa River Basin, the project also functions as a connecting and coordinating mechanism of these processes, since its implementing partners EuroNatur and EcoAlbania have been also the main drivers of the promotion of these processes.

The declaration of Vjosa as a Nature Park in 2022 and then as a National Park in 2023, as well as the launch of the process for the recognition of the Vjosa Valley as a UNESCO heritage site in 2024, are the key milestones of developments in the context of nature conservation on one hand. On the other hand, during this period and until the drafting of this report, work has continued on the drafting of the Integrated Management Plan for the Vjosa River Basin.

In all these processes, the ESPID for Vjosa project has contributed by supporting scientific expeditions that have generated data as arguments to support decision-making for nature conservation, or even data related to the pressures and main issues that will be addressed in more detail in this report that would serve to the development of the Vjosa IRBMP.

Furthermore, this report is information that supports the management authorities such as KBU, AMBU and the Municipality of the Vjosa Valley to undertake the appropriate policies regarding the governance of this geographical area having as its backbone the National Park.

Finally, in addition to the nexus of science-decision-making-civil society, the project has also contributed to building relationships between cross-border actors between Albania and Greece, especially at the local level. This exchange constitutes a good basis for improving models of approaches to governance through the adaptation of models implemented by each country. This report can also serve as a good source of information for the Greek part of the river in terms of undertaking policies that would minimize pressures of cross-border origin.

Synthesis report edited by Hauer C. & Sovinc A., different chapters based on the work of

1. Floods: Prof. Assoc Klodian Scrame (Polytechnic University of Tirana)
2. Water Supply and Wastewater Treatment: Prof. Assoc Klodian Muço, University Our Lady of Good Counsel
3. Hydropower and Renewable Energy: PhD. Elton Qendro, Organization for Security and Co-operation in Europe (OSCE)
4. Natural Resources: Prof. Dr Etleva Dashi, Agricultural University of Tirana
5. Protected areas: Prof. Assoc Elena Kokthi, Agricultural University of Tirana
6. Ecotourism: Prof. Assoc Klodian Muço, University Our Lady Of Good Counsel
7. Climate Change: Prof. Dr. Romeo Hanxhari, University of Tirana

Grey boxes: Additional information and challenges of the ESPID group which were not addressed by the national experts.

1

Floods and Flood Risk Management in the Vjosa Basin

Prof. Assoc. Klodian Skrame
(Polytechnic University of Tirana)

Executive Summary

The vulnerability of society towards flood impacts increase with both (i) climate change and (ii) population and economic growth as settlemetns and infrastructure are using contiunously active and former flood plain areas. The chapter aims to give an overview of the legal status, the existing challenges and needs for the future flood risk management in the Vjosa basin and beyond.

The National legislation is determined according to the National Strategy for Disaster Risk Reduction (NSDRR). According to the NSDRR, the institutions responsible for flood risk management, water inundations and dam breaks are: Ministry of Agriculture and Rural Development supported by the relevant municipalities and District Prefect Institutions, as well as Institute of Geosciences at the Polytechnic University of Tirana (PUT). The Institute of Geosciences is the main actor that detects, monitors, analyses, predicts, distributes and communicates timely warning information about potential floods in order to strengthen and increase the level of flood risk management.

The legal boundary conditions in an international perspective are formed by the EU-Floods Directive. The Floods Directive (Directive 2007/60/EC[1]) is the legislation of the European Parliament on the assessment and management of flood risks which has to be adopted as well in Albania by various laws and different institutions.

Current challenges and key issues for the flood management in the Vjosa basin but in Albania in general are, that flood risk assessment has to deal with multiple criteria from hazard, exposure, and vulnerability and especially with the relationship between floods and humans. This approach results in more effective counter-measures from these three components, for disaster risk reduction. Traditional methods include a probability evaluation method based on historical data, comprehensive flood risk assessment, flood risk assessment integrating remote sensing and a geographic information system (GIS), and the Source-Pathway Receptor conceptual model. For the Vjosa basin different issues for the improvement were identified and are adressed as future requests for the integrative river basin management; (i) digital hydro-meteorological stations accessible by all institutions and the increase of technical and operational capacities, (ii) improved data-sharing for all responsible actors and (iii) coordinated

management of water discharges, canals, rivers, and water-related structures, which is currently often shared between many institutions and authorities. Moreover, (iv) to ensure regular maintenance of secondary or tertiary canals, and the assessment of stability as well as reinforcement and monitoring of dams, ditches, embankments were identfied as crucial management issues as well as (v) coordinated information dissemination and the implementation of a public information strategy, (vi) reduce of deforestation and (vii) adapted curicula for integrative flood risk management are adressed in this report.

1.1 Introduction

Climate change and socioeconomic developments are increasing the frequency and severity of floods. Flood management is widely recognized as an effective way to reduce the adverse consequences, and a more resilient and sustainable flood management approach has been the goal in recent studies. During the last decade, the trend of flood research has experienced a transition from flood control to flood resilience. The review of the recent scientific studies show that flood research has moved from traditional flood management, which provides mitigation strategies, to flood risk management, which provides an adaptation approach—adjusting mitigation measures, to flood resilience management, which provides a more resilient and sustainable plan to cope with flood disasters. Nature-based solutions (NbS) for flood disasters could focus on using natural processes and ecosystems to mitigate the impacts of flooding, enhance resilience, and improve community well-being. Some key approaches could be: i) Wetland Restoration, ii)Reforestation and Afforestation, iii) Green Infrastructure, iv) Floodplain Restoration, v) Soil Management: Implementing, vi) Natural Buffers and vii) Community Engagement and Education. Implementing these solutions does not only help to reduce flood risks but also enhances biodiversity, protects ecosystems, and improves overall community resilience to climate change. In this report, we also present a detailed overview of the field of flood research, and review the definition of risk, risk analysis methods, flood management, flood risk management, flood resilience, and corresponding implementation strategies. We conclude that integrating the concept of resilience into the framework of risk management is a better approach in future floods management directions. Consequently, appropriate options and decisions prior to disaster, during disaster, and post-disaster will effectively reduce the adverse consequences using the theory of risk, resilience, and sustainability.

This study is based on a detailed bibliographical analysis of keywords, terms and timelines in the research field of the flood research. It provides new insight into the flood research on the Vjosa River Basin (hereinafter VRB), by examining the existing and new data.

1.2 Policies and Legal Framework

1.2.1 National Legislation

The legal framework on floods and flood risk management in Albania is based on:

1. Decision of the Council of the Ministers (DCM) no. 835, dated December 3, 2004 - National Civil Emergency Plan
2. Law No. 45/2019 on "Civil Protection"
3. Law no. 29/2024 "On the Integrated management of the water"
4. Law no. 41/2024 "On the Territorial Planning and Development"
5. Law no. 139/2015 "On the Self-Governance of the Municipalities"
6. Draft on the National Strategy for Disaster Risk Reduction (NSDRR 2023-2030)

According to the NSDRR, the institutions responsible for flood risk management, water inundations and dam breaks are: Ministry of Agriculture and Rural Development supported by the relevant municipalities and District Prefect Institutions, as well as Institute of Geosciences at the Polytechnic University of Tirana (PUT). The Institute of Geosciences is the main actor that detects, monitors, analyses, predicts, distributes and communicates timely warning information about potential floods. In order to strengthen and increase the level of flood risk management. The National Water Council adopts the Flood Risk Management Plans while the plans are being drafted by AMBU consisting of 3 components:

1. Preliminary Flood Risk Assessment that leads to the identification of areas where there is a potential flood risk or where floods are likely to occur;
2. Hazard maps and flood risk maps;
3. Flood risk management plans.

The main objectives for flood protection to be achieved within a 9-year period according to the authors of NSDRR 2023-2030 are:

1. Reduce flood damage to less than 50% of what has occurred in recent years;
2. Rehabilitate and modernize the affected infrastructure and where there is a risk of collapse;
3. Build new protective works where necessary;
4. Train the personnel of the institutions responsible for irrigation and drainage in terms of monitoring, design, construction, and repair of protective infrastructure;
5. Strengthen the flood response capacities of operational forces.

The NSDRR 2023-2030 foresees several Strategic Projects related to floods, early warnings, water floods and dam breaks, a good part of which are also planned in the Vjosa water basin.

1.2.2 *European Legislation*

The Floods Directive (Directive 2007/60/EC[1]) is the key legislative background in the European Union on the assessment and management of flood risks. The Floods Directive basically prescribes a three-step procedure:

1. Preliminary Flood Risk Assessment
2. Risk Assessment
3. Flood Risk Management Plans

Thus, the National Strategy for Disaster Risk Reduction is already in line what is requested by the proposed European Legislation.

1.3 Challenges and key issues

In general, the risk assessment of natural disasters includes qualitative, semi-quantitative, and quantitative approaches. The result of qualitative assessment is the relative magnitude of natural disaster risk, such as zero risk, low risk, medium risk, and higher risk. The result of semi-quantitative risk evaluation can be expressed as the multiplication of the frequency grade and consequence grade. Quantitative assessment converts the loss result into a monetary value, to obtain an expected loss, such as the expected annual loss (EDA) or the cumulative loss. In order to accurately measure the impact of flood disasters on human societies and economies, flood risk assessment has undergone a change from qualitative to quantitative. According to different research needs, flood risk assessment could choose the research scale (i.e., global, country, basis, city, community). When conducting flood risk assessment, it can be assessed according to different years to observe the characteristics of changes in flood risk over time. In addition, it can be assessed according to specific scenarios, such as different flood return period scenarios, different social development scenarios, and different flood adaptation scenarios.

The most frequently used expressions of risk assessment models is:

Risk = Hazard x Exposure x Vulnerability

Flood risk assessment from hazard, exposure, and vulnerability deals with the relationship between floods and humans. This approach can identify more effective counter-measures from these three components, for disaster risk reduction. Traditional methods include a probability evaluation method based on historical data, comprehensive flood risk assessment, flood risk assessment integrating remote sensing and a geographic information system (GIS), and the Source-Pathway Receptor conceptual model. Nowadays, in the era of big data and the synthesis of integrative flood risk assessment approaches, the risk assessment approach is being increasingly oriented toward scenario-based methods. A synthesis of flood risk assessment

approaches includes the three indicators of hazard, exposure, and vulnerability. A scenario-based flood risk assessment requires
1 a hydrodynamic model and 2 flood damage simulation.

1. Referring to the NSDRR 2023-2030, there is a need for modernization and rehabilitation of the network of weather stations, regular maintenance of equipment, regular reliable Internet connections, new qualified staff, such as hydrologists and meteorologists, and digitization of data in order to improve the Early Warning System of Albania
2. According to the NSDRR 2023-2030, some of embankments need repair rehabilitation, or resizing due to the destruction and natural erosion that have occurred in recent decades.
3. Coordination and collegial decision-making at the local and national level
4. University curricula

The flood management and the planning of flood mitigation measures is coordinated and financed by the agriculture sector in Albania. This situation is challenging, as there is the risk, that also agricultural land is targeted to be protected by active flood management, like building of dykes. This is not in line with the aims of the EU-Floods Directive, which explicitly addresses that passive flood protection has to be prioritized compared to active measures, meaning that the inundation of agriculture land (providing retention) is mandatory in terms of the EU-Floods Directive.

1.4 Management response to address the issue

Issue 1

Referring to the NSDRR 2023-2030, there is a need for modernization and rehabilitation of the network of weather stations, regular maintenance of equipment, regular reliable Internet connections, new qualified staff, such as hydrologists and meteorologists, and digitization of data in order to improve the Early Warning System of Albania

Measure 1

Install digital hydro-meteorological stations accessible by all institutions and the increase of technical and operational capacities... In addition, according to the NSDRR 2023-2030, the technical and operational capacities of Albanian institutions for forecasting, monitoring, and warning of hydro-meteorological data are still considered insufficient. The installation of digital hydro-meteorological stations will improve not only flood management and damage prevention but will also help knowing the amount of water passing through the VRB. Climate change will extend already long periods of drought combined with short periods of intense rainfall. Knowledge and correct management of water in the VRB will help in the sustainable development of the areas and in ensuring proper use of land.

Measure 2

The most important aspect would be the data-sharing. All the previous hydro-meteorological data, together with the new data obtained from the new hydro-meteorological stations have to be publicly available without any restriction, especially for the research institutions. The data could be managed and provided by a responsible institution, like IGJEO. According to the NSDRR 2023-2030, some of embankments need repair rehabilitation, or resizing due to the destruction and natural erosion that have occurred in recent decades.

Issue 2

Long-term solution for safety and sustainable development

Measure 1

To ensure safety and sustainable development, it's essential that planning, land use, and people's actions take into account the potential flood risks. The main long-term solution consists of keeping urban areas outside the river floodplain. While land use planning for flood risk reduction has been extensively discussed in the literature, there is still a notable absence of a well-defined approach for flood-mitigation-focused land-use planning and its execution in Albania. A lack of hazard-informed land use planning coupled to random land cover pattern evolution characterizes the country. An important aspect of Disaster Risk Reduction (DRR) is the implementation of risk-based land-use planning and regulations to reduce the underlying causes of disasters and their resulting losses. The integration of DRR in urban land use planning has to be set as a priority action. Land use planning plays a crucial role in safeguarding infrastructure and assets, with land use planners promoting the construction of resilient buildings away from flood-prone areas to advance community safety.

Measure 2

Deforestation is a major problem causing increased erosion, especially in fragile geological formations such as Flysch; composed by sandy and clay formations. This contributes to the loss of several hectares of land, which could be well used for agricultural purposes and for livestock farming. The lack of forests and vegetation on the slopes along the Vjosa valley means that in case of intense short-period rainfall, which is also enhanced by climate change, the entire amount of rain water reaches the main stream of the Vjosa river within a very short time. The surface waters, which have encountered no resistance on the slopes, will significantly increase the number of downstream flows creating frequent and increasingly larger floods of Vjosa River in the future due to climate change.

In this chapter the possible and needed management responses based on the gap analysis are presented for the topic floods and flood risk management in the Vjosa basin.

Issue 3

Coordination and collegial decision-making at the local and national level

Measure 1

Ensure coordinated management of water discharges, canals, rivers, and water-related structures, which is currently often shared between many institutions and authorities. Coordination and collegial decision-making at the local and national level is essential for establishing quantifiable benchmarks for problem resolution. Additionally, effective information sharing and early notification measures are vital for mitigating and, in some cases, preventing flooding resulting from water accumulation at elevated levels.

Measure 2

Coordinated information dissemination and the implementation of a public information strategy are of utmost importance for safeguarding lives and properties in high-risk regions.

Issue 4

According to the NSDRR 2023-2030, some of embankments need repair rehabilitation, or resizing due to the destruction and natural erosion that have occurred in recent decades.

Measure 1

Ensure regular maintenance of secondary or tertiary canals, and the assessment of stability as well as reinforcement and monitoring of dams, ditches, embankments, etc.

Issue 5

University curricula

Measure 1

Other key measures include: developing university curricula related to river basin management and flood risk reduction; collaborating with neighbouring countries to address flood management; and enhancing the theoretical knowledge of local government staff in areas such as water resource management and flood risk reduction

2

Water Supply and Wastewater Treatment

Prof. Assoc. Klodian Muço,
University Our Lady Of Good Counsel

Executive summary

This technical report on water supply and wastewater treatment along the Vjosa River Basin has been prepared within the framework of the ESPID4Vjosa Programme, implemented by Euronatur and EcoAlbania, with financial support from the Austrian Development Agency (ADA). The objective of this study is to evaluate the current condition of the Vjosa River ecosystem and to identify the factors that contribute to its deterioration. The study focuses on water pollution, with the objective of identifying the principal sources of pollution and proposing concrete measures for the rehabilitation of the Vjosa River and its protection as one of Europe's most significant ecosystems. The pollution, predominantly caused by industrial and agricultural activities and urban sources, has the potential to destroy habitats and render the Vjosa River. Furthermore, it raises concerns about the sustainability of its valuable ecosystem services, including the provision of drinking water, climate regulation and support for tourism. The contamination of water resources is a significant threat to the provision of essential services, with considerable adverse implications for the economic stability and quality of life of local communities. A review of the data from local entities situated along the Vjosa River Valley reveals that the municipalities in question face significant challenges in terms of financing the construction and maintenance of wastewater treatment plants and solid waste management facilities.

It is therefore evident that investment from central public entities is required. Notwithstanding the progress has been made in identifying and allocating funds for the construction of wastewater treatment plants in the Vjosa River Valley; however, the commencement of these allocations has yet to occur. The failure to timely resolve the problems of wastewater pollution and water supply may have significant costs for residents living along the basin. These include increased health expenses resulting from pollution, as well as a loss of income from tourism. The latter is driven by the degradation of the ecosystem, which drives away tourists and reduces income from this important sector of the country's economy. The contamination of water resources and their subsequent use in agricultural practices can result in soil contamination, which in turn can affect crop yields and the health of animals used for milk and meat production. Furthermore, pollution can have a detrimental impact on fish populations, leading to a reduction in fish catches and consequently, a negative effect on the local fishing industry. In order to address these challenges, it is recommended that significant investments be made in the construction of wastewater treatment plants and in the implementation of improved systems for the collection and treatment of solid waste. It is similarly recommended that the legislation pertaining to the provision of water to residential areas and the utilisation and discharge of wastewater from agricultural and industrial sources into rivers should be subject to review. It is recommended that efforts be made to enhance collaboration with the local community, with the objective of pursuing ecologically sustainable economic development. In conclusion, this technical report on water supply and wastewater treatment along the Vjosa River Basin identifies shortcomings in the institutional framework and suggests measures that can be implemented by central and local institutions, academia, and local government along the valley in question.

2.1 Introduction

The Vjosa river basin is well known for its natural environment. Especially the undisturbed and unrestricted sediment transport from the headwaters to the Adriatic coast and that lateral constriction is only given by the valley forms, allowed and still allows the formation of a unique dynamic river system. However, beside this almost undisturbed river morphology and river morphodynamics the settlemetns, which are mostly dislocated from the active floodplains, have very less to almost no wastewater treatment. Thus, there is a big challenge for the current aquatic and semi-aquatic enviroment by this continous release of pollutants into the active channel. Aim of this chapter is to summarize these challenges in detail in reflection also with the existing national and EU-legislation. Based on this assessment a list of mitigation measures measures and strategies will be presented.

2.2 Policies and Legal Framework

2.2.1 *National Legislation*

The Government of Albania, focused on EU integration as its objective, has worked to harmonize the legislation with the EU legal framework, and intends to establish clear responsibilities for the implementation of the EU Acquis. Therefore, in the field of water monitoring, there has been progress towards the transposition of the EU Water Framework Directive (2000/60/EC), such as the Albanian water administration, Law No. 9115, dated 24.7.2003, "On the Environmental Treatment of Polluted Waters" that aims to protect the environment and human health from the negative impact of polluted waters, also setting rules for environmental treatment and obligations for polluters. Through the approval of the national Law no 29/2024 "On Water Resources" the National Agency for Water Resources Management is the institution responsible for the management, provision, and rational use of water resources as well as for the development and implementation of management plans.

The adoption of the decision of the Council of Ministers (No. 662), dated 21.09.2016 "On the approval of fees for the extraction/use of water and liquid discharges" is considered part of the progress of the national water administration. From these Laws and the decisions of the Council of Ministers, it can be observed that Albania has a relatively complete legal framework, but the implementation and enforcement of legality by public and private institutions is still a challenge. For this purpose, it is necessary that the primary legislation (law) be enriched with the secondary legislation (directives and instructions) to enable the effective implementation of the legal objectives. Municipalities under the law no. 139/2015 "on the Local Governance" are obliged to fulfil the services of water supply, wastewater treatment as well as solid waste management and rural development. Articles 23, 26 and 27 of this legislation place particular emphasis on the role of the country's municipalities in the production, treatment, transmission and supply of drinking water. Furthermore, municipalities are obliged to collect, remove and treat polluted water and rainwater in the event of flooding. Concurrently, municipalities are accountable for the maintenance of water quality and the infrastructure utilized for the administration and utilization of waters under their purview, as outlined in Articles 26 and 27. In the Vjosa valley, likewise in all the country the municipalities are the responsible to guarantee the water supply to the residents with drinking water. In addition, the municipalities are also responsible for the treatment of wastewater and sewage. A lack of financial capacity and resources to build the necessary infrastructure for the collection and treatment of urban wastewater, makes it impossible to adequately treat water for all municipalities situated along the Vjosa Valley. If municipalities are responsible for water supply and the treatment of used/polluted water at the local level, law no. 29/2024 identifies the organizational structures, which will deal with the management of river basins, at the central and local level, which are: Council of Ministers, National Council of Water (central level), Water Resources Management Agency (central level) , Water Basin Council (basin level - local), River Basin Administration Office (territorial branch of the Water Resources Management Agency) (Figure 1).

