



**IMPLEMENTATION OF THE STRATEGIC ACTION PROGRAMME (SAP) OF THE  
DINARIC KARST AQUIFER SYSTEM: IMPROVING GROUNDWATER  
GOVERNANCE AND SUSTAINABILITY OF RELATED ECOSYSTEMS**

**OUTPUT 2.1.**

**NATIONAL GROUNDWATER GOVERNANCE  
DIAGNOSTIC ANALYSIS**

**ALBANIA**

NOVEMBER 2025



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## ACRONYMS (a selection)

AGS	Albanian Geological Survey
CIS	Common Implementation Strategy
DCM	Decision Council Ministries
DPSIR	Drivers, Pressures, State, Impact, and Response
DSIP	Directive Specific Implementation Plans
DWD	Drinking Water Directive
DSIP	Directive Specific Implementation Plan
FD	Flood Directive
GGDA	Groundwater Governance Diagnostic Analysis
GWDE	Groundwater Dependent Ecosystems
GW	Ground Water
GWD	Ground Water Directive
HPP	Hydro Power Plant
IGEWE	Institute of Geosciences, Energy, Water and Environment
IPMG	Integrated Policy and Management Group
IPH	Institute of Public Health
IWRM	Integrated Water Resources Management
MTE	Ministry of Tourism and Environment
MA	Ministry of Agriculture
MIE	Ministry of Infrastructure and Energy
NIPT	National Inspectorate for the Protection of the Territory
NAPA	National Agency of Protected Areas
NANR	National Agency of Natural Resources
NEA	National Environmental Agency
NWO	National Water Operator
NCTW	The National Council of Territory and Water
NADWW	National Agency Drinking Water and Waste
NEIP	National European Integration Plan
ND	Nitrate Directive
NWC	National Water Council
NSPIW	National Sectoral Program for Integrated Water Management
RBC	River Basin Council
RBO	River Basin Office
SWOT	Strength Weakness Opportunities Threats
TBA	Transboundary Aquifer
ToC	Table of Content
UWTD	Urban Wastewater Treatment Directive



WRA

Water Regulatory Authority

WFD

Water Framework Directive

WMRA

Water Management Resource Agency

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## 1. Introduction

As part of the **first-year activities of the DICTAS II project**, members of the national experts, are tasked with conducting a **Groundwater Governance Diagnostic Analysis (GGDA)** in all project countries.

The GGDA will be carried out in line with the recommendations of the **GEF/FAO Groundwater Governance Project (GGP)**. Specifically, it will follow the guidelines set out in the GGP's final output, "*Global Framework for Action to Achieve the Vision on Groundwater Governance.*"

The **first step** of the process involves diagnosing the current state of groundwater governance in the relevant areas. The aim is to identify the most critical governance improvements and determine how these can be adapted to local conditions and challenges.

This document is organized into nine chapters and builds on **four essential components** of groundwater governance:

1. **Legal Framework:** A supportive and coherent legal basis for groundwater management.
2. **Knowledge and Awareness:** Accurate, accessible, and widely shared knowledge of groundwater systems, complemented by public and institutional awareness.
3. **Institutional Framework:** Strong leadership, effective organizations, institutional capacity, stakeholder engagement, participatory mechanisms, and cross-sectoral coordination.
4. **Policies and Incentives:** Policy instruments, incentive structures, and plans that are consistent with broader societal goals.

Together, these components establish the **enabling framework and guiding principles** for the implementation of groundwater management activities. They are intended to support mandated actors in ensuring the sustainable development, utilization, and protection of groundwater resources.

To meet the objectives of the DICTAS II project, the GGDA will be conducted in **two stages**:

- i. **National GGDAs:** Undertaken within each project country to assess governance conditions at the national level.
- ii. **Regional/Transboundary GGDA:** A collective assessment focusing on shared transboundary aquifers (TBAs).

The **national analyses** will identify key pathways for developing effective groundwater governance in all TBAs. They will also contribute to the establishment of a **common set of indicators** across project countries. These indicators will serve to evaluate the implementation of enabling frameworks and guiding principles for groundwater governance in the future.

The results will directly inform the **formulation of management plans, monitoring programs, and measures**, ensuring that these are adapted to the specific **environmental, technical, social, and financial contexts** of each transboundary aquifer.

## 2. Actors in Groundwater Governance

Albania possesses abundant groundwater resources, estimated between **9 and 13 billion cubic meters per year**. With approximately **9,000–10,000 m<sup>3</sup> of renewable freshwater resources per capita annually** (EEA, 2023), the country ranks among the ten most water-rich nations in Europe. Nevertheless, the availability of both surface and groundwater declines significantly during the **summer dry season (July–September)**, when only **6–9% of the annual runoff** occurs.

The following stakeholder mapping provides an overview of the principal actors engaged in groundwater governance across the DICTAS II countries, with a specific focus on Albania. It identifies formal and informal institutions operating at national, regional, and local levels, highlighting their respective roles, responsibilities, and interactions. This mapping underpins the diagnostic assessment by clarifying **who is involved, at which governance level, and in what capacity**.

### Key Actors

Groundwater governance in Albania involves a broad spectrum of institutions spanning both national and local levels. At the top of the institutional hierarchy stands the **National Council of Territory and Water (NCTW)**, which serves as the highest policy-making authority for water management. The **Water Resources Management Agency (WRMA/AMBU)** supports the NCTW by overseeing the implementation of policies and coordinating actions at the river basin level.

Several **sectoral ministries**—including those responsible for **Environment, Agriculture, Infrastructure, Health, and Defense**—contribute to groundwater management through their regulatory mandates, monitoring activities, and investment programs.

At the subnational level, **River Basin Councils** are responsible for issuing water permits, managing basin-level planning, and ensuring local implementation of water policies. **Municipalities** play a key role in operation and management of local water services (water supply and irrigation), and the enforcement of regulations.

**Local communities, farmers, and Water User Organizations (WUOs)** represent the primary groundwater users. Although their involvement in formal decision-making remains limited, these stakeholders are increasingly recognized as essential actors in sustainable groundwater governance.

Finally, **academic and research institutions**—such as the **Institute of Geosciences, Energy, Water and Environment (IGJEO)**—together with **civil society organizations** and **international partners** (e.g., UNESCO, UNECE, GEF), provide critical support through **scientific research, monitoring initiatives, capacity-building, and public awareness projects**.

