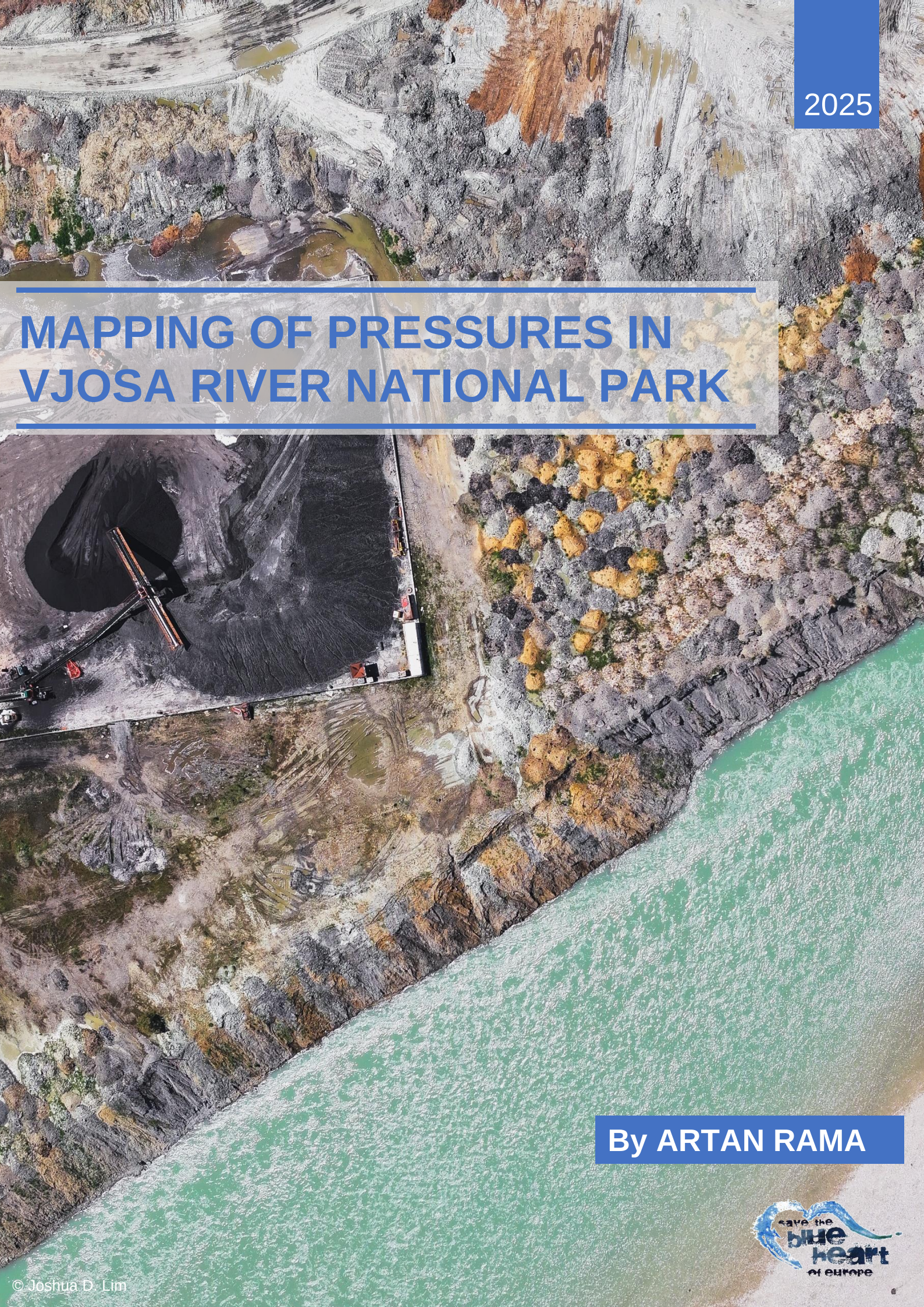
2025

# MAPPING OF PRESSURES IN VJOSA RIVER NATIONAL PARK



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save the blue heart of europe

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| AEC | Albanian Electro energy Corporation |
| AGRF | Albanian Geodetic Reference Framework |
| AMBU | National Agency for Water Resources Management |
| BC | Bern Convention |
| EIA | Environmental Impact Assessment |
| EP | European Parliament |
| MoTE | Ministry of Tourism and Environment |
| NANR | National Agency for Natural Resources |
| NAPA | National Agency for Protected Areas |
| NEA | National Agency for Environment |
| NWC | National Water Council |
| NWSSA | National Water Supply and Sewerage Agency |
| RBC | River Basin Council |
| WB | World bank |
| WRNP | Vjosa Wild River National Park |

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# 1. EXECUTIVE SUMMARY

This report presents the key findings on the pressures exerted by socio-economic activities within the territory of Vjosa national park. The study was conducted along the entire river course and supplemented with technical data and scientific background information. The presence of these pressures poses a significant threat to the values of Vjosa as a unique natural heritage site and the only national park of a wild river in Europe.

**Figure 1:** Inert materials fractionation plant, on the banks of the Vjosa River (Tepelena) © A. Rama

The study builds upon a previous assessment completed in December 2022 and extends the period of observation to July 31st, 2024. Although Vjosa was declared a national park on March 13th, 2023[1], the impact of these pressures has not yet been seriously addressed by authorities. The survey shows that despite fact that the national park's core area is being concentrated around the riverbed, ongoing economic activities within this area remain high.

The aim of this study is to recommend ways to mitigate, eliminate, or prevent further pressures, encourage rehabilitation in affected areas, and halt further degradation.

The assessment has identified and evaluated pressures that could lead to pollution of the riverbanks and riverbed of Vjosa and its tributaries. Key pressures include water pollution (both surface and groundwater), urban density, waste dumping near riverbanks, riverbed gravel extraction, intensive fishing, and exploitative industries, particularly mining.

[1] https://akzm.gov.al/wp-content/uploads/2020/07/Vendim-Nr.-155-date-13.3.2023-Per-shpalljen-e-ekosistemit-natyror-te-lumit-Vjosa-Park-Kombetar-kategoria-II..pdf

The study assessed the severity of these pressures and their impact on the ecosystem. The identification and mapping of pressures were based not only on official documentation collected from public authorities but also on photographic and video materials generated as part of this evaluation. These are included in the final report.

# 2. INTRODUCTION

## 2.1 The Effort to Declare Vjosa a National park

The journey to declare the Vjosa River a national park is the result of a decade-long environmental activism effort, which began with the fight against the construction of hydropower plants planned along its entire course.

However, public debate over Vjosa started earlier, in 1997, when the Albanian government issued Council of Ministers Decision No. 222, dated on May 24th, 1997, approving a concession agreement for the Kalivaç Hydropower Plant under a Build-Operate-Transfer (BOT) contract. This energy project, planned in the central section of the river, was supposed to be completed within five years. However, amendments and contract renegotiations delayed its implementation.

In 2007, sporadic construction work began but was halted in 2009 due to subcontractors withdrawing over unpayment issues.

In 2009, the Albanian government commissioned a study on the hydropower potential of the Vjosa River. The study, conducted by the French consultant Sogreah in collaboration with the Albanian Energy Corporation (AEC) and funded by the World Bank (WB), proposed the construction of 25 hydropower plants along the Vjosa, which later expanded to 31, including its tributaries.

In 2012, the campaign "Save the Blue Heart of Europe" was launched as a regional initiative to protect untouched rivers in the Western Balkans. In 2014, amid government propaganda promoting increased energy production from hydropower sources, three organizations – EuroNatur, RiverWatch, and EcoAlbania – initiated an action to protect Vjosa from planned hydropower projects. The first on-site action[2] was organized near the village of Qesarat, where activists used the riverbed as a direct platform to spread their messages.

In 2016, the government approved a new concession for the construction of another large hydropower plant on the central course of Vjosa – the Poçem Hydropower Plant with an installed capacity of 99.5 MW. In December 2016, 38 residents from the village of Kutë near Poçem filed a lawsuit at the Administrative Court of First Instance in Tirana challenging the concessionary contract. That same year, the outdoor brand Patagonia joined the campaign "Save the Blue Heart of Europe." For the first time, European scientists and ecologists visited Vjosa to conduct studies on its unique biodiversity.

[2] https://ecoalbania.org/konference-per-shtyp-vjosa-park-kombetar-jo-digave/

In May 2017, the Administrative Court of First Instance in Tirana declared the Poçem Hydropower Plant concessionary contract invalid. Around the same time, 30 scientists from Austria, Germany, Slovenia, and Albania began research[3] along the central course of the Vjosa near Kalivaç and Poçem. Although the government cancelled the Kalivaç Hydropower Plant concession, it transferred the project rights to another company. One of the winning bidders was the same company that had lost the Poçem case in court.

The campaign to protect Vjosa reached new dimension: concerts[4] were organized in Tirana to raise awareness on the Vjosa case, experts from the Bern Convention[5] visited the river, Scientists present[6] the values of the Vjosa, scientifically proving the wilderness and ecological importance of the river and the European Parliament urged[7] the Albanian government to reconsider its renewable energy strategy.

The narrative about Vjosa perceives a breakthrough in 2020. Precisely on September 15th, Albania's Ministry of Tourism and Environment rejected the Environmental Declaration (ED) for the Kalivaç Hydropower Plant. On September 25th, Prime Minister Edi Rama publicly[8] (on platform X) stated that hydropower plants would not be built on Vjosa.

In 2021, 726 scientists from around the world signed a petition opposing hydropower projects on Vjosa. EcoAlbania submitted a proposal[9] to designate Vjosa as a national park to the Ministry of Tourism and Environment. However, the Prime Minister initially dismissed the proposal[10], claiming it as a "mission impossible" that would hinder local development.

On January 22nd, 2022, for the first time, Vjosa was granted protected status[11], though not as a national park, but as a Natural Park. Negotiations continued until June 13th, 2022, when the "Memorandum of Understanding" [12] was signed between the Albanian Government and Patagonia, with the aim to proclaim the Vjosa as national park.

Finally, on March 13th, 2023, Vjosa was officially declared a national park, rewording as such a decade-long effort.

## 2.2 Location of the Study Area

"The Vjosa Wild River national park" is located in the southern Albania and extends along the entire territory in width, from the eastern border of the country to the west, to its mouth in the Adriatic Sea. The river begins its journey in the Pindus Mountain range (Greece) crosses Epirus and ends at the mouth in the Adriatic Sea (Albania)

[3] https://exit.al/ekspedite-e-shkencetareve-evropiane-per-te-shpetuar-vjosen/
[4] https://ecoalbania.org/gallery_eco/koncerti-mos-ma-prek-vjosen/
[5] https://ecoalbania.org/konventa-e-bernes-viziton-vjosen/
[6] https://portavendore.al/2019/01/10/beteja-per-rrjedhen-e-lire-te-vjoses/
[7] https://www.europarl.europa.eu/doceo/document/TA-8-2018-0481_EN.html?redirect
[8] https://x.com/ediramaal/status/1309447756092768256
[9] https://citizens.al/2021/02/10/20-organizatat-mjedisore-i-propozojne-qeverise-nje-plan-per-shpalljen-e-vjoses-park-kombetar/
[10] https://gazetasi.al/rama-e-gjithe-vjosa-park-kombetar-e-pamundur/
[11] https://www.facebook.com/watch/?v=4904647459596333
[12] https://www.reporter.al/2022/06/13/firmoset-marreveshja-per-projektin-vjosa-park-kombetar/

The transboundary Vjosa watershed covers approximately 6,800km$^2$ (4,540km$^2$ in Albania) with a length of 272 km, of which 190 km flow in Albania. The park has an area of 12,727 hectares, of which:

- 6,030 hectares, or 47.3% are water surfaces;
- 4,593 hectares or 36.1% are coastal areas and river plains;
- 1,199 hectares or 9.5% of the land area
- and 905 hectares, or 7.1% are fluvial erosive terraces[13].

In the geological, hydro-morphological, hydrological and ecological context, the Vjosa River valley can be divided into three sub-units:

- **The upper part** of the Vjosa River is characterized by steep gorges between Përmeti, Këlcyra and Dragoti, crossed by areas with depositional cones and large watersheds. The Vjosa River valley widens in the upper reaches of the Dragoti area, with the exception of the Këlcyra gorge.
- **The middle part**, along the stretch that includes the confluence with the Drino River, in the vicinity of Tepelena town, is known for the large sand and gravel banks formed by the tributary river. Downstream of Selenica, the Vjosa River Basin area decreases, the valley opens up and the river begins to meander. The Vjosa River floodplains are known as one of the most magnificent coastal ecosystems of the Balkan Peninsula, characterized by their natural hydro-morpho-dynamic river processes. The wide, branched stream, the large gravel banks and islands, the pioneer plant species, willows, poplars and brambles give the Vjosa Valley an extraordinary character.
- **The lower part** is characterized by the extension of the Vjosa River and the formation of wide meanders. Between the cities of Fieri and Vlora, the Vjosa River passes through the Myzeqe Lowland and flows towards the Adriatic Sea. The Vjosa River estuary is located north of the Narta Lagoon, where the river flows into the sea.

The Vjosa River represents a unique typology. The key element to the extraordinary biodiversity of the Vjosa is related to its hydro-morphological dynamics, especially in the longitudinal continuity of the water flow ("natural flow regime"), which remains intact throughout the length of the river, and it is precisely this considered as the main value of the park. Floods and high sediment transport create a continuous landscape circulation.

These unique river dynamics, which have remained largely intact in the catchment area, contribute to the creation of well-adapted biotas with very high biodiversity. However, this diversity is vulnerable to changes in river dynamics. In particular, terrestrial species of highly dynamic river systems are extremely sensitive to hydro-morphological changes in discharge, flow regime and sediment loads. Any impact on these parameters could lead to the reduction or extinction of vulnerable taxa found in the Vjosa.

The Vjosa Delta is located in the Pishë-Poro-Narta wetland area, near the Narta Lagoon, considered the second most important area in Albania for birds, after Karavasta, with about 80 species observed. The Vjosa River, its delta and the Narta Lagoon form a large area important for fish diversity, fishing and aquaculture[14].

[13] https://akzm.gov.al/wp-content/uploads/2020/07/Kapitulli-A-Plani-i-Menaxhimit-te-Zones-se-Mbrojtur.pdf (fq 12).
[14] Shumka et al., 2010; Shumka et al., 2014; Markova et al., 2010; Snoj et al., 2009

**Figure 2:** Drizari quarry near Poçem, with a high visual impact © A. Rama

The Vjosa Basin is rich in groundwater, the abundance of which is found in at least two aquifers:

- The aquifer along the Vjosa in the Western Lowlands and which supplies water to the Fier Ccity. The supply is made through wells located in in Kafaraj (18 wells in total).
- The Drino Valley aquifer (19 wells in total), which supplies mainly the Gjirokastra district, known for the good quality of the water.

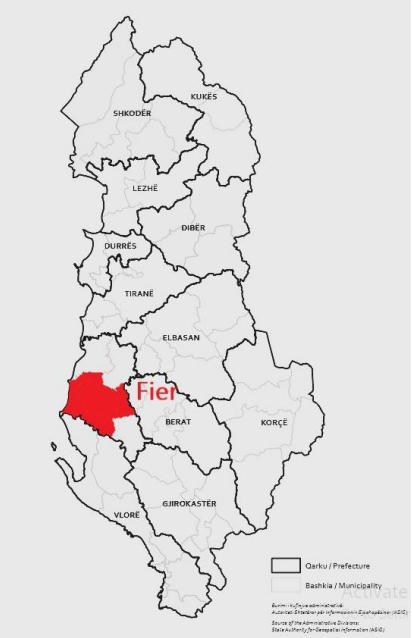
There are 47 springs[15] in the Vjosa Basin, whose flow is stable. In this basin there are some of the largest springs, such as: “black water” of Këlcyra, “Cold water” of Tepelena Viroi spring in Gjirokastra and “the blue eye” in Saranda.

## 2.3 Profile of Local Government Units

The Vjosa, together with its tributaries, passes through the territories of three counties: Fier, Vlora and Gjirokastra (and a small area in Korça) and in the territory of twelve municipalities: Fieri, Vlora, Selenica, Himara, Mallakastra, Memaliaj, Tepelena, Këlcyra, Përmeti, Gjirokastra, Libohova and Dropulli. The population in these municipalities, altogether, according to the Census, in 2023, resulted of 279,405 inhabitants (11.6% of the total population of Albania). Agriculture, livestock, extractive industry, fishing and recently tourism (that is growing), are some of the main economic activities. In 2022, the municipalities of Himara, Mallakastra, Vlora and Dropulli had good financial performance indicators, where more than 40% of the budget was provided by their revenues. This is due to the growing tourism and agricultural potential in these municipalities. Meanwhile, Këlcyra, Tepelena and Libohova performed poorly. Këlcyra managed to secure only 10% of its municipal budget from its own revenues.