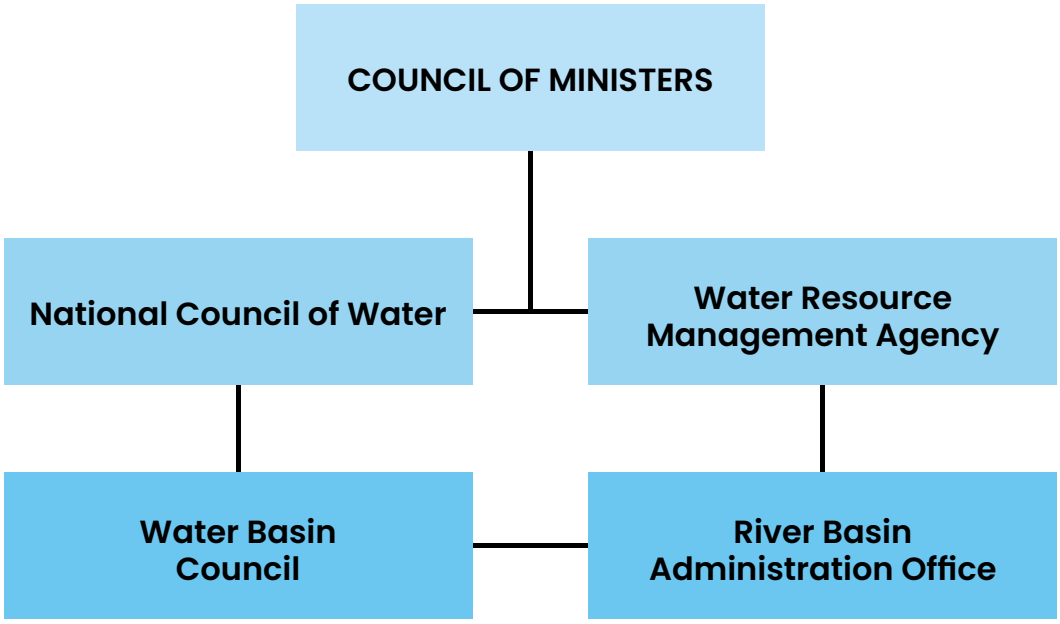

Figure 1: **The administrative organisation of water management in Albania**

The Council of Ministers approves the composition and operation of two central bodies: the National Council of Water and the Water Resources Management Agency, as well as the integrated management strategy of water resources and river basin management plans. The National Council of Water is the central decision-making body, responsible for the administration and management of water resources. The National Council of Territory and Water is a collegial body chaired by the Prime Minister and dealing with issues of administration and management of water resources.

The Water Resources Management Agency is a public legal entity that is financed from the state budget and any other legal source. The Water Resources Management Agency is organized at the central level and at the river basin level through river basin administration offices. The Water Resources Management Agency designs and implements policies, strategies, plans, programs and projects aimed at the management of water resources, quantitative and qualitative preservation, as well as their further consolidation; draws up river basin management plans, flood risk management plans or plans, programs and other management instruments defined in the provisions of this law; ensures the coordination of the provisions of this law in relation to the fulfilment of environmental objectives and especially of programs of measures with other authorities.

The River Basin Council bears the responsibility for the management of water resources within the defined river basin. The River Basin Council is responsible for ensuring the optimal conservation and utilisation of water resources within the defined river basin, in accordance with the management plan for that particular basin. It also ensures the fair distribution of water resources within the river basin, according to their intended use, as well as their efficient management and administration, in accordance with the management plan for that river basin. Furthermore, the Council ensures the protection of water resources from pollution, misuse and damage that could affect their quality and quantity.

2.2.2 *European Legislation*

The European Water Framework Directive (EWFD)

The European Parliament and the Council of the European Union enacted Directive 2000/60/EC on 23 October 2000, thereby establishing a framework for Community action in the field of water policy. Since 2000, this directive has constituted the primary legal instrument for the protection of water resources in Europe. The directive applies to inland, transitional and coastal surface waters, as well as groundwater ensuring an integrated approach to water management, respecting the integrity of whole ecosystems. This is achieved by regulating individual pollutants and setting corresponding regulatory standards. The directive is based on a river basin district approach, which ensures that neighbouring countries cooperate to manage the shared rivers and other bodies of water. The directive requires that Member States utilise their River Basin Management Plans (RBMPs) and Programmes of Measures (PoMs) for the protection and, where necessary, restoration of water bodies, with the objective of achieving a good status and preventing deterioration. The term "good status" denotes both a favourable chemical and ecological status. The directive represents a foundational document in the Albanian context, providing a framework for the formulation of river basin management plans at the national level.

Further Directives in the field of water quality:

1. Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration; This Directive evidences that groundwater as an important natural resource that should be safeguarded against degradation and chemical contamination. This is especially significant for groundwater-dependent ecosystems and the use of groundwater in water supplies for human use.

2. Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC. The alignment of this Directive searches the adoption and updating of the national air pollution control programs, including the analysis supporting the identification of policies and measures.

3 Directive 2013/39/EU of the European Parliament and of the Council of 12 August 2013 amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy;

4 Regulation (EU) 2020/741 of the European Parliament and of the Council of 25 May 2020 on minimum requirements for water reuse.

2.3 Challenges and key issues

As a candidate for EU membership, Albania is obliged to fulfil the objectives outlined in the EU Directive on IWRM. While progress has been made towards compliance with the directive, further effort is required to ensure full compliance. This will require institutional development and effective coordination at the local, regional, and central levels. Although the legal framework of IWRM has been approved, there are other issues such as the integration of IWRM activities into other sectors, such as agriculture and industry; the monitoring system, and community awareness of how to behave with this new management approach are all important considerations. In more detail, these main problems in IWRM can be identified:

Lack of the Basin Management Plan

In developing a River Basin Management Plan, it is essential to recognise that Albania is a candidate for membership of the European Union and that the EU has specific requirements for such a plan. While the drafting (and subsequent approval) of these plans has been completed for most Albania's river systems, this is not the case for the Vjosa River basin. The characteristics of the Vjosa River have presented a significant challenge in the drafting and approval of the Vjosa River Basin Management Plan which is under preparation. Nevertheless, the postponement of the Vjosa River Management Plan represents a potential vulnerability, as the absence of a comprehensive plan presents obstacles to achieving a harmonious equilibrium between conservation objectives and the needs of local communities and regional agriculture. Without a clear plan, there is no unified strategy to guide decisions regarding water use, habitat protection, or sustainable development. Here are some of the key issues and potential risks stemming from the absence of such a plan: Fragmented Water Use Practices; Biodiversity and Ecosystem Risks; Lack of Guidelines for Infrastructure Development; Missed Opportunities for Sustainable Economic Development.

Lack of Institutions/reformation of institutional framework

The IWRM principles call for the establishment of a well-defined institutional framework that clearly outlines and divides responsibilities and roles for the design and implementation of operational and regulatory activities, while promoting coordination between the relevant authorities. From an institutional perspective, the management of water resources in Albania has led to overlapping responsibilities between central and local level institutes, resulting in a fragmented water sector with inefficient activities and a lack of transparency.

Lack of the intersectoral coordination

Effective cross-sectoral coordination is essential for IWRM. This is particularly important for policies related to water and the environment, health, energy, agriculture, industry, spatial planning, and land use. It requires multi-level cooperation between interest groups and greater cross-border collaboration between countries on the use of water resources.

Lack of data and information

The IWRM principles and EU environmental policies require the timely development of relevant water policies, data, and information that are consistent, comparable, and exchangeable. This is necessary for assessing and improving policies and water management. Efficient coordination and information exchanges between water-related suppliers, data collectors, and users are necessary. It is important to note that environmental monitoring alone is not sufficient. For many years, monitoring activities have been rudimentary, resulting in a lack of actual and factual data on the status of water resources. The current monitoring system lacks regular reporting.

Lack of financial resources

The mobilization and allocation of funding for the water sector is a shortcoming, which needs to be addressed. Albanian regulation includes EU principles for environmental policy, such as the 'polluter pays' and 'user pays' principles, as well as payment for environmental services. The implementation of the EU Directives' investments, including short-, medium, and long-term investments, are still being reviewed to ensure compatibility related to urban wastewater treatment, drinking water provision, and flood risk management.

Legal shortcomings

The Albanian water management system requires relevant secondary legislation to effectively manage water resources and implement necessary mechanisms. This will promote the creation of water management frameworks that help balance the needs of water users, rural and urban areas, and future generations. Most of the secondary legal acts need to be drafted by the line ministries, which may have additional tasks. To comply with the requirements of the European Directives and address important aspects, the law would require secondary legal acts, including:

1. monitoring the state of marine water, surface water, groundwater, and protected areas.
2. managing natural waters such as curative, mineral, and geothermal waters.
3. sanctions and penalties may be imposed for non-compliance with the law, particularly in cases of pollution of natural resources, curative, mineral and geothermal waters.

Shortages in human resources

These shortcomings are related to the capacities and abilities of the relevant authorities to cope with the implementation of the IWRM. This involves the combination of a series of tasks, which may include many different activities, requiring administrative capacities for issues such as water use, pollution control, monitoring, financial management, etc.

Limited engagement of interest groups

The involvement of local actors in Albania's current engagement is not significant in terms of major contributions towards the design and implementation of common practices. The IWRM strategy involves a round of stakeholder consultations to engage in discussions with private and other actors who have a role in achieving the outcome or are affected by water-related decisions. Raising public awareness and promoting discussion of the risks and costs associated with water availability and pollution can help establish agreement on responsibility and financing, leading to improved resource sustainability.

2.4 Management response to address the issue

Issue 1

Lack of data and information

Measure 1

Clear communication channels: Define and communicate clear channels for exchanging information between the different organizations. This might include regular team meetings, email updates, collaboration tools, or dedicated communication platforms.

Measure 2

Collaboration tools using technology to facilitate communication and collaboration. This could include project management software, shared document repositories, instant messaging platforms, and video conferencing tools to enable real-time communication and document sharing.

Measure 3

Provide training ensuring that employees have the necessary skills and training to effectively use communication and collaboration tools, providing ongoing support and resources to help them navigate challenges and maximize productivity.

Issue 2

Intersectoral coordination lack

Measure 1

Committees or Working Groups comprising representatives from each sector. These groups can facilitate regular communication, collaboration, and joint decision-making on issues that intersect across sectors.

Measure 2

Policy Alignment and Coherence among sectoral policies, regulations, and institutional frameworks to minimize conflicting objectives and promote synergies. Review existing policies and regulations to identify barriers to cross-sectoral coordination and explore opportunities for harmonization and integration.

Measure 3

Participatory Governance Structures that involve diverse sectors and levels of government in decision-making processes.

Issue 3

Institutional Lack

Measure 1

Clear Goals and Objectives: Ensure that all institutions involved have a clear understanding of common goals and objectives.

Measure 2

Coordination Mechanisms, such as committees, task forces, or working groups, to facilitate collaboration and communication among institutions.

Measure 3

Roles and Responsibilities: Clarify the roles and responsibilities of each institution involved to minimize overlap and duplication of efforts. Delineating roles helps prevent confusion and enhances accountability.

Measure 4

Establish Communication Channels including meetings, forums, and electronic communication platforms.

In summary following management responses to address the water supply and wastewater treatment have to be listed.

Issue 4

Limited engagement of interest groups

Measure 1

Identify key stakeholders: Identify the key interest groups relevant to the organization. This might include industry associations, advocacy groups, community organizations, or government agencies. Understanding their interests and concerns is essential for effective engagement.

Measure 2

Tailor communication: Tailor communication efforts to resonate with the interests and priorities of different interest groups. Use targeted messaging and channels that are most likely to reach and engage each stakeholder segment effectively.

Measure 3

Create platforms for dialogue: Create platforms or forums for dialogue where stakeholders can come together to discuss common issues, share perspectives, and collaborate on solutions. This might include stakeholder meetings, workshops, or online forums.

Measure 4

Demonstrate impact: Showcasing the impact of stakeholder engagement can help motivate continued participation. Share success stories, case studies, or testimonials that highlight the positive outcomes resulting from collaboration with interest groups.

Issue 5

Institutional Lack

Measure 1

Conduct a comprehensive review of existing laws, regulations, and policies to identify any gaps, inconsistencies, or outdated provisions. This involves analyzing the legal framework against relevant standards, best practices, and emerging trends.

Measure 2

Stakeholder consultation with relevant stakeholders, including legal experts, government agencies, civil society organizations, and affected parties, to gather input and perspectives on legal shortcomings. This can help identify areas of concern and potential solutions.

Measure 3

Propose and advocate for legislative reforms to address identified legal shortcomings. This may involve drafting new laws, amending existing ones, or repealing outdated provisions to ensure compliance with international standards and best practices.

Measure 4

International cooperation: Collaborate with international partners, such as other countries, regional organizations, and multilateral institutions, to exchange best practices and experiences in addressing legal shortcomings. This can help leverage external expertise and resources to support domestic efforts.

In summary following management responses to address the water supply and wastewater treatment have to be listed.

Issue 6

Financial lack

Measure 1

Prioritize objectives based on their importance and urgency for compliance. Focus resources on implementing objectives that have the most significant impact on water management.

Measure 2

Allocate funds based on measure 1 to cover the costs associated with compliance, including staff training, technology upgrades, and legal fees.

Measure 3

Seek funding opportunities exploring funding opportunities provided by the EU or other sources to support the water sector. This could include grants, subsidies, or financing programs.

Issue 7

Shortages in human resources

Measure 1

Focus on core functions: Identify core functions and prioritize staffing and resources accordingly. Streamline non-core activities or consider outsourcing them to third-party providers to reduce costs while maintaining focus on essential operations.

Measure 2

Cross-training and multi-skilling: Cross-train employees to perform multiple roles or tasks within the organization (especially flood risk identification and calculation). This enhances flexibility and resilience, allowing the organization to function effectively with fewer specialized resources.

Measure 3

Utilize technology and automation: Invest in technology and automation solutions to streamline processes and reduce the need for manual labor. This can help offset staffing shortages by increasing operational efficiency and productivity.

2.5 Conclusions

Despite the biodiversity and ecological value of the Vjosa River, some economic activities have caused and continues to cause much damage to the ecosystem of the Vjosa Basin. Human activity and pressure on the unique water resources of the Vjosa Basin cause damage, both directly to the natural resources and, in the medium and long term, to the economic and social activity of the population living around the basin. At the same time, climate changes with global effects are also felt in the water flows of the Vjosa and affect the biodiversity of the Vjosa basin. The countries of the European Union, aware of the need to preserve the biodiversity and ecosystems of water resources (rivers, lakes, sea), have presented their plans (through the 2007 Directive) with the aim of managing water use and, apart from that, behaviour in the event of floods (IFRM), which are becoming more and more frequent. The preparation and implementation of these plans is not an easy challenge for a small country like Albania, which is rich in water resources. According to the analyses carried out, this study proposes the following priorities and recommendations:

1. **addressing the risk irrigation** - The implementation of techniques such as drip irrigation, rainwater harvesting, and other water-efficient methods has the potential to alleviate the strain on the river's resources, thereby contributing to the sustainability of the river system. Another potential solution is the establishment of buffer zones. This approach can facilitate the prevention of agricultural runoff, as the vegetation planted along the riverbanks has the capacity to filter pollutants before they reach the water. Finally, the involvement of the local community and the promotion of sustainable development are key factors. The promotion of sustainable agricultural practices and the involvement of local communities in conservation decision-making processes have the potential to enhance the efficacy of conservation outcomes.

2. **climate change** - Exerts a considerable influence on river ecosystems, with ramifications that extend to a multitude of levels, including the availability of water, the quality of habitats and the diversity of species. In order to address these changes, strategies are divided into two categories: adaptation and mitigation actions: a. The management of water resources through the creation of reservoirs during periods of heavy rainfall by preventing water withdrawal, especially in dry seasons. b. The renaturation and habitat conservation through the restoration of wetlands and banks and the protection of riparian forests.

3. **addressing the reduced sewerage coverage** - The discharge of sewage into rivers presents a significant threat to river ecosystems. To mitigate this negative impact, it is necessary to invest in the construction of the sewage system in areas where coverage is very low or low. Furthermore, constructed wetlands and green infrastructures are natural treatment systems that filter pollutants and reduce the impact of sewage on rivers by using vegetation and soil to absorb and break down contaminants. Riparian buffer zones (vegetation along riverbanks) are also effective in filtering pollutants before they enter the water and provide habitat for wildlife.

4 **the implementation of the Vjosa River Basin Management Plan** – Preparation and implementation of the Vjosa River Basin Management Plan represents a crucial step in the protection and sustainable management of this valuable natural resource. In light of the pivotal role of the river basin management plan and its absence in the case of the Vjosa River, it is of paramount importance to draft and commence implementation of this plan. Considering the distinctive characteristics of the Vjosa River, it is essential that the plan be developed in a manner that is aligned with the needs and concerns of both the border section of the river and the Vjosa River National Park. Despite its introduction to the discussion phase, the plan has yet to reach the draft report phase. In the context of growing awareness of climate change and its impact on local communities, the necessity for an integrated approach to river management is becoming increasingly apparent. The formulation of a Vjosa River Management Plan could assist in the protection of the river's ecosystems, the promotion of sustainable agricultural practices and the resolution of stakeholder conflicts. This would ensure the continued viability of this unique wild river for future generations.

5 **the institutional organisation** - The difficulties in terms of institutional and human organisation are related to the coordination of the different stakeholders, both at the institutional level and at the intersectoral level (since the management plan requires the cooperation of stakeholders from different sectors, and not only those directly involved in water management). On the other hand, if the primary legislation is complete and in line with the European Union directives, the secondary legislation (instructions, regulations, national directives) that would complete the primary legislation is missing. Human resources are an easy challenge, since the IFRM concept requires the identification, analysis, and calculation of flood risks. This requires human resources that are trained and capable of collecting, processing, and analysing statistical data from many operational sectors.

6 **funding for the implementation of the management plan** - Another difficulty relates to the funding of activities to implement the management plan. In such a situation, priorities have to be set, and in the absence of central and local funds, financial resources have to be sought at European level (grants, loans or participation in various development projects).

7 **community involvement:** Involving community in sustainable use of the water is essential to conservation efforts is essential for creating sustainable and effective conservation efforts. Communities can provide local knowledge, resources, and ongoing stewardship that make a real difference in preserving the health of rivers like the Vjosa. There are numerous avenues for community involvement, commencing with the dissemination of knowledge through seminars, conferences, and other forms of education. This is followed by the provision of incentives or financial assistance for programmes or economic activities that are primarily focused on environmental protection and its sustainable development.

3

Hydropower

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Executive summary

This technical chapter describes the renewable energy sector in Albania. The analysis of qualitative and statistical data shows that Albania continues to be highly dependent on energy imports, especially in the crude oil sector. In the field of hydropower, 252 concession agreements have been signed for the construction and operation of small hydropower plants in the country (Natural Agency for Natural Resources (NANR), 2024) with 58 such plants planned in the Vjosa River Basin. However, there is debate regarding the exact number of concessions permits as there is no central official database that registers all concessions in all stages of implementation.

Hydropower experience in Albania is among the most developed in the region, with hydropower constituting about 99% of the installed capacity. Nevertheless, this situation is significantly impacted by climate change, leading to high variability and vulnerability in energy production. In particular, hydropower constructed in the Vjosa Basin (not in the natural boundaries but administrative ones) accounts for only 0.44% of the total installed capacity in the country for 2022 (ERE, 2022). However, if we compare the planned power in the basin with the total planned power in the country, the Vjosa Basin would contribute a potential of 261.7 MWh or 28% of the planned potential to be built in the country. However, hydropower plants in the Vjosa Basin have faced strong opposition from residents, civil society, and public figures, reflecting the challenges in developing hydropower in the country.

On the other hand, the potential for solar and wind energy is high, with significant solar irradiance in Albania. The development of solar energy technologies is shifting the government's energy policy, turning the country into a high-potential destination for renewable energies. Government plans for licensing 1.2 GW of new capacity are progressing positively, with 460.5 MW already licensed and an additional 300 MW expected to be tendered by June 2024. This will result in 760.5 MW of licensed renewable energy capacity by 2024 (Bennet, 2023).

A swift shift toward new capacities without a strategic master plan that considers all technical, economic, security, and development aspects may pose challenges to the country's physical infrastructure, overproduction, and potential system shutdowns due to a lack of transmission capacity. Additionally, this could lead to a financial gridlock in feed-in and CfD subsidy systems, as well as cybersecurity issues in the energy sector. Recommendations to address these challenges include increasing investments in energy infrastructure, revising policies and laws in the energy sector, and improving collaboration with local communities on renewable energy projects. There is also a need to build institutional and technical capacities to promote the use of renewable energy technologies in the Vjosa Valley and to develop local technical capacities.

In conclusion, this technical report on hydropower and renewable energies in Albania, with a particular focus on the Vjosa Basin, analyzes deficiencies in three priority areas and nine specific shortcomings. It also suggests measures for institutions, the academic community, and both local and central government authorities to address these issues effectively.

3.1 Introduction

Albania is a country that imports goods and services, with a particular emphasis on energy imports. This situation limits the country's economic growth and development and has a negative impact on the trade deficit, making the country vulnerable to supply disruptions. The energy sector in Albania is dominated by carbon energy sources, especially crude oil, which constitutes more than half of the total primary energy supply. Domestic production cannot fully meet the country's needs, making Albania a net importer of energy. Hydropower dominates electricity production, representing around 99% of the installed capacity in the country . This indicates that Albania has the highest level of renewable energy in the region, but it also highlights the country's significant dependence on rainfall. This vulnerability to climatic externalities creates high variability in its energy production. In addition to the socio-economic impacts of relying solely on hydropower, Albania is also the most climate-vulnerable country, as evidenced by high temperatures, decreased precipitation, frequent and rapid floods, and prolonged droughts.

Energy security, sector stability, and a reliable supply of energy at competitive prices are some of the key challenges that the country needs to address in the short term. These challenges can be met by further increasing the share of renewable energy in the national energy mix and by diversifying the country's electricity sector. Currently, most of the electricity is produced in the northern and eastern parts of Albania, where large hydropower reservoirs are located. However, scattered throughout the mountainous regions of Albania are hundreds of smaller 'run-of-river' hydropower plants in operation.

Between 2005 and 2022, the Albanian government signed 252 concession agreements for the construction and operation of small hydropower plants in Albania's river basins, including the Vjosa River Basin. Although the exact number of issued concession permits has always been a matter of debate, according to the AKBN register, there are 179 concession contracts and 74 contracts with production capacities under 2 MW according to DCM 822/2015. Given the significant water flow of the Vjosa River, with average annual discharges of around 195 m^3/s at its mouth into the Adriatic Sea and a minimum summer flow of 33 m^3/s, the Albanian government has traditionally valued the hydropower potential of the Vjosa River. In addition to plans for small hydropower plants, the issue of hydropower in the Vjosa Basin has been significant and supported by partial studies (Sogreah 2008/9), which assessed the hydropower potential of the Vjosa River through the construction of dams on its main body, with a total production capacity of 458 MW. The study projected the following: HEC Kaludh 54 MW, HEC Dragot 109 MW, HEC Kalivaç 92 MW, HEC Poçem 99.5 MW, and HEC Karbonari 68 MW. The energy produced from these hydropower plants would be, according to the study, 1810 GWh per year and would supply energy to approximately 276,823 households.