**Table 1: Main Stockholders in Water Resource Management**

Albania			
Stakeholder	Type	Level	Role / Responsibility
Water Resources Management Agency (WRMA / AMBU)	Formal	National	Water resources administration, permits, monitoring
Ministry of Tourism and Environment	Formal	National	Policy-making, legislation, coordination
River Basin Councils (RBCs)	Formal	Regional	Basin-level permits, planning and coordination
Municipalities and Local Governments	Formal	Local	Local implementation, licensing, service provision
Institute of Geosciences (IGJEO)	Informal	National	Research, data provision, technical support
Civil Society Organizations (e.g. EcoAlbania)	Informal	Local/National	Awareness, monitoring, public participation
UNESCO, UNECE, GEF	Informal	International	Technical assistance, funding, regional coordination
Water User Organizations (WUOs)	Informal	Local	Local surface&groundwater use, informal monitoring, community coordination
Local Farmers and Well Owners	Informal	Local	Direct use of groundwater for irrigation and drinking water
Local Communities	Informal	Local	Water users, affected stakeholders, participants in awareness and social monitoring

### Institutional Framework for Groundwater Governance

Following the adoption of the **new Water Law No. 29/2024, “On Water Resources”**, all relevant institutions are now required to report to the **Water Resources Management Agency (WRMA)**, which serves as the **highest water authority in Albania**.

### Institutional Integration

Albania has established a **comprehensive legal framework** that promotes both **vertical and horizontal integration** in groundwater governance. In practice, however, vertical coordination between the **WRMA** and **municipalities** remains weak, hindered by inadequate reporting systems, fragmented databases, and uneven institutional capacities. Horizontal coordination among sectors—such as **water, environment, agriculture, energy, tourism, and health**—is legally mandated but functions inconsistently in practice.

The **National Water and Territory Council (NWTC)** and the **River Basin Councils** are intended to facilitate cross-sectoral and multi-level coordination; however, their potential remains underutilized. While donor-funded initiatives have successfully piloted models for integrated water governance, these experiences are typically limited in scope and lack long-term institutionalization.

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## **Institutional Capacity**

At the national level, institutions possess clearly defined mandates and strategic frameworks but face significant **operational challenges**. Both the **WRMA** and the **National Environmental Agency (NEA)** suffer from limited financial and human resources, particularly in **field-level monitoring and enforcement**.

At the local level, **municipalities** often lack qualified hydrogeological personnel, monitoring equipment, and sufficient funding to fulfill groundwater-related duties. Although **academic and research institutions**—such as the Institute of Geosciences, Energy, Water, and Environment (IGJEO)—hold substantial expertise, their participation in planning and implementation remains sporadic. Institutional capacity is further constrained by a continued dependence on **donor-funded projects**.

Ongoing reforms, including the establishment of the **National Water Operator** and the **digital water cadaster**, are expected to enhance institutional capacity, though these mechanisms are still in early stages of implementation.

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## **Cooperation and Coordination**

Overall cooperation among actors is assessed as moderate but fragmented. Formal mechanisms—such as the National Water and Territory Council (NWTC) and the River Basin Councils (RBCs)—exist to promote inter-ministerial and basin-level coordination, yet their effectiveness varies significantly.

At the local level, cooperation among the **WRMA**, **municipalities**, and **water utilities** is gradually improving; however, **data sharing** and **joint monitoring efforts** remain weak. Engagement with **civil society**, **academia**, and **local communities** tends to occur mainly through **donor-supported initiatives** or ad hoc **public consultations**. Structured and recurring collaboration with **Water User Organizations (WUOs)**, farmers, and **local NGOs** is still largely absent.

To ensure inclusive and sustainable groundwater management, Albania requires **stronger coordination frameworks** and **clearer legal mandates** that institutionalize cooperation across all governance levels.

The current institutional framework envisages both vertical and horizontal integration; however, its practical implementation is constrained by **limited coordination**, **data fragmentation**, and **capacity deficits**, particularly at the local level. In addition, **institutional instability** and **political interference**—especially in tariff setting and investment prioritization—further undermine the sector’s performance.

The absence of harmonized databases, coherent investment planning, and integrated monitoring mechanisms underscores the need for a **comprehensive, basin-based management approach**. Effective groundwater management depends on well-defined **vertical coordination** (between national and local authorities) and **horizontal coordination** (across sectors and agencies).

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### Vertical Integration (National–Local)

Vertical integration flows from the **central government**, which develops national policies, standards, and strategic plans, toward the **local level**, where municipalities and water supply companies implement and manage resources. However, supervisory and financial mechanisms remain fragmented, and local authorities often lack the **technical expertise** and **financial capacity** required for effective monitoring and management.

Several positive examples demonstrate that enhanced coordination is possible. The **GEF-Drin Project**, for instance, established effective structures for **data exchange** and **joint monitoring**, showing that cross-sectoral cooperation can succeed when adequate institutional and financial support is available. At the regional level, **UNESCO (2024)** recommends a **trans-sectoral approach** to groundwater governance within the **Dinaric Karst Aquifer System**, integrating **spatial planning** and **agriculture** as essential components of sustainable management.

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### Key Challenges

- Institutional fragmentation, particularly at the local level;
- Lack of sustainable financing for local monitoring activities;
- Insufficient technical and human capacities in municipalities;
- Fragmented and poorly accessible databases;
- Limited involvement of non-state actors in decision-making.

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### Recommendations

- **Strengthen vertical reporting:** Enforce legal provisions requiring municipalities to periodically report on groundwater status to WRMA.

- **Establish an Intersectoral Committee:** Create a national groundwater forum with representation from the environment, agriculture, energy, and health sectors.
- **Develop a National Database:** Implement a unified digital platform for monitoring, data sharing, and information exchange.
- **Provide Financial Support to Municipalities:** Introduce conditional grants for groundwater monitoring and aquifer protection.
- **Enhance Regional Exchange:** Capitalize on lessons learned from the **Drin** and **UNESCO** projects to build sustainable national practices.

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### Awareness Among Actors

Awareness of groundwater issues varies substantially across actor groups. Central institutions generally possess adequate knowledge of legal obligations and national strategies, whereas **municipalities, WUOs, and local communities** often lack a clear understanding of groundwater risks, regulations, and monitoring responsibilities.

A widespread **public perception of groundwater as an inexhaustible resource** persists, particularly in rural and karst regions. Awareness-raising and educational activities are rare and typically associated with international or donor-driven projects. While **local knowledge** of groundwater dynamics exists, it remains underutilized. Strengthening **community involvement** in monitoring and protection initiatives could bridge the gap between policy design and practical implementation.

### 3. Legal Framework

Albania has committed to an integrated water management approach aligned with the European Union’s legal and policy framework. Since 2014, the Government of Albania has adopted a vision rooted in the principles of sustainability, equitable access, economic prioritisation, and the long-term protection of ecosystems.

The comprehensive table of main water legislation (Laws & DCM) related to the Water Governance and Management are shown below.