[15] https://turizmi.gov.al/wp-content/uploads/2023/01/04.-Raporti-i-Studimit-t%C3%AB-Fisibilitetit_shqip.pdf (fq 22)

### 2.3.1 Fieri Municipality




- 10 A.U: Fieri, Cakran, Mbrostar, Libofsha, Fier Center, Dërmenasi, Topoja, Levani, Frakull, Portëza
- Population: 101,963 (Census 2023)
- Area: 619.9km$^2$

The Vjosa approaches the territory of Fieri Municipality (Frakull, Cakran, Levan) through wide meanders, leaving behind the central section, between the province of Labëria and Mallakastra. It starts to narrow its bed when it passes through the Myzeqe Lowland as it flows into the Adriatic Sea. The mouth of the Vjosa River is located north of the Narta Lagoon.

In this section, the riverbanks are under pressure from agricultural activities and small and medium-sized family enterprises. At its last section the river carries a high pollution load because of the pressures of human activities that are present along the Vjosa. In addition, this section reflects also the pollution load from the tributaries starting from Sarantaporos to Shushica. Due to the oil industry, mainly in Patos-Marinza, the city of Fieri constitutes a national economic importance, but the impact of this industry is, almost, insignificant for the Vjosa.

On the western border of the municipality, near the Vjosa delta, there are lands of marshy origin, which have recently been frequently flooded due to frequent and irregular rainfall. This has forced authorities to draw up emergency plans to address the consequences by maintaining existing flood management infrastructure and taking care of cleaning water beds. In the administrative units of Topoja, Libofsha and Dërmenas, near the lower section of the Vjosa, photovoltaic parks (PV) are recently being built.

Around 4% of the total stock of active enterprises operate in the Fieri municipality. For 2022, the number of active enterprises was 4,653 units. In structural terms, the business is oriented towards the provision of services (86% of the total number of active enterprises, +22 units compared to the previous year), mainly in the “trade” and “accommodation and food service” sectors. In 2022, the number of producers of goods was around 648 units (without considering the farmers), an increase compared to the previous year.

| | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| **Total/Activities** | 7,521 | 7,651 | 4,565 | 4,653 |
| Producers of Goods | 3,351 | 3,603 | 619 | 648 |
| Agriculture, Forestry, Fishery | 2,734 | 2,978 | | |
| Industry | 439 | 432 | | |
| Construction | 178 | 193 | | |
| Producers of Services | 4,170 | 4,048 | 3,946 | 4005 |
| Trade | 2,237 | 2,156 | | |
| Transportation & Storage | 237 | 234 | | |
| Accommodation & Food Services | 710 | 671 | | |
| Information & Communication | 52 | 53 | | |

| | | |
|---|---|---|
| Other Services | 934 | 934 |

**Table 1:** Economic profile of Fieri Municipality © INSTAT

### 2.3.2 Vlora Municipality

- 5 A.U.: Vlora, Orikumi, Vlora Center, Novosela, Shushica
- Population: 83,683 (Census 2023)
- Area: 616.85 km$^2$


Vlora municipality is an important part of the tourist industry, notable for its coastline, from the Vjosa river delta on the Adriatic Sea to the Llogora Pass, which descends to the Kanal (Karaburun) on the Ionian Sea. In this territory, the Vjosa flows between the Narta Lagoon and the floodplains of the lesser Myzeqea, near Novosela, while another part of the territory of this municipality flows through the Lower Shushica valley, near Kota village.

The most important part of the river is the Vjosa estuary, in the vicinity of the Narta Lagoon. The lagoon is the second most important wetland and area for biodiversity and bird ecology in Albania after Karavasta, which hosts over 18 Natura 2000[16] habitats. Although not located within the boundaries of the Vjosa Wild national park, the delta is an integral and interconnected ecological part of the Vjosa watershed and river system. It is considered the most important in the entire Mediterranean region.

The stock of active enterprises in the municipality of Vlora registered around 5,986 units at the end of 2022 (excluding farmers). In structural terms, businesses are focused on providing services (around 84% of the total) and operate mainly in trade, accommodation and food services, other services. In 2022, enterprises active in providing services increased by around 5% or increased by 48 units. The stock of enterprises active in the production of goods at the end of 2022 registered around 936 business units.

| | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| **Total/Activities** | 6,108 | 6,194 | 5,562 | 5,986 |
| Producers of Goods | 1,431 | 1,586 | 888 | 936 |
| Agriculture, Forestry, Fishery | 710 | 852 | | |
| Industry | 436 | 437 | | |
| Construction | 285 | 297 | | |
| Producers of Services | 4,677 | 4,608 | 4,674 | 5,050 |
| Trade | 2,016 | 2,012 | | |
| Transportation & Storage | 288 | 292 | | |
| Accommodation & Food Services | 1,071 | 990 | | |
| Information & Communication | 78 | 82 | | |

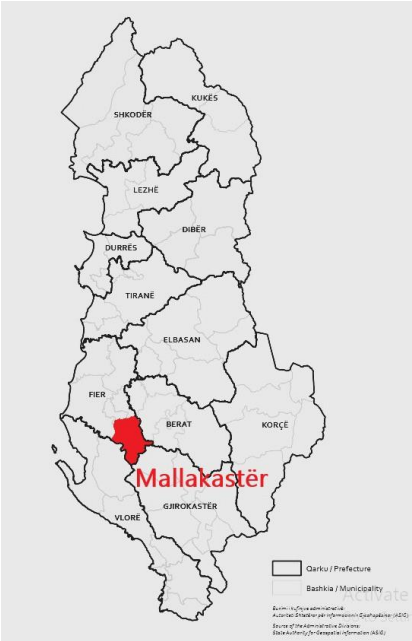
[16] https://ecoalbania.org/wp-content/uploads/2024/01/00-SIMPOZIUM_DELTA-VJOSE-TETOR-2023Leter-e-hapur.pdf

| | | | | |
|---|---|---|---|---|
| Other Services | 1,224 | 1,232 | | |

**Table 2:** Economic profile of Vlora Municipality © INSTAT

### 2.3.3 Mallakastra Municipality

- 9 A.U.: Ballshi, Dukas, Greshica, Aranitas, Hekal, Ngraçan, Kuta, Fratar, Selita
- Population: 15,838 (Census 2023)
- Area: 329.19 km$^2$




The territory of the municipality, located near the Vjosa riverbed, is characterized by a growing area planted with fruit trees, mainly olive trees and vineyards. The agricultural area, which is traditionally planted with field crops, has begun to decline gradually. In this municipality, the Vjosa widens up and the banks move away from each other, widening the valley and forming an impressive landscape.

The oil extraction industry is the main economic activity, but due to the geographical distance from the Park's borders, its production and processing does not affect its ecosystem. The construction of the new Levan-Tepelena motorway, several years ago, has increased the pressure of road transport on the banks of the Vjosa, approaching it at a relative distance: 1 – 2 km. Mallakastra has significant water reserves, which are provided by the aquifers of the Vjosa, through several pumping stations in Hekal, Kuta and Poçem, although part of this infrastructure is not operational.

The stock of active enterprises in the Mallakastra municipality registered around 460 units in 2022. In structural terms, businesses are focused on providing services (mainly in trade, accommodation and food services, other services).

In 2022, the stock of active enterprises in services decreased by around 1% or shrank by around 4 units. In the goods production sector, around 85 enterprises exercised their activity (+10% compared to the previous year). Small and medium-sized family businesses stand out, and very rarely large businesses, the latter of which do not exceed 1% of the total.

| | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| **Total/Activities** | 886 | 902 | 456 | 460 |
| Producers of Goods | 419 | 468 | 77 | 85 |
| Agriculture, Forestry, Fishery | 346 | 389 | | |
| Industry | 55 | 63 | | |
| Construction | 18 | 16 | | |
| Producers of Services | 467 | 434 | 379 | 375 |
| Trade | 220 | 201 | | |
| Transportation & Storage | 40 | 41 | | |
| Accommodation & Food Services | 104 | 98 | | |

| | | |
|---|---|---|
| Information & Communication | .. | 3 |
| Other Services | 101 | 91 |

**Table 3:** Economic profile of Mallakastra Municipality © INSTAT

### 2.3.4 Selenica Municipality

- 6 A.U.: Selenica, Armeni, Vllahina, Kota, Sevaster, Brataj
- Population: 9580 (Census 2023)
- Area: 561.24.24km$^2$


The town and villages of the Selenica municipality are located on the left bank of the Vjosa, just where the lower section starts. After leaving the Poçemi Gorge, the riverbanks spread out in width and the riverbed shows a meandering physiognomy. Part of the administrative units are located on the other side, in the Shushica Valley, positioned in its lower course.

Several mines of the bitumen, oil and gas extraction industry operate in the territory of this municipality. According to the National Agency of Natural Resources (NANR), 13 mines and plants for the extraction and processing of bituminous sand and gravel as well as limestone, operate in the Selenica municipality. In Vllahina, there is the Gorisht-Kocul resource field, in whose inventory there are about 150-160 active oil wells. They are spread over an area of 6 km$^2$, in which residents of the surrounding villages are employed. The rest of the economic activity is based on agriculture and livestock, without leaving aside viticulture and a large number of olive plots, which have increased significantly in recent years. Due to the industrial profile, part of the small cricks, but also the Vjosa, near this industry, suffers from relatively high, water pollution.

The stock of active enterprises in the municipality of Selenica marked around 177 units at the end of 2022 (excluding farmers). In structural terms, businesses are focused on providing services (mainly in trade, transport and storage). The stock of enterprises in services results to have shrunk by 5% or decreased by 6 units in 2022. The stock of enterprises active in the production of goods recorded 55 units in 2022, increased by 4 units compared to the previous year.

| | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| **Total/Activities** | 709 | 783 | 179 | 177 |
| Producers of Goods | 561 | 643 | 51 | 55 |
| Agriculture, Forestry, Fishery | 523 | 603 | | |
| Industry | 28 | 31 | | |
| Construction | 10 | 9 | | |
| Producers of Services | 148 | 140 | 128 | 122 |
| Trade | 67 | 61 | | |
| Transportation & Storage | 35 | 34 | | |

| | | |
|---|---|---|
| Accommodation & Food Services | 29 | 26 |
| Information & Communication | .. | .. |
| Other Services | 16 | 18 |

**Table 4:** Economic profile of Selenica Municipality © INSTAT

### 2.3.5 Himara Municipality


- 3 A.U.: Himara, Lukova, Vranisht
- Population: 8328 (Census 2023)
- Area: 571.94.km$^2$

Himara is the municipality that provides more than half of its budget from its income, up to 60%. This is thanks to the development of the tourism industry, especially in the last ten years. Livestock, fishing and olive groves are another source of income. The Municipality of Himara is distinguished by its diverse geographical character. The mild maritime climate on the western border of the Himara municipality changes to a mountainous climate on the other side of the territory, where the Administrative Unit of Vranisht is located. This Unit lieas along the Shushica river valley. The construction of a new road along this valley and the direct access to the riviera, has increased the opportunity and thus, the rapid tourism progress of Himara.

In an effort to build a supporting infrastructure to cope with the high number of visitors, the authorities are looking for new water sources to supply the touristic coast, which has caused a conflict with the inhabitants of the Shushica River, specifically over the Lëpusha Spring, that is planned to supply the Himara Water Supply. The diversion of natural resources from their places of origin, in rural areas, towards a new touristic destination, will inevitably lead to the loss of biodiversity, the compromise of ecological parameters and the violation of natural integrity of the Shushica.

The stock of active enterprises in the Himara municipality in 2022 registered about 612 units (excluding farmers). In structural terms, the business is oriented towards the provision of services (about 87% of the total stock), mainly in the “accommodation and food service” and “trade” sectors. In 2022, the number of service providers expanded by about 10% in annual terms or increased by about 48 business units. In the manufacturing sector, 79 business units operate.

| | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| **Total/Activities** | 735 | 763 | 554 | 612 |
| Producers of Goods | 284 | 330 | 69 | 79 |
| Agriculture, Forestry, Fishery | 227 | 270 | | |
| Industry | 37 | 40 | | |
| Construction | 20 | 20 | | |
| Producers of Services | 451 | 433 | 485 | 533 |
| Trade | 118 | 119 | | |

| | | |
|---|---|---|
| Transportation & Storage | 20 | 19 |
| Accommodation & Food Services | 254 | 242 |
| Information & Communication | 3 | 4 |
| Other Services | 56 | 49 |

**Table 5:** Economic profile of Himara Municipality © INSTAT

### 2.3.6 Memaliaj Municipality

- 6 A.U.: Memaliaj, Memaliaj Center, Luftinja, Buzi, Krahësi, Qesarat
- Population: 6578 (Census 2023)
- Area: 372.07km$^2$


In the territory of this municipality, the Vjosa leaves behind the canyons of Përmeti, Këlcyra and Dragoti and flows towards the middle section, creating an open valley on both sides of the banks, where a number of alluvial islands stand out. The riverbed passes near river plains exposed to erosion, especially in the Qesarat area. The river flows under the Griba mountain range, and the banks are surrounded by river terraces planted with numerous olive plantations.

The town of Memaliaj is known for its coal mine in the past, but now it is closed. Many residents have left and those who still live there are engaged in services or small businesses. Economic activity is related to agriculture and services. Part of the agricultural lands have been turned into pastures due to the fragmentation of plots. Other sources of income come from viticulture, collection of medicinal plants, river related tourism and historical and cultural tourism.

The stock of active enterprises operating in the Memaliaj municipality registered around 144 units at the end of 2022 (excluding farmers). In structural terms, businesses are concentrated in the services sector. In this sector, the stock of active enterprises registered around 117 units, increasing by around 7% in annual terms or increasing by 8 units. In the goods manufacturing sector, the stock of active enterprises at the end of 2022 registered 27 units (+3 manufacturing units).

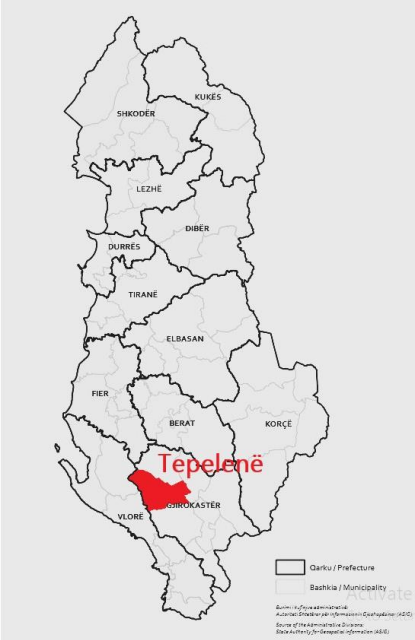
| | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| **Total/Activities** | 322 | 345 | 133 | 144 |
| Producers of Goods | 208 | 231 | 24 | 27 |
| Agriculture, Forestry, Fishery | 186 | 207 | | |
| Industry | 13 | 14 | | |
| Construction | 9 | 10 | | |
| Producers of Services | 114 | 114 | 109 | 117 |
| Trade | 47 | 46 | | |
| Transportation & Storage | 9 | 11 | | |

| | | |
|---|---|---|
| Accommodation & Food Services | 36 | 36 |
| Information & Communication | .. | .. |
| Other Services | 21 | 20 |

**Table 6:** Economic profile of Memaliaj Municipality © INSTAT

### 2.3.7 Tepelena Municipality

- 4 A.U.: Tepelena, Tepelena Center, Lopësi, Kurvelesh
- Population: 6761 (Census 2023)
- Area: 431.24km$^2$




Near the Tepelena town and around the confluence with the Drino River, the Vjosa river landscape is distinguished by the large flow and gravel and sand formed by the meandering river. The main economic activity is focused on agriculture, tourism, fishing and forestry. The collection of medicinal plants also provides income for a small part of the population. Important tourist resources include the Vjosa River, the Ali Pasha Castle, the Bënça Canyon, the Beçisht Bridge, the Nivica agrotourism and the Cold-Water Nature Monument.

The municipality of Tepelena with its 4 administrative units is affected or completely extended by the Vjosa national park, which includes the Drino, Bënça and Vjosa valleys.

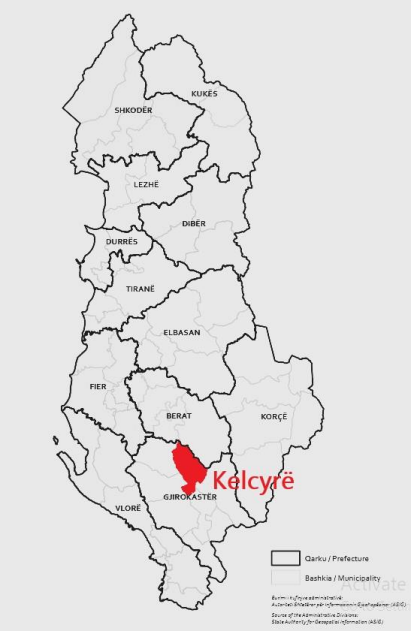
The stock of active enterprises in the municipality of Tepelena registered around 321 units at the end of 2022. In structural terms, businesses are focused on providing services (trade, other services, accommodation and food services). The stock of active enterprises in services registered around 260 units, around 5 units more than a year ago. In 2022, enterprises active in the production of goods recorded around 61 units (excluding farmers)

| | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| **Total/Activities** | 747 | 763 | 321 | 321 |
| Producers of Goods | 476 | 505 | 66 | 61 |
| Agriculture, Forestry, Fishery | 423 | 450 | | |
| Industry | 33 | 36 | | |
| Construction | 20 | 19 | | |
| Producers of Services | 271 | 258 | 255 | 260 |
| Trade | 129 | 121 | | |
| Transportation & Storage | 11 | 13 | | |
| Accommodation & Food Services | 61 | 56 | | |
| Information & Communication | 5 | 5 | | |
| Other Services | 65 | 63 | | |

**Table 7:** Economic profile of Tepelena Municipality © INSTAT

### 2.3.8 Këlcyra Municipality

- 4 A.U.: Këlcyra, Ballabani, Suka, Dishnica
- Population: 4400 (Census 2023)
- Area: 304.65km$^2$




The Këlcyra Gorge (from Këlcyra town up to Dragoti) is the final boundary of the upper course of the Vjosa river. The river leaves behind gorges and canyons, expanding its banks towards the river plains in the Memaliaj Valley. Economic activities in the Municipality of Këlcyra are related to agriculture, production of goods, forestry, fishing. There are also some industrial activities that take place in Këlcyra.