Plans to build the Kalivaç and Poçem hydropower plants, with an installed capacity of 210 MW and a total investment of 250 million euros, have been strongly opposed (legally, media-wise, politically, and scientifically) by residents, civil society, and the engagement of national and international public figures. Their efforts, alongside support from international environmental organizations, culminated in a major success: the establishment of the Vjosa Wild River National Park (VWRNP). This designation effectively halts hydropower developments at Kalivaç and Poçem, preserving the Vjosa River in its natural state and marking a significant victory for environmental conservation in Albania. The increasing demand for energy and the high potential for energy production from the Vjosa River and its tributaries through hydropower plants have been and remain the most serious threat to the "Vjosa River – one of the last wild rivers in Europe." On the other hand, the potential for solar and wind energy is significant. 'Solar irradiance' in Albania is very high across most of its territory, exceeding 1,500 kWh/m^2 per year, with peaks up to 1,753 kWh/m^2 annually, particularly in the western part of the country. Meanwhile, according to IRENA's assessments in a low capital cost scenario, Albania has competitive wind potential up to 7,400 MW. However, IRENA's REmap scenario proposes an installed wind capacity of 616 MW by 2030, with an annual generation potential of 1,794 GWh.

The objective of this chapter is to analyzing the hydropower sector in the country, with a focus on the Vjosa River Basin. The report aims to analyze the energy sector, national plans, and strategies, and then sector-specific factors that have a direct or indirect impact on the Vjosa River Basin.

3.2.1 Key Policy Developments

Prior to the onset of the energy crisis in 2021, energy policies in Europe were oriented towards an optimistic forecast for renewable energy under the programme of the Green Deal. To accelerate the growth of renewable energy and achieve more ambitious climate goals, the European Commission published the 'Fit for 55' package and proposed increasing the renewable energy share in the EU from 32% to at least 40% by 2030. This policy was aimed at setting the European Union on a path to zero greenhouse gas emissions, toward climate neutrality by 2050. Member states will need to update their National Energy and Climate Plans (NECPs) during 2023-2024 to reflect new national goals and identify supporting policies.

Policies and the legal framework in the field of energy, and renewable energies in particular, are very dynamic and subject to frequent changes at both the European level and within the Energy Community, of which Albania is a member. Albania has developed the National Energy Strategy (NES) 2018-2030 through Decision No. 480 dated 31.07.2018, which outlines its energy development based on supply security and resource optimization to meet needs, with the main objective being the sustainable development of the economy. Table 3 presents the targeted objectives in the NES and the corresponding indicators up to 2030.

Table 1: **Strategic Energy Objectives for 2030**

Description	Starting Point 2015	Objectives 2030
Losses in the Distribution Network	31.4%	10%
Losses in the Transmission Network	2.2%	1.7%
Energy Revenues	90%	98%
Share of Domestic Primary Energy Resources in TPES	47.5%	52.4%
Share of Renewable Energy in TPES	32.5%	42%
Share of Biofuels in Total Energy Consumption in Transport	3.5%	10%

In July 2021, Albania submitted the first draft of the National Energy and Climate Plan (NECP 2030) as part of the commitments made by the country within the Energy Community, the Green Deal, and the Paris Agreement. The NECP is an integrated document aimed at reflecting the energy and climate objectives outlined in the Nationally Determined Contribution (NDC) Report. The Secretariat of the Energy Community has provided its recommendations for improving this plan, which Albania needs to address in a revised plan, pending implementation.

The revised NDC report presents a higher target for reducing total emissions by 20.9% compared to the Business as Usual (BAU) scenario, representing a reduction of 6,674 ktCO2from 2021 to 2030.

Specifically, the obligations arising from the NECP 2030 are: developing renewable energy and energy efficiency action plans, strengthening and operationalizing institutional aspects, and implementing auditing, certification, and financing measures, including transitioning from hydropower production in consideration of the energy crisis (Table 2).

Table 2: **Climate and Energy Objectives and Indicators**

Description	Renewable Energy Indicators	CNAPRES 2020	NES 2030	NECP 2030
Renewable Energy	Renewable Energy in Final Energy Consumption by 2030	38% [2020]	42%	54.4%
Energy Efficiency	Reduction in Final Energy Consumption Compared to the Scenario with Existing Measures	2.2%	2.2%	1.7%
Greenhouse Gas Emissions	Reduction (%) Below 1990 Levels	31.4%	31.4%	Reduction of Emissions by 18.7% Compared to BAU

The NECP has specified the new capacities that need to be built for renewable energy production in order to achieve national objectives. Specifically, these are divided into two blocks: a) the investment block that will be supported by the feed-in tariff mechanism, and b) the investment block that will be supported through open auctions and Contracts for Difference (CfD), as shown in Figure 2 below.

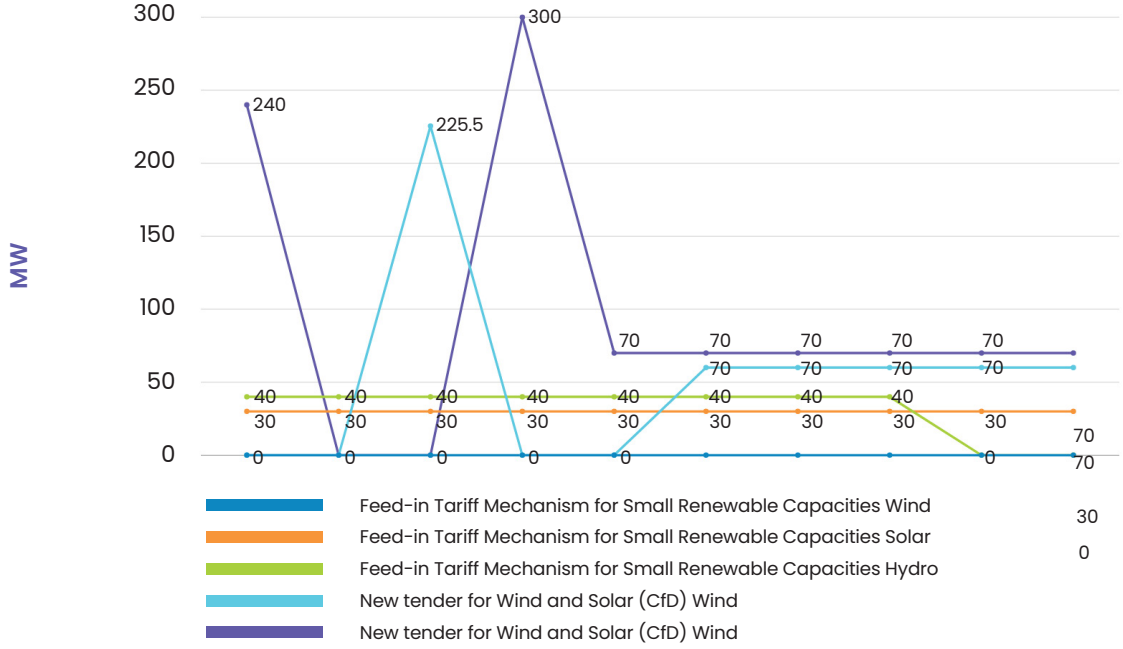

Figure 2: **Capacity Needed by 2030**

Source: NECP 2030. Calculated by E. Qendro

As shown in Figure 2 above, the first block plans to build approximately 320 MW of hydro power and 300 MW of wind power by 2030, benefiting from the feed-in tariff system.

In the open auction block, the NECP has forecasted licensing more than 1 GW (1260 MW) of energy by 2030. Notably, the licensing graph does not follow the plan, where last year 222.5 MW of wind energy was licensed. In July 2024, an auction is expected to open for 300 MW of solar energy, with the maximum capacity of a single plant ranging from 100 to 140 MW. Although the Ministry of Infrastructure and Energy (MIE) has prepared a study on the potential and a possible map, it remains up to investors to select the geography of the investment and the land: private or public.

3.2.2 Legal Framework

In March 2023, Albania approved amendments to the Renewable Energy Resources Law (24/2023), aligning it with the EU Renewable Energy Directive (2018/2001). This law establishes an "incentive scheme" as a direct government commitment to meet the targets for the use of energy generated from renewable sources. The law includes provisions for the approval of the National Energy and Climate Plan, which outlines the objectives for renewable energy, total energy consumption in the country, including electricity, transportation, heating, and cooling. The new law introduces several innovations in the electricity sector, including the provision for the establishment of energy communities. These communities are granted the right to produce, consume, and sell renewable energy, including through power purchase agreements.

On the other hand, the law permits renewable energy self-producers (wind or solar) to have a maximum capacity of 500 kW. These self-producers are entitled to produce, consume, store, and sell excess renewable electricity. This includes engaging in bilateral agreements, working with electricity suppliers, and entering into commercial agreements with counterparts, without facing discriminatory or disproportionate charges. The rights and responsibilities of renewable self-consumers are defined through a Council of Ministers' Decision (VKM), which now allows self-producers to use net metering on an annual basis.

These positive legislative changes came into effect on January 1, 2024, enabling annual net metering for all self-producers. Private households and small to medium-sized enterprises, under the new law, can qualify as self-producers of solar and wind energy up to 500 kW. These changes have resulted in a total amount of self-produced energy reaching 120 MWh, with a total number of self-producers at 1,250, of which 61% are located in the Tirana-Durres region.

These positive legal developments signal promising prospects for the Vjosa River Basin, where numerous private entities or communities could organize themselves into energy communities for self-production of energy from solar panels and wind turbines.

3.3 Challenges and key issues

During the preparation of this technical document and the consultations conducted as part of the ESPID4Vjosa Project in Permet, Gjirokastra, Vlore, and Tepelena in March 2023, the author noted that the most extensive knowledge among the residents is about hydroelectric plants, as well as their concerns regarding these plants.

The push towards the use of renewable energies and their integration into the energy market has received increased focus in recent years in Albania. In the renewable energy sector, there are several dynamics and initiatives noted, including efforts to optimize consumption, projects to support households installing solar panels (with 70% grant for investment costs), and energy-saving measures in public institutions.

The analysis of shortcomings in this technical report is summarized into three main pillars based on the analysis of the legal framework, development policies in the sector, and local meetings:

1. shortcomings of a developmental and institutional nature;
2. shortcomings related to local capacities, knowledge, and awareness regarding renewable energy;
3. shortcomings related to challenges and opportunities for access to financing for renewable energy sources.

3.3.1 *Deficiencies in the nature of development policies*

1. **Lack of a Comprehensive Energy Master Plan.** Although Albania has a National Energy Strategy 2030, a National Energy and Climate Plan 2030, and a Gas Master Plan, which aim to guide the energy sector in Albania, it is still unclear what the limit of new production capacities will be, where they will be developed, and how these energy plans align with local development plans. The Master Plan will need to consider climate change scenarios, the declining population trend, and water shortages in 2030 and 2050.

2. **Lack of Renewable Energy Zoning in the country.** The northeastern region is an area for hydropower plants, while the Fier region (Sheq, Dermenas, Darëzezë, etc.) has effectively become a solar zone in the country. However, the reality on the ground is not reflected in a national or local policy regarding the zoning of energy plans in the country. Considering that one of the key criteria for solar energy is land and favorable solar radiation, planning is guided only by technical energy aspects and not by spatial development considerations.

3. **Lack of Local Energy and Climate Plans in the Vjosa Valley.** The municipalities along the Vjosa Valley do not have energy and climate plans, which serve as a key instrument for planning the achievement of energy objectives in this sector.

3.3.2 Deficiencies in the nature of local capacities and knowledge regarding renewable energies.

4 **There is a deficiency in institutional capacities and local human resources regarding renewable energies.** Although the national orientation is towards a broad wave of investment in renewable energies, this has not been matched by local policies and technical support at the local level. Energy discussions continue to be technocratic, focused on supply and production. Today, there is a need for a more human-centered approach to energy, and for defining and clarifying the role, involvement, and function of »energy communities.«

5 **Lack of technical programs for youth and other age groups in the field of energy.** Although the country has focused on the development of tourism, ecotourism, nature, cultural, and gastronomic tourism, today, trends and demands are shifting towards renewable energies, as well as employment opportunities in this sector. Along the Vjosa River basin, there are two universities (Vlora and Gjirokastra) and technical vocational schools, but there is a lack of programs in the field of energy.

6 **Lack of information and awareness about energy and women at the national and local levels.** In Albania, as well as elsewhere, the energy sector is dominated by men. There is a marked absence of programs, campaigns, social activism, and media coverage addressing the significant gender gap in this field. There cannot be energy communities with a lack of women.

3.3.3 Deficiencies related to the challenges and opportunities for access to financing for renewable resources

7 **There is a lack of information and limited awareness among key actors** including institutions, businesses, and communities, regarding the administrative and financial mechanisms that encourage or facilitate investments in the field of renewable energy production.

8 **There is a negligence by the private and public sectors regarding existing financing opportunities and the involved actors.**

3.4 Management response to address the issue

Development, legal, and institutional policies.

Lack of a comprehensive energy master plan.

Measure 1

In this regard, a comprehensive plan should be developed that gathers data in the energy sector, such as the definition of renewable energy, the potential of energy resources, and historical statistical trends, along with both qualitative and quantitative information, in a clearly formulated and evidence-based development pathway that will allow for decision-making and sustainable sector development.

Lack of Local Energy and Climate Plans in the Vjosa Valley.

Measure 2

Development of local climate and energy plans.

In line with the national NECP (National Energy and Climate Plan), municipalities can develop their local plans, which will help them set local energy objectives, investment opportunities, and foreign financing. On the other hand, municipalities can also develop plans for electric vehicle infrastructure within their territories.

Lack of zoning for renewable energies in the country.

Measure 3

Development of in-depth studies for renewable energy areas in the Vjosa Valley.

While aspects of hydropower have been analyzed in detail, there is a lack of analysis and zoning for the economic potential of solar and wind resources in the country. This hinders the development of policies for setting achievable objectives and planning a cost-effective energy system in the region.

Measure 4

Identification of suitable areas for wind and solar parks.

Municipalities should analyze their territory and determine the economic potential in this regard, becoming stakeholders through public-private partnerships. This approach would generate revenue, create jobs, invest in youth, and become an economic pole by increasing local financial autonomy.

Technical capacity

There is a deficiency in institutional capacities and local human resources regarding renewable energies.

Measure 5

Increase in energy education regarding the benefits of renewable energy throughout the Vjosa Valley.

In general, energy knowledge is poor throughout the Vjosa River basin for many stakeholders. This is not in the context of technical or engineering expertise, but rather a lack of overall assessment and understanding that the human relationship with energy is changing. Citizens need to know more about the form of energy, efficiency, savings, and their energy suppliers. Therefore, the role of civil society is essential in creating energy communities. For example, the successful model of Solar Panels developed by EcoAlbania in the village of Kuta, Mallakaster, has enabled solar energy production by installing an independent electricity generation system to power five public buildings and the street lighting in the village of Kuta.

Lack of technical programs for youth and age groups in the field of energy.

Measure 6

Support for human resources, their training, and expertise is necessary to maximize and ensure the development of local economies.

Local institutions and the private sector need to collaborate with the academic sector and vocational training sector to develop training, development, and certification programs for energy managers and mid-level technicians. The industrial schools in Gjirokastër and Vlora are two poles that can play this role.

Lack of information and awareness about energy and women at the national and local levels.

Measure 7

Development of dedicated programs for promoting paid scholarships and 'Women in Energy' internships.

This measure aims to raise awareness among women about the opportunities offered by the energy sector and simultaneously prepare them for the job market by providing scholarships, internships, and training. All of these will result in an increase in the number of women professionally prepared for energy-related work and a reduction in the gender gap in this sector in the region.

Promotion, awareness and financing

There is a lack of information and limited awareness among key actors about existing financing opportunities and the involved stakeholders.

Measure 8

Development of real public hearings with local residents, local authorities, and Water Basin Councils.

Local authorities should implement the legal framework (including the principles of the Aarhus Convention) that mandates public hearings for projects or decisions that significantly affect local communities. They should also use official channels to disseminate information about these hearings, ensuring that their development sites are accessible to everyone. Additionally, the Vjosa River Basin Council can contribute by exchanging information about projects in the Vjosa Water Basin and acting as an intermediary between local authorities and the community. They can and should provide expert support during the hearings and keep transparent records of the discussions.

There is negligence by the private and public sectors regarding existing financing opportunities and the involved stakeholders.

Measure 9

Raising awareness about energy efficiency among local communities to promote sustainable practices and reduce energy consumption.

Although this option seems like the simplest solution, in practice it requires significant time and resources. To raise awareness about energy efficiency in local communities, it is necessary to start with organizing educational seminars, partnering with local organizations, and creating informational materials. Another tool would be providing pilot energy audits for demonstration purposes and organizing community events to engage schools and youth groups. To encourage involvement and incentive programs, it is important to include local media for broader coverage. Project models and special guests can help and enhance credibility in these efforts.

3.5 Conclusions

1. Albania is recently witnessing **a shift in its strategic energy orientation** towards solar and wind energy, with an investment potential of up to 1.2 GW.

2. Although renewable energy (solar and wind) are decentralized resources, in Albania this phenomenon is **entirely political and centralized** by the central government.

3. There is **a low level of awareness among small businesses** and enterprises in the Vjosa Valley region about investment opportunities in self-production or energy efficiency amid the energy crisis and the government's plans for liberalizing the energy market.

4. Local governance in the 11 municipalities of the Vjosa Valley should be **activated and take a proactive role** in informing businesses, creating energy communities in the area starting with pilot zones. The energy community in Kute could serve as a pilot and, subsequently, actions could be extended throughout the valley.

5. The academic community in the Vjosa Valley (Vlora and Gjirokastra) should collaborate with **research projects and technical institutes to establish a training program** for young people in the field of renewable energy, with a particular focus on women and girls. This would enable the creation of new job opportunities in a growing sector, reduce youth depopulation in the area, and narrow the gender gap.

These conclusions aim to address the challenges and strengthen the development of renewable energy in the Vjosa Valley by incorporating a decentralized approach, informing local businesses, and involving academic collaboration and civil society for the youth.

4

Natural Resources in the Vjosa Basin

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Executive summary

The Vjosa Valley is renowned for its ecological importance and biodiversity. In addition, it is also posited known to be rich in various natural mineral resources, including natural gas, oil, bitumen, and coal. More precisely, such natural minerals are found underground in Drashovica, Gorisht-Kocul and Cakran-Mollaj, in the form of natural gas and oil at a depths of 100-4500 meters. Based on active exploitation of the natural resources pollutants affect the ecosystem by the extraction of mineral processing. Moreover, surface mining for limestone and silica, covering a total surface area of 9.2 km2 is also taking place in the Vjosa Valley, as it does across Albania. However, extracting raw materials such as sand, gravel, and stones from the water basin's coasts and beaches is forbidden in protected areas in principle. Aim of this chapter is to present the current status, the existing challenges and potential improvemetn of the future situation of the use of natural resources in the Vjosa basin. The management and oversight of natural resources in Albania, including the Vjosa basin, involve the application of multiple concurrent laws. This is due to the unique characteristics of resource divisions, which encompass forests and pastures, agricultural land, freshwater bodies, and both surface and subsurface mineral deposits. Institutional frameworks are crucial for efficient and coordinated management of natural resources. While this is not a specific characteristic diagnostic for Albania, it is one of the challenges that must be addressed as the region develops. Further challenges were identified for the use of agricultural land, pastures, and forests in addition to mining activies. In this chapter those challenges are presented in detail with following suggestions of improvement. This is of special importance as the ecosystem services approaches present opportunities to build constituencies for biodiversity and ecosystem management with communities who live in rural areas, but who may not be willing to support biodiversity conservation. Each ecosystem has its economic value, which refers to the value of an asset, which lies in its role in attaining human goals, be it spiritual enlightenment, aesthetic pleasure, or the production of some marketed commodity. Therefore, also in this chapter nature-based solutions leverage natural processes to address environmental challenges while simultaneously promoting biodiversity conservation and enhancing human well-being are addressed.

4.1 Introduction

This chapter presents the results of a social-economic analysis for the Vjosa. The analysis focuses on understanding the social dynamics, stakeholder interests, and potential impacts of activities on local communities, as well as providing suggestions and potential solutions for the future of this area. Over the last thirty years, Albania has experienced many changes in land utilization, which have also affected the Vjosa Valley. Nowadays human activities undertaken to increase the benefits obtained from rivers and their floodplains may also increase the potential for costs and damages such as when the river is experiencing periods of droughts, floods, and heavy pollution (Loucks, & van Beek 2017).

The findings of research conducted by the Albanian Geological Institute suggest the potential for the presence of bitumen in sedimentary formations (Albanian Geological Institute, 2019). In the Memaliaj municipality, coal deposits make up 4.4% of the entire national reserve (National Agency of Natural Resources, 2022). However, pollutants that affect the ecosystem are dispersed in uncontaminated areas like soil or water flows due to unintentional discharges, extraction of mineral processing, black sludge used in agricultural lands, and spills of both controlled and uncontrolled waste (Ghosh M. et al., 2005).

Surface mining for limestone and silica, covering a total surface area of 9.2 km2 is also taking place in the Vjosa Valley, as it does across Albania (National Agency of Natural Resources, 2022). However, extracting raw materials such as sand, gravel, and stones from the water basin's coasts and beaches is forbidden in protected areas (Law 11/2012 on Integrated Management of Water Resources, Article No.67). At present state, the current monitoring data on the quality of water resources in the Vjosa basin are insufficient and not representative of the whole basin. The pollutants exert an influence on the sediment transport dynamics of the river, as contaminants that accumulate in the riverbed frequently result in a deterioration of the sediment quality, which in turn affects the general health of the aquatic environment (Xhaferri et al., 2020; Bizzi et al., 2021). The maintenance of the river's natural form and biological functions is contingent upon the sediment transport mechanisms. However, the potential construction of hydroelectric projects, which could alter these dynamics, represents an increasing threat to the river's ecosystem (Peters et al., 2021; Schiemer et al., 2020).