**Table.2:** Main Legislation on Governance, Management and Protection of Water Resource in Albania.

ALBANIAN GOVERNMENT – LEGAL ACTS	
Law No. 99/2024 revised	For Water Sources
Law No. 431/2011	For Environmental Protection
Law No. 44/2015	For Administrative Procedures
Law No. 81/2017	For Protection Area
Law No. 93/2015	For Tourism
Law No. 107/2014	Agency for Territory Planning and Development
Law No. 111/2015	Albanian Geological Services
Law No . 7/2017	For use of Renewable Resources
Law No. 102/1996	For Water Supply and Sewerage
Law No. 24/2017	For Irrigation and Drainage
Law No. 111/2012	On Integrated Water Resources Management” (primary water law aligned with EU WFD).(revised 2018).
Law No. 8102/1996	On Water Supply and Sanitation Sector Regulation
Law No.90/2012	For Public Administration
Law No. 45/2019	For Civil Protection
Law 72/2012	For Organization and Operation of Geospatial State Infrastructure
Law No. 138/2009	For Public Health
Law No. 15/2024	For Albanian Marine Environmental Protection

#### DECISIONS OF COUNCIL OF MINISTRIES

DCM no. 335 dt.19.6.2025	<i>For Organization and Operation of WSMA</i>
DCM No. 1015/2020	<i>On the content, development and implementation of National Water Strategies, River Basin Management Plans and Flood Risk Management Plans.</i>
DCM no. 635, date 21.11.2001	<i>On Establishment of a Government Commission for Water Problems with Neighboring Countries.</i>
DCM no.568/2019	<i>For Creation of National Environmental Agency</i>
DCM no.490/2011	<i>For Creation of IGJEU-it</i>
DCM no.102/2015	<i>For Creation of National Agency of Protection Zones</i>
DCM no. 27/2016	<i>For Creation of National Agency of Territory Planning</i>
DCM no. 47/2006	<i>For Creation of National Agency of Natural Resources</i>
DCM no.431/2018	<i>For Creation of NADWW-</i>
DCM no 246, date 30.04.2014,	<i>For the determination of environmental quality standards for surface waters”</i>
DCM no.1014, date 16.12.2020	<i>For Approval of Tariffs for Water Use and Discharged Request of Water Works</i>
DCM no.1122, date 30.12.2020	<i>For Water Cadastre Creation and Operation</i>
DCM no. 1189 date 18.11.2009	<i>On rules and procedures for the design and implementation of national environmental monitoring programme.</i>
DCM No 267, date 7.4.2021	<i>Establishes the roles of WRMA and RBO .</i>
DCM no. 379, date 25.5.2016	<i>For Approval of Drinking Water Quality Regulations</i>
DCM no. 247, date 30.4.2014	<i>For the determination of rules, requirements and procedures for public information and involvement in environmental decision-making.</i>
DCM no 345, date 22.05.2019,	<i>For Approval of National Strategy for Irrigation and Drainage and Action Plan 2019-2031”</i>
DCM no.437/2017	<i>For Creation of 4 Regional Irrigation and Drainage Directorate</i>
DCM no.570/2019	<i>For Creation of Forest National Agency</i>
DCM no. 319 dt.11.6.2025	<i>For the approval of the application forms for the use of water resources, accompanying documents, the review and decision-making procedure, permit formats, authorization, special conditions and their validity periods.</i>

The primary legislative instrument governing water management in Albania is **Law No. 29/2024 “On Water Resources.”** This comprehensive law establishes the foundation for

integrated water resources management, aligning Albania's framework with the principles of the EU **Water Framework Directive (WFD)** and **Groundwater Directive (GWD)**.

**Scope:**

The law provides a unified framework for the sustainable use, protection, and administration of all water resources, including groundwater.

**Key Provisions:**

- Mandates the **progressive reduction and prevention of groundwater pollution**;
- Strengthens **groundwater protection and pollution control measures**;
- Consolidates and coordinates **permits, authorizations, and concessions** related to water use;
- Aims to **reduce discharges of hazardous substances** into water bodies.

Albania has developed a substantial legal foundation for the protection of water resources, particularly groundwater. This includes regulations addressing **sanitary protection zones, wastewater discharge control, artificial aquifer recharge, and remediation of contaminated soil and groundwater**. However, significant gaps and inconsistencies persist—especially in **karstic regions**, where hydrogeological vulnerability is exceptionally high.

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### Alignment with EU Directives

National laws and subordinate regulations provide the necessary conditions for the **transposition of the Water Framework Directive (WFD)** and related directives. These legal instruments define the procedures for **assessing and monitoring the chemical and quantitative status** of both surface and groundwater bodies, as well as the **ecological status of associated ecosystems**.

In line with EU accession requirements, Albania must prepare **Directive-Specific Implementation Plans (DSIPs)** for each directive for which it seeks transition periods. DSIPs serve as strategic documents for planning:

- **(i)** legal transposition;
- **(ii)** institutional adjustments;
- **(iii)** implementation and enforcement activities.

These plans are typically developed for **investment-intensive directives** that require substantial technical and financial resources to achieve compliance.

Currently, the main water institutions in Albania are focusing on:

- Developing four key directives: **Water Framework, Groundwater, Floods, and Nitrates**;
- Approving **secondary legislation** between **2025–2026** (with most regulations expected by 2025);

- Reviewing and updating the **National Integrated Water Resources Management (IWRM) Strategy by 2027.**

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## Legislation and Regulation of Groundwater Management

### Sanitary Protection Zones (SPZs)

In Albania, Sanitary Protection Zones (SPZs) are legally recognized but have been only partially implemented, with the first zone most consistently defined. Their delineation is primarily based on Decision of the Council of Ministers (DCM) No. 379, dated 25 May 2016, “On the Quality of Drinking Water.”<sup>1</sup>

#### Scope:

This regulation sets technical and hygiene standards for drinking water infrastructure and includes provisions for protection around water sources.

#### Key Provisions:

- Establishes sanitary protection requirements for water supply systems;
- Specifies standards for design, disinfection, and hydro-sanitary safety of wells, pipelines, and related facilities.

#### Structure of Sanitary Protection Zones:

- **Immediate Protection Zone**
  - Directly surrounds the water source.
  - Strictly controlled access, managed by the water supplier.
  - Defined by **VKM No. 379/2016**, typically with a radius of **15–100 meters**, depending on aquifer type.
  - The main objective is to **prevent infiltration of pollutants** into the water intake.
- **Adjacent (Vicinal) Protection Zone**
  - Extends beyond the immediate zone and prohibits **construction, agriculture, livestock, industrial activities, and use of fertilizers or pesticides.**
  - Calculated using hydrogeological formulas tailored to the aquifer.
  - Serves to prevent **pathogenic and chemical contaminants** from reaching the groundwater.