Këlcyra has always been distinguished for the high quality of its fruits and grapes and has been known as a centre for the production of raki and wine. It is one of the poorest municipalities along the Vjosa river flow.

The agri-processing industry is being seen as a priority in this area, strengthening ties with the regional development poles of Korça and Gjirokastra-Saranda. Finally, a number of agrotourism programs and activities are coming to life, promoting the rich natural, cultural and religious heritage.

In the east-southeast of the territory is located the Hotova-Dangëlli national park, which could encourage the growth of tourism businesses and the increase in the number of tourists. The Këlcyra Gorge reserves an impressive landscape, within which is located the abundant karst spring of "Black Water". At the exit of the Gorge, towards Tepelena, there are two monuments of engineering heritage: the Dragoti Bridge and the Lekli Bridge, built in the last century, during the Monarchy.

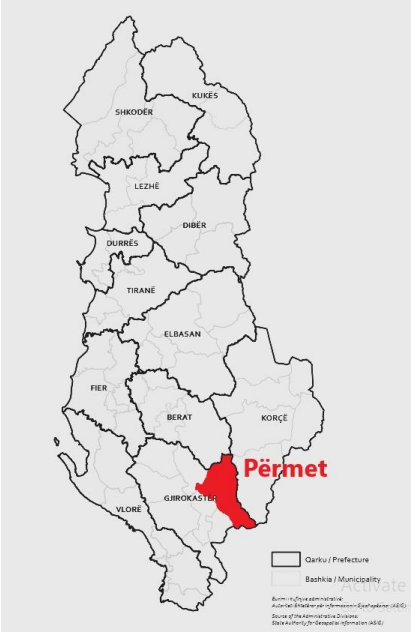
In the municipality of Këlcyra, there are about 134 active enterprises, a low number of businesses which significantly limits the fiscal capacity. In structural terms, businesses are focused on providing services (about 118 units). The number of service providers increased by 9% (or 10 units more) and are focused on the trade, accommodation and food services sectors. With the exclusion of farmers from the stock of active enterprises, in 2022 there are about 16 producers of goods.

| | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| **Total/Activities** | 376 | 391 | 126 | 134 |
| Producers of Goods | 260 | 282 | 18 | 16 |
| Agriculture, Forestry, Fishery | 220 | 261 | | |
| Industry | 18 | 17 | | |
| Construction | .. | 4 | | |
| Producers of Services | 116 | 109 | 108 | 118 |
| Trade | 57 | 55 | | |
| Transportation & Storage | 11 | 10 | | |
| Accommodation & Food Services | 31 | 31 | | |

| | | |
|---|---|---|
| Information & Communication | .. | .. |
| Other Services | 16 | 12 |

**Table 8:** Economic profile of Këlcyra Municipality © INSTAT

### 2.3.9 Përmeti Municipality




- 6 A.U.: Përmeti, Çarshova, Frashëri, Petran, Përmeti Center, Piskova
- Population: 7980 (Census 2023)
- Area: 601.95km$^2$

The Përmeti Municipality is located in the southeast of Albania and is the first municipality in whose territory the Vjosa Wild River National park stands. Along this territory and further, to Dragoti, the Vjosa maintains a longitudinal stability of the flow, which is complemented by gorges and steep gorges on the riverbanks.

The main economic activities in this municipality include agriculture, agri-processing, services, tourism and to a lesser extent fishing and construction. Based on the projected plan for the development of the territory, the Përmeti Municipality has identified agriculture, agri-processing and tourism as top 3 priorities.

Rafting in the surroundings of Përmeti and within the national park is growing rapidly and is offered professionally to visitors and locals. According to information from the NAPA, 1500-2000 boats are registered per year, mainly during the main season June-August (average: 17-22 boats per day). There are no regulations in force regarding a time limit for rafting, entry and exit points, conduct on the river (companies often set up camps on the gravel banks) or limitations of the number of boats on the river per day.

Unregulated water sports activities can lead to loss of vegetation, soil compaction, disturbance of existing water channels and disturbance of the aquatic fauna. This can lead to displacement or alteration of the spatial-temporal movement patterns of wildlife and affect the reproductive success of terrestrial breeding bird species that have occurred in the region.

In the municipality of Përmeti, the stock of active enterprises at the end of 2022 registered 399 units (excluding farmers). In structural terms, business is mainly concentrated in the service sector, mainly in trade, accommodation and food services. In annual terms, the stock of enterprises in services expanded by about 6% or increased by about 21 units. In the manufacturing sector, the stock of active enterprises for 2022 registered about 80 units (increased by 5 production units compared to the previous year).

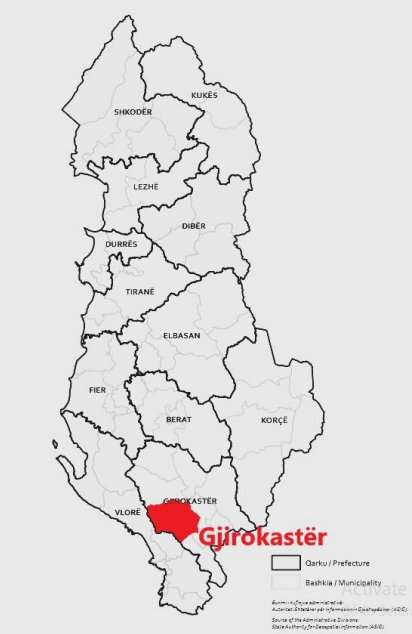
| | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| **Total/Activities** | 784 | 792 | 378 | 399 |
| Producers of Goods | 449 | 478 | 75 | 80 |
| Agriculture, Forestry, Fishery | 368 | 406 | | |

| | | | | |
|---|---|---|---|---|
| Industry | 57 | 56 | | |
| Construction | 24 | 16 | | |
| Producers of Services | 335 | 314 | 303 | 319 |
| Trade | 137 | 130 | | |
| Transportation & Storage | 22 | 20 | | |
| Accommodation & Food Services | 90 | 80 | | |
| Information & Communication | 4 | 5 | | |
| Other Services | 82 | 79 | | |

**Table 9:** Economic profile of Përmeti Municipality © INSTAT

### 2.3.10 Gjirokastra Municipality

- 7 A.U.: Gjirokastra, Cepo, Lazarat, Picari, Lunxhëria, Odrie, Antigonea
- Population: 23,270 (Census 2023)
- Area: 469.25km$^2$




This municipality is situated on both riverbanks of one of most prominent tributaries of the Vjosa Wild River National park: the Drino River. Unlike other tributaries of the Vjosa, the Drino River is notable for the beauty and charm of its riverbed along the lower course and not the upper one. The Drino River is located in a relatively flat and open valley, combined with gentle hilly terraces, beyond which rise mountains of medium height (300m-1500m), but which in some places reach peaks over 2000m. One of the Drino aquifer (the source of the Viroi) constitutes a powerful underground water source that supplies water to the main settlements of the Valley.

The centre of the municipality, the city of Gjirokastra: the characteristic stone houses, the bazaar and the fortress above the city, are part of the UNESCO Cultural World Heritage. Tourist activity has expanded recently, but it is limited, mainly to the Bazar Pass, near the Fortress, leaving aside outdoor tourism, an economic development potential, not appreciated enough. The rural area near the city is known for its livestock and high-quality livestock products.

A part of the Drino, when approaching the city (Gjirokastra), is extremely burdened by urban activities which have caused water pollution and damage to the landscape. The stock of active enterprises in the territory of the municipality of Gjirokastra at the end of 2022 registered around 1,269 units (+10 business units). In structural terms, the business is oriented towards the provision of services (88% of the total number of active enterprises), mainly in the “trade” and “accommodation and food service” sectors. In 2022, enterprises active in the production of goods registered around 153 business units (excluding the number of farmers).

| | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| **Total/Activities** | 784 | 792 | 378 | 399 |
| Producers of Goods | 842 | 908 | 148 | 153 |
| Agriculture, Forestry, Fishery | 696 | 765 | | |
| Industry | 114 | 114 | | |
| Construction | 32 | 29 | | |
| Producers of Services | 1,166 | 1,143 | 1,111 | 1,116 |
| Trade | 530 | 527 | | |
| Transportation & Storage | 81 | 84 | | |
| Accommodation & Food Services | 224 | 213 | | |
| Information & Communication | 17 | 15 | | |
| Other Services | 314 | 304 | | |

**Table 10:** Economic profile of Gjirokastra Municipality © INSTAT

## 2. 3.11 Libohova Municipality

- 3 A.U.: Libohova, Libohova Center, Zagoria
- Population: 2765 (Census 2023)
- Area: 248.24km$^2$


The Municipality of Libohova has the smallest territory within the boundaries of the Vjosa Wild river national park. By typology it can be considered a completely rural municipality that is distinguished by the number of small livestock and the variety of medicinal plants. The Libohova town has a panoramic position and is located east of the Drino Valley. The Zagoria River flows through the territory of this municipality, which, although not part of the park, is an integral part of the Vjosa ecosystem. Moreover, the Zagoria Valley is part of the Network of Protected Areas under category IV, Natural Park, creating a natural connecting area with the Vjosa WRNP.

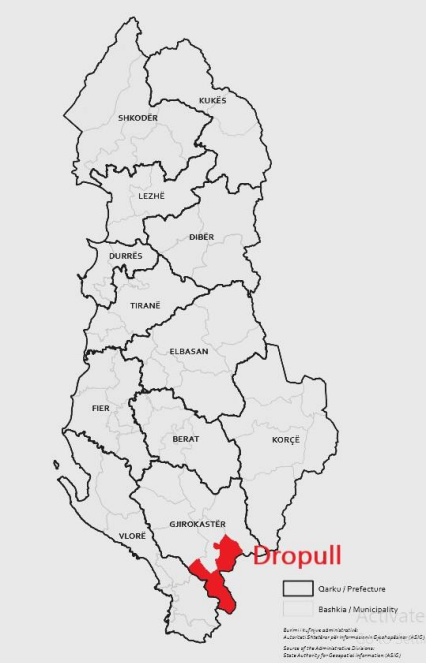
In the territory of the Libohova municipality, 52 active enterprises operated at the end of 2022 (excluding farmers). In structural terms, businesses are focused on providing services, specifically trade and other services. The stock of active enterprises in services marked an annual increase of about 29% or increased by 3 service units. The stock of active enterprises in the production of goods recorded 9 units at the end of 2022.

| | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| **Total/Activities** | 178 | 193 | 50 | 52 |
| Producers of Goods | 127 | 147 | 7 | 9 |
| Agriculture, Forestry, Fishery | 122 | 142 | | |
| Industry | .. | 3 | | |
| Construction | .. | .. | | |
| Producers of Services | 51 | 46 | 43 | 43 |
| Trade | 17 | 16 | | |
| Transportation & Storage | 11 | 9 | | |
| Accommodation & Food Services | 11 | 10 | | |
| Information & Communication | .. | 11 | | |

**Table 11:** Economic profile of Libohova Municipality © INSTAT

### 2.3.12 Dropulli Municipality

- 3 A.U.: Lower Dropulli, Upper Dropulli, Pogoni
- Population: 8259 (Census 2023)
- Area: 466.67km$^2$




The Dropulli area, with about 5600 ha, is one of the most important agricultural areas in the country with a high production capacity. But the Dropulli region is also an important ecological region with rich and unexploited terrain, which can offer special incentives for a special way of vacation and entertainment.

The Dropulli region also offers many other natural activities in all seasons of the year and especially in spring. The visitor can practice all three types of hiking in order to enjoy the curiosities of nature, which are numerous and amazing, such as: the natural monument "Sotira Fir", that includes the amazing Cokli gorges in Selio, the Havo gorge in Sotira, as well as the gorge with the same name in Kosovica. Through the elevated network of trails, itineraries of free walking in nature are offered, combined with the exploration of rare wild and medicinal plants of the area, but also with the observation of wildlife in general. The Municipality of Dropulli is rich in archaeological sites and cultural heritage, with Byzantine and post-Byzantine churches, which enrich the tourist itinerary with historical, cultural and religious content, attractive to every visitor.

In the municipality of Dropulli, a small number of businesses of about 196 units are operating at the end of 2022. In structural terms, active enterprises are focused on the provision of services (about 79%) and the production of bottled water and soft drinks and less in the extractive industry (non-metallic quarries). In the service sector, the number of active enterprises is found to have decreased by about 1% (-1 unit) at the end of 2022. In the manufacturing sector, 2022 recorded about 42 businesses (excluding farmers.

| | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| **Total/Activities** | 306 | 306 | 197 | 196 |
| Producers of Goods | 156 | 158 | 42 | 42 |
| Agriculture, Forestry, Fishery | 111 | 117 | | |
| Industry | 44 | 41 | | |
| Construction | .. | . | | |
| Producers of Services | 150 | 148 | 155 | 154 |
| Trade | 71 | 76 | | |
| Transportation & Storage | 7 | 12 | | |
| Accommodation & Food Services | 40 | 38 | | |
| Information & Communication | 5 | 5 | | |
| Other Services | 27 | 27 | | |

**Table 12:** Economic profile of Dropulli Municipality © INSTAT

# 3. METHODOLOGY

The methodology follows the same research procedure followed in the previous study (Stakeholder Engagement and State "0" Report, December 09th, 2022), conducted by Olsi NIKA & Besjana GURI), but focuses on identifying pressures that affect the state of the river, with the aim of mitigating, eliminating or avoiding them from the park. The information is updated until August 31st, 2024.

The work to collect information was carried out during July-August (2024). The information search was combined with conducting a field survey; with obtaining official information through agencies that administer and own natural resources and environmental information. This has been the first phase of the work.

During the second phase, mainly in the second half of August and onwards, the clustering, assessment and analysis of the collected information was carried out. The methodology followed for conducting the assessment and drafting the report was based on Law No. 10 440, dated 7. 7. 2011, as amended "On Environmental Impact Assessment".

The third phase included the preparation of the products: the first draft of the assessment report; the final report, accompanied by the analysis of pressures on the ecosystem; mapping of hotspots; extracts compiled for public use; multimedia materials (photos and videos) which identify a high degree of impact from socio-economic pressure on the Vjosa riverbed, its biodiversity and natural habitats.


**Figure 3:** Progress of processing the collected information © A. Rama

## 3.1 Data Collection

The collection of information to identify pressures was carried out in four ways: a) research and field visits, along the entire territory of the declared a national park; b) collecting information from datasets with data, published online; c) obtaining official information, by sending requests for information to public authorities; d) control and inspection by authorities, which included inspection by the National Environment Agency (NEA), the National Agency for Natural Resources (NANR) of activities that were equipped with environmental or mining permits), as well as monitoring and banning the extraction of river gravel by the National Agency for Protected Areas (NAPA).