4.2 Policy and Legal Framework

4.2.1 National Legislation

The management and oversight of natural resources in Albania, including the Vjosa basin, involve the application of multiple concurrent laws. This is due to the unique characteristics of resource divisions, which encompass forests and pastures, agricultural land, freshwater bodies, and both surface and subsurface mineral deposits. Institutional frameworks are crucial for efficient and coordinated management of natural resources. While this is not a specific characteristic diagnostic for Albania, it is one of the challenges that must be addressed as the region develops.

Regarding water quality, the level of alignment remains incomplete, and two laws on water resources and marine waters should still be adopted as soon as possible. Directive-specific implementation plans for the Drinking Water Directive and Urban Waste Water Treatment Directive – where major investment is required for compliance – were prepared in 2022. Following the 2020 adoption of the Drini-Buna and Semani River Basin management plans, Albania should complete and adopt the remaining five RBMPs for the Ishem, Erzen, Mati, Shkumbini and Vjosa rivers.

More precisely, the relevant legal framework is summarized as follows:

1. Law no. 57/2020 "For Forests" and the National Agency for Forests
2. Law no. 9693, dated 19.3.2007, "On the Pasture Fund", as amended
3. Law no. 9817, dated 22.10.2007 "On Agriculture and Rural Development"
4. Law no. 111/2012 "On the Integrated Management of Water Resources"
5. Law no. 10 304, dated 15.7.2010 For the Mining Sector in the Republic of Albania, as amended by Law No. 65/2021
6. Law no. 7746, dated 28.7.1993, On Hydrocarbons (exploration and production), as amended.

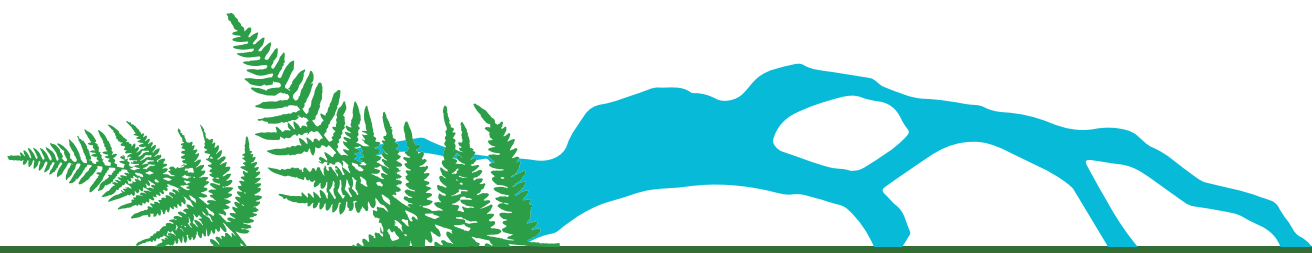
Also, the policies and management of natural resources are oriented through sectoral and national strategies.

1. National Strategy for Integrated Development (NSID), 2021-2030. The NSID 2021-2030 serves as a crucial platform for prioritizing policies in both sector-specific and cross-sectoral strategies. The alignment of NSID implementation will be guided by the attainment of the 2030 Sustainable Development Goals (SDGs), to which Albania is fully committed throughout the entire process. Consistent with this overarching strategy, the following inter-sectoral plans have been endorsed:
2. The National Strategy for the Integrated Management of Water Resources according to decision no. 3, dated 13.12.2017 of the National Water Council and Decision of Council of Ministers no. 73, dated 7.02.2019.
3. National Irrigation and Drainage Strategy 2019-2031 and Action Plan according to Decision of Council of Ministers no. 345, dated 22.05.2019

4. Decision no. 814, dated 31.12.2018 For the Approval of the Policy Document for Forests in Albania, 2019-2030
5. Strategy for land consolidation 2016 - 2030, according to Decision of Council of Ministers no. 700, dated 12.10.2016
6. Agriculture, Rural Development and Fisheries Strategy 2021-2027 according to Decision of Council of Ministers no. 460, dated 29.06.2022

Since Albania is now an official candidate EU accession country, steady progress has been made in terms of the political criterion, implementing and consolidating reforms in the rule of law and public administration. In many areas, efforts have been made to bring Albanian legislation closer to EU requirements, increasing the country's ability to accept the obligations of the EU membership. Albania still needs to make significant efforts to improve its preparations for implementing EU legislation in several critical areas, such as climate change. The General National Climate Change Strategy and Plan is intended to aid in implementing EU environmental and climate legislation and strengthening intersectoral coordination in Albania (Ministry of Tourism and Environment 2019).

To ensure that Albanian policies and mechanisms strive for a cost-efficient low-carbon economy, several key policy objectives have been identified to respond to the six priorities identified in the KIA document. In the Climate Change Mitigation Plan, 222 measures have been identified, mainly focused on a medium-term (2030) and long-term (2050) period. The central part of the measures originates from the existing strategies and plans; some are new proposals from the National Strategy for Climate Changes and Adaptions (SKNK&P) document for dealing with gaps or synergies. Most of the steps are in the energy sector (77) and the transport sector (71), followed by LUCF (Land-Use Change and Forestry), Agriculture (17), and four cross-sectoral measures. On the other hand, there have been initiatives and support for open investments in different sectors of the economy.



4.2.2 European Legislation

This part of the technical report provides a short overview of the main EU legislation about forest, water and soil resources. In Albania the General National Climate Change Strategy and Plan and the Climate Change Mitigation Plan are important steps towards achieving a cost-efficient low-carbon economy since in 2019 Albania was ranked 141 out of the 218 countries in per capita global greenhouse gas emissions.

According to the International Monetary Fund report (2022) the agricultural sector (30 %) is its largest contributor to pollution, followed by transport (15 %) and industry (12%), and is obliged to reduce total emissions by 20.9 % in 2030. The EU's environment policies seek to promote sustainable development and environmental conservation for current and future generations. There is a significant relationship between agricultural and environmental policy. The main instruments related to agriculture are the Common Agricultural Policy (CAP) and the EU strategy "From Farm to Fork". CAP seek to adopt and strength the EU's agri-food and forestry sectors, environmental sustainability, and the well-being of rural areas in general. It aims to achieve the following strategic objectives:

1. fostering the competitiveness of agriculture;
2. ensuring the sustainable management of natural resources, and climate action;
3. achieving a balanced territorial development of rural economies and communities, including the creation and maintenance of employment.

Also European Commission has published the New EU forest strategy for 2030 which was published in 2021. This new strategy aims to improve the quantity and quality of EU forests by the initiatives of the European Green Deal and builds on the EU Biodiversity Strategy 2030.

So the EU directives are focused in some directions as follows:

Forests and Agriculture:

- Decision No. 529/2013/EU of the European Parliament and of the Council of 21 May 2013 on accounting rules on greenhouse gas emissions and removals resulting from activities relating to land use, land-use change and forestry and on information concerning actions relating to those activities.

- Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides.

- Regulation (EC) No. 2152/2003 of the European Parliament and of the Council of 17 November 2003 concerning monitoring of forests and environmental interactions in the Community (Forest Focus);

- Commission Regulation (EC) No. 1737/2006 of 7 November 2006 on removal of detailed rules for the implementation of Regulation (EC) No. 2152/2003 of the European Parliament and of the Council concerning monitoring of forests and environmental interactions in the Community;

- Regulation (EC) No. 2152/2003 of the European Parliament and of the Council of 17 November 2003 concerning monitoring of forests and environmental interactions in the Community (Forest Focus);

- Council Regulation (EEC) No. 1615/89 of 29 May 1989 establishing a European Forestry Information and Communication System (Efics), OJ L 165, 15.06.1989, p. 12 - 13;

- Council Regulation (EEC) No. 2158/92 of 23 July 1992 on protection of the Community's forests against fire,OJ L 217, 31.07.1992, p. 3 – 7, amended by Commission Regulations (EEC and EC) No. 1170/93 of 13 May 1993, No. 1460/98 of 8 July 1998, No. 1727/1999 of 28 July 1999, Council Regulation (EC) No. 308/97 of 17 February 1997, and Regulations of the European Parliament and the Council No. 1485/2001 of 27 June 2001 and No. 805/2002 of 15 February 2002;

- Council Regulation (EC) No. 2173/2005 of 20 December 2005 on the establishment of a FLEGT licensing scheme for imports of timber into the European Community;

- Regulation (EU) No. 995/2010 of the European Parliament and of the Council of 20 October 2010, laying down the obligations of operators who place timber and timber products on the market.

Circular Economy and Waste Management:

- Circular economy systems preserve the added value of products for as long as possible and reduce waste. Since the widespread adoption of the concept of sustainable development by many actors in the economy, making it the main objective of various countries, and while the world economy is facing a slowdown in economic return, different ideas and opinions are appearing to make a difference. In 2015, European Commission adopted the first action plan on the circular economy which was followed and by the EU Directive.

- Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment

- On the other hand, Waste management is considered one of the key elements of the EU's environmental policy.

- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste;

- Directive 86/278/EEC on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture, as amended by Directive 91/692/EEC, Regulation (EC) 807/2003 and (EC) 219/2009;

- Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators, as amended by Directive 2008/12/EC, Directive 2008/103/EC and Directive 2013/56/EU, and Commission Decisions 2008/763/EC, 2009/603/EC, 2009/851/EC;

- Directive 94/62/EC of European Parliament and Council Directive of 20 December 1994 on packaging and packaging waste as amended by Regulations (EC) 1882/2003 and (EC) 219/2009 and Directives 2004/12/EC, 2005/20/EC and 2013/2/EU;

- Directive 96/59/EC of 16 September 1996 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT) as amended by Regulation (EC) 596/2009;

- Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of life vehicles

- Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003, on waste from electrical and electronic equipment (WEEE), as amended by Directive 2003/108/EC of the European Parliament and of the Council of 8 December 2003;

- Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste, as amended by Regulations (EC) 1882/2003 and (EC) 1137/2008 and Directive 2011/97/EU;

- Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries and amending Directive 2004/35/EC and Regulation 596/2009/EC, as amended by Commission Decision 2009/335/EC, 2009/337/EC, 2009/358/EC, 2009/359/EC and 2009/360/EC;

- Regulation (EU) No 1257/2013 of the European Parliament and of the Council of 20 November 2013 on ship recycling and amending Regulation (EC) No. 1013/2006 and Directive 2009/16/EC;

- Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste, as amended by Regulations 1379/2007/EC, 669/2008/EC, 219/2009/EC, 255/2013/EC and 308/2009/EC, 664/2011/EU and 135/2012/EU;

- Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE);

- Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment, as amended by Directives 2012/50/EU, 2012/51/EU, 2014/1/EU and 2014/16/EU.

4.3 Challenges and key issues

Challenges for **agricultural land, pastures,** and **forests** are related to:

1. Limited agricultural and livestock production. These are a consequence of the existence of small farms with a high level of fragmentation and low yields.
2. The continuous use of agricultural lands, has interrupted the natural vegetation (Leiter&Toromani 2022).
3. Loss of soils due to erosion and lack of vegetation cover, especially along the river banks.
4. Loss of biomass due to livestock grazing, indiscriminate logging and deliberate burning.
5. Water pollution from agricultural treatments with chemical fertilizers and pesticides, which will bring irreparable consequences if not addressed in a timely and professional manner.
6. Lack of up-to-date breeding plans for forest and pasture economies, where managers of the forest fund plan holding capacities and determine the extent of use such as for grazing, cultivation of aromatic medicinal plants, tourism, utilization of secondary materials, etc.
7. Inadequate coordination between central and local authorities in monitoring and managing forests and pastures remains an issue. The power division, particularly concerning monitoring, is unclear. The delegation of responsibilities lacks a prior allocation analysis and lacks adequate funding for functions like forest management, agriculture, and fire protection (MTM 2020).
8. Lack of environmental education on sustainable strategic policies of natural resources.

The extraction of minerals often causes environmental pollution in nearby areas due to gases which are sometimes emitted by burning, and due to waste spills or discharges into surrounding water bodies. The risk of Vjosa water being polluted at its middle section is high due to the discharge of polluted urban waters along the river and in its lower section due to mineral exploitation activity of Selenica region (Sovinc 2021). Mining activities involving limestone and siliceous stones result in water pollution due to solid waste. However, the most significant impact is the irreversible physical damage inflicted on the environment during the extraction process. As a result, all living organisms are forced to vacate the area due to noise pollution and dust.

Challenges regarding **mineral resources** and their use:

1. Preservation of the natural landscape and maintenance of the natural processes. It is a fact that the process of extracting minerals is accompanied by damage to the landscape and vegetation that covers the surface in that region and causes extreme changes in the transportantion of the sediment and erosion processes.

2. Achieving a reduction of water pollution, derived from the extraction of minerals from the underground. Moreover, the construction work on a commercial airport in the Vjosa-Narta protected landscape causes significant concern about threats to the environment, the habitat, migratory birds and other living species.

From the questionnaires conducted in the Vjosa basin, several opinions from the Albanian experts are remarked as a summary:

1. *Auron Tare* for water resources management topic was concerned with the hydropower constructions in the Nivica region.
2. *Vasillaq Nikolla* agriculture expert thinks that agriculture is one of the main pollutants in the area so it is necessary for the intervention of the local government.
3. *Aulona Veizi*, Deputy Mair of Vlora municipality thinks that the Local Action Group 'Vjona" has addressed all the problems of the Vjose Narte region through the Local Development Strategy. This strategy needs to be taken into consideration as well in the Vjosa management plan.

4.4 Management response to address the issue

Ecosystem services approach present opportunities to build constituencies for biodiversity and ecosystem management with communities who live in rural areas, but who may not be willing to support biodiversity conservation (Ingram J. et al 2012). Each ecosystem has its economic value, which refers to the value of an asset, which lies in its role in attaining human goals, be it spiritual enlightenment, aesthetic pleasure, or the production of some marketed commodity (Barbier et al., 2009). Nature-based solutions leverage natural processes to address environmental challenges while simultaneously promoting biodiversity conservation and enhancing human well-being (Lushaj et al 2024). Traditional biodiversity conservation approaches may not have worked here due to the villagers' suspicions about hidden conservation agendas; a suspicion not uncommon in this part of the world where some people believe conservationists have prioritized the needs of species over the needs of extremely poor people (Berghöfer et al, 2017).

Issue 1

Water pollution

Measure 1

Treatment of polluted waters using processing plants before they are discharged into the river. This measure should be focused on the main cities which are located mainly near the Vjosa river. While for rural areas, this measure can be implemented for a longer period due to the current protection from septic tanks.

Measure 2

Improvement of agricultural practices according to the use of sustainable agriculture. Promoting sustainable agriculture, can only be possible when farmers adopt sustainable agriculture practices.

Measure 3

Prohibition of exploitation of mines as the processing of minerals in them creates pollution of underground water.

Issue 2

Preservation of the natural landscape.

Measure 1

Mines and oil well closure. They affect the environment in the protected areas and damage biodiversity

Measure 2

Livestock grazing with conventional forms. Farmers have to cultivate alfalfa or fodder for animal grazing.

Measure 3

Replacement of the goats with sheep, since goats are the main destroyers of the forests.

Issue 3

Loss of soils due to erosion and lack of vegetation cover

Measure 1

Afforestation of buffer zone near the river bank

Measure 2

The change of agricultural crops in areas classified as hot points by alternative land use as fruit trees.

Issue 4

Limited agricultural and livestock production.

Measure 1

Farmers will invest in organic or semi-conventional crops only if they are a competitive commercial option.

- To break even with existing agriculture methods (conventional), organic crops need to produce returns at least as high as other conventional/ agricultural options for the same area of land considered. In this exercise, a monocrop production plot of 0.1 ha is assumed although it will not be the case in reality. For instance, a management cost (such as weed control) may be incurred but with different type of inputs used, and the variable cost of agriculture may experience changes in type and frequency of used inputs and operational labor. These 'costs' are included in the amount that the organic crop must return.
- For each product should estimated breakeven price and potential performance indicators for nonconventional products

4.5 Conclusions

1. Develop a management plan for Vjosa water basin through a multi-sectoral approach with special focus on the agriculture sector and the exploitation of natural ressources industry, that promotes the balanced utilization of water resources in both the agricultural sector and the hydrocarbon industry.

2. Restricting mining activities in the basin requires a comprehensive and critical evaluation of existing licenses and their impacts on the river system. This evaluation should consider various environmental, social, and economic factors to ensure well-informed decision-making. Especially overminig in the vicinity of the National Park may harm biodiversity.

3. To orient agriculture towards a multi-functional agricultural model which positively affects good management of the rural area, the preservation of the environment and rural identity as well as the increase of employment in the area. This way, integrated farming is encouraged by optimally reducing damage to the environment.

4. Create an enabling condition for livestock food base by establishing forage systems in order to completely eliminate irresponsible grazing of livestock in forests.

5. Support farm families with alternative forms of energy security, avoiding logging.

6. Develop support programs in terms of environmental education through Regional Agency for Protected Areas (RAPAs) in the Vjosa National Park in order to raise awareness at the community level (e.g. by the creation and implementation of a Junior Ranger program).

7. Encourage local communities to create a Local Action Group (LAG) as a long-term solution towards sustainable economic development.

8. Develop joint plans for forest and pastures breeding between institutions at the local and central level. Measures to preserve the environment, ensuring the replacement of the biomass lost due to uncontrolled use of forests.

9. Improve managerial and law-enforcement capacities serving sustainable management of natural resources.

10. Increase necessary capacities of farmers and ranchers in order to inform them about sustainable practices in developing agriculture and livestock through cooperation with the extensive service at the regional directorates of agriculture.

5

Protected areas in the Vjosa Basin

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Executive Summary

The Vjosa River National Park (VRWNP), which encompasses one of the last free-flowing wild rivers in Europe, is an ecological asset in the Albanian landscape. The technical report provides a comprehensive analysis of the protected areas within the Vjosa basin, examining the difficult balance between conservation needs and socio-economic activities. The report combines secondary and primary data, integrating legislative reviews and case studies with empirical data from stakeholders. A structured questionnaire formed the primary research component of the report, with 162 completed surveys providing insights into local community perceptions of water resource management. The methodology recognizes the unique challenges of managing river systems and highlights the need for tailored conservation strategies. Protected Areas (PA's) within the Vjosa Basin are crucial for conserving biodiversity and maintaining natural hydrological processes. These PA's act as mitigator against ecological stress, have the potential to provide sustainable economic benefits and are following environmental legislation. The management strategies of the VRWNP are therefore key to the ecological and socio-economic well-being of these regions and provide a blueprint for balancing development and conservation. The report details the national and international legal frameworks that influence the management of the VRWNP. Albania's Law No. 81/2017 aligns national conservation efforts with EU standards, demonstrating the country's commitment to the sustainable management of its protected areas. EU directives, such as the Birds Directive, Habitats Directive and Water Framework Directive, provide fundamental guidelines for maintaining the pristine state of the river and promoting its sustainable use. The report identifies gaps in current management practices and highlights the need for management plans dedicated to riverine -protected areas (PAs). It highlights the potential of PAs to provide targeted protection for riverine ecosystems and underlines the global commitment to extend protected area coverage to freshwater ecosystems. Based on 162 interviews with stakeholders, several key findings emerged that highlight the main concerns surrounding the Vjosa River National Park. Pollution from urban waste stands out as the most important issue, highlighting the urgent need for improved waste management practices. In addition, stakeholders expressed significant concerns about flooding and erosion, highlighting the need to implement robust mitigation and stabilization measures to protect the region. Another critical issue identified is the heavy reliance on the public water supply system for drinking water, highlighting the critical need for

ongoing maintenance and improvement of water infrastructure. In addition, the impact of tourism activities has raised concerns about the ecological pressures on the river, suggesting that sustainable tourism development strategies are crucial to mitigate environmental pressures and promote the conservation of this vital ecosystem. These findings reflect the collective perceptions of the local community and stakeholders and provide a clear direction for future management and conservation efforts in the park.

The challenges and key issues in managing VRWNP include several complex factors that need to be addressed for effective conservation. Firstly, the designation and management of Freshwater Ecosystem Priority Areas (FEPAs) requires managing land use conflicts and fostering cooperation between various stakeholders. Secondly, the VRWNP faces challenges in efficiency in integrating protected areas (PAs) into a unified network that supports sustainable practices across the basin. In addition, establishing consistent monitoring protocols is essential to continually assess the effectiveness of conservation efforts. Securing sustainable funding sources is also essential to ensure the successful implementation and longevity of the management plan. These issues highlight the delicate balance between conservation objectives and the socio-economic dynamics within the VRWNP. This chapter proposes measures to address the issues identified, including continuing professional development for NAPA/RAPA staff, increased development of management plans for protected areas, and increased promotion of sustainable tourism. These measures aim to increase revenue generation within the PAs and promote community engagement and education.

5.1 Introduction

This technical report outlines the protected areas within the Vjosa Basin, highlighting the complex relationship between environmental sustainability and regional development. It comprehensively examines conservation initiatives' status, challenges and prospects in one of Europe's last free-flowing wild rivers.

The methodology of this report integrates a dual approach, combining extensive reviews of national and international legislation relevant to protected areas with empirical data gathered from stakeholders through structured surveys and interviews. Specifically, the primary research included a structured questionnaire completed by 162 residents, providing invaluable insights into community perspectives and interactions with the river ecosystem. This approach allows for a detailed understanding of the socio-economic dynamics and environmental pressures facing the Vjosa Basin.

The Protected Areas along the Vjosa play a key role in maintaining the ecological balance and supporting the region's biodiversity. These areas act as an essential mitigation against environmental degradation, providing shelter for numerous species while maintaining the hydrological and geomorphological processes that define the river's character. The report assesses the existing PAs and explores the potential for extending protected areas to incorporate better freshwater ecosystems, a key aspect highlighted by recent global conservation priorities.
The report also examines the legal frameworks that shape the management of these protected areas, both at the national level and through the lens of EU integration processes. It identifies gaps in current management practices and proposes strategic responses to effectively address these challenges. Through detailed analysis and stakeholder feedback, the report aims to identify a pathway forward that respects the Vjosa River's ecological integrity while addressing the local population's economic and cultural needs.