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<sup>1</sup> <https://faolex.fao.org/docs/pdf/alb163693.pdf>

- **Remote Protection Zone**

- Surrounds the second zone.
- Activities may be permitted but require **administrative authorization** and strict environmental oversight.
- Functions as a **buffer zone** between protected areas and the wider environment.

These zones are defined based on **health risks and water quality criteria** through cooperation between **water, health, and environmental authorities**. Although the legal framework acknowledges the specificities of **karst hydrology**, technical implementation guidelines remain insufficient.

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### Artificial Aquifer Recharge and Wastewater Reuse

Albanian legislation currently **does not explicitly regulate Managed Aquifer Recharge (MAR)** or the **intentional reuse of treated wastewater** for aquifer replenishment. Key regulatory gaps include:

- Absence of **treatment standards** for recharge water;
- Lack of **risk assessment procedures** or **permit conditions** specific to recharge operations;
- No legal differentiation between **surface reuse** (e.g., irrigation) and **subsurface reuse** (e.g., infiltration or injection wells);
- Existing laws interpret subsurface discharges primarily as **pollution sources**, not as managed recharge activities.

These gaps pose particular risks in **karst regions**, where rapid infiltration and conduit flow increase vulnerability to contamination. Clear **hydrogeological criteria, risk-based assessments**, and **legal safeguards** are necessary to enable safe implementation of MAR practices.

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### Soil and Groundwater Remediation

Albania's environmental legislation embraces the **polluter-pays principle** and establishes a general obligation for environmental restoration. Nevertheless, practical remediation of contaminated soil and groundwater remains weak due to several legal and procedural shortcomings:

- Absence of **numerical cleanup standards** for soil and groundwater contamination;
- Lack of **defined responsibilities** for initiating and financing cleanup;
- Undefined **thresholds and criteria** for when remediation is mandatory;
- Weak **monitoring and enforcement mechanisms**;

- No differentiation based on **land use types** (e.g., residential, agricultural, industrial) or **sensitive hydrogeological settings**, such as karst terrains.

While legal terminology such as *rehabilitation* and *restoration* are used, these provisions often lack operational guidance specifying **how, when, and by whom** remediation should occur.

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### Groundwater Monitoring Methodology

The current **groundwater monitoring methodology** does not incorporate specific criteria for **karstic aquifers**, applying uniform procedures to all aquifer types. Monitoring focuses primarily on **water levels**, including **piezometric levels** in natural springs and wells, but data collection is **irregular** and lacks systematic temporal coverage.

Similarly, **physical-chemical monitoring** is performed without differentiation between karst and non-karst formations. Parameters and sampling frequencies are standardized nationwide, overlooking the distinct hydrodynamic and contamination characteristics of karst systems. This uniform approach limits the accuracy of groundwater status assessments and the ability to detect rapid changes typical of karst environments.

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### Sanitary Protection Obligations in Permitting

The obligation to comply with sanitary protection requirements is reaffirmed in **Decision of the Council of Ministers No. 319, dated 11 June 2025**, *“On the Approval of Application Forms for the Use of Water Resources, Accompanying Documentation, Decision-Making Procedures, Permit Forms, Special Conditions, and Validity Periods.”*

According to **Annex 2** of this decision, applicants submitting **hydrogeological studies** must provide:

“General data on the quality of the water source, in accordance with environmental quality standards, and in compliance with sanitary protected areas.”

This provision integrates **sanitary protection considerations** into the **permitting process**, linking water use authorization directly to compliance with environmental and public health standards.

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### Albania’s legislative alignment with the WFD

Albania’s legal framework for groundwater management is evolving toward alignment with EU environmental standards. The **Water Law No. 29/2024** provides a robust foundation for integrated management, yet effective implementation remains constrained by **regulatory**

**gaps, insufficient technical guidelines, and limited institutional capacity**—particularly regarding **karst aquifers, artificial recharge, and remediation procedures**.

To strengthen compliance and sustainability, Albania should:

- Develop **specific regulations** for Managed Aquifer Recharge and wastewater reuse;
- Establish **numerical standards and procedural clarity** for soil and groundwater remediation;
- Tailor **monitoring methodologies** to karst environments; and
- Enhance **coordination between permitting, health, and environmental authorities** in the designation and enforcement of Sanitary Protection Zones.

These steps are essential for ensuring that Albania’s groundwater governance framework is not only legally sound but also technically and practically effective and environmentally sustainable.

## 4. Policy, Plans, and Principles

This chapter provides an overview of groundwater (GW) and groundwater-dependent ecosystems (GWDE) management in Albania, with a focus on karst areas, describing the legal framework, policies, strategic plans, and coordination mechanisms.

### National Water Management Strategy

Albania has committed to **integrated water management** aligned with EU legislation and the Water Framework Directive (WFD). The **Integrated Water Resources Management (IWRM) Strategy 2018–2027** establishes the vision:

*“By 2027, Albania shall ensure efficient use of water through integrated and operational water resources management, supported by a comprehensive monitoring system and effective management of flood risks and water scarcity.”*

### Key Implementation Structure Includes:

- **Integrated Policy and Management Group for Integrated Water Management (IPMG-IWM):** Chaired by the National Council of Territory and Water (NCTW), overseeing policy development, implementation, and evaluation.
- **Agency for Water Resources Management (AWRM):** Established in 2018, acts as the central coordinating body and NWC secretariat.

Administration and management structures for water management are provided at national, basin and local level. Albania is divided into seven river basins, each one having a River Basin Council (RBC) with respective Administration Office of Basin Water. This structure is favourable, in principle, to counteract the current fragmentation of water resources management and promote an effective administration at basin and local level.

The **National Sectoral Program for Integrated Water Management 2018–2030** guides investments, improves planning processes, ensures continuous monitoring, and protects environmental objectives. Two thematic working groups support the IPMG-IWM:

- **Water and wastewater reform** – led by the Ministry of Infrastructure and Energy.
- **Water resource management** – led by WRMA.

This framework is integrated within Albania’s **National European Integration Plan (NEIP) 2022–2024**, aligning water governance with EU accession priorities.

### Objectives for Groundwater and Karst Areas

Water resources management in Albania faces persistent systemic, technical, and environmental challenges that hinder the sustainable use and protection of water across sectors. Despite the existence of a legal framework aligned with the EU Water Framework

Directive (WFD), implementation suffers from water administration, insufficient human and financial capacities, particularly at the regional and basin levels

The **National Integrated Water Resources Management Strategy (NIWRMS, 2018–2027)** Emphasizes sustainable groundwater management, particularly in karst areas. Priorities include monitoring, pollution prevention, harmonizing legal frameworks, cross-sectoral coordination, and employing technology for groundwater management.

**Key objectives:**

- Sustainable drinking water supply for population and other water use sectors (irrigation, industry, energy production, etc).
- Protection and preservation of water quality.
- Management of water resources in sensitive karst areas.
- Infrastructure improvement for monitoring and resource management.
- Education and public awareness on sustainable water use.