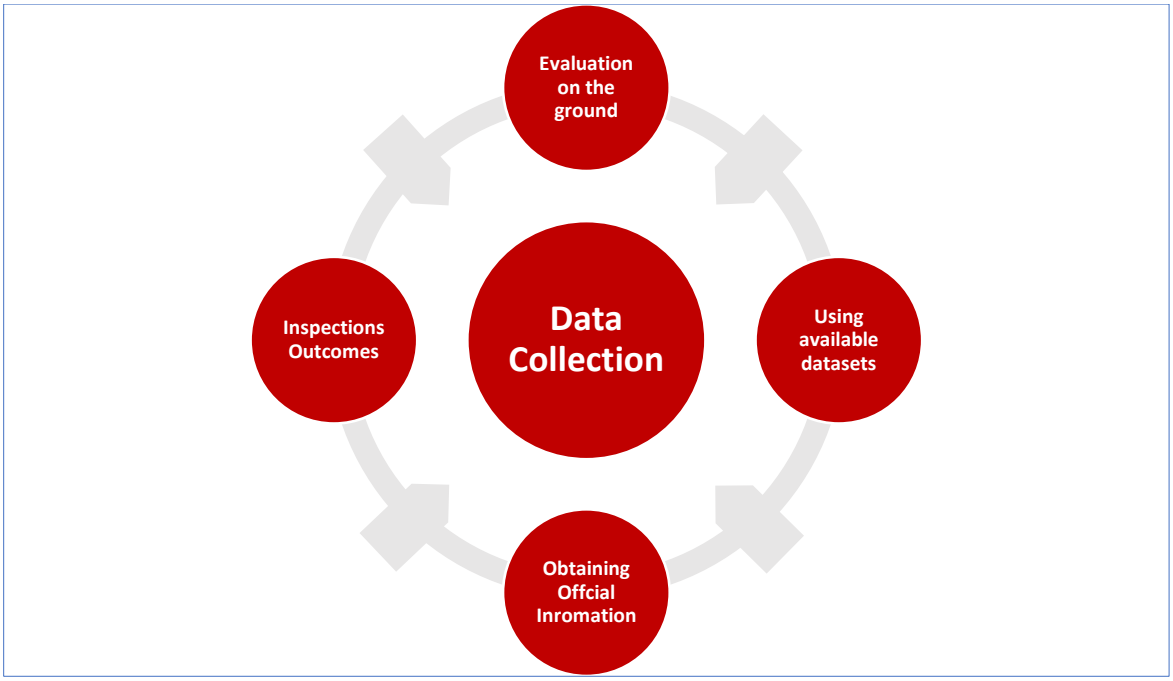



**Figure 4:** Information collection cycle © A. Rama

## 3.2 Clustering and Data Processing

The pressures were identified and classified. The classification concerns the identification of the same typology of pressures, generated by the exercise of socio-economic activities, that have the ability to change the basic conditions of the environment, with the consequent damage to the values on which the well-being and health of natural and social habitats are based. Thus, the most important pressures generated by socio-economic activities, identified, were categorized in 6 clusters as follows:

- **Mining and Extractive Industry** (bitumen, oil, stone, river gravel, water)
- **Urbanization and community activity** (economic entities, waste (urban/inert/industrial), urban wastewater and sewage discharges).
- **Artificial River Infrastructure** (riverbank protection, irrigation canals and wells,
- **Tourism** (service infrastructure and accommodation)
- **Silviculture**
- **Aquaculture**

From the totality of the information collected, "hot spots" were taken into consideration which were located no further than 1 km from the riverbank, including some others, where due to the possible impact, either on the state of water quality or on the landscape (mainly quarries), they were positioned beyond 1km distance.

**Figure 5:** Stone processing plant, 100m from the riverbanks. Lower Shushica © A. Rama

## 3.3 Interpretation and Data Analysis

### 3.3.1. Possible consequences on natural elements

| | |
|---|---|
| Soil | •Soil quality degradation<br>•Erosion |
| Underground Waters | •Pollution<br>•Decrease of water sources |
| Surface Waters | •Sedimentation in the water bodies<br>•Alteration of the flow morphology |
| Biodiversity and Habitats | • Habitat degradation due to construction<br>• Degradation of the Reparian zones<br>• Habitat loss/Degradation of Flora and Fauna |
| Air Quality | •Dust emissions<br>•Gas emissiona |
| Landscape | •Visual Impact<br>•Landscape Degradation |

**Figure 6:** Impacts of pressures according to environmental elements

The pressures generated by the applied of socio-economic activities have the potential to negatively impact the physical and biological environment. Below is a list of the most

important potential effects on natural elements, under the pressure of socio-economic activities:

### 3.3.2. Impact Rate

Further, the identified pressures were Entityed to assessment. The basic criteria in determining an impact (consequence of a pressure) is the possibility that an event (unplanned) has the ability to directly or indirectly cause changes in the basic conditions of natural elements. The degree of change, its magnitude, is the result of the identification and assessment of pressures, in this case, the identification and assessment of socio-economic activities in the river ecosystem of the park, or in the area next to it. The scale of the impact is the result of the interaction of pressures with natural elements (land, water, air, biodiversity and landscape).

While the weight or significance of the impact is the result of this interaction under the following conditions.

- Sensitivity, or importance of the receptor (physical and biological)
- Type of pressure
- Magnitude/size of the pressure

#### *3.3.2.1. Natural Elements Sensitivity*

The sensitivity of an element will depend on the stability and characteristics of the receptor, the reversibility (of the physical receptor), i.e. the effort required to return to baseline conditions (e.g., reversible in the long term, or irreversible), in terms of its fragility, adaptability and importance/value. For physical and biological receptors, sensitivity can be assigned low, medium, or high. For socio-economic receptors, sensitivity is based on the ability of individuals to maintain their livelihoods and health (including spiritual health). The sensitivity of a receptor can be assessed as negligible, low, moderate, or high.

| **Sensitivity Assessment Criteria** | **Definition** |
|---|---|
| High | A large number of individuals or communities have minimal resources to adapt to external changes and this creates significant vulnerability with regard to basic food security and shelter, with the potential for significantly deteriorated living conditions and/or health status in the long term. |
| Moderate | The receptor has a low capacity to absorb changes without fundamentally altering its character; it is of high environmental or social value, or it is of national importance. Individuals and the wider community have limited resources to adapt to external changes. Adaptation will be limited and slow, with the potential for deteriorating living conditions and/or health status in the medium term. |

| | |
|---|---|
| Low | The receptor has a moderate capacity to absorb changes without significantly altering its character; it has a social environmental value or is of regional importance. Individuals and the wider community have resources and systems in place to partially adapt to the changes, but impacts on the livelihoods, well-being or health of community members will be apparent in the short term. |
| Negligible | The receptor is tolerant of change/its character is not damaged; it has low environmental or social value, or it is of local importance. Individuals and the wider community have ample resources and systems available to readily absorb changes without risk of significant impacts on the livelihoods, well-being or health of community members. |

**Table 13:** Definition of Sensitivity Criteria

### *3.3.2.2. Type of Impact*

Impacts (in the sense of the interaction of energy with physical elements) are classified according to the following terminology:

| Type of Impact | Criteria |
|---|---|
| Useful (positive) | Influences that, in the author's opinion, have a beneficial effect on receptors |
| Unfavourable (negative) | (Negative) impacts that, in the author's opinion, have a negative impact on receptors |
| Permanent | Impacts that may cause an irreversible change in the underlying environment or that are persistent |
| Temporary | Impacts that last only for a limited period, or that can be neutralized due to natural environmental recovery |
| Direct | Impacts affecting directly the par area |
| Indirect | Indirect impacts that are not directly caused by socio-economic activities, but are a consequence of a primary effect |

**Table 14:** Categories of the impact types

### *3.3.2.3 Impact Magnitude*

The degree of impact is directly proportional to the degree of change from baseline conditions of natural elements and is determined through consideration of the following factors:

- Spatial extent (distance, location or positioning);
- Duration, i.e. how long the pressure will last (e.g. permanent or temporary);
- Frequency, i.e. how often the pressure will occur or recur (e.g. a one-time, periodic or ongoing event);

The magnitude of the impact can be assessed as negligible, low, moderate or high and is expressed as follows:

| Impact Range | Criteria |
|---|---|
| High | Total loss or major changes in natural elements of baseline conditions, due to activities. |
| Moderate | The loss or alteration of one or more of the main elements, or characteristics of the underlying conditions as a result of pressure so that the character or composition of the underlying condition is materially altered. |
| Low | Minor displacement from baseline conditions due to the project. Changes may be noticeable but not material; the fundamental character and composition of the baseline would be similar to the baseline situation. |
| Insignificant | Pressure causes negligible changes. The change is almost unnoticeable, approximating a "no change" situation. |

**Table 15:** Categories of the Impact Range

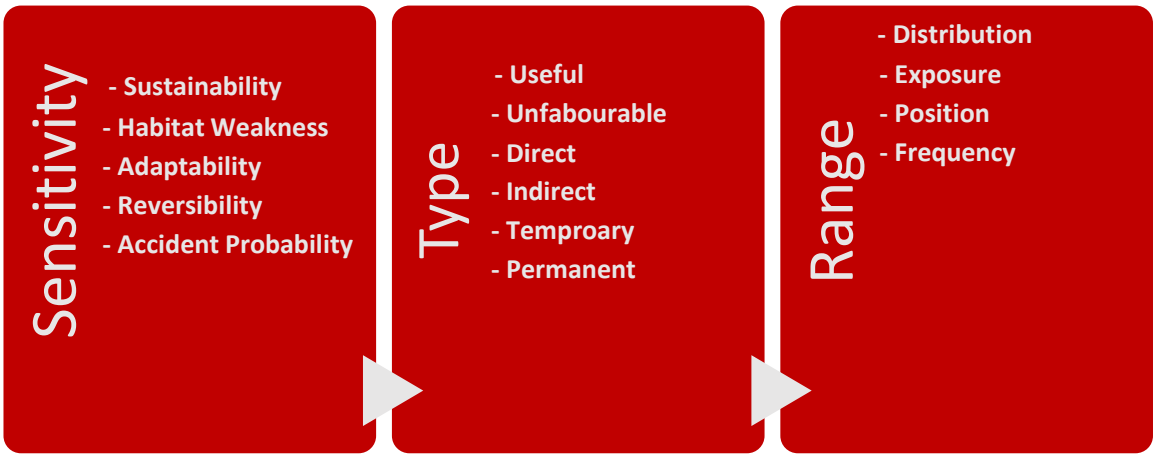



**Figure 7:** Factors of Impact Scale

### 4.3.3. Assessment of the impact significance

To achieve the overall impact assessment (impact scale), impacts on natural elements from factors such as size, sensitivity, or vulnerability of receptors (in accordance with the assessment criteria, see above) will be integrated together, combining them in a table. The tabular presentation makes the impacts of pressures more readable and understandable. For example, assessments of the size of an impact with assessments of the sensitivity and vulnerability with which the natural element reacts will determine the significance of the impact. Specifically, if a ten-year mining activity, with a high exploitation capacity, takes place near the riverbank, the significance of the impact is

assessed as strong. If the same activity, but with a light intensity of exploitation, for the same distance from the coast, it will be assessed as *moderate*.

Of course, as long as there is no definition of the significance of impacts, the assessment will remain Entityive, but nevertheless, it is not *a priori*, but is based on the data and information collected, on the literature and expertise in the field, as well as on the standards on which this methodology is built.

Thus, by combining in a common table, the results of all factors, we will understand whether an impact is significant or not, and if so, what is the effect of its significance. This principle will be expressed in an integrated manner, as follows:

| | | **Sensitivity/Resource Importance/Receptor** | | |
|---|---|---|---|---|
| | | Low | Medium | High |
| **Impact Range** | **Negligible** | Negligible | Negligible | Negligible |
| | **Low** | Negligible | Light | Moderate |
| | **Medium** | Light | Moderate | Strong |
| | **High** | Moderate | Strong | Strong |

**Figure 8:** Assessment of the impact significance

Matrica e mëposhtëve tregon rëndësinë e ndikimit nga vlerësimi i bashkëveprimit të presionit ndaj të gjitha elementeve natyrore.

| **Receptor** | **Possible Consequences** | **Receptor Sensitivity** | **Type of Impact / Expansion** | **Magnitude** | **Significance** |
|---|---|---|---|---|---|
| **Soil** | Quality degradation | | | | |
| | Soil Erosion | | | | |
| **Underground Water** | Water pollution | | | | |
| | Reduction of waterflow in sources | | | | |
| **Surface Water** | Water pollution | | | | |
| | Sedimentation | | | | |
| | Waterflow Alteration | | | | |
| **Biodiversity** | Habitat Loss | | | | |
| | Degradation by dust cover | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | Biota Degradation | | | | |
| | Riparian Habitats Degradation | | | | |
| **Air Quality** | Dust Emissions | | | | |
| | Gas Emissions | | | | |
| **Landscape** | Visual Impact | | | | |
| | Landscape Degradation | | | | |

**Table 16:** Summary assessment of the impact on natural elements

| | | | | |
|---|---|---|---|---|
| **Sensitivity**: | negligible (**N**); | low (**L**); | moderate (**M**); | high (**H**). |
| **Type of impact**: | indirect (**I**); | direct (**D**); | temporary(**T**); | permanent (**P**). |
| **Magnitude**: | negligible (**N**); | low (**L**); | moderate (**M**); | high (**H**). |
| **Significance**: | negligible (**N**); | low (**L**); | moderate (**M**); | high (**H**). |

# 4. ANALYSIS OF PRESSURES

## 4.1. Pressures from Mining and Extractive Industry

This category of pressures is divided into several subcategories that include Bitumen and Limestone extraction; River Gravel; Oil and Water.

### 4.1.1 Bitumen and limestone

Mining and quarries pose a threat to the aquatic biodiversity of the river. Discharges of excavated materials profoundly affect the ecological features of the river and its biota, as they contain, among other compounds, heavy metals. From a geological point of view, the Vjosa valley possesses mineral-rich structures and oil deposits. Bitumen reserves near the Selenica town and slab limestones along the Përmeti stand out. A number of quarries operate near Drino, downstream of Gjirokastra city.

The National Agency of Natural Resources (NANR) was asked for a list of mines (quarries, gravel mining) that apply legal activity in each of following municipalities: Fieri, Mallakastra, Memaliaj, Tepelena, Këlcyra, Përmeti, Gjirokastra, Vlora, Selenica, Libohova, Dropulli. Furthermore, the requests included the information gain on the number of quarries, distribution by administrative units, name of the


**Figure 9:** Distribution map of the most important mines and quarries near the banks of the Vjosa River

entity, type of mineral, number of the permit, date of issuance and deadline for the period from January 1st, 2023, to July 31st, 2024, as well as the list of entities whose mining permits have been revoked, along with the reason for the revocation. The total number of mines was 43 and they are all classified as non-metallic. The list provided by NANR can be found in Annex 11.

But the research was combined with field observation, which resulted in the increase of the collected information, the analysis of which is presented as follows,

The Selenica Municipality has the highest number, with 13 mines, 8 of which are located near Selenica town and exploit bitumen mineral and bituminous gravel. They are concentrated in an area of about 3.4 $km^2$ east of the city, where the exploitation points approach up to 100 m to the riverbank. Five other mines (Limestone) are located on the Brataj mountain and are divided between Lepenica and Brataj. These are located at a relatively large distance from the Shushica River, but those of Lepenica have a more visible impact on the landscape, especially during explosions, where a large cloud of smoke rises into the air, which is noticeable from the valley below.

At the Vlora Municipality are located 7 mines (Limestone), 4 of which are located near the village of Kanina, which have severely damaged the physical terrain and the landscape nearby. But these do not have any direct impact on the Vjosa, nor on the landscape, as they are located several kilometres away from the Shushica valley. The Sherishta mines are more problematic, one of which ("D & D Inert sh.p.k"), has been allowed to operate on the Shushica side, near the village of Drashovica, since 2022.

From the verification on the ground, the site resulted closed (although the machinery and equipment were still within the fenced area), but formally the permit is still active at the National Licensing Center (NLC). This company, in 2024, was allowed to exploit another nearby territory, deeper, causing a high impact, especially on the landscape.

Another river section that suffers the impact of quarries is from Këlcyra to Përmeti. The direct impact, due to the proximity to the riverbed, is combined with the impact on the landscape, especially for those quarries that are somewhat displaced, but being at a height can be easily seen from below. A number of stone fractionation sites are observed in the river fields near this section.

Based on the identification of pressures, their extension in space and time, proximity to the banks, sensitivity to environmental receptors, etc., the following table lists the 10 mines that have the greatest impact on the Vjosa riverbed.

| No. | Pressure | Coordinates | Distance from bank | Impact | Impact Consequences | Recommendation |
|---|---|---|---|---|---|---|
| 1 | "Bitumen processing site" | E 470090<br>N 4490013 | 100 m | High | soil quality degradation/water pollution/sedimentation/riparian degradation/visual impact | closure and rehabilitation of the terrain (coasts) |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | “Selenica Bitumen SHA” | E 469884 N 4489352 | 950 m | High | dust emissions/gas emissions/visual impact/landscape degradation | since at a distance of about 1km, the possibility of monitoring should be seen, and a rehabilitation program should be required. Mineral exploration and extraction should not be allowed towards the riverbanks. |
| 3 | “D&D Inert shpk” | E 463960 N 4480153 | 60 m | High | dust emissions/visual impact/riparian degradation/landscape degradation | closure and rehabilitation of the terrain (riverbanks) |
| 4 | “Selenica bitumen” | E 470241 N 4489350 | 550 m | High | dust emissions/gas emissions/visual impact/landscape degradation | The implementation of the rehabilitation program should be required. Mineral exploration and extraction should not be allowed towards the riverbanks. |
| 5 | “Mineral Bitumen shpk” | E 469469 N 4489028 | 450 m | High | dust emissions/gas emissions/visual impact/landscape degradation | The implementation of the rehabilitation program should be required. Mineral exploration and extraction should not be allowed towards the riverbanks. |
| 6 | “Balkan Mineral Invest shpk” | E 471636 N 4488869 | 150 m | High | soil quality degradation/water pollution/sedimentation/riparian degradation/visual impact/dust emissions | closure and rehabilitation of the terrain (riverbanks) |
| 7 | “Quarry” | E 517689 N 4462866 | 300 m | Moderate | visual impact/dust emissions | The implementation of the rehabilitation program should be required. Mineral exploration and extraction should not be allowed towards the river banks and the possibility of gradual |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | closure should be considered. |
| 8 | “Quarry” | E 518067<br>N 4462496 | 500 m | Moderate | visual impact/dust emissions | The implementation of the rehabilitation program should be required. Mineral exploration and extraction should not be allowed towards the riverbanks and the possibility of gradual closure should be considered. |
| 9 | “Quarry” | E 519732<br>N 4461233 | 450 m | Moderate | visual impact/dust emissions | The implementation of the rehabilitation program should be required. Mineral exploration and extraction should not be allowed towards the riverbanks, and the possibility of gradual closure should be considered. |
| 10 | Quarry “Eral” | E 499317<br>N 4456922 | 160 m | Moderate | Visual Impact | To be rehabilitated, as it appears to be inoperative. |

**Table 17:** High-impact mines and quarries

**Figure 10:** Bitumen Mining near Selenica © Artan Rama

The full list of mines and quarries near the Vjosa riverbed and its tributaries can be found in Annex 3.