In summary, this chapter documents the current state of protected areas in the Vjosa Basin and serves as a conceptual guide for future conservation efforts.

5.2 Policy and Legal Framework

5.2.1 National Legislation

Albania's journey in nature conservation dates back approximately five decades, with ongoing initiatives to enhance and update legislation and protective measures since the 1990s. Furthermore, as part of its integration process into the European Union, Albania is compelled to uphold and oversee its natural ecosystems following the regulations and directives of the European Union. Law No. 81/2017 "On Protected Areas" is the framework law, showing the broad convergence of the national biodiversity conservation legislation with that of the EU. In this law, a special section (or Section V) is dedicated to PAs of international interest and, in particular, Natura 2000 sites. In addition, the Decision of the Council of Ministers No. 1156 of 24.12.2020 represents a very important step towards generating income from ecotourism services and activities in PAs and towards financial independence. Albania has recently made significant progress in expanding its network of protected areas, from 5.2% of the country's territory in 2005 to 16% in 2014. As of 2022, terrestrial protected areas in Albania covered approximately 18.59% (5,263 km²) of the country's land area, according to the Ministry of Tourism and Environment data.

The implementation of Law No. 81/2017 on Protected Areas provides for the relevant administrative structures, with the NAPA as the central public body within the Ministry of Tourism and Environment that leads and manages the protection and management activities of all natural PAs, and the Regional Administrations of Protected Areas as the competent local bodies at the district level (in particular, RAPA Vlorë, Fier and Gjirokastër are responsible for the Vjosa Basin) that cover the management and monitoring aspects.

The municipalities that implement the Law on Protected Areas within their territory cooperate with the RAPAs. The law also provides for the establishment of management committees as oversight organizations to ensure the effective implementation of management plans. These committees are composed of representatives from municipalities, the NAPAs, and other local stakeholders from sectors such as agriculture, tourism, forestry, business, and civil society. However, currently, no overarching strategy for Protected Areas (PAs) exists to facilitate cooperation among these diverse actors.

In general, RAPAs face significant operational challenges due to limited resources. Human resources are often insufficient to cover the extensive areas within their jurisdiction, and financial resources are inadequate for carrying out all necessary management and monitoring tasks effectively. Additionally, PA staff frequently lack adequate skills to professionally fulfil their roles. Although Law No. 81/2017 mandates that PA management should follow the Specific Plan for PAs and the Plan for the Management of the Country's Ecological Network, there is still no comprehensive study on this requirement. Moreover, most PAs in the Vjosa Basin lack an updated management plan a'pproved by the Ministry of Tourism and Environment.

Law No. 21, dated 22.2.2024, "On Some Additions And Changes To Law No. 81/2017 On Protected Areas" is the latest legislative amendment that introduces additional provisions for the management of protected areas in Albania, directly influencing the management framework of the Vjosa River National Park (VRWNP). Key changes include updated guidelines for conservation standards, stricter enforcement mechanisms, and enhanced roles for local stakeholders in decision-making processes. This amendment aims to strengthen the legal foundation for effective management, monitoring, and sustainable use of protected areas, thus aligning more closely with EU conservation policies.

The proposed law aims to address issues identified from the implementation of the existing law by proposing the following changes in relation to protected areas:

1. To redefine the principles of managing protected areas by adding the principle of "suitability," "the principle of categorizing objectives," and "the principle of management flexibility," with the goal of enhancing the efficiency of these areas' management processes, based on the principles of the IUCN.

2. To reformulate state policies in the field of protected areas, considering the need for collaboration/interaction with other central and local government institutions, as well as civil society, to effectively administer, conserve, and protect these areas.

3. To review the functions of public institutions in order to strengthen their roles through coordination and harmonization of joint work, aiming to ensure the conservation, protection, and administration of protected areas.

4. To guarantee public access to protected areas.

5. To redefine the types of environmental protected areas according to the type of interest for which protection status has been granted, including the addition of a category for "protected areas of local/municipal interest," to facilitate their management by local government institutions.

6. To enable municipalities to manage a portion of the protected areas that are part of their respective territories they administer.

7. To reformulate the objectives for declaring territories as protected areas, with the purpose of protecting these areas through increasing public awareness, education, encouragement of scientific research activities, recreational activities, and economic activities in accordance with the principle of efficiency, but also with the objectives of the protected area.

8. To harmonize the terminology of the law with that of the IUCN.

9. To reformulate the allowed or prohibited activities in the protected area "National Park."

10 To enable residents of the area to develop economic activities that adhere to the principles of sustainable development, ensuring access and benefits while focusing on the economic growth of the region.

11 To allow permitted urban, recreational, or industrial interventions within the area, but preserving its character.

12 To encourage and support initiatives, projects, programs, and activities aimed at improving the ecological and natural indicators of an environmentally protected area, or that have a positive impact on them.

Law No. 21, dated 22.2.2024, "On Some Additions And Changes To Law No. 81/2017 'On Protected Areas, is a step back in the process of protected area management in Albania. Several civil society actors such, PPNEA, EcoAlbania and AOS have shown their disagreement with this new amendment of the law. Among other aspect, the Article 7, which suggests amending Article 9 of the law, broadens the scope for interventions within protected areas to include urban areas, recreational activities, and various infrastructures such as roads, railways, and energy systems, including renewable energy, oil and gas facilities. Initially, PAs were not designed to accommodate such wide-ranging activities. Implementing these changes could expose these areas to development projects that could undermine their original conservation goals.

Also, the proposal to repeal Article 13, which sets out the zoning regulations for protected areas, contradicts proven management strategies that have historically preserved these regions. Zoning is crucial for balancing the preservation of natural values with the socio-economic activities of local communities. Eliminating these regulations could disrupt the delicate management balance required for both conservation and community benefits, integral to the Voluntary Wild River Network Program's (VRWNP) comprehensive strategy.

Furthermore, Article 6 proposes modifications to Article 8, allowing municipalities to manage at least 20% of protected area territorieswhich includes the potential for intensive infrastructure development such as hotels and other facilities. This could lead to administrative conflicts, as municipalities are tasked with specific duties and responsibilities under their organic laws, which include compliance with protected area legislation. This division of management could hinder coordinated efforts necessary for the successful implementation of VRWNP's integrated plan, potentially fragmenting the conservation efforts and reducing the effectiveness of environmental protection measures across these areas. Finally in the Law No. 21, dated 22.2.2024, "On Some Additions And Changes To Law No. 81/2017 'On Protected Areas, In Article 1, after point 25, point 25/1 is added with the following content :25/1. Excellence Tourism". In the context of this law, excellence tourism refers to a type of tourism that provides accommodation in structures meeting the highest architectural and environmental standards, as well as exclusive high-level tourism services. And in point 36, after the word "traditional," the words "economic and tourist, aligning the objective of protection, effectiveness, and appropriateness with the characteristics of the protected area or sub-zone" are added. These changes create the possibility for the construction of five-star hotels in protected areas including the national parks and therefore even the Vjosa.

5.2.2 European Legislation

International and EU legislation concerning protected areas, with specific attention to wild river basins, emphasize the importance of diverse protection mechanisms to safeguard rivers. The Convention on Biological Diversity and other platforms advocate for increased protection for rivers, including diverse mechanisms to maintain their connectivity. These mechanisms include river-specific versions of protected areas, like the National Wild and Scenic Rivers System in the United States, Canadian Heritage Rivers System, and River Protection Reserves in Spain. Additionally, policies such as Mexico's Environmental Water Reserves and Water Resource Protection Areas in Zambia play a vital role in maintaining free-flowing rivers. However, river-specific protection mechanisms differ in their primary management objectives. According to the IUCN definition, protected areas must prioritize biodiversity conservation as their primary goal. Mechanisms like the National Wild and Scenic Rivers System in the United States and the Canadian Heritage Rivers System align with this definition because they are primarily managed to conserve rivers' natural and ecological integrity. In contrast, mechanisms such as Mexico's Environmental Water Reserves and Zambia's Water Resource Protection Areas aim to ensure water availability and quality for human use, such as drinking water, agriculture, or hydroelectric power. While these areas may provide secondary benefits to biodiversity conservation, their primary purpose does not align with the IUCN's strict criteria for protected areas. The protection of wild river basins is a critical component of global conservation efforts, requiring a combination of local, national, and international legislation to ensure the long-term conservation of nature and associated ecosystem services. The National Wild and Scenic Rivers System in the United States is a model of best practice in the process of wild river flow protection and management that can be considered by EU and non-EU countries such as Albania.

The Convention on Biological Diversity (CBD)

CBD is a pivotal international agreement that has played a significant role in shaping global policies for the conservation of biological diversity, sustainable use of its components, and fair and equitable sharing of benefits arising from genetic resources. One of the fundamental aspects of the CBD that relates to protected areas (PAs) is its focus on conserving biological diversity through the establishment and effective management of these protected areas.

The 30x30 Global Biodiversity Framework

With the conclusion of the Aichi Biodiversity Targets in 2020, a new global framework for biodiversity conservation has emerged—the 30x30 agreement, adopted as part of the Kunming-Montreal Global Biodiversity Framework during the COP15 to the Convention on Biological Diversity (CBD). This ambitious initiative aims to protect and conserve 30% of the planet's terrestrial and marine ecosystems by 2030, addressing the urgent need for transformative action to halt biodiversity loss. The 30x30 agreement expands the

scope of conservation efforts beyond traditional protected areas by including Other Effective Area-Based Conservation Measures (OECMs). OECMs are areas that, while not formally designated as protected areas, deliver significant long-term biodiversity conservation benefits. These include indigenous territories, community-managed lands, and privately owned conservation areas. Recognizing OECMs, the framework acknowledges the diverse governance systems and management approaches contributing to biodiversity conservation. This agreement underscores the need for inclusivity and equity, particularly by integrating contributions from indigenous peoples, local communities, and private stakeholders. It also highlights the importance of addressing drivers of biodiversity loss, such as habitat destruction, overexploitation, and climate change, through a collaborative global effort.

Ramsar Convention

The Ramsar Convention, officially known as the Convention on Wetlands of International Importance especially as Waterfowl Habitat, is an international treaty established in 1971 in Ramsar, Iran. It represents one of the earliest global conservation agreements and specifically addresses the conservation and wise use of wetlands and their resources. One of the core elements of the Ramsar Convention is the designation of Wetlands of International Importance, commonly known as Ramsar Sites. These are wetlands deemed significant for global biological diversity and for sustaining human life through the multitude of ecological services they provide, such as freshwater supply, food resources, biodiversity, flood control, groundwater replenishment, and climate change mitigation. The Ramsar Convention plays a pivotal role in conserving globally significant wetlands, and its principles are particularly relevant to Albania's natural heritage. The Vjosa River and the nearby Narta Lagoon, though not part of the VRWNP, are examples of ecosystems that align with the convention's objectives. These areas provide critical habitats for numerous species, offer ecological services, and hold potential for Ramsar designation, underscoring their importance in safeguarding biodiversity and supporting sustainable development.

National frameworks of protected areas based on the IUCN PA classification'

The International Union for Conservation of Nature (IUCN) is a globally recognized authority on the status of the natural world and the measures needed to safeguard it. Established in 1948, the IUCN plays a critical role in global conservation efforts, including the management and promotion of protected areas. Among its many initiatives, the IUCN categorizes different types of protected areas and works to enhance the conservation of wild rivers and their surrounding ecosystems. It classifies protected areas into six management categories based on their management objectives, ranging from strict nature reserves (Category Ia) to protected areas with sustainable use of natural resources (Category VI). These categories help guide the planning and management of protected areas globally. The IUCN provides a framework for planning, establishing, managing, and monitoring protected areas. This includes guidelines on protected area governance, the integration of biodiversity into wider landscapes and seascapes, and the protection of key biodiversity areas. These standards are crucial

for ensuring that protected areas achieve their conservation and management objectives effectively. Wild rivers, which are free-flowing and relatively undisturbed by human activities, are recognized by the IUCN for their high conservation value, however there is no single IUCN protected area category that would refer only at riverine ecosystems. They support diverse ecosystems that are often more resilient to environmental changes and stressors than more heavily managed river systems. The IUCN advocates for the protection of wild rivers through various initiatives, such as the Freshwater Protected Areas Network. These initiatives focus on enhancing the conservation status of freshwater ecosystems and promoting policies that prioritize the ecological health of rivers. Conserving wild rivers presents unique challenges, including threats from dam construction, pollution, unsustainable water extraction, and climate change. The IUCN works with governments, local communities, and other stakeholders to mitigate these threats by promoting integrated water resource management and sustainable practices.

5.3 The European context

The European Union (EU) legislative framework plays a critical role in environmental conservation, mainly through its Directives, which are legally binding legislative acts. An EU Directive sets goals that all Member States must achieve but allows each country to determine how to implement them within its national legal systems. For example, the Habitats Directive and the Birds Directive form the cornerstone of EU nature conservation policy, obligating Member States to designate and manage Natura 2000 sites to protect critical species and habitats. Also, EU candidate states, such as Albania, must align their national legislation with EU Directives during the approximation process. Candidate countries must adopt and implement EU environmental standards before full membership, ensuring their policies, practices, and governance structures comply with EU requirements. This obligation reflects the broader integration process and demonstrates a commitment to upholding shared environmental and conservation objectives across Europe.

Birds directive

The Birds Directive Article 11 of the Directive 79/409/EEC (2009/147/EC) on the conservation of wild birds ("The Birds Directive") relates to the prevention of damage to local flora and fauna by the introduction of bird species which do not occur naturally in the wild state in the European territory of the Member States. The Birds Directive, formally known as the Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds, is a crucial piece of environmental legislation in the European Union. It was originally adopted in 1979 and has been amended subsequently to better address the conservation needs of wild bird species across Europe. The directive plays a significant role in defining the conservation measures for birds, particularly through the designation and management of Special Protection Areas (SPAs). Applying

the principles of the Birds Directive to the Vjosa River can significantly contribute to the protection and conservation of bird species and their habitats. It provides a comprehensive framework that can help ensure the ecological integrity of this unique river ecosystem is maintained. As Albania works towards EU integration, leveraging EU directives like the Birds Directive will be crucial in safeguarding its natural heritage, promoting biodiversity, and fulfilling international conservation commitments.

Habitats Directive

The Habitats Directive established the "Natura 2000 Network", the largest ecological network of special protected areas. It comprises special areas of conservation designated also includes special protection areas classified pursuant to the "Birds Directive". The Article 22.b of the Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ("The Habitats Directive") requires the Member States to "ensure that the deliberate introduction into the wild of any species which is not native to their territory is regulated so as not to prejudice natural habitats within their natural range or the wild native fauna and flora and, if they consider it necessary, prohibit such introduction". Under the Habitats Directive, countries within the EU are required to designate Special Areas of Conservation (SACs) for the protection of habitats and species listed in the directive's annexes. Although Albania is not a member of the EU, the principles of the directive can guide conservation efforts for the Vjosa River, advocating for the establishment of SACs along its length. This would ensure the preservation of its unique habitats, which support a variety of flora and fauna, some of which are rare or endangered.

Natura 2000 and protected areas

Natura 2000 is a network of protected areas across the European Union established under the EU's Birds Directive and Habitats Directive. Its primary goal is to ensure the long-term survival of Europe's most valuable and threatened species and habitats. Natura 2000 is an essential tool for biodiversity conservation in the EU, providing a framework for managing both terrestrial and marine protected areas.

The Natura 2000 network is made up of Special Protection Areas (SPAs), designated under the Birds Directive, and Special Areas of Conservation SACs, designated under the Habitats Directive. For the Vjosa River, which flows through rich and varied habitats, these designations could be instrumental in conserving critical habitats for birds, fish, and other species. Similarly, Natura 2000 sites are not strictly no-use zones. Instead, they are managed in a way that integrates environmental conservation with human activities. This approach would be crucial for the Vjosa River, considering the socio-economic aspects of the region, including agriculture, fishing and potential eco-tourism. Implementing Natura 2000 directives could help balance conservation needs with local economic interests, ensuring sustainable use of the river's resources. However, as the Vjosa River flows from Greece to Albania, transboundary management is essential. However, cooperation between EU member states and neighbouring countries like Albania could be fostered to extend Natura 2000-like protections to the river.

The Water Framework Directive (WFD)

The Water Framework Directive (WFD) 2000/60/EC is the cornerstone of EU policy for managing inland, transitional, and coastal waters. A key component of the WFD is the establishment of a Register of Protected Areas, which identifies water bodies that require special protection. These protected areas are designated under national or European legislation to safeguard their surface or groundwater quality or to conserve habitats and species that depend directly on these waters. This integrated approach ensures that water management strategies align with broader conservation objectives, promoting ecosystem health and sustainable water use. The WFD states that water quality management be focused on river basins. Management of these basins will be achieved through management plans including the assessment of pressures and impacts caused by humans. However, the WFD does not explicitly require Member States to take account of alien species for the assessment of ecological status of their surface water bodies. Because of this, a debate has arisen on the role of invasive species in the classification of area under the WFD. Similarly, WFD provisions do not fully rule out hydropower development and barrier construction but allow exemptions under Art. 4.7 WFD, even in rivers of high ecological value. A precedent in this regard was set by the ruling of the European Court of Justice on the case of the Schwarze Sulm River in Austria in 2016. The environmental effects of barriers in watercourses are one of the main reasons why the environmental objectives of the Water Framework Directive (WFD) were largely not met by 2018, with only 40% of the EU's surface water bodies reaching "good ecological status" or "good ecological potential". In conclusion, implementation of these legal provisions in the EU member states has been insufficient and, in many cases, not able to prevent further degradation of free-flowing rivers, their natural properties and biodiversity (Schäfer, 2021a).

Bern Convention

The Bern Convention, formally known as the Convention on the Conservation of European Wildlife and Natural Habitats, was adopted in 1979 and is one of Europe's earliest and most significant international legal instruments to conserve wildlife and natural habitats. Its main objective is to ensure the conservation and protection of wild plant and animal species and their natural habitats, especially endangered and vulnerable ones, and to promote cooperation between states. The Bern Convention requires the contracting parties to take appropriate and necessary legislative and administrative measures to ensure the conservation of habitats and the natural environment. This includes preserving the ecological quality of water bodies that support the life cycles of aquatic and semi-aquatic species; for a wild river such as the Vjosa, which is noted for its pristine ecological state and free-flowing nature, the convention advocates for the maintenance of such habitats to prevent any deterioration that might arise from development activities.

Nature Restoration Law

The European Union has adopted the Nature Restoration Law, a groundbreaking initiative to restore degraded ecosystems for the benefit of people, the climate, and the planet. This law establishes binding targets to reverse biodiversity loss and restore critical habitats, including riverine habitats, on a large scale. One of its specific objectives is River Connectivity, which targets identifying and removing barriers to restore at least 25,000 km of rivers to a free-flowing state by 2030.

The European Union's water and nature conservation legislation, including the Nature Restoration Law, the Water Framework Directive, and the EU's Nature Directives, provides effective mechanisms to protect and restore free-flowing rivers. These legal instruments include obligations to prevent deterioration and ensure restoration of designated sites within the Natura 2000 network, particularly riverine ecosystems. However, despite this robust legal framework, implementation across EU Member States has often been insufficient, failing to prevent further degradation of free-flowing rivers and their natural properties (Schäfer, 2021a; Valentim et al., 2024). Adopting the Nature Restoration Law signals a renewed commitment to addressing these challenges and achieving tangible restoration outcomes by 2030.

5.4 Challenges and key Issues

These global efforts and frameworks are crucial for the protection of wild rivers, like those in the VRWNP, emphasizing the need for dedicated conservation efforts that address the specificities of riverine systems. Riverine PAs are an integral part of this conservation strategy, offering a focused approach to preserving the ecological integrity, natural flow regimes, and biological diversity of riverine environments, thus ensuring their protection for current and future generations. The VRWNP is a crucial cornerstone in the conservation of one of Europe's last free-flowing rivers, providing an invaluable opportunity to preserve a unique fluvial ecosystem. However, the successful designation and management of the park is not without significant challenges, which are intricately woven into the complex structure of environmental governance and sustainable land use.

Similarly, Freshwater Ecosystem Priority Areas (FEPAs) are areas identified for their critical role in maintaining freshwater biodiversity, ecosystem functioning, and water-related ecosystem services. These areas are designated based on criteria such as habitat quality, species diversity, and ecosystem connectivity. For example, in South Africa, FEPAs have been developed as part of integrated water resource management to prioritize freshwater conservation while supporting sustainable development goals (Driver et al., 2011). Designating FEPAs is a complex process that requires a nuanced understanding of the dynamic ecology of rivers. It involves sophisticated approaches to balancing the needs of biodiversity conservation with the social and economic demands of local communities. This balancing act is critical for ensuring ecological integrity while addressing the livelihoods of those who depend on these ecosystems

(Nel et al., 2011). The designation of FEPAs offers a robust framework for prioritizing freshwater biodiversity conservation and sustainable resource management. Applying this approach to the VWRNP would emphasize its ecological significance as one of Europe's last wild rivers, characterized by dynamic fluvial processes, high biodiversity, and intact connectivity. Similar to FEPA applications in other regions, such as South Africa (Nel et al., 2011; Driver et al., 2011), the Vjosa could be recognized as a critical priority area for maintaining freshwater ecosystem services, including habitat provision, flood regulation, and water quality maintenance. This approach would also support the integration of conservation efforts with local community needs, ensuring sustainable livelihoods and the protection of cultural heritage along the Vjosa.