**Required actions:**

- Development and implementation of RBMPs for integrated water management, for all rivers.
- Alignment with EU legislation and policies.
- Capacity building and institutional strengthening.
- Monitoring and reporting on water status.
- Stakeholder engagement in decision-making.

**Transboundary management:**

The **2010 Memorandum of Understanding with Montenegro** remain as main guides for shared transboundary aquifer management. This document needs to be amended and updated including even the governance issues of GW in the area.

**Alignment with Sectoral Policies**

Water quantity management is also constrained. Many users, in agriculture, industry and drinking water, abstract water without permits or monitoring, contributing to overexploitation, especially in vulnerable sub-basins. Groundwater resources remain poorly understood due to limited hydrogeological data and sparse monitoring facilities.

The IWRM Strategy aims to integrate water management across sectors, though effectiveness varies by sector:

- **Water supply:** Guaranteeing permanently safe water supply and sewerage services in quality and quantity for the population

- **Agriculture:** Incorporates irrigation and fertilizer use, balancing abstraction with recharge. Local implementation is often fragmented.
- **Environment:** Aligns with ecosystem protection, pollution control, and biodiversity conservation; coordination challenges persist.
- **Tourism and recreation:** Integration remains limited and sporadic.
- **Transport and infrastructure:** Hydrological studies and mitigation measures are included in planning, but cross-sectoral coordination is weak.
- **Industry:** Policies address hydropower and water-intensive industries through environmental assessments and compensatory measures.
- **Urban development:** Urban plans integrate water impacts to some extent, but full coordination remains a challenge.

While sectoral policies increasingly consider groundwater impacts, full integration, particularly at the local level and in karst aquifers, remains limited.

The IWRM Strategy, as a comprehensive framework, try to integrates water management with sectoral policymaking and strategies in Albania. The strategy is broadly aligned with sectoral strategies, but effectiveness depends on institutional implementation and coordination mechanisms. In practice, alignment with other sectoral strategies is partially advanced but has limitations on their coordination.

Regarding the environment, the strategy aligns with environmental policies, aiming to protect ecosystems and karst areas, manage pollution, and conserve biodiversity; however, inter-agency coordination for monitoring and data sharing remains challenging.

Related to drinking water, Albania's 2023–2030 National Water Supply and Sewerage Sector Strategy is sectoral, focusing on water utilities and operator performance to improve water supply and sewerage services, support economic development, and enhance citizens' living conditions<sup>2</sup>.

This strategy it aims developing in line with Albania's international commitments and the UN Sustainable Development Goals<sup>3</sup>. For the environment, the strategy prioritizes improving the management of wastewater and reducing pollution, increasing the proportion of sewage treated in proper facilities to protect water resources and ecosystems<sup>4</sup>.

In Albania, while some sectors have begun integrating groundwater impacts into their policies, full coordination between institutions and sectors remains a challenge. Achieving sustainable groundwater management requires an integrated approach<sup>5</sup>.

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<sup>2</sup> Government of the Republic of Albania. (2023). National Strategy for the Water Supply and Sewerage Sector 2023–2030. Ministry of Infrastructure and Energy.

<sup>3</sup> [infrastruktura.gov.al](https://infrastruktura.gov.al)

<sup>4</sup> [erru.al](https://erru.al)

<sup>5</sup> Water Resources Management Agency (WRA). (2015). Water Report: Monitoring and Sectoral Impacts. [https://www.ammk-rks.net/assets/cms/uploads/files/Publikime-raporte/Raporti\\_i\\_ujrave\\_i\\_2015\\_shqip\\_%282%29.pdf](https://www.ammk-rks.net/assets/cms/uploads/files/Publikime-raporte/Raporti_i_ujrave_i_2015_shqip_%282%29.pdf)

## Legislative and Policy Framework

In Albania, groundwater management is supported by a framework of various policies and strategies that aim to protect and ensure the sustainable use of these vital resources.

Albania's groundwater governance is supported by:

- **Law No. 29/2024 “On Water Sources”** – Protects surface and groundwater, ensures rational use, and mandates monitoring.
- **National Strategy for Integrated Water Resources Management** – Balances abstraction and recharge, guides sustainable water management.
- **River Basin Management Plans (RBMPs)** – Implement WFD principles, regulate GW and GWDE, and address over-abstraction, pollution, and ecosystem protection.

### Key challenges addressed related to GW on RBMPs:

- **Identification**, mapping, evaluation and registering existing illegal groundwater abstraction in respective RBs.
- **Monitoring of groundwater pollution**. Industrial, agricultural, and urban activities often cause groundwater contamination through untreated discharges. Measures to improve water quality include enhanced treatment capacities and continuous monitoring<sup>6</sup>.
- **Monitoring unsustainable exploitation**. Over-abstraction of groundwater, especially in low-recharge areas, can lower water levels and degrade quality.
- **Adapt Climate change resilience solution**. Climate change affects hydrological cycles, impacting groundwater availability. Policies include infrastructure adaptation and resource management to cope with.

### Local challenges not fully covered:

- Illegal well water use.
- Tourism pressures in coastal karst areas.
- Limited local capacity for monitoring and management.
- Compliance of aquifer protected area

### Karst-specific measures in RBMPs:

- Detailed water source monitoring.
- Protective measures against contaminant infiltration.
- Community education and awareness initiatives.

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<sup>6</sup> <https://www.erru.al>

## Integration of Groundwater and Surface Water

Groundwater represents a vital resource for drinking water supply, agriculture, and ecosystems in Albania, particularly within karst aquifers distributed in mountainous and lowland areas

Groundwater and surface water are integrated through the **IWRM approach**, linking aquifers, rivers, lakes, and dependent ecosystems. The IWRM Strategy emphasizes the balance between extraction and recharge, coordinated sectoral planning, and monitoring to address agriculture, industry, tourism, and urban infrastructure impacts.

In Albania's RBMPs, groundwater and groundwater-dependent ecosystems (GDEs) are managed in line with the EU Water Framework Directive (2000/60/EC), which requires achieving "good status" of water bodies by 2027. This sets standards for the quantitative and chemical status of groundwater, as well as their interactions with surface ecosystems (European Union, 2000), in coordination with the National Strategy for Integrated Water Resources Management (2018–2027).

## Public Finance and Subsidies

Public finances and subsidies have a **mixed impact** on sustainable groundwater use:

The state budget and international donor funds provide crucial support for the modernization of water supply and sewerage systems, as well as for integrated water resources management projects.

State budget allocations for groundwater management remain limited and are often fragmented across institutions (Ministry of Finance and Economy, 2024)<sup>7</sup>.