The highest pressure is found in the Selenica-Poçem section, which refers to the bitumen mines near Selenica. The importance of the impact of pressures on natural elements resulted from moderate to high. The most affected environmental elements from the survey resulted:

- Landscape (visual impact/degradation)
- Biodiversity (biota degradation/riparian degradation)
- Soil (soil quality degradation/erosion)
- Water (groundwater pollution)

The survey showed that the characteristics of the mines can change the features of the landscape, causing negative visual impact for the residents, tourists or casual passers-by. The lack of a vegetative layer of soil, eroded banks and the presence of mineral dumps created by slag thrown along the banks, due to the lack of management of industrial waste or excavation materials, were also evidenced. Some of the dumps were located on the western bank of the Vjosa, where the flow passes near Selenica.

As part of the observations, the habitat in which the mines and quarries operate was assessed. In addition to the bitumen mines, in the vicinity of the city of Selenica, near plots with alluvial typology, there are a number of dams and embankments set to protect the banks from erosion. Their presence may increase the cumulative effect to the detriment of the alteration and erosion of the banks. Mining activity has a cumulative effect on both groundwater and surface waters, especially when activities are carried out near the coast. In the Përmeti Valley (Këlcyra-Përmeti), the degree of impact of mining activities (limestone and siliceous sandstone) on natural elements decreases, but continues to have a significant visual impact, due to the persistence of high scenic values around it.

### 4.1.2 Pressures from river gravel mining

The extraction of river aggregates (gravel extraction) is related to the intensity of the extractive and processing industry, which is active and distributed throughout the entire course of the National park. The consequences of this activity are mainly visible near the banks and the riverbed. These hotspots are located far from populated areas and at a distance from each other, causing visual impacts and landscape degradation to a *moderate degree*, but depending on the physical characteristics, distance from the riverbed and the features of the landscape in which they are located. The open roads for the deposit of gravel (over a 30 years-period) have increased the damage. Other additional impacts are also caused by the lack of management of construction waste, from which small hills have been created on the surface, damaging riparian vegetation, but others, with a greater impact, have been placed directly in the riverbed.

Visual impacts are closely related to the scenic values (“beauty” of the landscape) and the frequency of viewing of the affected area. (Natural) visual barriers – mountain relief, canyons and surface cover can limit the view to narrow sectors along river and stream courses, enabling them to maintain their scenic potential. Field observation showed that

most of the plants and activities for gravel extraction and processing are active, throughout the territory of the National park. Their full list is found in Annex 4.

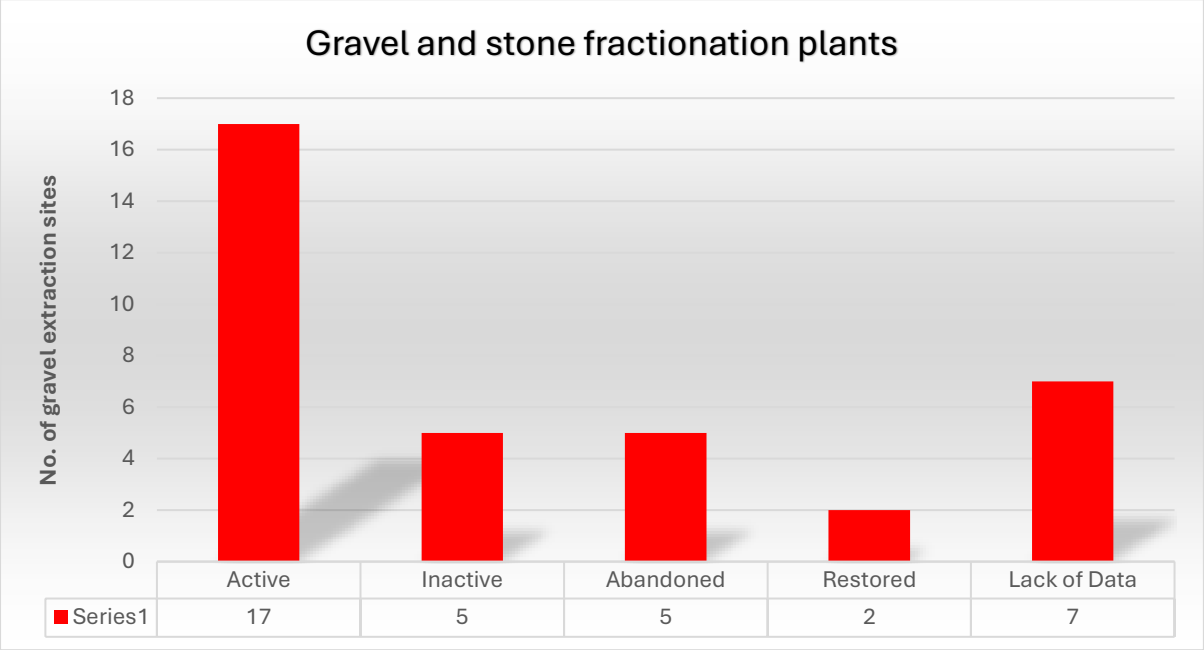



**Figure 11:** Number of plants and assessment of their state during the inspection.

The table below lists the pressures that have the highest impact in the subcategory "River gravel". The full list of pressures from river gravel extraction can be found in Annex 4.

| No. | Pressure | Coordinates | Distance from bank | Impact | Impact Consequences | Recommendation |
|---|---|---|---|---|---|---|
| 1 | "Large gravel extraction pit" | E 459886 N 4496699 | 190 m | Moderate | soil quality degradation/riparian degradation/visual impact | closure and rehabilitation of the terrain |
| 2 | "Abandoned gravel deposit" | E 461067 N 4495609 | 70 m | Low | Visual Impact | closure and rehabilitation of the terrain |
| 3 | "Excavation, gravel extraction" | E 476524 N 4485039 | 0 m | High | visual impact/landscape degradation | closure and rehabilitation of the terrain |
| 4 | "Cobial" | E 501057 N 4464793 | 200 m | High | dust emissions/visual impact/landscape degradation | closure and rehabilitation of the terrain |
| 5 | "Inert materials processing" | E 525985 N 4458465 | 50 m | High | dust emissions/visual impact/landscape degradation | closure and rehabilitation of the terrain |
| 6 | "Material extraction" | E 463526 N 4487540 | 50 m | High | sedimentation/riparian degradation/visual impact/dust emissions | stop extracting, closing and riverbed rehabilitation |
| 7 | "Stone processing, inert extraction" | E 462855 N 4487289 | 50 m | High | sedimentation/riparian degradation/visual impact/dust emissions | stop extracting, closing and riverbed rehabilitation |

**Table 18:** High impact aggregate fractionation plants

#### *4.1.2.1 List of NAPA*

The National Agency for Protected Areas (NAPA) was asked to provide a list of economic entities responsible for the creation and installation of river gravel hotspots, piles of inert materials near the banks of the Vjosa River and its tributaries. NAPA provided a list of only 16 activities, defined as inappropriate, mainly fractionation and gravel extraction, accompanied by a short description, which included the names of the entities, the location of the coordinates in the Albanian Geodetic Reference Framework (AGRF) system, as well as a short quote on verbal agreements, where the companies agreed with the state authority to voluntarily close the activities of extracting and processing inert materials from the river. According to the list, it is noted that the activities monitored by NAPA are located only in one section of the river: from the Çerem village in Kafaraj (lower section of the Vjosa) to the Shkoza village (middle section). For the rest of the river and its tributaries, NAPA did not provide any data.

NAPA was asked to explain on what criteria it had limited the monitoring of activities to only gravel extraction and processing plants, leaving aside other economic activities that could potentially affect the state of the river water quality, but it did not respond.

In addition to the total monitoring of the Vjosa (together with the tributaries: Shushica, Bënça, Kardhiqi and Drinos), a verification of the list of activities monitored by NAPA was also carried out. A total of 13 activities were monitored in the field. One activity was not checked, while two activities resulted without geospatial references.

It was noted that most of the hotspots reported by NAPA had been abandoned for a long time and some of them had not been active for years, which was also confirmed by local residents that were asked during the on-the-spot inspections, but was also observed through direct observation, where a layer of vegetation had covered some of the surfaces of the aggregate deposits listed by NAPA. For some hotspots, it resulted in a “false alarm”, as no aggregate accumulation or traces of gravel extraction were observed at the given coordinates.

A few businesses had kept their promises: they had removed their machinery and closed their activities. Others were far enough away to cause any potential impact on the riverbed.

However, the few activities (16 in total) selected and monitored by NAPA resulted inactive on the ground and some of the hotspots were in the process of being rehabilitated. The impact level can be considered “low”. The most affected receptor is the landscape (landscape degradation/visual impact). The list of gravel and stone fractionation plants, submitted by NAPA, is found in Annex No. 1.

**Figure 12:** Stone processing plant, Këlcyra-Përmeti © A. Rama

### 4.1.3 Oil extraction

In addition to open-air mining, part of the extractive industry in the Municipality of Selenica is also the exploration and production of hydrocarbons, which is represented by the oil field in the Gorisht-Kocul-Amonica and Karbunarë area, located between the rural area of the Vjosa Valley (east) and the Shushica Valley (west). Of these, the Gorisht-Kocul area deserves attention with over 150 active wells, with depths from 700 m to 1500 m, distributed over an area of 6 $km^2$, where the closest point of industrial pressure to the riverbed is located at a distance of 1300 m from the Vjosa river near Poçem.

### 4.1.4. Water abstraction

By nature, these types of pressures are associated with a number of factories that produce bottled water and beverages and are located mainly along the Drinos Valley in its upper course (Dropulli Municipality). The enterprises are focused on the production of bottled water and soft drinks with high capacity, which causes the depletion of groundwater resources. The Drinos Valley constitutes a powerful source of groundwater for the supply of the local population with drinking water and for irrigation purposes. Other similar pressures are located in two different locations: the company “Bevcom shpk” that produces bottled water, in the picturesque gorge of Këlcyra and the project of Himara Municipality water supply with the planned intake at the Lepusha spring in the headwaters of Shushica. Below is the list of the factories.

- “Himara water supply”, on the riverbank. Located at coordinates E 483438 N 4449636.
- “Bevcom shpk”, Trebeshina water factory, 70 m from the Vjosa riverbank. Wter abstraction is allowed up to 6l/s. Located at coordinates E 513225 N 4462526.
- “Tepelena Water”, production and packaging factory. 80 m from the Drino riverbank. It is allowed to use, up to 5l/s. Located at coordinates E 505221 N 4457831.
- “Living Water”, (probably for storage, because the production factory is in Sheper in Zagoria). 950 m from the Drino river. Located at coordinates E 517527 N 4430354.
- “Fresh Company”, beverage factory, 900 m from the Drino river. Located at coordinates E 520372 N 4426648.
- “Alfa SHA”, beverage factory, Pepsi Albania, 1200 m from the Drino riverbank, but has a high production capacity. Located at coordinates E 524247 N 4426192.
- “Gjirofarma”, dairy products. 650 m from the Drino riverbank. Located at coordinates E 527556 N 4420507.
- “Elka”, beverage factory, 160 m from the Drino riverbank. Located at coordinates E 529124 N 4418679.
- “Agna Group”, beverage factory (Amstel), 130 m from the Drino riverbank. Located at coordinates E 529363 N 4418367.

## 4.2. Pressures from Urban Activities

This category of pressures is divided into several subcategories: pressures from urban waste disposal; pressures from inert material disposal; pressures from domestic water discharge and sewage discharge; pressures from the exercise of economic activities.

### 4.2.1. Pressures from urban waste disposal

Eleven municipalities, in whose territory the Vjosa and its tributaries flow, were requested to provide data on urban waste: quantity, landfills, structures and management organization. More specific and supplementary requests regarding them were also sent to the Ministry of Tourism and Environment (MoTE) and the National Environment Agency (NEA).

From the data obtained, it results that the municipalities along the Vjosa do not generate large volumes of waste, compared to the rest of the country, where the large cities are located. Moreover, the landfills of Vlora and Fieri, two of the largest cities in the basin, are equipped with environmental permits from the NEA and are moving towards integrated waste management. The landfills of other municipalities do not have environmental permits. At least, the landfills of four municipalities directly affect the quality of the waters of the Vjosa and its tributaries.

Waste collection has increased in the last decade, with an average of one ton of waste not being collected for every three tons generated. Many villages are not covered by the urban waste collection service, dumping their generated waste in the Vjosa river or in the little torrents that flow to the Vjosa. Only 1/3 of municipalities have urban waste management plans. Despite being rural in nature, waste composting is absent in all municipalities in the Basin.

The table below lists the pressures that have the highest impact in the subcategory "Urban waste disposal". The full list of pressures from urban waste disposal can be found in Annex 5.

| No. | Pressure | Coordinates | Distance from bank | Impact | Impact Consequences | Recommendation |
|---|---|---|---|---|---|---|
| 1 | "The stable pit-Dushku Pass" | E 468213 N 4471033 | 800 m | Negligible | water pollution/habitat loss/biota degradation | No Action needed |
| 2 | Tepelena Municipality Dump "Majkosh" | E 501960 N 4463987 | 50 m | High | land degradation/water pollution/biota degradation/visual impact/landscape degradation | closure, removal and rehabilitation of riverbanks |
| 3 | "Këlcyra Municipality Landfill" | E 518824 N 4462668 | 70 m | High | land degradation/water pollution/biota degradation/visual impact/landscape degradation | closure, removal and rehabilitation of riverbanks |
| 4 | "Përmeti Municipality Landfill" | E 524172 N 4460553 | 50 m | Moderate | land degradation/water pollution/biota degradation | closure, removal and rehabilitation of riverbanks and soil |

**Table 19:** High-impact waste landfills

**Figure 13:** The Këlcyra landfill by the Vjosa river © A. Rama

### 4.2.2. Pressures from domestic wastewater discharge and sewage discharge

Municipalities were asked for data on the collection, treatment and disposal of wastewater from residents. Information was requested on wastewater treatment services and systems, on treatment technology and methodology (mechanical, biological and chemical). The following results were obtained from the on-the-spot inspection:

In all municipalities of Vjosa (in urban and rural areas) there are no wastewater treatment plants, thus they are not treated, but are discharged directly into the river.

The previous Water Supply and Sewerage infrastructure in the cities, built during the communist era in Albania, is almost destroyed. The new network, built in the last two decades, driven mainly by the new road infrastructure, is partial and has numerous problems, due to the lack of planning and urban discipline, which often results in blockage of the sewers.

The wastewater discharges that descend from the main cities of the Municipalities along the Vjosa in the form of pipelines or collectors, meet together with the other house waters at the lowest level and flow freely into the Vjosa and its tributaries. There is no processing or treatment of them. In rural areas there are collective and individual septic tank systems that, percolate through underground layers, or end with concrete channels (open, partially) and then flow into the Vjosa.

Due to the failure of the authorities to take responsibility for the construction and organization of the sewage infrastructure, residents are not charged for the maintenance of the current sewage system. The impact level can be considered moderate-strong, especially near the urban watercourses of the lower section, where the most affected element is water and its aquatic biodiversity.

### 4.2.3. Pressures from inert martials deposition

Several construction sites, mainly used for road construction, now abandoned, cause relief degradation in many ways. They remove the vegetative cover of the land along the banks, but damage, in addition to the coastal area, the landscape. Such abandoned sites are observed in the alongside of the new road in the Shushica river valley.

Their impact can be considered slight due to the size of the occupied area, but they nevertheless constitute a moderate disturbance in the upper part of the Shushica stream, due to the picturesque characteristics of the streambed.