Developing an integrated management plan that addresses the delicate interplay of these factors is paramount to the success of the VRWNP. In this vein, the Integrated Management Plan has been officially approved by the Albanian Authorities of September 2024. As already mentioned Albania's legislative and strategic framework for the VWRNP encompasses various laws and policies aimed at environmental protection, sustainable resource management, and tourism development. Key legislation includes the **Law on Protected Areas (No. 81/2017)** and its recent amendments through **Law No. 21**, dated 22.2.2024, which introduced stricter conservation measures, expanded responsibilities for the National Agency of Protected Areas, and reinforced public participation in decision-making. Complementing these are the **Law on Environmental Protection (No. 10431)**, which emphasizes integrated environmental management, the **Law on Biodiversity Protection (No. 9587)**, and the **Law on Integrated Water Management (No. 111/2012)**, which ensures sustainable water use. Sectorial strategies like the **General National Spatial Plan (GNSP) 2030**, the **National Strategy for Development and Integration (NSDI) 2022–2030**, and the **Agriculture, Rural Development, and Fisheries Strategy 2021–2027** further embed these objectives in spatial planning, rural development, and tourism, ensuring alignment with EU directives such as Natura 2000.

However, the complexity of this legislative and strategic ecosystem poses significant challenges. Firstly, adding new measures under Law No. 21/2024 further layers the framework, which can create inefficiencies and inconsistencies due to overlapping objectives and fragmented responsibilities among various agencies and governmental bodies. For instance, coordinating biodiversity conservation, water management, and tourism development within spatial planning frameworks (GNSP) can lead to conflicts, especially when balancing ecological integrity with economic development pressures. Secondly, limited resources for monitoring and management, combined with delays in implementing local general plans (LGPs), exacerbate these issues. This underscores the need for streamlined governance, enhanced capacity-building, and active local participation to ensure the effective and sustainable management of the VWRNP.

To address the challenges posed by the complex legislative and strategic framework governing the VWRNP, it is crucial to enhance inter-agency coordination by establishing a central coordinating body or task force to streamline efforts across diverse laws and strategies. Strengthening local involvement through participatory governance models is essential to integrate local actors in planning and management processes, fostering community ownership and engagement. Building capacity by investing in training and human resources is necessary to effectively manage protected areas and water

resources. Additionally, implementing robust monitoring systems with indicators and digital platforms can enable real-time tracking of biodiversity, tourism activities, and water resources, ensuring informed decision-making.

Also, promoting policy integration by aligning national and local policies (vertical integration) and fostering collaboration across ministries and sectors (horizontal integration) will create a cohesive and efficient framework for sustainable management and conservation efforts. However, the biggest shortcoming of the VWRNP is that, for the last three years, the Government has neither appointed a director nor established a dedicated staff for the park. Similarly, there is no allocation for this in the state budget for 2025, further undermining the park's management and conservation objectives. Financial and resource constraints are a pragmatic reality that VRWNP must face. Securing sustainable funding streams and allocating resources efficiently will be critical to the implementation of the Integrated Management Plan (IMP). The plan must therefore articulate a clear pathway for resource mobilization, taking advantage of both national and international funding opportunities to ensure the long-term viability of the Vjosa Wild River National Park.

5.5 Management response to address the issue

Following the desk research and primary data findings we outline in the table below the main challenges and corresponding management responses aimed at improving the effectiveness and sustainability of the protected areas in the Vjosa Basin. It identifies specific areas of concern, such as insufficient staff capacity development, lack of comprehensive management plans, insufficient promotion of sustainable tourism, and the need for more effective community engagement and education. For each issue identified, the table proposes strategic actions to address these challenges through professional development, stakeholder collaboration, and the improvement of both infrastructure and promotional efforts. These management responses are critical to ensure the long-term preservation and prosperity of the Vjosa Basin's ecological and socio-economic environment.

Issue 1

Insufficient Capacity Development in National and Regional Protected Area Agencies

There is a critical need to ensure the ongoing development of technical and logistical capacities among personnel at the National Agency of Protected Areas (NAPA) and Regional Administrations of Protected Areas. Currently, staff may not be adequately equipped or up to date on the latest methodologies and technologies required for effectively planning, managing, promoting, and monitoring protected areas. These issues could hinder conservation efforts' overall efficacy and responsiveness within the agency.

Measure 1

Continuous Professional Development Programs
Develop and implement a continuous professional development program that includes regular training sessions, workshops, and seminars. These programs should cover the latest trends and technologies in conservation management, policy updates, and effective area management practices. This will ensure that the staff's skills and knowledge are current and comprehensive.

Measure 2

Partnerships with Academic and Research Institutions
Establish partnerships with universities, research institutions, and other conservation organizations. These partnerships can facilitate staff access to cutting-edge research, new methodologies in environmental management, and opportunities for collaborative projects.

Measure 3

Implementation of a Mentorship and Leadership Development Program
Create a mentorship program that pairs less experienced staff with seasoned experts in specific areas of protected area management. Additionally, develop a leadership training program to prepare senior staff for greater responsibilities.

Measure 4

Technology Upgrades and Access to Tools
Provide ongoing access to the latest tools and technologies relevant to protected area management. This includes Geographic Information Systems (GIS), remote sensing technology, and data management software.

Issue 2

Lack of Comprehensive Management Plans

The need for management plans in Protected Areas (PAs) arises because effective conservation often requires holistic planning beyond a single area, even when focusing on a specific site like the Vjosa Wild River National Park (VWRNP). While an Integrated Management Plan (IMP) for VWRNP does exist, the effectiveness of its implementation may depend on the broader context of Albania's conservation framework, which includes other connected or neighboring PAs.

Measure 1

Establish an Integrated Planning Task Force
Form a task force comprising members from the National Agency of Protected Areas (NAPA), regional environmental agencies, water resource management bodies, and other relevant stakeholders. This task force will be responsible for overseeing the development and revision of management plans to ensure they align with the Water Resources Management Plan for the Vjosa Water Basin.

Measure 2

Conduct Comprehensive Environmental Assessments
Implementation: Perform thorough environmental assessments to gather current data on biodiversity, water quality, land use, and socio-economic factors affecting the Vjosa Basin. This information will serve as the foundation for both new and revised management plans.

Measure 3

Stakeholder Engagement and Public Participation
Develop a framework for active participation by local communities, NGOs, and other stakeholders in the planning process. This should include public consultations, workshops, and regular updates to keep the community informed and involved.

Measure 4

Develop and Implement Training Programs
Initiate training programs for all agencies involved in the management of the Vjosa Basin. These programs should focus on integrated management practices, conflict resolution, and adaptive management techniques to address changing environmental conditions.

Measure 5

Monitoring and Evaluation Systems
Establish robust monitoring and evaluation systems to regularly assess the effectiveness of the management plans and make adjustments as necessary. This system should include indicators for ecological health, water quality, and community engagement.

Issue 3

Insufficient Promotion and Revenue Generation from Sustainable Tourism

Sustainable tourism forms such as ecotourism and agro-tourism are under-promoted, impacting potential revenue streams.

Measure 1

Development and Implementation of a Targeted Marketing Strategy
Develop a comprehensive marketing strategy that highlights the unique aspects of each PA, focusing on their ecological significance and the sustainable tourism opportunities they offer.

Measure 2

Partnership with Eco-Tourism Operators
Establish partnerships with eco-tourism operators and local businesses to create and promote tourism packages that align with IUCN standards. These packages should offer visitors authentic and low-impact tourism experiences, such as guided wildlife tours, bird watching, and cultural heritage tours.

Measure 3

Enhancement of Visitor Facilities and Services
Invest in enhancing the infrastructure and visitor services within the PAs to improve the overall tourist experience. This can include developing visitor centres, improving signage, offering educational programs, and ensuring that facilities are eco-friendly and enhance the natural experience without disrupting the environment.

Issue 4

Revenues generated within PAs are not adequately reinvested, affecting the sustainability of these areas.

Measure 1

Ensure that revenues generated within the PA are reinvested in the area itself, supporting improvements in management, monitoring, and promotion of the PAs, and contributing to the welfare of local communities.

Issue 5

Lack of Community Engagement and Education

There is a need for greater educational and awareness initiatives to highlight the significance of the PA network in the Vjosa Water Basin.

Measure 1

Advocate for educational and awareness initiatives that emphasize the role of the PA network in conserving biodiversity and fostering sustainable growth within local communities.

Issue 6

Stakeholder Collaboration and Empowerment

There is insufficient collaboration among stakeholders, which hampers effective management and sustainable development.

Measure 1

The establishment of a multi-stakeholder forum will enhance communication and collaboration among all parties involved, ensuring that diverse perspectives and expertise are incorporated into the management of PAs. It will also build stronger relationships and trust among stakeholders, which are crucial for the long-term sustainability of conservation efforts.

Issue 7

Lack of a Defined Unique Selling Proposition (USP)

The region lacks a clear USP that integrates ecotourism and sustainable development principles.

Measure 1

Elaborate a unique selling proposition that encompasses both ecotourism and sustainable development principles while maintaining the ecological integrity of the Vjosa Basin.

Issue 8

Need for an Inclusive Management Approach

Current management practices do not fully consider the various ecosystem services provided by the Vjosa Basin.

Measure 1

Encourage an inclusive management approach that considers various ecosystem services within the Vjosa Basin, fostering favorable economic, social, and environmental benefits for local communities.

The amendments to Law No. 81/2017 "On Protected Areas" contradict the European Union (EU) Nature Directives and other environmental legislation on several important points. The introduction of new definitions such as "slightly disturbed natural zones" and "moderately disturbed natural zones", which allow economic activities in protected areas, contradicts the EU's strict requirement that conservation objectives in protected and preserved areas, such as Natura 2000 sites, must take precedence over economic activities. By reclassifying core protected areas into less restrictive categories, the amended law allows potentially harmful activities such as logging, construction work and resource extraction. This is incompatible with Article 6(2) of the Habitats Directive, which requires proactive conservation measures and no activities that harm ecosystems. The new law allows the development of mass tourism infrastructure (e.g. hotels, airports and roads) in key protected areas (e.g. national parks) without the need for a proper environmental impact assessment or justification by overriding public interest, in direct violation of Article 6(3) and (4) of the EU Habitats Directive. The removal of a 50-metre buffer zone around natural monuments and strict nature reserves in the amended law increases the risk of habitat destruction, which is contrary to EU law that requires the protection of critical habitats even outside designated protected areas if they play a role in the connectivity of ecological networks. The reduction in public consultation requirements and the failure to align new site designations and permitted activities with nature conservation priorities are at odds with the EU's requirement for public participation and evidence-based decision-making in nature conservation.

5.6 Conclusions

This chapter has comprehensively examined the protected areas within the Vjosa Basin, highlighting significant challenges and offering insights into effective management and conservation strategies. The Vjosa River, as one of Europe's last free-flowing wild rivers, represents a critical natural asset that requires thoughtful and sustainable stewardship to preserve its ecological integrity, and the myriad benefits it offers to biodiversity and the local communities.

The Vjosa Basin's ecological value cannot be overstated, with its extensive biodiversity and dynamic riverine ecosystems providing essential services such as habitat provision, flood mitigation, and water purification. These ecosystems are irreplaceable and serve as a benchmark for conservation efforts across Europe.

The chapter identifies several challenges in managing the protected areas effectively. These include integrating freshwater ecosystems into the broader network of terrestrial protected areas, managing land use conflicts, ensuring sustainable funding, and improving stakeholder cooperation. The complexity of these challenges necessitates integrated and adaptive management approaches that are responsive to environmental changes and stakeholder needs. Insufficient political will, fragmented coordination across different government levels, and limited stakeholder engagement exacerbate these issues, making it challenging to enforce conservation policies effectively. Additionally, the complexity of the Vjosa River's ecosystem, coupled with the impacts of climate change, requires adaptive management strategies that the current legislative framework may not fully support, thereby complicating conservation efforts and stakeholder collaboration.

The insights from 162 stakeholder interviews underline the need for enhanced engagement and education efforts to ensure that all stakeholders understand the ecological and economic importance of the Vjosa. There is a clear demand for improving management practices, particularly in areas such as pollution control, water resource management, and infrastructure development.

Firstly, it emphasizes the need to extend the framework of terrestrial protected areas to include fluvial protected areas to ensure comprehensive conservation of biodiversity. It also recommends the creation and implementation of integrated management plans that consider environmental, social and economic factors to guide the sustainable development of the region. It also proposes the promotion of sustainable tourism, in order to exploit the natural attractions of the Vjosa for economic gain, while preserving its ecological integrity. Finally, continuous research and environmental monitoring are considered crucial to assess the impact of both natural and anthropogenic changes, thereby supporting informed decision-making and adaptive management practices.

The ultimate goal should be to maintain the ecological integrity of the Vjosa River while balancing the needs of human development. This requires a commitment from all stakeholders, including government agencies, local communities, and international partners, to collaborate towards the long-term sustainability of the Vjosa's unique landscape.

6

Ecotourism in the Vjosa Basin

Expert: Dr. Klodian Muço

Executive summary

This chapter on the development of the ecotourism sector in the Vjosa Valley has been prepared within the framework of the ESPID4Vjosa Programme, implemented by Euronatur and EcoAlbania, with financial support from the Austrian Development Agency (ADA). The objective of this study is to evaluate the potential and opportunities for the development of ecotourism as an industry that can contribute to the conservation of biodiversity, economic development and protection of the natural environment of this rich and ecologically important area.

Albania has considerable potential for the development of tourism in general, with the tourism sector identified as a key area for the country's economic development, contributing approximately 20% of GDP by 2023. Ecotourism presents a novel avenue for sustainable development and economic advancement, contingent on the avoidance of any adverse impact on natural resources. This is particularly pertinent in the context of protected areas such as the Vjosa Valley. As indicated in the Global Ecotourism Network report (2020), ecotourism represents a significant proportion of the global tourism market, accounting for approximately 20-25%. The Vjosa Valley encompasses a multitude of ecologically diverse regions, home to over 1820 species, endemics and endangered ones. Additionally, the valley serves as a habitat for 13 internationally endangered fauna species, underscoring the significance of this region as a biodiversity hotspot.

The analysis of tourism data for the Gjirokaster region indicates that approximately 25,000 tourists per year from Europe and the region visit the Vjosa Valley, motivated by an interest in the area's natural and cultural attractions. This figure represents a double-digit growth rate for 2023. It is estimated that for every 1,000 tourists visiting the Vjosa Valley, approximately 30 to 40 direct and indirect jobs can be created in the tourism and agriculture sectors. Furthermore, ecotourism provides a foundation for agritourism, which in turn offers opportunities to gain familiarity with traditional lifestyles, crafts, and local foods. An analysis of the development of tourism in Albania has revealed that the sectors of agrotourism and ecotourism have experienced the most rapid growth in terms of visitor numbers in recent years. However, this growth has been accompanied by a series of challenges. The hasty shift towards this form of tourism, devoid of a strategic plan for the advancement of ecotourism in the Vjosa Valley, could result in a significant expansion that would inevitably lead to

environmental degradation. Conversely, this could result in irreparable damage to a protected area such as the Vjosa Valley.

In order to address these challenges, it is recommended that a sustainable infrastructure be developed and that investments be made in ecotourism opportunities. This approach could result in a sustainable increase in visitor numbers and economic benefits without causing harm to the natural environment. Furthermore, it is recommended that the legislation on tourism in protected areas be revised and that cooperation with the local community be enhanced with a view to developing tourism infrastructure that is environmentally sustainable. In conclusion, this technical report on ecotourism with a focus on the Vjosa Basin identifies shortcomings in the institutional aspect and suggests measures that can be implemented by central and local institutions, the academic world and the local government that extends along the valley in question

6.1 Introduction

Ecotourism is a form of tourism that has gained significant popularity in recent decades as a means of experiencing the natural and cultural heritage of pristine regions while engaging with the environment in a responsible and sustainable manner (Buckley, 2009; Garg & Srivastav, 2021; Ismail et al., 2021). This type of tourism is renowned for the opportunities it presents for the conservation of natural resources and the sustainable development of local communities, while simultaneously offering an educational experience for visitors (De Zoysa, 2022; Huang et al., 2023; Blanton et al., 2024). The Global Ecotourism Network (GEN, 2020) posits that ecotourism can be defined as responsible travel to natural areas that protect the environment, support the socio-economic well-being of local populations, and create opportunities for learning and understanding nature through interpretations and educational activities. Fennell (2004) defines ecotourism as a form of tourism based on natural resources, with a primary focus on experiencing and learning about nature. It is ethically managed to have a low impact and support local development. In this context, ecotourism represents a significant opportunity for transforming the development of the tourism sector in Albania, offering new avenues for sustainable growth.

However, in order to fully comprehend the function and prospective impact of ecotourism in Albania, it is essential to elucidate certain pivotal terms utilized throughout this report, such as "mass tourism." This phenomenon encompasses the movement of vast numbers of organized tourists who visit renowned destinations for recreational purposes. It is characterised by the use of standardised packages (Abram & Waldren, 2021) as well as an increase in air traffic, which has resulted in significantly reduced ticket prices. This is an important factor in the context of mass tourism (Naumov & Green, 2014). The Albanian Riviera is a popular summer tourist destination in Albania. The term "nature-based tourism" encompasses all forms of tourism where the primary attraction is a reduced natural environment. Such activities include nature walking, mountaineering, rafting and more, where the natural environment is left undisturbed and serves an educational and recreational purpose. As posited by Buckley (2021)

and Newsome & Perera (2023), nature-based tourism represents a form of tourism that prioritises visits to pristine natural environments, conferring social, mental and environmental benefits.

The concept of sustainable tourism entails the management of resources in a manner that fulfils the economic, social and aesthetic needs of the present generation, while simultaneously ensuring the preservation of cultural integrity, essential ecological processes, biodiversity and life support systems (United Nations Sustainable Development Knowledge Platform). The objective of this type of tourism is to achieve a balance between economic development and the conservation of natural resources, as well as respect for the environment. In the Albanian context, Albania has traditionally been a well-known destination for beach tourism (Kadiu et al., 2021), with the majority of visitors opting for short stays and minimal expenditure. As evidenced by INSTAT data (2024) and the statistical yearbook (2023), Albanian tourism has experienced a notable surge in recent years, reflecting a shift from mass beach tourism towards a diversification of activities and destinations.
The Vjosa River Basin represents a significant potential for mountain tourism and ecotourism. The Vjosa River is regarded as one of the last remaining undammed rivers in Europe, with its tributaries originating in the mountains of Greece and flowing naturally into the Adriatic coast of Albania. The river creates an ecosystem that is rich in both national and global biodiversity. Tourism in the Vjosa River Region has exhibited a gradual increase, particularly in recent years, as nature and wildlife tourists have begun to engage in activities such as hiking and rafting, with a primary focus on enjoying the natural environment and the cultural values of the area (Statistical Office of the Municipality of Gjirokaster, 2024; Information Office, Gjirokaster Prefecture, 2024). The development of ecotourism in the Vjosa Valley presents a promising avenue for diversifying the Albanian tourism sector, offering a sustainable alternative to mass beach tourism. The designation of the Vjosa River ecosystem as a National Park will facilitate the conservation of biodiversity, promote sustainable development and enhance the well-being of the local community. It is imperative that local communities are engaged and empowered if ecotourism in this region is to succeed. By incorporating local residents into tourism initiatives and emphasising the value of conserving natural resources, while also providing economic incentives through responsible practices, ecotourism has the potential to become a catalyst for sustainable development. Community-based tourism initiatives provide visitors with the opportunity to stay in accommodations managed by local residents, enjoy traditional cuisine, and engage in cultural exchanges that highlight the unique heritage of the Vjosa community.

This chapter will examine the opportunities and challenges of ecotourism development in this region, proposing a framework for nature conservation and sustainable tourism development. This framework is presented as an alternative that supports not only tourism, but also the well-being and economic development of the communities in the area.

The objective of this chapter is to provide an in-depth analysis of the opportunities and challenges related to the development of ecotourism in the Vjosa River Basin, part of which has recently been designated a national park (the Vjosa Wild River National Park, comprising mainly the river and the first level floodplain areas and three tributaries). The objective of the first part of this report is to provide a comprehensive review of the ecotourism sector in Albania, along with an analysis of the national and local policies and strategies that directly or indirectly influence the growth of ecotourism and sustainable tourism in the country. Section 2 will present an analysis of the current situation of the ecotourism sector in Albania, with a particular focus on the opportunities and challenges related to the development of ecotourism in the Vjosa Valley.

This section will also undertake a review of the existing tourism situation and tourism infrastructure in this valley, as well as an assessment of the plan for the promotion of nature-based tourism in this area. In addition, the potential of the region's natural and cultural resources will be evaluated. Section 3 will analyse the political, legal and institutional framework of the ecotourism sector, including national and local policies that can support the development of ecotourism in the Vjosa Valley. Furthermore, this section will examine the policies and legislation that regulate the protection of nature and the utilisation of natural resources, with the objective of achieving sustainable and responsible development that respects the natural environment. Section 4 will present a detailed analysis of the shortcomings of the ecotourism sector in Albania, with a particular focus on the challenges faced in the Vjosa Valley.

This section will identify the principal obstacles to the development of ecotourism, including the absence of infrastructure, difficulties in the management of natural resources and the lack of comprehensive involvement of the local community in decision-making processes. In Section 5, the measures and recommendations to address the identified gaps will be discussed. These include the development of strategies for improving tourism infrastructure, the involvement of the local community and the assurance of sustainable management of natural resources. Section 6 is devoted to the Vjosa Wild River National Park and Valley Tourism Master Plan, which aims to establish a globally recognised model for sustainable tourism. The plan seeks to strike a balance between the preservation of nature and the provision of tangible benefits for local communities. It prioritises low-impact, high-value tourism, guided by key principles such as biodiversity conservation, responsible business practices, and adherence to global sustainability standards.

Furthermore, the plan emphasises respectful engagement with local culture and the natural environment, fostering economic opportunities while protecting the valley's unique ecosystem for generations to come. The final section (Section 7) will summarize the key findings and recommendations for institutions and stakeholders involved in the management and development of ecotourism in the Vjosa Valley. The objective is to ensure that this sector contributes to the sustainable economic development of the area while preserving the environment.