Subsidies in sectors such as agriculture can, at times, indirectly increase pressure on groundwater through intensified irrigation and fertilizer use, particularly in sensitive karst regions (European Environment Agency (EEA), 2022)<sup>8</sup>. Furthermore, the lack of well-defined mechanisms for reinvesting water tariffs into groundwater protection and monitoring reduces the long-term effectiveness of financial support (ERRU, 2024)<sup>9</sup>.

Overall, while public finances and subsidies contribute positively to groundwater governance, especially through infrastructure and donor-supported projects, the absence of consistent domestic financing mechanisms, coupled with sectoral subsidies that may incentivize unsustainable practices, suggests that the impact is **partly supportive but not fully aligned**

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<sup>7</sup> Ministry of Finance and Economy. (2024). *State budget report 2024*. Government of Albania.

<sup>8</sup> European Environment Agency (EEA). (2022). *State of the environment report: Western Balkans – groundwater and agriculture*.

<sup>9</sup> ERRU. (2024). *Annual performance report of the water supply and sewerage sector in Albania 2024*. Water Regulatory Authority

with sustainable groundwater use. Strengthening cost-recovery systems, reinvestment of tariffs, and targeted subsidies for efficient water use remain key policy priorities.

Related to agriculture public finances and subsidies can support sustainability on irrigation technologies, and resource monitoring facilitate rational groundwater use (World Bank, 2023). Programs such as *“Better Irrigation Services and Enhanced Water Management in Albania”* provide financial support to farms and local operators to reduce groundwater exploitation and improve irrigation efficiency (World Bank, 2023)<sup>10</sup>. Unbalanced tariffs and subsidies may stimulate overexploitation, harming karst resources and dependent ecosystems (Ministry of Tourism and Environment, 2018).

Therefore, public finances and subsidies can support sustainable groundwater use only if linked to monitoring, abstraction tariffs, and policies promoting aquifer recharge. Without these conditions, financial support may have the opposite effect (World Bank, 2023).

#### **Positive Contributions:**

- Funding for modernization of water supply and sewerage systems.
- Support for integrated water management projects and institutional capacity building.
- Investment in monitoring infrastructure and sustainable irrigation programs.

#### **Challenges:**

- Reliance on external funding highlights weaknesses in domestic financial sustainability.
- Sectoral subsidies (e.g., for agriculture) may indirectly increase groundwater pressure.
- Limited reinvestment of water tariffs into protection and monitoring.

#### **Recommendations:**

- Strengthen cost-recovery systems and ensure reinvestment into groundwater protection.
- Target subsidies to promote efficient irrigation and aquifer recharge.
- Link financial support mechanisms with abstraction control and monitoring systems.

Public finance instruments can become powerful tools for sustainable groundwater governance if they are tied to monitoring obligations, tariff reinvestment, and incentives for water-efficient technologies. Without such integration, financial support may inadvertently contribute to groundwater depletion, especially in vulnerable karst regions.

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<sup>10</sup> World Bank. (2023). *Better irrigation services and enhanced water management in Albania*. Washington, DC: World Bank. <https://projects.worldbank.org/en/results/2023/08/22/better-irrigation-services-and-enhanced-water-management-in-albania?utm>

## 5. Adherence to the WFD and GWD

Since its adoption in 2000, the **EU Water Framework Directive (WFD, 2000/60/EC)** has constituted the cornerstone of European water protection legislation. It applies to inland, transitional, and coastal surface waters, as well as to groundwater resources. The Directive promotes an **integrated and ecosystem-based approach** to water management, ensuring the ecological integrity of aquatic systems through the regulation of specific pollutants and the establishment of binding quality standards. Central to its implementation is the **river basin district (RBD) approach**, which obliges Member States and neighboring countries to coordinate the management of shared transboundary water bodies.

Available national data indicate that groundwater in Albania generally maintains **good physical and chemical quality**, meeting the prescribed national standards. However, the presence of nitrite and ammonium compounds in certain wells suggests localized contamination, likely attributed to **inadequate enforcement of sanitary protection zones** around abstraction points.<sup>11</sup>

The **2022 revisions of Directive 2008/105/EC and Directive 2006/118/EC** highlight areas where further improvements remain necessary. As in several other European countries, Some of **Albania's river basins are of a transboundary nature**, extending across administrative and territorial boundaries. Consequently, establishing a **common understanding and coordinated management framework** is essential for the effective implementation of the WFD's principles and objectives.

The WFD methodology provides a **robust foundation** for Albania's ongoing efforts in **Integrated River Basin Management and Planning (RBMP)**. Given that the country is in the early stages of implementing integrated water resources management, Albania can significantly benefit from **the accumulated experience and best practices** of EU Member States during their WFD implementation processes.

To facilitate harmonization, the **European Commission (EC)** has adopted a **Common Implementation Strategy (CIS)** aimed at ensuring the consistent and coherent application of the WFD and its subsidiary directives across all Member States. Within this framework, the **EU water acquis** supports the preparation of **Directive-Specific Implementation Plans (DSIPs)** in Albania, particularly in the domain of **water quality and RBMP implementation**. These efforts are designed to strengthen the execution of the **National Water Reform**, enhance administrative capacities, and accelerate progress toward full alignment with **EU water legislation**, including the **Marine Strategy Framework Directive (MSFD)**.

In the domain of water quality, Albania has **requested transitional periods** for the full transposition of several key directives, notably the **Urban Waste Water Treatment Directive**

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<sup>11</sup> INVENTORY OF GROUNDWATER RESOURCES AND THEIR UTILISATION PATTERNS

Prepared by Bernardas Paukštys, Irene Zieritz (CEMSA Project), Aranit Gelaj, Arben Pambuku and Megli Belle (Albanian Geological Survey).

(UWWTD), Drinking Water Directive (DWD), Nitrates Directive (ND), Groundwater Directive (GWD), and Floods Directive (FD).

The **Groundwater Directive (2006/118/EC)**—“On the protection of groundwater against pollution and deterioration”—has been extensively integrated into the **new Albanian Law on Water Resources**, accompanied by approximately **12 draft Decisions of the Council of Ministers (DCMs)** currently under preparation to operationalize its implementation.

The **new Water Resources Law** and its associated **secondary legislation**, soon to be enacted, exhibit a **high level of conformity** with the WFD’s provisions. This alignment is also reflected in Albania’s **progress in developing River Basin Management Plans (RBMPs)**. To date, three out of seven RBMPs have been finalized, with the remaining four expected to be completed by late 2026 or early 2027.

In accordance with **Article 17 of the WFD**, Albania’s legal framework also addresses measures for the **prevention and control of groundwater pollution**, including criteria for assessing good chemical status, identifying significant upward pollution trends, and determining thresholds for trend reversal. The Albanian legislation thus mirrors the core principles and technical standards of the **Groundwater Directive (2006/118/EC)**.