The table below lists the pressures that have the highest impact in the subcategory “Inert materials disposal”. The list of waste from construction works can be found in Annex no. 7.

| No. | Pressure | Coordinates | Distance from bank | Impact | Impact Consequences | Recommendation |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | "Non-functional gravel deposit" | E 470381<br>N 4490509 | 50 m | Low – Moderate | soil quality degradation/sedimentation/visual impact/landscape degradation | removal and rehabilitation of the terrain |
| 2 | "General Beton" Company | E 459608<br>N 4496680 | 130 m | Low – Moderate | soil quality degradation/sedimentation/visual impact/landscape degradation | removal and rehabilitation of the terrain |
| 3 | “Kapaj Brothers” Company | E 461067<br>N 4495609 | 70 m | Low – Moderate | soil quality degradation/sedimentation/visual impact/landscape degradation | removal and rehabilitation of the terrain |
| 4 | “Unidentified ” Company | E 470381<br>N 4490507 | 140 m | High | soil quality degradation/sedimentation/visual impact/landscape degradation | removal and rehabilitation of the terrain |
| 5 | “Gravel deposit site | E 501425<br>N 4463805 | 210 m | Low – Moderate | soil quality degradation/sedimentation/visual impact/landscape degradation | removal and rehabilitation of the terrain |
| 6 | “Mustafaraj” Company | E 463402<br>N 4488341 | 100 m | Low – Moderate | soil quality degradation/sedimentation/visual impact/landscape degradation | removal and rehabilitation of the terrain |
| 7 | Construction site with gravel | E 503540<br>N 4459657 | 350 m | High | soil quality degradation/sedimentation/visual impact/landscape degradation | removal and rehabilitation of the terrain |
| 8 | Himara water supply construction site | E 483438<br>N 4449636 | 20 m | Low – Moderate | soil quality degradation/sedimentation/visual impact/landscape degradation | removal and rehabilitation of the terrain |
| 9 | “Inert materials disposal site” | E 510108<br>N 4442755 | 170 m | High | soil quality degradation/sedimentation/visual impact/landscape degradation | removal and rehabilitation of the terrain |
| 10 | “Gravel Deposit Site” | E 501425<br>N 4463805 | 210m | High | soil quality degradation/sedimentation/visual impact/landscape degradation | removal and rehabilitation of the terrain |

**Table 20:** High-impact inert dumps


**Figure 19:** Gravel and aggregate dump 200 m from the Vjosa riverbanks in Tepelena © A. Rama

### 4.2.4. Pressures from the economic activities

The municipalities were asked for a list of entities that carry out economic activity at a distance of 100 m-150 m from the riverbanks. The Fieri Municipality stated that it did not have data. While in the Municipality of Kolonja (part of the Vjosa WRNP for such a small territory) no activity is carried out.

The Vlora Municipality sent a list of 13 activities, concentrated mainly in the Fitore village. From the on-site inspection it was observed those other businesses extended as far as Novosela, in areas very close to the riverbed. For three of the selected businesses: “Herb-Life”, “Shoe Factory” and “Oil Factory”, the National Environment Agency (NEA) was asked if, on the data related to the discharges of these businesses, over the last three years, had been monitored. It turned out that all three of these businesses were not equipped with the environmental permits of type A and B required for the development of the respective activity, thus the NEA has no jurisdiction to inspect/monitor these activities as regarding the discharges, which makes the level of river pollution even more likely and higher due to lack of control.

The section of the Vjosa under the jurisdiction of the Vlora Municipality is one of the most problematic nodes, not only due to the high load of economic activities in a fairly narrow territory, but also because the secondary road Fier-Vlora passes very close to the riverbed. At one point, at the exit of Novosela, it comes close, no further than 130 m. The landscape appears to be poor and significantly deteriorated, since a number of buildings, mainly apartments and family residences, low-rise buildings and 2-floor villas are placed along the bed in an irregular manner and without any standard architectural style.

When the river passes near Selenica, two main events occur: industrial activities (bituminous gravel mines, oil extraction in the Gorisht-Kocul hydrocarbon area) and the

presence of plots that have cultivated Paulownia plantations, with the aim of using timber, as Paulownia wood grows quickly. Paulownia plots are not part of the natural forest stands of the Vjosa Valley and have been imported here from other continents, so their forced cultivation risks the installation of an unacceptable monoculture and at the same time harmful to the wild flora and fauna of the Vjosa river. Meanwhile, on the western bank, there are ambushes for the protection of agricultural fields in the form of ladders (not all of them are included in this report), more near the confluence between Shushica and Vjosa.

The entrances of the two cities Memaliaj and Tepelena are extremely busy, where economic activities, not only in terms of activity, but also in planning, are the product of the *laissez-faire* policies that have been followed in Albania over the last 2-3 decades. In addition to pollution, there is a degradation of the physical landscape around the riverbanks.

In the Këlcyra Municipality, although shifted to the east, in a territory with a relatively low population density, the river section continues to suffer the pressure of bar-restaurants, mainly in the picturesque Këlcyra Gorge and a large number of quarries and stone processing plants, along the Vjosa Valley, up to the entrance to Përmeti town.

Upstream Përmeti, the section is freed from the pressure of construction. The population is sparser, and the dwellings are concentrated around each other in small agricultural and livestock villages. Recently, rafting activities have been added, which are gradually being accompanied: either by camping, or by small, stable wooden houses. In addition to kayaking on the river, some points are being transformed into small, permanent beaches, which continue down to the Sarantaporos Spas (Vromonera).

Pressures in the Himara Municipality (Upper Shushica) are still negligible and appear in the form of kiosks or newly opened restaurants on the riverside. This is due to the recent development that the Valley received thanks to the newly construction of the road, from the lower section up to Kuç.

Drinos in the Dropulli Municipality is distinguished by the presence of high-capacity drinking water and beverage production and packaging factories, while the segment of Drinos near the Gjirokastra city is the segment with extremely polluted waters and a deeply degraded landscape. The list of economic activities offered by the municipalities can be found in Annex No. 10.

Meanwhile, the table below lists the top 10 economic activities with the highest impact on the Vjosa WRNP, located from 0 m to 150 m from the NP boundaries.

| No. | Pressure | Coordinates | Distance from bank | Impact | Impact Consequences | Recommendation |
|---|---|---|---|---|---|---|
| 1 | "KA Trading" | E 455746<br>N 4497912 | 85 m | Moderate – High | water pollution/riparian degradation/ biota degradation/visual impact/ | removal and rehabilitation of the banks |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | “Lumi i Bardhë” | E 483420 N 4449653 | 30 m | Moderate | water pollution/riparian degradation/ biota degradation/visual impact/ | Limitation of services |
| 3 | “Ioumenis” | E 500893 N 4462137 | 100 m | Moderate – High | water pollution/habitat loss/riparian degradation/ biota degradation/visual impact/landscape degradation | closure and rehabilitation of the banks |
| 4 | “Hotel Uji i Ftohtë”, Tepelena | E 505658 N 4457307 | 20 m | High | water pollution/habitat loss/riparian degradation/ biota degradation/visual impact/landscape degradation | Limitation of services |
| 5 | “Shena Fruits” | E 513015 N 4438915 | 30 m | Moderate – High | sedimentation/biota degradation/riparian degradation/visual impact/landscape degradation | removal and rehabilitation of the banks |
| 6 | “Xerra Plast” | E 515398 N 4433547 | 130 m | Moderate – High | water pollution/riparian degradation/ biota degradation/visual impact/ | removal and rehabilitation of the banks |
| 7 | “Woodpacker shpk” | E 517450 N 4431857 | 60 m | Moderate – High | water pollution/riparian degradation/ biota degradation/visual impact/ | to close and rehabilitate the terrain |
| 8 | “Fraksionim guri” | E 514581 N 4436745 | 50 m | Moderate – High | habitat loss/dust degradation/impact/visual/ | to close and rehabilitate the terrain |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | landscape degradation | |
| 9 | “VAGEXCO ” | E 528755 N 4420971 | 450 m | Moderate | groundwater pollution | to control discharges |
| 10 | “VEKO” | E 528930 N 4418715 | 350 m | Low – Moderate | water pollution/biota degradation/riparian degradation | to control emissions and limit activity |

**Table 21:** High-impact economic activities

**Figure 14:** Gas station near the Dragon Bridge © A. Rama

## 4.3. Pressures from Dams, Canals, Irrigation, and Wells

The municipalities along the Vjosa basin have been requested to provide data on the use of Vjosa water for the supply of drinking water to the population. Due to government reforms, the responsibilities of administration had been transferred to the newly established National Water Supply and Sewerage Agency (NWSSA), so the requests were redirected to the latter, which distributed them to the regional water supply and sewerage agencies: Fieri, Vlora and Gjirokastra. Specifically, data were requested on the number of wells, pumping stations, and the power and capacity of pumps, located in a distance of no more than 800 m from the banks of the Vjosa River (including its tributaries: Drinos, Kardhiq, Shushicë and Bënçë).

In rural areas, where the river flows near villages and floodplains, local authorities have built dams in order to protect the banks from erosion. This affects the dynamics of flows and changes the morphology of the riverbed. Data were requested on irrigation schemes and infrastructure, dams, diversion works, pumping stations for irrigation of agricultural fields; annual water consumption, volume of sediments and river alluvium; number of dams and protective embankments.

### 4.3.1. Data on wells

| Municipality | No. of wells | Location | No. of Pumps | Pumping Stations | Aabstraction capacity in l/s |
|---|---|---|---|---|---|
| Fieri | 20 | Kafaraj/Gorishova/Cakran/Vreshtas/Vembar/Varibop/Poro | 12 | 2 | 347; 69.4; 22.2; 5.5; 6.9; 2.8; 6.9; 38.9 |
| Vlora | 7 | Novosela/Shushica | 7 | | 45; 60 |
| Selenica | 10 | Selenica/Karbunara/Mesarak/Armen/Lubonja/Peshkepia/Drashovica/Kota/Mavrova | | | |
| Mallakastra | 4 | Poçem/Rpmësi/Kuta/Mollasi | 7 | 1 | 25; 22.2; 5.3; 4.4 |
| Memaliaj | 2 | | 4 | 2 | 80; 11; 11; 6.5 |
| Tepelena | 2 | | 2 | 2 | 1.5; 1.5 |
| Këlcyra | 7 | | 8 | 7 | 22; 22; 2.5; 4; 4; 4; 2; 2.5 |
| Përmeti | 3 | | 3 | 3 | 19; 5; 4 |
| Gjirokastra | 3 | | 3 | 2 | 37.5; 37.5; 28.6 |
| Libohova | 1 | Libohova | 1 | 1 | 7 |
| Dropulli | 1 | Buduk/Lazarati | 2 | 1 | 15; 25 |
| **TOTAL** | **60** | | **49** | **21** | **1014.6** |

**Table 22:** Number of water wells in the Vjosa valley

#### *4.3.1.1. Pressures from concessioning water resources*

The National Water Council (NWC) is a national decision-making body that manages the Republic's water resources. There is still no water cadastre to understand, currently, the extent of use of the Republic's water resources. The available data the online dataset of the Water Resources Management Agency (AMBU, in the role of the NWC secretariat), are not accurate, but more importantly, they are incomplete. Therefore, the data are not reliable.

However, in an effort to collect possible information from this dataset, it was possible to obtain new data, the list of which can be found in Annex no. 2.

### 4.3.2. Data on canals and irrigation infrastructure, dams and embankments

In addition to water for domestic use, the waters of the Vjosa also serve to support the agricultural and livestock activities of the communities living around its banks and floodplains. Several pumping systems feed irrigation canals with water. Some of the canals operate with free flow. Several dams and weirs have been built along the banks to protect the erosion of soils from floods or from flooding.

Part of the irrigation infrastructure is out of order, including several pumping stations. For example, the Vjosa-Levan-Fier irrigation canal, according to experts, is operating at half capacity. Municipalities do not have data on the volume of sediments, and even the data on the volume of water they have is theoretical, based on the technical parameters of the pumping equipment, but they are not able to calculate a total annual consumption. For example, the Municipality of Memaliaj reports the state of the infrastructure inventory in its rural areas but informs that none of the segments are in working order due to lack of investment. Specifically, refer to the table below.

| Municipality | Water abstraction schemes |
|---|---|
| **Vlora** | Drashovicë-Llakatund free-flow canal 650l/s for irrigation of 14,000ha of agricultural land. |
| | Embankments in Risili, Xhyherina and Bunavi, 15 km long. |
| **Fieri** | Vjosa-Levan-Fieri free-flow canal; 6 gates; annual water quantity: 233,280,000 $m^3$; irrigated area: 20,000ha; extends 31km. |
| **Selenica** | Shkoza pumping station (Vjosa, 450l/s) for the irrigation of 250ha of agricultural land. |
| | Mesaplik pump station, Shushica river, 100l/s, 0.1 $m^3$/s for irrigation of 125ha of agricultural land. |
| | Drashovica-Armen free-flow canal, Shushica river 600l/s (0.6 $m^3$/s 105 days)) 12,000ha of agricultural land. |
| | Mechanically elevated canal (with pump) Vjosa-Dushkarak (Vjosa; from Dautaj to Golimbas), 4.5 km long; 60-100 l/s; for irrigation with a maximum capacity of 420 ha of agricultural land, but due to depreciation only 120 ha of agricultural land). |
| | Embankment in the agricultural lands of Selenica, 2.6km. |
| **Mallakastra** | Poçem pumping station (Vjosa river) for irrigation of Hekal-Mollas-Rromës fields: 560 ha; not functional. |
| | Kutë pumping station (Vjosa river) for irrigation of Kutë fields; 771 ha |
| | Protection dam of agricultural lands Hekal-Mollaj-Rromës; 750 m |
| **Memaliaj** | Vjosa River Canal: Qesarat-Vasjar-Mogila, 10.5 km |
| | Vjosa River Canal: Krahes-Toç-Kalivac, 36.2 km |
| | Vjosa River Canal: Buz Administrative Unit, 45 km |
| **Gjirokastra** | Kardhiqi River Canal: Piksi stream - Kardhiqi. Amount of water taken 70 l/s --> 554,320 $m^3$/year |
| | Kardhiqi River Canal: Piksi stream - Kardhiqi. Amount of water taken 70 l/s --> 554,320 $m^3$/year |
| | Kardhiqi River Canal: Zhulatit Stream - Taroninë. Amount of water taken 80l/s --> 622,280 $m^3$/year |

| | |
|---|---|
| | Kardhiqi River Canal: Zhulatit Stream - Kakodhiq. Amount of water taken 50 l/s --> 388,800 $m^3$/year |
| | Kardhiqi River Canal: Kardhiqi Stream - Çepunë. Amount of water taken 250 l/s --> 1,944,000 $m^3$/year |
| | Kardhiqi River Canal: Kardhiqi Stream - Maskullorë. Amount of water taken 600 l/s --> 4,665,600 $m^3$/year |
| | Kardhiqi River Canal: Picari Stream - Humelica. Amount of water taken 300 l/s --> 2,332,800 $m^3$/year |
| | Suha River Canal: Shuha River - Lazarat. Amount of water taken 50 l/s --> 388,8000 $m^3$/year |
| **Dropulli** | Embankment on Drinos: Derviçian-Kakavijë, 50 km long. |
| | The Jergucat Stream embankment, which supplies the Drinos: Grapsh-Gorica, 5 km long. |
| | Two diversion structures in Drinos: "Agios Georgios" and "Rogozi" |

**Table 23:** Irrigation schemes in the Vjosa WRNP

## 4.4 Pressures from Tourism Activities

Until now, the touristic perspective of the Vjosa has been limited to the exploitation of bars and restaurants along its banks, mainly in the Këlcyra Gorge, in the "Cold Water" hotspot (Tepelena-Gjirokastra) and to a lesser extent, along the upper reaches of the Shushica.

Recently, *rafting* has been developing, especially in the upper reaches of the river, in the Sarantaporos - Përmeti section, and down to Gjirokastra, which is increasing the touristic potential of the Vjosa. Currently, the kayaking business is being developed with the free initiative of the touristic businesses in Përmeti Municipality, without any restrictions or control from the authorities. However, the initiative is in line with the priorities of the municipality for tourist development. There is a risk that unregulated water sports activities could lead to vegetation loss, soil compaction, disturbance of existing water channels and affect the reproductive success of land-breeding bird species that have occurred in the region.

Below, the assessment of the ten tourism activities with the highest impact. For bars and restaurants that are located next to each other, the cumulative effect of the impact has also been taken into account, which increases the weight of the pressure. Meanwhile, the full list of tourism pressures is in Appendix no. 8.

| No. | Pressure | Coordinates | Distance from bank | Impact | Impact Consequences | Recommendation |
|---|---|---|---|---|---|---|
| 1 | "Sejmola Bar-Restorant" | E 509171 N 4462451 | 0 m | Low – Moderate | water pollution/riparian degradation/biota degradation/visual impact/ | limiting activity or moving away from the banks |
| 2 | "River Bar-Restorant" | E 513706 N 4462433 | 0 m | Low – Moderate | water pollution/riparian degradation/biota | limiting activity or moving away from the banks |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | degradation/visual impact/ | |
| 3 | “Hotel-Restorant Gryka e Këlcyrës” | E 513805 N 4462460 | 0 m | Low – Moderate | water pollution/riparian degradation/biota degradation/visual impact/ | limiting activity or moving away from the banks |
| 4 | “Vjosa beach” | E 517759 N 4463306 | 0 m | Low | water pollution/riparian degradation/biota degradation/visual impact/ | limiting activity or moving away from the banks |
| 5 | “Vjosa Albania Rafting & Kayak Camping Përmet” | E 531813 N 4454423 | 0 m | Low | water pollution/riparian degradation/biota degradation/visual impact/ | limiting activity or moving away from the banks |
| 6 | “Rafting Vjosa” | E 532404 N 4453955 | 0 m | Low | water pollution/riparian degradation/biota degradation/visual impact/ | limiting activity or moving away from the banks |
| 7 | “Plazh” | E 547727 N 4440340 | 0 m | Low | water pollution/riparian degradation/biota degradation/visual impact/ | limiting activity or moving away from the banks |
| 8 | “Lumi i Bardhë” | E 483420 N 4449653 | 30 m | Moderate | water pollution/riparian degradation/biota degradation/visual impact/ | Limitation of the Activity |
| 9 | “Hotel Uji i Ftohtë” | E 505658 N 4457307 | 10 m | High | water pollution/sedimentation/riparian degradation/biota degradation/visual impact/landscape degradation | Limitation of the Activity |
| 10 | “Xronos Village”, fshat turistik, Hotel-Bar-Restorant | E 519987 N 4427446 | 800 m | High | habitat loss/biota degradation/visual impact | Limitation of the Activity |

**Table 24:** High-impact tourism activities

**Figure 15:** Beach on the Vjosa River. Hotel "Cold Water", Tepelena © A. Rama

## 4.5. Pressures from Silviculture and Agriculture

Another threat evidenced in the river floodplains, on the banks, from the installation of a new riverine forest ecosystem, where several plots planted with Paulownia, a non-native species, risk replacing and degrading the native riparian vegetation, which constitute sensitive habitats rich in biota. Positioned downstream of the main riverbed (Selenica-Poçem), the new Paulownia plots, whose seeds are easily spread by the wind, are not part of the natural forest stands of the Vjosa river valley and have been introduced from other continents (West and Central Asia), so their forced cultivation risks the installation of an unacceptable monoculture and at the same time harmful to the natural vegetation of the Vjosa river. The largest massif is located in the Selenica-Poçem section, with a length of 1.5 km, only 100 m from the coast: about 19 ha. The full list can be found in Annex no. 9.