6.2 Policy and Legal Framework

6.2.1 National Legislation

The legal basis in Albania consists of Law no. 93/2015 "On Tourism", as amended. In addition, within the framework of the National Strategy for Development and Integration (NDSI), the Republic of Albania has approved a sectoral strategy named "National Strategy for the Sustainable Development of Tourism (NSSDT) 2019 - 2023" (Figure 3).

Institutions Responsible for Tourism Policies

Ministry of Tourism and Environment

Tourism Advisory Committee for the Private Sector

National Tourism Agency

National Coastal Agency

The tourism sector inspectorate

Local government units (municipalities)

Standardization commission of tourism activities

Legal Framework

Law no. 93/2015 "On Tourism", as amended

CoM Decision No 155, 13.03.2023, "for declaring the natural ecosystem of the river Vjosa a national park, category II"

Com Decision No. 22, 12.01.2018, "the approved criteria and procedures for the certification of agrotourism activities and the construction of structures.objects that serve agrouturism"

Strategy Framework

National Strategy for Development and Integration 2030

National Strategy for the Sustainable Development of Tourism (NSSDT) 2019 - 2023

National Strategy on Biodiversity Protection 2012-2020

Figure 3: **National Strategy for the Sustainable Development of Tourism**

Source: AKZM (2024)

The strategy defined by the NSSDT is the basis for the action plans for the development of ecotourism and agrotourism, and there is even a legal basis for the latter, from Council of Ministers Decision No. 22, 12.01.2018. This strategy contains "the approved criteria and procedures for the certification of agrotourism activities and the construction of structures/objects that serve agrotourism". The action plans contained in the aforementioned strategy provide the methodological and administrative basis for the development of agrotourism as one of the most promising forms of sustainable tourism. This is also due to the possibility of directly involving farmers in this type of activity, which guarantees a capillary increase in revenues while connecting communities with the territory.

The NSSDT has classified the "Vjosa-Zagoria area", i.e. the 441 km2 area between the sanctuary of Këlcyra and the Greek border, as "a priority area for tourism development". The recent legislative amendments (specifically, Law no. 81/2017 "On Protected Areas", as amended by Law no. 21/2024, effective 22/02/2024) have the potential to compromise the protective approach of protected areas. This is because investments aimed at more intensive development of tourism in the protected areas in question may now be permitted. Under the vision of "Albania, a welcoming, attractive and authentic tourist destination, for sustainable development of the country's economic, natural and social potential", the strategy identifies three groups of tourism types, namely "coastal tourism", "nature tourism" and "thematic tourism". "Ecotourism" is considered as one of the three tourism types of the "natural" sub-sector. The "development of the nature tourism program and the creation of new products" is known as one of the specific objectives of the strategy.

With reference to the legislative base, the Ministry of Tourism and the Environment is the principal public body responsible for the definition and implementation of tourism policies in Albania. Other responsible bodies in the field of tourism, related with the Ministry of Tourism and the Environment, are:

1. Tourism Advisory Committee for the Private Sector
2. National Tourism Agency
3. National Coastal Agency
4. The tourism sector inspectorate
5. Local government units (municipalities)
6. Standardization commission of tourism activities.

6.2.2 European Tourism Policy

The current European tourism policy is based on the European Agenda for Tourism 2030, adopted at the end of 2022, which aims to make tourism greener, more digital, and more sustainable.

In the agenda, the EU Council developed its vision for the future, while reminding that before the COVID-19 pandemic, the EU tourism ecosystem represented 15.8 % of employment and that over 99 % of the economic actors of this ecosystem are micro, small, and medium-sized enterprises. The agenda comes with five priorities:

1. Enabling policy framework and governance;
2. Green transition;
3. Digital transition;
4. Resilience and inclusion;
5. Skills and support for transition.

The European Agenda for Tourism 2030 describes voluntary concrete actions for the Member States, relevant public authorities, the Commission, and other stakeholders in the tourism ecosystem to take and encourage, in accordance with the principle of subsidiarity and within the remit of their competences.

6.3 Challenges and key issues

Despite unique natural and cultural values, the Vjosa basin's great wealth has been consistently damaged by human activity, which continues to persist. Furthermore, climate change has started to impact river flows and disrupt natural balance due to rising temperatures. Historically, pollution of water and the environment surrounding riverbanks has been the primary issue affecting Albanian rivers, including the Vjosa River, in terms of human activity; the presence of microorganisms above the rates permitted by European standards, identified as total coliforms and heterotrophic bacteria, indicates that human activity is the primary source of pollution in the Vjosa River. (Hamzaraj et al., 2014).

As previously stated, the amendment to the legislation pertaining to protected areas, which allows construction of the 5-stars hotels and related infrastructure even in the core zones of the national parks, has created a potential for deterioration of the situation as a result of the risk posed by the activities of public and private actors. Threats to the Vjosa River include solid waste disposal, sewage discharge, discharge of polluted water from aquaculture activities, as well as for the operation of inert material collection points (gravel extraction, bitumen production, extraction of water for irrigation and water bottling etc).

There are also several other businesses such as production of paints, slaughterhouses, or shoe production which dispose of their wastewater into the Drino River (tributary of Vjosa River) without filtering. Their cumulative effect constitutes a threat to the quality of water resources and the organisms living in them.

Considering the characteristics outlined, the main challenge for ecotourism remains sustainability, implying human management and exploitation activities (as indicated below) as the main determining factor in the ecotourism development and / or ecosystem deterioration.

Physical and digital Infrastructure

The roads outside the main corridor along the Vjosa River, which connect the main residential areas, are in poor condition. Although the Albanian Government and international organizations have intervened to improve the quality of the existing roads, the situation of the physical infrastructure remains a serious problem. The development plans of the municipalities located along the Vjosa basin, particularly in the upper and middle reaches, reveal significant deficiencies in road connectivity between residential centres. It is important to note that the status of the National Park inside the Vjosa basin necessitates that any infrastructural development and tourist flow must not have negative impacts on the river ecosystem. Despite the current situation, both physical and digital infrastructure require significant improvement in the medium term.

The physical infrastructure of the Vjosa Basin varies along its extent. In the lower flow, both the main branch and other branches have more developed road infrastructure (Figure 4). However, this is not the case in the middle and upper parts of the basin. The ease of accessibility of connections between main municipalities is not necessarily indicative of the same ease of accessibility of infrastructural connections between main municipalities and their administrative units (villages).

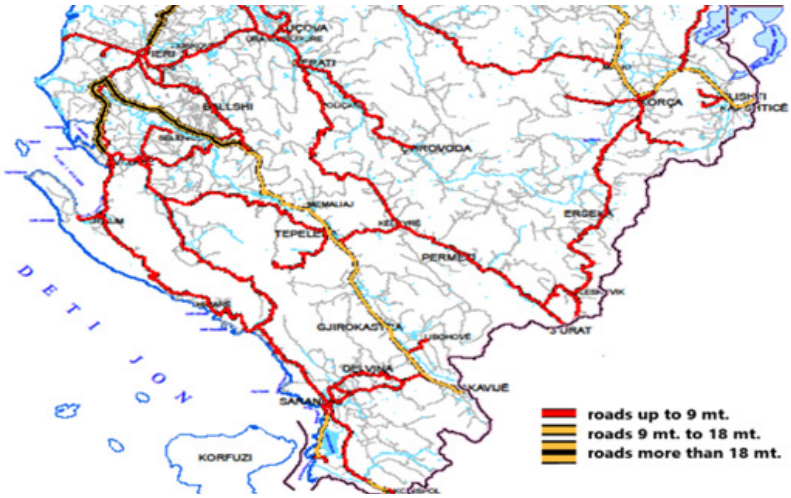


Figure 4: **Roads Network in Vjosa Basin (Albanian Road Authority)**

If planned with conservation standards in mind, the road and bridge construction can promote eco-tourism by providing access to areas that can be developed in a sustainable way. However, this is not the case with the planned Airport of Vlora, which is expected to be completed in 2025 and whose construction has not been planned with environmental considerations in mind. The airport of Vlora along with the roads and auxiliary infrastructure, which facilitates the connection between countries and the development of classical tourism, would have a negative impact on the declared Protected Landscape Vjose – Narte but also to the adjacent VWRNP.

While roads and bridges can pose significant threats to ecosystems, careful planning and innovative design can mitigate these impacts and even contribute positively to environmental conservation. The key lies in integrating ecological principles into transportation planning, promoting sustainable infrastructure development that balances human mobility with the preservation of natural habitats and biodiversity.

Digital infrastructure is a crucial asset for territorial development, particularly in tourist areas that require access to high-quality connectivity and digital services. Therefore, the Vjosa basin, which hosts a national park with a focus on ecotourism development, should also be equipped with quality digital connectivity in both urban and rural areas. While urban areas may have satisfactory connectivity, the same cannot be said for rural areas, where connectivity is either absent or of very poor quality.

From the data available, fixed broadband coverage for both population and family, as given in the figure below, in the 2013-2020 periods has increased more than twofold (Figure 5). Fixed broadband penetration remains well below the EU average and other penetration levels of neighbouring countries, albeit growing by 10%-15% annually.

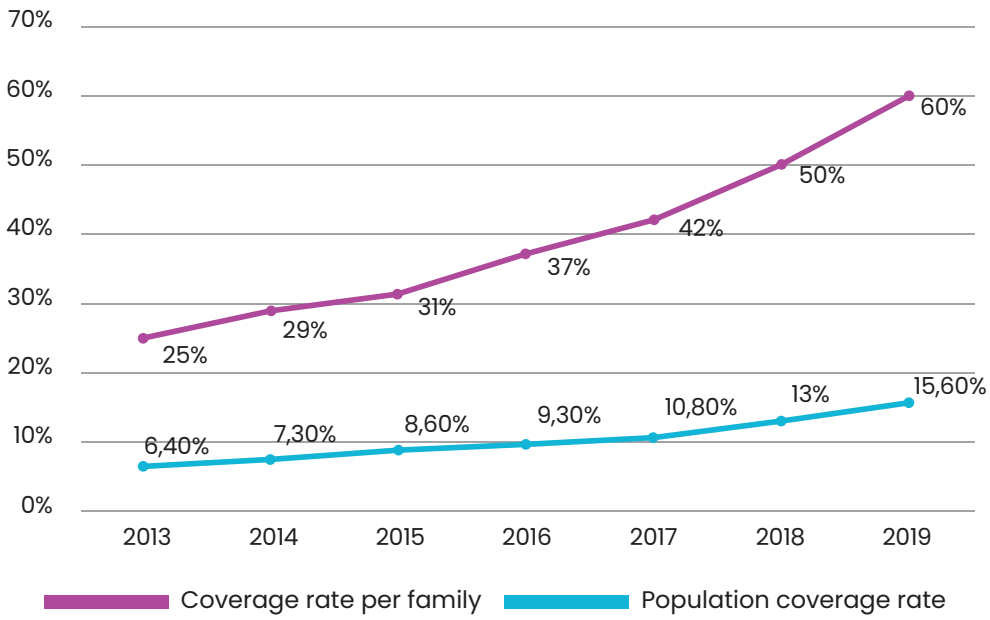


Figure 5: **Quality services of digital infrastructure**

Source: Min. of Infrastructure and Energy, 2020

Territorial coverage is significantly lower for 4G at 21% and 55.6% by the operator. Most of the 4G coverage is concentrated in urban areas. According to the quality of services conducted by EPCA during 2019, mobile operators are taking measures to extend 4G coverage in rural areas, focusing mainly on those areas where 3G coverage has not been very good.

6.4 Management response to address the issue

In response to the gaps identified, our approach focuses on implementing targeted measures to ensure the conservation and sustainable management of Vjosa Wild Park. These issues are interrelated and encompass a range of factors, including institutional organisation, human resource engagement, a dearth of investment, and a lack of awareness.

Possible issue 1

Institutional organization (central and local level)

Management Response to Address the Issue

Establishment of clear communication channels between central and local institutions. This can include regular meetings, electronic communication platforms, and designated liaison officers to facilitate information flow.

Joint Task Forces and Committees comprising representatives from both central and local institutions to address specific issues or projects. These platforms can facilitate coordination and decision-making.

Alignment of Policies and Priorities between central and local levels to avoid conflicts and promote synergy in implementation efforts.

Legal Framework and Support that clarifies the roles and responsibilities of central and local institutions in coordinating activities. Legal provisions can help enforce collaboration and accountability.

Possible issue 2

Digital infrastructure

Management Response to Address the Issue

Internet Connectivity:
Establishing reliable internet connectivity is fundamental. This can be achieved through various means such as satellite internet, wireless broadband, fibre optics, or even innovative solutions like mesh networks. Governments, NGOs, and private sector entities can collaborate to fund and implement connectivity projects.

Infrastructure Investment:
The government should prioritize investing in digital infrastructure in remote areas, including building and upgrading telecommunications networks, establishing data centers, and deploying necessary hardware such as towers and cables.

Policy and Regulation:
Implementing favourable policies and regulations can incentivize private sector investments in remote areas. This may include subsidies, tax breaks, or regulatory frameworks that encourage competition and innovation in the telecommunications sector.

Possible issue 3

Road infrastructure

Management Response to Address the Issue

Environmental Considerations:
Consider environmental factors during the planning and construction phases. This includes minimizing deforestation, mitigating soil erosion, and preserving wildlife habitats.

Budget Allocation:
Allocate sufficient funds for road infrastructure development in rural areas. This could come from government budgets, international aid, or public-private partnerships.

Maintenance:
Implement a regular maintenance schedule to ensure that roads remain in good condition over time. This includes repairing potholes, clearing debris, and ensuring proper drainage.

Possible issue 4

Vjosa River pollution

Management Response to Address the Issue

Waste Water, Waste, and Sewage Management:
To clean residential and commercial wastewater before it is released into rivers, wastewater treatment plants must be installed and upgraded creating efficient waste management programs to stop solid waste from getting into waterways. This includes proper collection, recycling, and disposal of waste, as well as promoting public awareness about littering. Urban sewage systems should be upgraded to stop raw sewage from entering rivers. This can involve separating stormwater from sewage, repairing leaky pipes, and expanding sewage treatment infrastructure.

Industrial Regulations:
Enforcing strict regulations on industries to control and treat their effluents before releasing them into rivers. This can involve implementing pollution control measures, such as installing effluent treatment plants and regularly monitoring discharge.

Agricultural Practices:
Promoting sustainable agricultural practices to reduce runoff of fertilizers and pesticides into rivers. This can include encouraging organic farming, precision agriculture, and implementing buffer zones along water bodies.

Riparian Zone Protection:
Protecting and restoring riparian zones (the areas adjacent to rivers) to prevent erosion, filter pollutants, and provide habitat for wildlife. This can involve reforestation, establishing vegetative buffers, and implementing erosion control measures.

Public Awareness and Education:
Educating the public about the importance of clean rivers and their role in protecting them. This can involve campaigns on water conservation, pollution prevention, and responsible recreational activities.

Monitoring and Enforcement:
Implementing robust monitoring programs to regularly assess water quality and identify sources of pollution. Strong enforcement of environmental regulations is essential to ensure compliance and deter illegal dumping.

International Cooperation:
Collaborating with Greece on transboundary rivers to address shared pollution issues. This can involve bilateral or multilateral agreements, sharing of data and technology, and coordinated efforts to mitigate pollution.

Possible issue 5

Indiscriminate exploitation of natural resources

Management Response to Address the Issue

Regulatory Frameworks:
Albanian Government need to enact and enforce strict regulations on the extraction and use of natural resources. This includes laws regarding mining, logging, fishing, and other resource-intensive industries. Regulations should aim to prevent overexploitation, habitat destruction, and pollution.

Sustainable Management:
Implementing sustainable management practices in industries such as forestry, agriculture, and fisheries is crucial. This involves techniques like selective logging, rotational grazing, and quota-based fishing to ensure that resources are harvested at a rate that allows for natural regeneration.

Economic Incentives:
The Albanian Government can provide economic incentives for businesses and individuals to adopt sustainable practices. This can include tax breaks for environmentally friendly activities, subsidies for renewable energy projects, and grants for conservation initiatives.

Possible issue 6

Registration of structures providing tourist services

Management Response to Address the Issue

Outreach Programs:
Local administrations often conduct outreach programs to educate accommodation providers about registration requirements and procedures. These programs may include workshops, seminars, or informational sessions where officials provide guidance on legal obligations and benefits of registration.

Registration Requirements:
Establishing clear registration requirements for accommodation structures is crucial. This might include documentation such as proof of ownership or lease, compliance with safety regulations, and payment of applicable fees.

Incentives:
Some local administrations offer incentives to encourage accommodation providers to register their properties. These incentives could include tax breaks, access to marketing support, or priority listing on official tourism platforms.

Enforcement and Compliance Checks:
Regular inspections and compliance checks help ensure that registered accommodation structures meet safety and quality standards. Inspectors may visit properties to verify compliance with regulations and address any violations.

Penalties for Non-Compliance:
Implementing penalties for non-compliance with registration requirements can incentivize accommodation providers to register their properties. Penalties might include fines, suspension of operating licenses, or other punitive measures.

Possible issue 7

Human resources (HR) skills

Management Response to Address the Issue

Training and Education:
Provide comprehensive training to stakeholders (public and private) and accommodation structure staff members on ecotourism principles, local flora and fauna, conservation techniques, and cultural sensitivity. This education should empower stakeholders to act as ambassadors for responsible tourism practices.

Community Engagement:
Encourage stakeholders to engage with local communities in a respectful and culturally sensitive manner. HR can facilitate partnerships with local organizations, involve community members in ecotourism initiatives, and support local economic development through employment opportunities and partnerships.

Understanding of Ecotourism Principles:
HR professionals involved in ecotourism should have a strong understanding of ecotourism principles, including conservation ethics, community involvement, and sustainable practices.

Conflict Resolution and Mediation:
Develop strategies for resolving conflicts that may arise between tourists, staff, and local communities. Local professionals should be adept at mediation and conflict resolution to ensure that disputes are handled peacefully and in a manner that upholds the principles of ecotourism.

Professional Development:
Support stakeholders in their professional development by providing opportunities for training, skill-building, and career advancement within the field of ecotourism. Encourage employees to pursue certifications and qualifications related to sustainability and tourism management.

The Law on Tourism (No. 93/2015) and the Law on Protected Areas (No. 81/2017, now amended) do not have a consistent approach to the integration of tourism development and nature conservation. The Tourism Law does not define what types of tourism should be promoted in sensitive natural areas, which means that there is no legal distinction between ecotourism and mass tourism in the legislation. As a result, large hotels, resorts and infrastructure projects are permitted in sensitive ecosystems, including coastal areas, national parks and wetlands. Permitting the construction of five-star tourism infrastructure in the core zones of protected areas may conflict with the objectives of the EU Birds and Habitats Directives. Tourism planning is top-down and often driven by foreign investors and large companies rather than local needs. As a result, sustainable agriculture, cultural or community-driven tourism and other forms of small-scale use of natural resources are being replaced by mass tourism development. The legislation on tourism and protected areas does not set limits on the density of hotels/resorts, the construction of roads or tourism infrastructure in sensitive ecosystems.

6.5 Conclusions

The Vjosa valley is a valuable ecosystem as its nature values and importance go beyond the boundaries of Albania. In addition to the natural values, the Vjosa Valley is a significant mixture of historical, archaeological, cultural, and culinary values. The most important part of the Vjosa Valley, the Vjosa River and its three tributaries, was therefore designated as the unique Vjosa Wild River National Park in 2023. The vast majority of the national park, over 90% of the water surface of the Vjosa River and its three tributaries with floodplains, is thus an area where planning and implementation of tourism and recreational activities is severely restricted due to conservation objectives. It is therefore envisaged that the development of eco-tourism should be directed towards the peripheral areas of the Vjosa valley, where there are many natural and cultural features and where the necessary tourist infrastructure, including accommodation and food and drink facilities, should also be located. Thus, this area can be utilised with respect, preserving it as a valuable asset for future generations in the concept of sustainable development.

However, throughout the political transition period in Albania, overexploitation of the natural resources of the Vjosa basin, has been noted in water pollution, deforestation, and significant damage to flora and fauna, especially in the lower part of the basin. Similarly, climate change is expected to harm the natural habitat of the river, which may reflect serious consequences to the local economy.

It is therefore necessary that all governmental, central, and local structures (but also all other interested parties) take measures to preserve the Vjosa National Park and even to take restoration actions when needed. Having the natural values in the Vjosa valley at their best condition can be the basis for the economic development of the valley, whereas the tourism could be the primary sector.

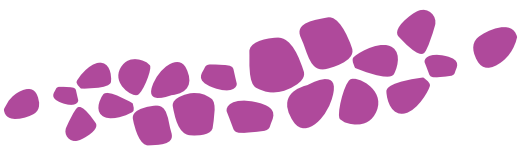
The European Union's guidelines for the future of tourism advocate the sustainable development of ecotourism. This policy is also echoed by the latest scientific research on tourism, especially after the period of the COVID-19 pandemic, which should make people more aware of the importance of preserving biodiversity, purity, and nature.

The development of ecotourism in the Vjosa Valley, which is closely linked to the Vjosa River ecosystem, has been and continues to be, the subject for pressures originating from human activity. These pressures have the potential to disrupt the balance between conservation and protection of the ecosystem, whether on legal grounds (for example, the recent change in the Law on Protected Areas or the construction of the Vlora airport), or on informal ones, such as industrial and agricultural activities without the license requisite. It is not possible to engage in ecotourism without a protected and properly managed ecosystem. As is widely acknowledged, the development of ecotourism in the Vjosa Valley is still in its infancy. To facilitate the sustainable growth of this sector, while simultaneously reducing the potential negative impact of tourism on the surrounding environment, this study proposes the following priorities and recommendations:

1 Establishment of effective organisational and coordinating structures between central and local institutions is a crucial element in the development of ecotourism. When central and local legislation aligns with ecotourism objectives, it establishes a unified framework that enables effective action, resource allocation, and enforcement. Such coordination can streamline policies around protected areas, sustainable land use, and responsible tourism practices, ensuring that development aligns with environmental conservation. However, as seen in debates on legislative amendments for protected areas, alignment often remains more rhetorical than actionable. To move beyond proclamations, central and local institutions need to establish clear roles, responsibilities, and mechanisms for collaboration. This could include joint committees, regular policy reviews, and shared data platforms, which foster accountability and consistent implementation. Through cohesive organizational structures, ecotourism efforts can become more grounded, impactful, and sustainable, directly benefiting both the environment and local communities.