Nevertheless, the **designation of protection zones for water abstraction** intended for human consumption remains incomplete. While the initial three RBMPs have partially identified **groundwater bodies** and delineated **drinking water source areas**, national-scale coverage is still under development.

Furthermore, two key legislative acts—**Law No. 29/2024 on Water Resources** and **Law No. 15/2024 on Marine Waters**—were adopted in 2024, thereby reinforcing the **regulatory framework for integrated water management**. The **development of RBMPs**, initiated under the **EUSWIM project**, continues under the **EU4Rivers project**, ensuring continuity in Albania’s water governance reforms.

In addition, twelve **secondary legal instruments (DCMs)** are under preparation to ensure the **full transposition of the Water Quality Directive’s requirements by 2025**.

A comprehensive **cost analysis of surface and groundwater monitoring operations**, including staffing, materials, and equipment, has also been completed and submitted to the **Ministry of Tourism and Environment (MoTE)** for the establishment of a **dedicated budget line** in the national fiscal framework.

Overall, Albania has made **significant progress** in aligning its **water management framework** with the **EU Water Framework Directive (WFD)** and the **Groundwater Directive (GWD)**. These developments represent important steps toward **EU accession-related environmental compliance**, institutional strengthening, and the **sustainable management of national water resources**.

### Related to **Groundwater Directive 2006/118/EC**

- Approve Secondary legislation 2025 – 2026 (most of them by 2025!)
- Review/Update national IWRM Strategy by 2027
- Develop all 7 RBMPs (different cycles) by 2027
- Establish a Monitoring dedicated budget line by 2025
- Classification methods for (Hy-Mo, Phy-Chem, Biol Monitoring) by 2027
- Technical reports + annually reporting on quality/quantity data by 2028
- Complete trend analysis of concentrations for priority substances by 2027
- Invest on 40 new monitoring stations by 2027
- Determine environmental quality standards (by 2027)

The core objectives of the WFD—especially **the attainment of good ecological and chemical status for all water bodies by 2027**—are embedded in Albania’s national water policy and legislative efforts. The country has transposed key WFD and GWD provisions into national legislation, incorporating principles such as river basin management, public participation, and the development of River Basin Management Plans (RBMPs). These plans are the foundation of Albania’s integrated water resources management strategy.

The Ministry of Tourism and Environment, through the National Environmental Agency (NEA), and in collaboration with the National Agency of Water Resources Management (WRMA) **holds primary responsibility for implementing, monitoring**, and reporting in accordance with WFD and GWD requirements

WRMA also collaborates with regional basin councils and local institutions to ensure effective multi-level water governance at the catchment scale. Regarding groundwater and groundwater-dependent ecosystems (GWDEs),

Albania has taken steps to incorporate GWD requirements by defining threshold values and quality standards through national regulatory acts. These are aligned with the GWD’s Article 3 and reflect Albania’s hydrogeological specificities, particularly the widespread karst aquifer systems. While specific technical guidelines for karst environments are still under development, a precautionary and risk-based approach is applied in vulnerable and sensitive zones.

A national methodology for groundwater monitoring and assessment has been developed, covering both chemical and quantitative status in line with the EU’s Common Implementation Strategy (CIS) Guidance Documents. This is supported by scientific input from institutions such as the Institute of Geosciences, Energy, Water and Environment (IGEWE) at the Polytechnic University of Tirana.

Comprehensive monitoring programs are in place for groundwater and GWDEs, with data informing the preparation of RBMPs and feeding into WFD reporting mechanisms. Ongoing efforts to enhance monitoring networks, particularly in remote or karstic areas, are supported through EU pre-accession assistance, international cooperation, and national initiatives.

**Water Monitoring Program Consist on:**

- Evaluation of methods of classification for **physical-chemical**, **hydro-meteorological** and **biological water** monitoring.
- Provide technical reports on **water monitoring**, including pressures, site selection, and sampling results from field investigations.
- Report annually on **water quality** and **quantity data**.
- Continuous on-the-job training will be provided for **monitoring**, **data processing**, and **reporting**.

**Table 3.** Overview of Water Monitoring

Monitoring Program	Managing Entities	Focus	Parameters Monitored	Frequency	Spatial Coverage
<b>National Environmental Monitoring Program (AKM)</b>	National Environment Agency (AKM/NEA)	Surveillance of water quality in rivers, lakes, coastal waters, and groundwater	Physico-chemical parameters, nutrients, metals, biological indicators (in rivers)	Monthly to seasonal	Major river basins, coastal areas; less dense in karst/remote areas
<b>River Basin Monitoring Programs</b>	River Basin Office	Support for river basin planning and WFD compliance	Nutrient loads, flow, pollutant pressures, habitat status	Monthly to continuous (for flow)	Drin-Buna, Ishmi, Seman, and other key basins
<b>Groundwater Monitoring Networks</b>	National Environment Agency/NEA + Water Resource Authorities (e.g. Albanian Geological Survey)	Monitoring transboundary and strategic aquifers	Ions, nutrients, metals, conductivity, DO	Seasonal to annual	Transboundary aquifers and some urban/industrial zones; karst aquifers under-sampled
<b>Abstraction Monitoring</b>	Water Resources Management Authorities	Legal abstraction volumes per permit holders	Abstraction volumes by sector (irrigation, public, industrial)	Annual reporting	Nation wide for legal users; informal abstraction not fully captured
<b>Project-Based Monitoring (e.g. EU4Rivers, Drin Project)</b>	International donors, NGOs, local authorities	Pilot ecological and hydrological monitoring	Multiparameter water probes, macroinvertebrates, flow, habitat mapping	Weekly to continuous (in pilots)	Select pilot areas (e.g. Drin Basin, transboundary zones)
<b>Coastal / Bathing Water Quality Monitoring</b>	National Environment agency/NEA	Public health and recreational water quality	Microbiological parameters, DO, temperature	Seasonal (tourist season)	Coastal bathing zones

**Water Monitoring Data and Programs in Albania**

Monitoring data in Albania exist for several critical aspects of water management, including water quality, abstraction volumes, spring discharge capacity, ecological flow, and key ecological indicators,

largely aligned with EU directives such as the Water Framework Directive (WFD) and national strategies including the 2024 Law on Water Resources.