- *Impact on receptor* (**High**): soil quality degradation/erosion/habitat loss/biota degradation/visual impact
- *Recommendation*: do not plant in the future and rehabilitate the terrain

## 5.6. Pressures from Fishing Activities and Aquaculture

Recreational fishing activities are carried out along the Vjosa and its tributaries. Commercial fish farming was identified in Kardhiqi, Picari and Shushica.

The importance (weight) of the pressures affecting the waters (surface and underground), urban density, dumping/accumulation of urban waste near the banks, leaving inert materials on the riverbed, intensive fishing, exploitative and extractive industries, especially mining (surface and underground), etc. was assessed.

Kardhiqi is one of the cleanest tributaries of the Drinos. Human activities are few, except for 2 farms positioned along the banks. In Kardhiqi there are 23 fish tanks, in which rainbow trout is cultivated, with a capacity of 175 t/y (including the Picari stream).

The Ministry of Agriculture has not yet designated fish farming areas for inland waters, so it is time for the protected area authorities to intervene to present their restrictive measures in the new context of declaring the river as a national park. The list of pressures is in Annex No. 6.

# 5. FINDINGS AND RECOMMENDATIONS

## 5.1 Findings

The results of the on-the-spot observation showed that the weight of the pressures caused by the exercise of economic and social activities in the Vjosa national park, or in vicinity to it, is bigger mainly in the downstream of its central section. The same pattern of pressure distribution is observed in the tributaries: Drino, Shushica, Bënça and Kardhiqi. This is not only related to the geomorphological profile of the landscape, which descends from the height of the source towards the lowland of the mouth, but also to the historical installations of settlements, which are concentrated around the river plains near the riverbanks.

In the downstream of the Vjosa, from Poçem to Mifol, the degree of pressure is considered to have a high impact due to bitumen mining, mainly when the banks approach the city of Selenica, and then Novosela, where urban and economic activities increase.

Another added pressure downstream are the levees placed in the form of river dams which serve to protect the lands from erosion, such as the dams in Selenica, Kashisht and Llakatund; where it has been observed that some of them are out of function. The (uncontrolled) levees can cause changes in the geomorphology of the river, in the structure of the bed and banks and in the linearity and depth of the flow.

Another threat resulted in the floodplains of the rivers, on the banks, also positioned downstream of the main bed, where a number of plots planted with Paulownia, a non-native species, risk replacing and degrading the riparian vegetation, which constitute sensitive habitats rich in biota.

The situation with the use of water for irrigation and for meeting the needs of the inhabitants with drinking water supply is also problematic, especially downstream Poçem Gorge and heads towards Kafaraj. In this section rich in river plains, several irrigation canals, river dams, and water wells simultaneously collect large amounts of water, which risks reducing the flow especially during the peak of the drought.

The Peshkëpia Bridge is another “hot spot” with socio-economic density, near which illegal landfills of urban and inert waste of moderate size were registered, as well as several stone fractionation plants, some of which are abandoned, leaving behind a degraded landscape.

The picturesque Vjosa valley offers an impressive landscape, but traces of landscape degradation due to uncontrolled urban development were recorded, specifically, at the point where the Bënça meets the Vjosa (at the entrance to Tepelena) and at the entrance to Gjirokastra, where the Drino approaches the Tepelena-Gjirokastra-Kakavie highway. Further impact on the landscape occurs also due to the lack of management of waste or slag resulting from the extractive industry, specifically in several bitumen mines in Selenica, which deposit mineral waste along the banks, in the lower section of the Vjosa.

- A large number of economic activities, mainly small and medium-sized family businesses, operate within or near the territory of the national park, especially in the section where the river approaches the main cities of the municipalities.

- The creation of informal residential centres near the Vjosa banks are the result of developments in the country's political and social transitional period, especially after the 1990s, whereas the transition from a centralized economy to a free market economy: an unplanned transition, according to the *laissez-faire* method.

- The economic activities so far around the Vjosa, (within the core area of the national park, but also a little beyond, which may affect its ecological integrity) have not had limitations in scope or intensity; nor have they shown sensitivity or an appropriate environmental approach.

- The pressure that affects the most from the activities with the highest impact on natural elements is the extractive industry (mining, gravel), followed by urbanization (waste: household, inert and industrial materials).

- A significant part of the economic activities within the territory of the Vjosa national park do not pay for the environmental damage they cause to the ecology of the park.

- There are no rehabilitation works on abandoned construction sites that have served for the construction of new road axes, or other works, mainly of public service, located near the riverbed.

- Many economic entities began their activity some time before the Vjosa was declared a national park, therefore their current positioning, very close to the banks, endangers the integrity of ecosystems, the flora and fauna of the river and the natural characteristics of the protected area of the national park.

- The section of the delta, from the mouth to Fitore (Novosela) shows a river line undisturbed by activities, but the water is polluted, and the banks are loaded with urban waste (mainly plastic) and industrial waste, which is a direct consequence of the socio-economic activities that take place in the upper section of the stream.

- The Environmental Impact Assessment (EIA) documentation, which includes the assessment of the expected environmental impacts caused by the implementation of socio-economic activities, has not taken into account the impact on the national park and has been based on insufficient data on the habitats in which they operate.

**Figure 16:** Abandoned gravel and aggregates deposit. Lower Shushica © A. Rama

## 6.2 Recommendations

- By declaring Vjosa a national park, consideration should be given not only to the mitigation but also to the removal of some of the current pressures that affect the ecological integrity of the river and its biodiversity, in order to reduce the level of pollution of natural elements, material and cultural assets.

- Organize the implementation of a long-term ecological monitoring program in Vjosa and its tributaries to closely monitor the consequences that socio-economic activities may cause on the ecological integrity of the park.

- Monitoring programs should be extended to any socio-economic activity operating within the territory of the park.

- Economic activities that have caused a significant impact on the park should, within a reasonable period of time, carry out all rehabilitation works in the affected parts, especially on riparian vegetation, eroded slopes, damaged banks, in the landscape, etc. Future economic activities should be examined in light of environmental performance criteria, taking into account the climate change factor.

- Remove illegal, urban and inert deposits created near the banks, prohibit future deposits. Address responsibilities and, in cooperation with village elders or local authorities, organize the cleaning of the territory.

- Systematize (clean) construction waste caused by the construction of new road axes or other works, mainly public, located near the river flow.

- It is necessary and urgent to conduct a study on the cumulative effects caused by pressures along the entire flow, which cause a chain reaction in the degradation of land, water and biodiversity in the territory of the Vjosa national park.

- The exercise of economic activities around the Vjosa should be carried out in accordance with the objectives of nature protection, in accordance with specific environmental standards, defined in the relevant legislation but also in the Park Management Plan, and should be reassessed through the collection of new environmental documentation, the results of which should condition the granting of future permits, the scope and intensity of economic activity, as the current practice conflicts with the new status. The new documentation should also address the environmental damage that businesses may cause, the costs of which they must assume to repay.

- In cooperation with the Water Resources Management Agency (WMA) and regional water supply and sewerage companies, calculate the total amount of water extracted from the Vjosa aquifers for domestic, agricultural and industrial use; to assess the impact of this use and to control the volume of use in the future. The use of water for domestic, agricultural and industrial use should not impede or compromise the ecological integrity of the park, taking into account the threats resulting from climate change.

- A similar assessment, to the above, should be made in the Drino Valley, where there are a large number of economic activities that use the reserves of this aquifer as raw material. In the meantime, caution should be exercised, as the water use industry provides employment for the surrounding villages.

- Eliminate mineral dumps (especially those located near the riverbanks in Selenica), in order to rehabilitate the riverbanks and restore riparian vegetation, thus stopping the further erosion process and managing excavated materials, which can positively affect the landscape.

- Develop an action plan for the rehabilitation of degraded and exposed habitats to visitors (riverbanks and slopes, riparian vegetation, water segments, etc.) and their return to their previous state.

- For the nodes loaded with socio-economic activity (Fitore Village in Novosela, Peshkëpia Bridge in Kota, the entrance to Memaliaj, the entrance to Tepelena (at the confluence of the Bënça and Vjosa rivers), areas that have so far been developed according to the Laissez Faire principle, detailed development plans should be drawn up and subjected to a rehabilitation process, in accordance with the new circumstances, after the declaration of the Vjosa National park.

- The national park Administration Office should be established and operational as soon as possible. Specialized staff should be appointed for this administration, in order to monitor the condition of habitats and curb their further degradation, by addressing the costs of rehabilitation to those who cause them.

- The national park Administration Office should identify sensitive ecological areas, along the territory of the national park, to protect them from exposure to potential threats, including those of climate change.

- A laboratory should be established modern control, part of the park administration, to be equipped with the necessary technologies and capacities to carry out independent monitoring and measurements of land-water-air emissions caused by socio-economic activity that takes place within the territory of the national park and in the area adjacent to it.

- All businesses operating directly within the central sub-zone of the park, or in the vicinity, about 500m from the shores, should be equipped with dewatering plants for water treatment and other equipment for gas control and monitored by the above laboratory.

- The review of environmental documentation, mandatory for the continuity of economic activity in the territory of the national nark/near the banks of the Vjosa, should also be monitored by dedicated experts, outside the NAPA, but part of the Administration (or contracted as external) of the national park.

- In the above context, an improvement of the legal framework will be needed to accept specific environmental assessment criteria with the best standards, for economic activities in the Vjosa national nark.

- Economic activities and projects that take place outside the national park, but that may have negative impacts on it, should be assessed on a case-by-case basis, ensuring the inviolability and integrity of the park.

- Rafting activities in the Sarantaporos - Përmeti section should be promoted as sustainable models for the park, but also as an opportunity to employ local residents, to curb their departure to large cities. Also, these activities should be controlled and adapted to the ecological and environmental needs of the Vjosa river ecosystem.

- The trend of building small, unplanned cafes and bars along the Upper Shushica should be curbed and directed towards the establishment of guesthouses and agribusiness activities, in order to promote local products and curb the exodus of people.

# 6. REFERENCES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# 7. ANNEXES

Attached to this study you will find a photo archive (93 in total) with views of the most visible pressures around the banks of the Vjosa and its tributaries.

In addition to the photos, you will have a number of videos taken with a drone, showing some of the most prominent pressures around the banks of the PKLEV.

You will also have the complete list of pressures, located on the GIS Platform, through geospatial coordinates. In the file "*Vjosa all files together.kmz*" all pressures have been integrated.

In another file (Information Requests.zip) you will have the answers on the pressure data that I have requested from the authorities.

- **Annex 1:** List of companies using Gravel and stone according to the monitoring of the NAPA
- **Annex 2:** List of companies licensed by the National Water Council for the use of water and gravel
- **Annex 3:** List of pressures identified by the author from mines and quarries
- **Annex 4:** List of pressures identified by the author from the extraction of river gravel
- **Annex 5:** List of Municipal Waste Landfills with Potential Impact on the Vjosa River identified by the author
- **Annex 6:** List of pressures identified by the author from fishing activities
- **Annex 7:** List of pressures identified by the author from construction works and the deposition of inert materials
- **Annex 8:** List of pressures identified by the author from tourist activities
- **Annex 9:** List of pressures identified by the author from planting non-autochthonous trees (Paulownia)
- **Annex 10:** Exchange of letters with LGU_List of economic activities by municipality
- **Annex 11:** Correspondence with AKBN_AKBN Response Southern Albania permits

## ANNEX 1

List of NAPA (Gravel extraction and stone fractionation)

*Entity "Unidentified"*, 30 m from the riverbank; was checked and found to be abandoned for a long time. The pile of aggregates had been covered by vegetation. It is located at coordinates E 455859 N 4499760.
*Entity "General Beton"*, 130 m from the riverbank; was checked. It turned out to be an inactive aggregates and gravel dump, with an area of about 5000m2. But two other illegal hotspots, unreported, were noticed near this dump. It is located at coordinates E 459608 N 4496680.

- *Entity "Vëllezërit Kapaj"*, 70 m from the riverbank, near the village of Kashisht. The dump was checked and found to be inactive. Located at coordinates E 461067 N 4495609
- *Entity "Vëllezërit Avdylaj"*, 400 m. Not checked. Located at coordinates E 464491 N 4492556.
- *Entity "Unidentified 2"*, 140 m from the riverbank. Checked and resulted in a long-abandoned deposit. E 470381 N 4490507.
- *Entity "FIAMA shpk"*. Checked, but no material removal was found, probably due to the lack of activity for a long time and because the coordinates fell within the gravel bed of the river, which may have led to the natural rehabilitation of the terrain. Located at coordinates E 474601 N 4488462.
- *Entity "Ajet Skënderaj"*. The coordinates fell on the gravel bed of the river. It was checked and it turned out to be a closed activity, while it seemed to be towards rehabilitation. It is located at coordinates E 476463 N 4485063.
- *Entity "Duka shpk"*, 1500 m. It was checked, but it turned out to be far enough to exert pressure on the river. It is located at coordinates E 478790 N 4487413.
- *Entity "Halili shpk"*, 900 m from the riverbank. It was checked, but no deposits or hotspots degraded by the fractionation of inerts were observed; moreover, it turned out to be far from the riverbed. It is located at coordinates E 478195 N 4486403.
- *Entity "Elmazaj Construction shpk"*. It was not checked directly on the ground, but the coordinates fell within the river and from the satellite images in Google Earth, no accumulations of inert materials were visible. It is located at coordinates E 478502 N 4482272.
- *Entity "Shehu shpk"*. It was not checked directly on the ground, but the coordinates fell within the river and no accumulations of inert materials were seen from satellite images in Google Earth. It is located at coordinates E 478439 N 4481668.
- *Entity "Beton Vlora 2013 shpk"*, 700 m from the riverbank. It was checked, but no accumulations of inert materials were found. It is located at coordinates E 479786 N 4476288.
- *Entity "Mehmetaj 2002 shpk"*. It was checked and no accumulations of materials were observed. Furthermore, the coordinates indicate a large distance from the river, about 1600 m. It is located at coordinates E 479585 N 4474200.
- *Former polygon of the Perlat Rexhepi* enterprise. It was checked, but the coordinates fell on the riverbed and no inert fractionations were observed. It is located at coordinates E 478477 N 4481466.

***Note:*** *For two entities: "Aliko Ndërtim" and "FEBA shpk", AKZM did not provide geospatial references*.

## ANNEX 2

National Water Council List

- *PF Jona Çela*, for the use of an underground source (Shushicë) for the irrigation of 1ha of agricultural land. February 2023. Term 5 years. Located at coordinates E 485384 and N 4449242.
- *"Cobial shpk"*, use of inerts for up to three years. Term 2023-2026. Located at coordinates E 501048 N 4462928 (Coordinate group).
- *"Peshku Picari 1 shpk"*, HPP; Picarit Stream; use 1000 l/s; ecological flow 230 l/s; 18 ponds. Intake work at coordinates: E 504211 N 4447995.
- *"Albanian Green Energy"*, HPP Smokthina in the Vërmik Stream. Permit 28. 12. 2020, 80m. Power: 9.2 MW; Q=600 l/s. Located at coordinates E 471571 N 4462528.