2 Infrastructure development - both physical and digital - is indeed essential for fostering a sustainable relationship between people and nature. Stakeholders are increasingly emphasizing the need for projects that support tourism growth while prioritizing environmental conservation. On the physical side, building eco-friendly pathways, visitor centers, and waste management facilities can improve accessibility without compromising natural landscapes. Meanwhile, digital infrastructure, such as interactive maps, online educational resources, and digital monitoring systems, can enhance visitors' experience and awareness, encouraging responsible tourism. Digital tools can also help monitor visitor numbers, manage traffic in sensitive areas, and provide real-time data for resource management. Balancing these infrastructure developments with environmental impact reduction will require innovative, low-impact construction techniques, careful site planning, and community involvement to ensure that projects benefit both the environment and residents.

3 Environmental pollution (especially in the lower course of the Vjosa River) is a pressing issue with far-reaching implications. Beyond the direct impact on tourism, which requires intervention at both central and local government levels, the contamination affects the river's ecosystems and the health of communities relying on it. Pollution harms the appeal of the area as a tourist destination and its role as a vital ecological corridor. Addressing this issue comprehensively will likely require coordinated policy measures, improved waste management practices, and community engagement to restore and preserve the river's ecological integrity.



4 Raising awareness among the local population is indeed crucial for protecting the Vjosa River ecosystem, as it encourages sustainable practices that benefit both the environment and the community. Highlighting the natural values of the area - its biodiversity, clean water resources, and natural beauty - can foster a sense of pride and responsibility among residents. By informing the community about the positive impact of a healthy ecosystem on social well-being and public health, awareness campaigns can help people see beyond the immediate economic benefits of tourism. Leveraging diverse information channels like TV, social media, and community events can effectively reach different segments of the population, ensuring a broad and inclusive approach to education. Such efforts can create behavioural changes that not only improve environmental stewardship but also build a community culture cantered around the preservation of natural resources for future generations.

Establishing a comprehensive registry of accommodation structures, alongside creating extensive databases on natural resources and their evolution, would indeed be valuable for both environmental management and research. By systematically tracking accommodation sites, visitor numbers, and their impact on natural resources, authorities can better understand the relationship between tourism and environmental change. For researchers, such data would provide a clear, scientific foundation for studies on environmental impact, conservation efforts, and sustainable development. This information could also support science-based policy decisions, helping to mitigate environmental degradation while promoting responsible tourism.

7

Climate Changes In The Vjosa Basin

Expert: Prof. Dr. Romeo Hanxhari

Executive Summary

The Vjosa Basin in Albania is highly vulnerable to the adverse impacts of climate change, reflecting broader global and Mediterranean trends. This report identifies the region's challenges, proposes management responses, and offers actionable recommendations to address the impacts of climate change effectively. Environmental challenges include insufficient monitoring of water sources, ecosystems, and socio-economic systems to assess the effects of climate change, as well as the increasing frequency and intensity of flash floods and droughts. Agricultural practices and biodiversity are particularly vulnerable to climate variability, and there is inadequate planning for future risks in the Vjosa River Delta, where biodiversity loss, land use changes, and erosion remain critical issues. Social challenges arise from a lack of public understanding and engagement in addressing climate change, limited adoption of alternative livelihoods such as agro-tourism and resilient farming, and inadequate community awareness of climate-related health risks like heatwaves. Institutional and policy deficiencies exacerbate the situation, including fragmented and outdated climate adaptation plans at both local and national levels, limited integration of climate change strategies into broader policies, and insufficient training of public administration and experts in climate adaptation and mitigation. Financial and economic barriers further hinder progress, with inadequate financial incentives and regulatory frameworks to encourage renewable energy and sustainable infrastructure, and over-reliance on vulnerable agricultural sectors, coupled with limited investments in climate-resilient economic alternatives.

To address these challenges, enhanced monitoring systems are necessary to strengthen hydrological and ecosystem monitoring using GIS and remote sensing technologies, alongside collaboration with academic institutions such as the University of Tirana to expand research capacity. Community awareness and education campaigns should be launched, targeting schools and local communities in the Vjosa Basin, with a public communication strategy that emphasizes the benefits of climate adaptation. Policy and legislative updates are urgently needed to revise outdated legislation on urban infrastructure, such as stormwater drainage systems, and align sectoral and cross-sectoral strategies with national climate goals to ensure coherence and effective implementation. Local action plans should be developed for the entire Vjosa Basin, integrating financial instruments such as incentives for renewable energy adoption

and sustainable practices, and offering tax reductions and support for eco-friendly construction technologies like pervious concrete. Capacity building and training must focus on equipping local government and environmental agencies with the skills to implement effective adaptation measures, supported by the dissemination of practical, user-friendly manuals on climate mitigation and adaptation. Promoting nature-based and sustainable solutions is also essential, including encouraging agro-tourism as a viable economic alternative to vulnerable agriculture and adopting nature-based solutions for flood management and biodiversity conservation. This integrated approach aims to mitigate climate risks, protect biodiversity, and enhance socio-economic resilience in the Vjosa Basin while contributing to Albania's national and international climate commitments.

7.1 Introduction

Climate change is the greatest non-military threat humanity has ever faced. This threat is capable of challenging all natural and social systems on which human existence as a natural species and as a social being is based.

There are two active strategies to combat climate change: mitigation and adaptation. In 2015, the United Nations enacted the Paris Agreement, which aims to limit the increase in the global average temperature to no more than +2 °C compared to pre-industrial times (currently almost 1,5 °C).

All signatory states to the United Nations Framework Convention on Climate Change (UNFCCC) have committed to reducing their greenhouse gas emissions by 2030. Albania's original commitment was to reduce greenhouse gas emissions by 11.5 % by 2030 compared to 2009 levels. With the revision of this commitment, Albania's target was increased to 20 % by 2030.

Protected areas help to mitigate the negative effects of land use changes that contribute to the increase of greenhouse gases in the atmosphere. They also prevent the loss of biodiversity, which is a consequence of negative land use changes. The Vjosa National Park has the potential to positively influence the above-mentioned national commitment to reduce greenhouse gas emissions.

As a developing country, Albania has obligations under international agreements, and if it aspires to join the European Union (EU), it must adapt to EU-specific climate change policies and guidelines.

7.2 Policy and Legal Framework

7.2.1 National Legal Framework

National legislation on climate change is based on international conventions and agreements that are binding on the Parties (including Albania).

The United Nations Framework Convention on Climate Change (UNFCCC) is the framework agreement that obliges Parties to prepare and submit regular national communications and biennial update reports on greenhouse gas emissions and climate action and to take measures to mitigate emissions and adapt to climate impacts (Albania's fourth national communication was prepared in 2022 and includes, among other things, an updated greenhouse gas inventory for the country and a description of Albania's capacity to contribute to climate change mitigation and adaptation).

The other important and binding agreement is the Paris Agreement (2015), which requires Parties to submit a Nationally Determined Contribution (NDC) outlining their climate goals and strategies. The Paris Agreement also calls on Parties to reduce greenhouse gas emissions, adapt to the impacts of climate change and mobilize financial resources.

Albania's national climate policy and strategy reflects these commitments:

The National Climate Change Strategy and Action Plan (NCCS&AP), developed in 2018 and approved in 2019, aims to strengthen coordination between sectors on climate change mitigation and adaptation measures, environmental protection and sustainable development. As part of the climate change adaptation measures, Albania has developed and approved the NAP – National Adaptation Plan of Action. Following this national plan, the responsible central institution, the Ministry of Tourism and Environment, coordinates the work on the development of – Local Action Plans (LAP). It would be advantageous if a single local adaptation plan were developed for the entire Vjosa catchment area.

1. Nationally Determined Contribution (NDC) is a commitment resulting from the Paris Protocol, in which Albania has committed to reduce its greenhouse gas emissions by 20.9 % by 2030.

2. Integrated National Energy and Climate Plan (NECP), a document that is still in preparation to bring it in line with EU climate and energy targets.

3. Disaster Risk Reduction Plan, which addresses climate-related natural events such as floods and forest fires.

4. The legal basis for incorporating EU and international climate requirements is contained in the Environmental Protection Act

7.2.2 European legal framework

As a candidate country, Albania must adopt EU environmental and climate legislation, the so-called EU acquis, in particular Chapter 27: Environment and Climate Change.

1. The EU achieves its climate goals through a system-wide framework approach and the implementation of various directives.

2. The EU climate and energy framework is in line with the EU target of climate neutrality by 2050 and the interim targets for 2030 (55 % reduction in greenhouse gas emissions by 2030). This framework obliges countries to integrate the EU climate targets into various national strategies, e.g. the expansion of renewable energies, energy efficiency and climate adaptation.

3. The EU directives must be transposed and implemented through national legislation. Some of the most important EU directives that are directly or indirectly linked to climate change are listed below:

4. The EU Emissions Trading Scheme (EU ETS) Directive, which calls on Member States to introduce mechanisms to monitor and trade greenhouse gas emissions in key sectors such as energy and industry.

5. The Renewable Energy Directive (RED II) aims to increase the share of renewable energy in national energy systems in order to achieve the EU benchmarks (32% by 2030).

6. The Energy Efficiency Directive (EED) calls on member states to take measures to improve energy efficiency in buildings, industry and transport.

7. The Effort Sharing Regulation (ESR) aims to reduce emissions from non-ETS sectors such as agriculture, waste and transport.

8. The LULUCF (Land Use, Land-Use Change and Forestry) Regulation aims to ensure that carbon removals (e.g. from forests) offset emissions from land-use change.

9. The Floods Directive requires Member States to develop flood risk management plans to mitigate climate-related disasters.

10. The Water Framework Directive stipulates, among other things, that the management of water resources must be adapted to climate-related changes such as droughts and floods.

11. The EU Adaptation Strategy urges the development of a national adaptation strategy to increase resilience to climate change, reduce disaster risks and integrate adaptation into key sectors.

12 The EU Green Deal calls for reducing dependence on fossil fuels, promoting biodiversity and ensuring sustainability in all sectors of the economy.

13 Albania receives technical and financial support through IPA III (Instrument for Pre-Accession Assistance) to meet the EU's environmental and climate standards.

7.3 Challenges and key issues

The identified challenges in climate change detection, mitigation and adaptation in Albania were categorized into groups: environmental, social, institutional/political and financial/economic.

The following issues were considered as environmental challenges:

1 Insufficient monitoring of water sources, snow cover, ecosystems and socio-economic systems to assess climate change impacts.

2 Limited use of GIS and remote sensing for comprehensive monitoring.

3 Increasing intensity of flash floods in cities such as Vlorë and Gjirokastër.

4 Vulnerability of agricultural practices and crops to climate variability.

5 Agricultural practices and crops are not resilient to changing climate conditions.

6 Investments in the Vjosa River Delta do not take into account future climate risks.

7 Social problems are mentioned below:
- Lack of public understanding and engagement on climate change issues.
- Unrecognized risks of heat waves, floods and other extreme climate events to public health.
- Livestock farming and agrotourism are not sufficiently utilized as alternatives to traditional agriculture.

8 Institutional and policy problems include the following:
- Limited collaboration with academic institutions on data collection and analysis.
- Measures to adapt to climate change are slower than the pace of environmental change.
- Outdated legislation, particularly in relation to urban infrastructure such as stormwater drainage systems.

- Lack of integration and coordination between climate strategies and sectoral policies.
- Adaptation plans at the municipal level are fragmented and not coordinated across the Vjosa basin.
- Insufficient training of public administration and environmental authorities in climate adaptation.
- Limited expertise in climate-specific issues such as sustainable development and management of extreme events.

9 Financial/economic aspects include:

- Inadequate financial incentives and regulatory frameworks for private sector engagement in renewable energy and sustainable construction.
- Vulnerability of economic systems (especially agriculture and tourism) to climate variability.
- Lack of investment in climate-resilient infrastructure and adaptation measures in vulnerable areas.

7.4 Management response to address the issue

In this section, the necessary responses to address the identified deficiencies and challenges related to climate change for the Vjosa Basin are discussed.

Building and Strengthening Monitoring. Monitoring in the field for natural elements that impact or are impacted by climate change needs to be reinforced. The flow of water sources should be monitored based on a representative selection that has the potential to draw general conclusions for all the lithological, tectonic, hydrogeological, and geomorphological realities of the Vjosa Basin. These elements determine the flow rates of the water sources in the area, and monitoring would determine whether and to what extent climate change is impacting these flows. The selection criteria are geological, morphological, and the monitoring should be conducted at methodically dispersed intervals throughout the year. Snow cover could be monitored using GIS and Remote Sensing technologies. Some departments at national universities have already developed these capabilities, and cooperation with them is feasible. Examples include the University of Tirana (Department of Geography), the Polytechnic University (Faculty of Geomatics), etc. Monitoring should also focus on the continuous assessment of the impacts of climate change on:

1. terrestrial and aquatic ecosystems in the area
2. forest cover at risk of reduction
3. hydrological cycle of surface water flows human social and economic systems, particularly in agricultural and livestock productivity;

Environmental Education Campaign on Climate Change. This would help clarify the myths surrounding climate change. A careful environmental education campaign should start in the schools of the pre-university system in the Vjosa area. This could be incorporated into the management plans for the Vjosa Park, along with other educational topics such as biodiversity, floods, ecotourism, energy, etc. Without an updated and aware local community of experts, no Strategy or Action Plan can succeed.

A Simple Manual of Mitigation and Adaptation Methods. Targeting local administration and local experts from various fields, it is essential to develop and publish a manual on climate change mitigation and adaptation methods, including their benefits. This should not be written in technical or "one-way" language, and therefore cannot be a copy of the National Strategy or the National or Local Action Plan, but rather conceptualized in a completely different format. For example, it should explain in simple terms why every euro invested in the green economy yields a return of 4 euros in the short and medium term.

A Climate Change-Oriented Public Communication Strategy is needed. It should be careful and understandable. No policy can be implemented "top down"; instead, it should have a "bottom up" approach for understanding and support. This would create a broad, well-informed, and accurately educated community, aiming to activate and contribute to the fight against climate change and adaptation efforts. To achieve this,

municipal websites or their social media pages, local television, etc., could be used. Every solution should start with environmental education and therefore informing the community about the causes of changes in their agricultural and livestock productivity. Community awareness should focus on two pillars:
the identified problems are related to global changes that require local solutions;
the solution is not to intensify the use of natural resources but to adapt to conditions through small changes. This awareness campaign would ensure community cooperation in protecting the environmental quality of the Vjosa protected area.

Updating Legislation and Strategic Acts at the National Level. This update should also address the need to revise public infrastructure criteria. For example, the capacity of stormwater drainage systems has until now been based on multi-year maximum precipitation, whereas this maximum was calculated under a different climate from the current one. Climate change has rendered previous calculations inadequate. Examples from the Vjosa area, from Albania, and even from around the world are numerous. Recent floods in Dubai demonstrated that calculations based on current climate data are insufficient and that technical parameters for urban infrastructure investments need urgent revision. For instance, a coefficient of 1.3 should be added to the multi-year maximum precipitation to ensure that water drainage installations are prepared for the surprises that climate change is making a reality. These technical changes need to be reflected not only in the National Strategy and Action Plans but also in the relevant technical manuals for the respective sectors.

There needs to be **full alignment between the climate change strategy and sectoral and cross-sectoral strategies.** Given the rapid pace of climate change, these latter strategies should be updated even before the expiration of their legal deadlines. This will require a detailed analysis to identify which sectoral and cross-sectoral strategies need swift and immediate updates, and to specifically suggest the necessary changes.

The rapid development of Local Action Plans for climate change adaptation is urgent. Climate change is advancing faster than the pace at which administrative adjustments to measures are made, which is a significant disadvantage for human systems. In this urgency for speed, it should be considered that developing Local Plans is only the first step, and then we must wait for the implementation by local administration, gradual enforcement, etc. This may lead to a situation where the impacts of climate change occur faster than we can adapt to them.

The local adaptation plan for the Vjosa Basin should be developed based on meeting the needs of the entire Vjosa Basin and should function for the whole Vjosa Basin, rather than on a municipality-by-municipality basis.

Local plans should also include **financial instruments such as incentives,** etc., to encourage entrepreneurs to undertake measures to improve efficiency and increase the use of renewable energy, especially solar energy. Additionally, incentives or tax reductions for private builders who voluntarily implement pervious concrete technology should be considered)

Continuous training of central and local administration is essential. The administration of protected areas, water management agencies, regional environmental agencies, and local government must be trained on climate change with a focus on the Vjosa Basin. These climate change issues should be as understandable to these experts as matters such as the need for sustainable economic development and environmental protection. If this gap is not addressed, success, particularly in adaptation, is difficult. This is a completely new field that has only started within the last 10-15 years even in more advanced countries, making it challenging for the public administration to be familiar with it.

Serious handling of extreme climate events regarding their immediate health consequences for the population: Heatwaves are treated with naivety, assuming that the population is accustomed to heat and knows how to protect itself, which is harmful.

Immediate implementation of adaptive measures for the increase in flash floods from intense rainfall is essential and should be applied across all cities in the Vjosë Basin, including Vlorë, Fier, Tepelenë, Memaliaj, Përmet, and Gjirokastër. Particularly, Vlorë and Gjirokastër, which suffer chronically from this phenomenon, should implement water-permeable concrete techniques in both public and private constructions for sidewalks and public pedestrian areas. Also, even they are not among the most succesful category of adaptation measures in Europe, nature-based solutions in all the area of the Vjosa basin could be tested and considered.

The development of adaptation measures specifically for the Vjosë river delta is essential, considering the lack of awareness among investors that climate change could threaten their future investments if these are conceived with the mistaken ideas that "the territory will remain unchanged" and that "any change has a post-factum technical solution".

Reconceptualizing adaptation measures in the lower reach of the Vjosa River is crucial. This could include modifying agricultural production structures and creating morphological conditions for a wider riverbed to mitigate the impacts of flooding.

Engaging with agricultural sector stakeholders to adapt to climate change is essential. This can include a gradual phase-out of crops that are highly vulnerable to climate change and a shift towards more resilient agricultural practices. Transitioning towards livestock farming, while ensuring it does not become the primary sector, can also be beneficial. Additionally, modifying the economic structure of communities by shifting from the primary sector towards the tertiary sector—particularly agro-tourism—can provide a safer economic pathway given the increasing protected status of the area and its lower susceptibility to reduced agricultural productivity due to climate change.

Although Albania committed to climate neutrality by 2050 at COP26, alignment with the European Union's climate policy acquis remains limited. Albania's ability to integrate climate change into sectoral strategies and plans is very limited. This lack of integration hinders the development of coherent and effective climate action in different sectors, such as energy, agriculture and infrastructure. While Albania has developed a National Adaptation Plan (NAP), it remains a challenge to integrate climate change adaptation into national and sectoral development planning, legislation and regulations. Albania does not have a comprehensive emissions registry, which is essential for monitoring greenhouse gas emissions and tracking progress towards mitigation targets.

7.5 Conclusions

Climate change in the Vjosa Basin is part of global trends and aligns with the climate change patterns observed in the Mediterranean region, particularly within freshwater and riverine ecosystems. The consequences of climate change are already evident, including an increased risk of extreme weather events, changes in biodiversity, and impacts on economic sectors.

1. There are important forecasts indicating substantial biodiversity loss with a temperature increase of +1.5°C.

2. There are current and projected impacts in the Vjosa River delta that need to be addressed, making it essential to reconsider infrastructure interventions in this area.

3. There are data and perceptions suggesting that the volume of liquid inflows in the water sources of the area may be decreasing. However, this needs to be confirmed through monitoring.

4. There is a need to design environmental monitoring programs that include both karst spring waters and surface water flows.

5. There are anticipated consequences of increased exposure to flooding due to intense rainfall. This underscores the urgent need for immediate adaptive measures.

6. The potentials for enhancing energy efficiency and utilizing renewable solar energy in the Vjosa Basin are significant and should be encouraged and explored. Every new inititive must take into consideration that hydro-energy is not considered to be green energy, and every new Project on this field must be stopped.

7. The plans to build HPPs on the Vjosa basin are actually avoided, but a permanent and decisive ban for every kind of HPP, including the Small HPPs, is crucial to the success of the National Park of Vjosa. It is firmly recognised worldwide already that the hydro-energy is not “green energy”, since it causes negative impacts on land use, loss of biodiversity, coastal erosion, etc.

8. The GHG emissions in the Vjosa River Basin are impacted also by the increase in natural fire risks due to drought and the rise in heatwave events. To mitigate this negative impact, an early warning system should be installed through satellite monitoring, utilizing GIS technologies for data processing and forecasting.

9. There are impacts that need to be considered in the agricultural sector, such as in wheat production. Impacts on the livestock sector are currently minimal but may become more significant in the near future. Projects to uptake the water of Vjosa River Basin for utilisation on the tourism sector, etc, must be seriously reconsidered and stopped.

10 Taking water from Vjosa river for irrigation should be allowed only to local farmers or union of farmers, but the quantity taken must be strictly calculated, controlled and monitored.

11 The creation and implementation of local strategic documents for both mitigation and, especially, adaptation to climate change need to be expedited

12 There is an urgent need to train and update local administration and experts on climate change, ensure effective public communication about climate change and adaptation methods, and implement community-focused climate environmental education.

13 Alternatives for changing the economic structure towards more flexible sectors, such as the tertiary tourism sector, should be considered. This involves focusing on a combination of traditional economic practices with modern visitor needs, such as decentralized and widespread agritourism models.

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