## ANNEX 3

List of pressures from mines and quarries along the Vjosa

- *"Bitumen processing site"*, near the riverbank (100 m). The site worked until late in the evening. It is located at coordinates E 470090 N 4490013.
- *"Selenica Bitumi SHA",* 950 m from the shore. The site's furnaces also worked at night. It is located at coordinates E 469884 N 4489352.
- *"Balkan Mineral Invest shpk"*, along the Rroma-Selenica road, which has created several high bitumen dumps. The distance from the river is relatively large (1100m), but they can be seen from the other bank of the river, in the territory of the Administrative Unit of Cakran and the Administrative Unit of Hekal and may exert a relative impact on the landscape. They are located at coordinates E 470845 N 4488126 and E 470767 N 4488021.
- *"D&D Inert shpk"*, limestone, 60 m. Drashovica (Permit number and exploitation surface were not reported by NANR, but the permit is active since 2022). They are located at coordinates E 463960 N 4480153.
- *"Selenicë bitumi",* bitumen, 550 m. Selenica (No. 355/1.97, surface 1.543; activity 1997; exploitation. 16.000t/year). Located at coordinates E 470241 N 4489350.
- *"Mineral Bitumen shpk"*, bitumen, 450 m from a stream that immediately flows into the Vjosa. Kume-Murriz (No. 1371.09, elevation 0.324; activity: 2009; utilization: 20,000t/y). Located at coordinates E 469469 N 4489028.
- *"ALB-INDUSTRI shpk"*, bituminous gravel, 750 m. Selenicë (No. 1644.13, elevation 0.36; activity: 2013; utilization: 20,000t/ year). Located at coordinates E 470330 N 4489032.
- *"B&AD Construction shpk"*, bituminous gravel, 1000 m. Selenica (No. 1753.15, elevation 0.322; activity: 2015; utilization: 30,000t/ year). Located at coordinates E 470133 N 4487434.
- *"BEAT GENERATION shpk"*, bituminous gravel, 950 m. Selenica (No. 1754.15, elevation 0.251; activity: 2015; utilization: 30,000t/year). Located at coordinates E 470446 N 4487114.

- *“Balkan Mineral Invest shpk”*, bituminous sand, 150m. Treblove Rromëz Vlorë (No. 1496/3.14, top. 1.171; activity 2014-2039; exploitation: 30,000t/year-100,000t/year). Located at coordinates E 471636 N 4488869.
- *“Albpetrol Oil Station”* in the Gorisht-Kocul field. There are about 150 active wells. The station is located about 1500 m from the riverbank (near Poçem). It occupies an area of 7.5km2. It is located between the Shushica Valley and the Vjosa Valley at coordinates E 473721 N 4482651.
- *“Drizari Quarry”* with a high visual impact. Although it is about 1.5 km from the river and is not directly visible from it, the quarry is located next to the Fier-Memaliaj national road, and the high number of travellers cannot help but be affected by the erosion of the slope due to the extraction of stones. It is located at E 479058 N 4486375.
- *“Herkules shpk”*, limestone slab, 1300 m. Kalivaç (No. 1157/1.08, elevation 0.208). It is located at a distance but has a high landscape impact on the central flow, especially when visiting the Vjosa Valley through the picturesque hills, filled with olive trees. It is located at the coordinates E 484477 N 4474564.
- *“Cobial SHA”*, breccia slope, 200 m. Red Belt (No. 832.04, elevation 0.033); 2015. Although a small slope, it has a high impact on the lower course of the Bença, as it is located very close to the riverbed and 3 km from the Ali Pasha Aqueduct, a cultural monument. It is located at coordinates E 501177 N 4461499.
- *“ALBANERA”*, siliceous sandstone, 600m. Çome’s Hill (No. 1535/1.11, elevation 0.152). It is located at coordinates E 518033 N 4462520.
- *“Kosta shpk”*, siliceous sandstone, 400 m. St. John's Stream (No. 1607.13, elevation 0.0098; activity 2012-2037; utilization: 2000t/y). Located at coordinates E 519738 N 4461226.
- *“FLU-TO-NE shpk”*, siliceous sandstone, 1000m. Argovo (No. 1710.14, elevation 0.1; activity: 2014-2039; utilization: 500m3/y). Located at coordinates E 521869 N 4460260.
- “Gurore, 1200m. Lipë. Located at coordinates E 527833 N 4455941.
- “Buci shpk”, limestone slab, 1400 m. Lazarat (1168/1.08, elevation 0.032; activity 2008; utilization: 12,000m3/v). Located at coordinates E 513674 N 4433978.
- *“Y. SALLA shpk”,* decorative limestone 2000m, high impact on the landscape. Lepenicë (No. 1789.16, elevation 0.198; activity: 2016; utilization: 1200m3/year). Located at coordinates E 468493 N 4462615.
- *“ANA-2013 shpk”*, decorative limestone 1900m, high impact on the landscape. Lepenicë (No. 1792/1.16, elevation 0.268; activity: 2016-2041; utilization: 2500 $m^3$/year). Located at coordinates E 468894 N 4462069.
- *“Balkan Mineral Invest shpk”*, bituminous gravel, 1500m, high impact on the landscape. Resulaj II (No. 1578.13 above sea level 0.137; activity 2013-2038; exploitation: up to 2000t/m (60-90 t/d)). It is located at coordinates E 470782 N 4487721.
- *“Gurore”,* 300 m from the riverbank, in altitude. Located at coordinates E 517689 N 4462866.

- *“Gurore”,* 500 m from the bank, in altitude, but has a high impact on the landscape; since 2010; use: 30,000-50,000m$^3$/year. Located at coordinates E 518067 N 4462496.
- *“Gurore”*. It is positioned in altitude, 450 m from the bank, but has a high impact on the landscape. Located at coordinates E 519732 N 4461233.
- *“Gurore”*, 1000 m from the bank, but has a visible impact on the landscape. It is located at coordinates E 521690 N 4459753.
- *“Lepenica Quarries”,* 2000 m from the riverbank, at an altitude. Although at a distance from the riverbed, the impact on the landscape is high, especially during dynamite explosions where a large cloud of dust is raised in the air which is visible from below. It is located on the slope of Brataj Mountain. There are several quarries in a row, close to each other, and one of them is even located near “Brataj Cave”, a natural monument. The most representative coordinates are E 468403 N 4462553.
- *“Quarries and stone fractionation”*, 1100m from the riverbank. It does not directly overlook the river, but it has a high impact on the landscape (since it is located on the side of the national road (SH76)) through which the entire Shushica Valley is accessed. Located at coordinates E 473758 N 4456906.
- *“Eral” quarry,* 160 m from the riverbank, in elevation and 1.7 ha E 499317 N 4456922.
- *“Naçopulo”* quarry, 650 m from the riverbank, but also has a high impact on the landscape. Area: 0.808 ha; activity: 2021-2046; utilization: 110,000m3. Located at coordinates E 514373 N 4433887.
- *“Ndrico-2010”* quarry, 1100 from the bank. Area: 0.509 ha; activity: 2012; 2000t/v. It is located at coordinates E 4430363 N 4432388.
- *Gurore"*, appears inactive, 350 m from the riverbank. E 463271 N 4483256.

## ANNEX 4

List of pressures from river gravel extraction (Extractive industry)

- *“Large gravel pit”*, with a volume of 2500 m$^3$. 190m from the riverbank. It serves to extract gravel. It seems usable and has a high landscape impact. It is located at coordinates E 459886 N 4496699.
- *“Abandoned gravel deposit”*, near Kashisht, 70 from the riverbank. Almost invisible, abandoned for a long time. It is one of the deposits, also referred to in the NAPA Kapaj Brothers) report as closed. It can hardly be distinguished, since the volumes are minimal. It is located at coordinates E 461067 N 4495609.
- *Entity “Avdylaj* Brothers*”*, 400 m. It was not checked. Located at coordinates E 464491 N 4492556.
- *Entity “FIAMA shpk”*. It was checked, but no material was found, probably due to the lack of activity for a long time and because the coordinates fell within the gravel bed of the river, which may have led to the natural rehabilitation of the terrain. Located at coordinates E 474601 N 4488462.

- *Entity "Ajet Skënderaj"*. The coordinates fell within the gravel bed of the river. It was checked and the activity resulted closed, while it seemed to be towards rehabilitation. Located at coordinates E 476463 N 4485063.
- *Entity "Duka shpk"*, 1500m. It was checked, but it resulted far enough to exert pressure on the river. It is located at coordinates E 478790 N 4487413.
- *Entity "Halili shpk"*, 900m from the riverbank. It was checked, but no deposits or hotspots degraded by aggregate fractionation were observed; moreover, it turned out to be far from the riverbed. It is located at coordinates E 478195 N 4486403.
- *Entity "Elmazaj Construction shpk"*. It was not checked directly on the ground, but the coordinates fell within the river and from the satellite images in Google Earth, no aggregate accumulations were visible. It is located at coordinates E 478502 N 4482272.
- *Entity "Shehu shpk"*. It was not checked directly on the ground, but the coordinates fell within the river and no aggregate accumulations were visible from the satellite images in Google Earth. It is located at coordinates E 478439 N 4481668.
- *Entity "Beton Vlora 2013 shpk"*, 700 m from the riverbank. It was checked, but no accumulation of aggregates was found. It is located at coordinates E 479786 N 4476288.
- *Entity "Mehmetaj 2002 shpk"*. It was checked and no accumulation of materials was observed. Furthermore, the coordinates indicate a large distance from the river, about 1600m. It is located at coordinates E 479585 N 4474200.
- *Former polygon of the Perlat Rexhepi* enterprise. It was checked, but the coordinates fell on the riverbed and no fractionation of aggregates was observed. It is located at coordinates E 478477 N 4481466.
- *"Excavation, material extraction"*, in the gravel bed of the river, near the village of Poçem. The plant looks abandoned and dilapidated. It is one of the hotspots identified along with 15 others, also by the Administration of Protected Areas (AKZM), in an effort in 2022 to identify inert waste disposal sites, mainly due to the processing and use of gravel from the Vjosa River. A ban on the activity was promised and it seems that the word has been kept. It is located at coordinates E 476524 N 4485039.
- *"Cobial" (Gravel processing)*, two hotspots, adjacent to each other, at the entrance to the city of Tepelena (Axis Memaliaj-Tepelena), 200m from the riverbank; from 2022. Located at coordinates E 501057 N 4464793.
- *"Inert processing"*, 50 m from the riverbank. Located at coordinates E 525985 N 4458465.
- *"Material collection"*, appears abandoned. Located at coordinates E 463526 N 4487540.
- *"Stone processing"*, by Fatmir Hodaj, on the riverbed side. Located at coordinates E 462855 N 4487289.

## ANNEX 5

List of urban waste damps & landfills with potential impact on Vjosa

- *"Stable Pit of Oak Pass"*, waste disposal site of the Municipality of Selenica, near Kota, 800m from the riverbank. Located at coordinates E 468213 N 4471033.
- *Tepelena Municipality Landfill "Majkosh"*. Waste disposal site of the Municipality of Tepelena. 50 m from the riverbank; since 2000. Amount of waste: 7t/d. Located at coordinates E 501960 N 4463987.
- *Landfill of Këlcyra Municipality*, 70 m from the riverbank. Since 2000; Amount of waste: 3t/d. It is located at coordinates E 518824 N 4462668.
- *Landfill of Përmeti Municipality*, 50 m from the Kosina Stream, which, after 1km, flows into the Vjosa River. Volume: 8 t/d. It is located at coordinates E 524172 N 4460553.

## ANNEX 6

List of pressures from fishing and fish farming activities

- *"Abandoned fish breeding plant"*, 40 m from the riverbank. Located at coordinates E 504594 N 4445591.
- *"Fishponds"*, 80 m from the gravel riverbed; 23 tanks. Located at coordinates E 504092 N 4445331
- *"Peshku Picari 1 shpk"*, Hec; Picari Stream; usage 1000 l/s; ecological flow 230 l/s; 18 tanks. Intake at coordinates: E 504211 N 4447995.
- *"Taverna Balilaj"*, Bar-Restaurant, fishponds, on the riverbank. It is located at coordinates E 485898 N 4449607.
- *"Artisanal fishing point, with a balance"*, which occupies the entire space between the two banks and is lowered and raised by a crane. It is administered by a local villager (Pandeli Zhupa). It is located 10 m from the river, next to a wooden hut that serves as a shelter for the fisherman and next to a dried willow. It is located at coordinates E 456774 N 4499142.

## ANNEX 7

List of pressures from inert deposition

- *Entity "Unidentified"*, 30 m from the riverbank; was checked and found to be abandoned for a long time. The aggregates pile had been covered by vegetation. It is located at coordinates E 455859 N 4499760.
- *"Undeclared aggregates pile"*, in the direction of Kashisht. 350 m from the riverbank. It is located at coordinates E 456689 N 4498609.
- Entity "General Beton", 130 m from the riverbank; was checked. It turned out to be an inactive aggregates and gravel dump, with an area of about 5000m2. But two other

illegal hotspots, unreported, were noticed near this dump. Located at coordinates E 459608 N 4496680.

- *Entity "Vëllezërit Kapaj"*, 70 m from the riverbank, near the village of Kashisht. The landfill was checked and was inactive. Located at coordinates E 461067 N 4495609
- "Mustafaraj", accumulation of inert materials (abandoned) on the side of the riverbed. It has a high impact on the Landscape. Located at coordinates E 463402 N 4488341.
- *Entity "Unidentified 2"*, 140 m from the riverbank. It was checked and resulted to be a long-abandoned deposit. E 470381 N 4490507.
- *"Non-functional gravel deposit"*, very close to the riverbank (50m). The soils are visible and form a small hill; it appears abandoned. This hotspot has been identified, along with 15 others, by the Administration of Protected Areas (AKZM), in an effort in 2022 to identify inert waste disposal sites, mainly due to the processing and use of gravel from the Vjosa River. It is located at coordinates E 470381 N 4490509.
- *"Abandoned construction site",* on the side of the Fieri-Memaliaj national road, about 200m from the riverbank. It is located at coordinates E 492026 N 4470724.
- *"Abandoned construction site"*, 150 m from the riverbank: 1 ha. It is located at coordinates E 477631 N 4453582.
- *"Gravel waste from the Himara Waterworks construction site"*, 20m from the riverbank. E 483117 N 4449901.
- *"Abandoned construction site"*, 20 m from the gravel bed of the river. E 483253 N 4449812.
- *"Himara Waterworks Site"*, on the riverbank. Located at coordinates E 483438 N 4449636.
- *"Inert materials storage site"*, 170 m from the riverbank. Located at coordinates E 510108 N 4442755.
- *"Gravel collection point"*, 210 m from the riverbank. Located at coordinates E 501425 N 4463805.
- *"Gravel construction site"*, 350 m from the riverbank. It is located at coordinates E 503540 N 4459657.

## ANNEX 8

List of pressures from tourism activities

- *"Sajmola Bar-Restorant"*; the services have been moved to the shore, down to the river. It is located at coordinates E 509171 N 4462451.
- *"Resort-Hotel-Restorant"*, 280 m from the shore. It also has a high impact on the landscape. It is located at coordinates E 510093 N 4462553.
- *"River Bar-Restorant"*, on the river side. It is located at coordinates E 513706 N 4462433.

- *"Hotel-Restorant Gryka e Këlcyrës"*, on the river side. It is located at coordinates E 513805 N 4462460.
- *"Vjosa beach"*, a beach with umbrellas and sun loungers on Vjosa. There is also a one-story building that serves as a Bar-Restorant. Located at coordinates E 517759 N 4463306.
- *"Armando Rafting"*, two-story building, 40 m from the shore. Located at coordinates E 531014 N 4455189.
- *"Vjosa Albania Rafting & Kayak Camping Përmet"*, they have also built wooden cabins; 250 m from the shore. Located at coordinates E 531813 N 4454423.
- *"Rafting Vjosa"*, rafting point with wooden cabins; 190 m from the riverbank. Located at coordinates E 532404 N 4453955.
- *"South Adventure"*, rafting, 40 m from the shore. Located at coordinates E 4442365 N 4453054.
- "Plazh", on the gravel bed of the river. Located at coordinates E 547727 N 4440340.
- "Kjoskë-Bar", 10 m from the riverbank. Located at coordinates E 478069 N 4452780.
- *"Kafe Kallarati"*, on the riverbed. Located at coordinates E 478108 N 4452783.
- *"Bar-Restaurant",* on the riverbank. Located at coordinates E 479776 N 4452196.
- *"Bar-Cafe"*, wooden kiosk, 20 m from the riverbank. Located at coordinates E 483144 N 4449880.
- *Bar-Restaurant* in the form of a large kiosk, 20 m from the riverbank. Located at coordinates E 483330 N 4449616.
- *"Lumi i Bardhë"*, Hotel-Bar-Restaurant, 30 m from the riverbank. Located at coordinates E 483420 N 4449653.
- *"Taverna Balilaj"*, Bar-Restaurant, fish markets, on the riverbank. Located at coordinates E 485898 N 4449607.
- *"Hotel Uji i Ftohtë"*, 20 m from the riverbank; since 2019. Located at coordinates E 505658 N 4457307.
- *"Camping Shtepez",* 60 m from the riverbank. Located at coordinates E 507285 N 4451345.
- *"Xronos Village"*, tourist village, Hotel-Bar-Restaurant, 800 m from the river. It is located at coordinates E 519987 N 4427446.

## ANNEX 9

List of pressures from planting Paulownia (Paulownia tomentosa)

- *"Paulownia plot"*, 700 m from the shore. 1 ha. Located at coordinates E 468248 N 4492596.
- *"A string of Paulownia plots about 1.5 km long"*, only 100 m from the shore at the closest point to the river. 19 ha. Located at coordinates E 471520 N 4490118.
- *"Paulownia plot"* 40 m from the riverbank. Located at coordinates E 519023 N 4462477.

- *“A small Paulownia plot”*, 600 m from the shore. 1 ha. Located at coordinates E 470774 N 4491083.