**Table 4.: Existing Monitoring Data and Aspects Covered**

Aspects	Status in Albania
<b>Water Quality</b>	Chemical and ecological status data for surface and groundwater are collected through surveillance and operational monitoring. Parameters include nutrients, major ions, metals, (and biological indicators for surface water only). However, groundwater data—especially in karst regions—remain sparse.
<b>Water Abstraction</b>	Abstraction volumes from both surface and groundwater sources are reported by users under the national water law. Data are categorized by sector (e.g. irrigation, public water supply, industry). However, unauthorized or unreported abstraction remains a challenge.
<b>Spring Discharge Capacity</b>	Hydrological data including spring discharge are monitored in several basins. However, in mountainous and karst terrains, coverage is irregular and often not integrated into national datasets.
<b>Ecological Flow</b>	Ecological flow requirements are referenced in basin management and water planning documents, aligned with WFD objectives. However, systematic and continuous monitoring of ecological flows is limited to select river systems.
<b>Ecological Indicators</b>	Some data exist from basin management and biodiversity projects, including macroinvertebrate surveys and habitat condition assessments for surface waters only. However, long-term monitoring and detailed ecosystem assessments (e.g. wetlands, karst systems) are still limited or missing.

In summary, Albania is advancing toward full compliance with the WFD and GWD through sustained legal harmonization, institutional strengthening, and the development of technical capacities. **Addressing challenges specific to karst hydrology, groundwater vulnerability, and GWDE conservation will be key to achieving the 2027 environmental objectives.**

National regulations define areas designated for the abstraction of water intended for human consumption, generally are missing. There are areas identified partially as groundwater bodies provided by three first River basin Management Plan. The others are defined as drinking water sources.

## 6. Knowledge, Information and Awareness

The Dinaric karst groundwater system within the territory of Albania has not been assessed according to the requirements of the WFD and GWD. As it was explained before the waters are elaborated in general, without any specific to the Dinaric or karstic water.

The problems of water quality are exacerbated by a growing demand for limited water resources in some parts of the country. A comprehensive and sufficient monitoring system is missing, followed by a weak regulatory and financial framework together with the lack of Institutional data change. Given the situation, the country has a fragile and fragmented management of water resources.

The existing monitoring data of the groundwater consist on:

- partially and fragmented GW level and
- physical-chemical parameters analyzed of the samples taken in national monitoring network point.

The monitoring program for the GWB consist in water sample, taking by the determined springs and wells. The sampling frequency is 2-4 time for year, depended by the available funds and financing.

Measuring data are published in official website of the Ministry of the Environment, or in the Annual Edition of the National Environmental Agency (NEA): "Environmental state report" for every year.

NEA is a central public institution under the Ministry of Environmental and Tourism, which exercises its jurisdiction throughout the territory of the Republic of Albania, through the central offices of the NEA and regional branches in all districts and performs:

Its obligation are:

- Regulatory functions for environmental permits in the country with the provisions of the relevant amendments;
- Monitors and evaluates the state of the environment and the preparation of the National Environmental Monitoring Program;
- Prepares and publishes the report on the state of the environment and other matters related to the environment;

The Benchmarking Unit, in the National Agency of Drinking Water and Waste (NADWW), part of the Ministry of Energy and Infrastructure (MEI), is monitoring the performance of 55 Water Utilities (WU), responsible for water supply and sanitation by collecting information and processing indicators.

The system collects information about the performance of the Water Utilities, the quantity of water used, financial performance of service provided, hours of service offered, etc.

Water quality is not included in this benchmarking, because it is covered by the Health Institute in terms of bacteriological analyses. The monitoring system is focused on the financial performance of WU. It covers about 80% of the total population and provides a reliable source of information.

**Table 5. Examples of the monitoring**

No	Nomenclature of hydrogeological sheet (1:25 000)	Water point code	Information source	Source location	X	Y	Z	Aquifer	Flow	physico-chemical parameters
1	e.x.: K-34-51-A-b	AlGWD 001	World bank report	River basin				Quaternary	Q (l/sek)	(anions+ cations + other physics)

Albanian Geological Survey (AGS), is the Contracted Institution by the National Environmental Agency (NEA) that make the sampling and analyzing of the samples from the national monitoring network. ([www.ags.gov.al](http://www.ags.gov.al));

The institution in charge for the data management is the of Water Resources Management Agency (WRMA) ([www.ambu.gov.al](http://www.ambu.gov.al));

The institution in charge for the data dissemination is National Environmental Agency ([www.govserv.org](http://www.govserv.org));

These organizations have sufficient staff but often not capable to do the best in existing conditions. It is quite necessary the staff training and definitely the new equipment and instruments that support the monitoring process. A strong threat and request addressed to the absence of the new trained generate that can know and use the GW modeling program.

The data, information, and knowledge about groundwater and dependent ecosystems in karst areas in **Albania** are available, but in a fragmented and partially limited way. They exist in different **institutional reports, monitoring systems, and research outputs**, yet accessibility for the wider public is often constrained by format, frequency, and institutional sharing practices.

Albanian legislation does not explicitly authorize or regulate Managed Aquifer Recharge (MAR) or the intentional reuse of treated wastewater for underground infiltration or aquifer replenishment. Key regulatory gaps include:

- No specific treatment standards for recharge water
- No risk assessment procedures or recharge permit conditions
- No legal distinction between surface reuse (e.g., for irrigation) and subsurface reuse (e.g., infiltration basins, injection wells)
- Existing laws treat subsurface discharges mainly under pollution prevention rather than beneficial reuse

These gaps are particularly critical in karst areas, where rapid infiltration and conduit flow can cause widespread contamination if recharge is unregulated. Hydrogeological assessments and legal safeguards are necessary but currently lacking.

Availability of data and information is ensured through the government-mandated transparency programs accessible to every ministry and agency, as well as through public consultations, which are publicly accessible online<sup>12</sup>. These sources include decisions, reports, and data from institutions, agencies, or projects, organized by sector.

Across the Dinaric Karst region, data, information, and knowledge related to groundwater and dependent ecosystems are **partially publicly available**, though often fragmented and not fully harmonized across institutions.

The River Basin Management Plan (RBMP) and sectoral reports from the Ministry of Tourism and Environment include data on groundwater levels (Ministry of Tourism and Environment, 2018). Some data are accessible online via public institutions or international projects, such as the World Bank – Better Irrigation Services in Albania (World Bank, 2023), DICTAS 1 and 2, etc.

Information formats include national and river basin reports, containing quantitative and qualitative analyses, tables, and graphics, which showing water levels, usage trends, and pollution sources, as well as more specific formats such as GIS maps, particularly for studies and projects monitoring karst river basins. Other sources include scientific research, technical studies, and reports, accessible in print or via online platforms, such as Eftimi (2020)<sup>13</sup>, providing an overview of Albania's karst water resources and their management.

Hydrogeological maps and GIS data, for example, of the Dinaric karst aquifer system, provide distribution and characteristics of groundwater<sup>14</sup>. International projects and announcements, including UNESCO projects<sup>15</sup>, have also conducted groundwater monitoring in Albania, such as a 2023 project for designing and testing a monitoring network in the Drin River region (UNESCO, 2020).

The Global Water Partnership – Mediterranean organisation have conducted integrated water assessments, including karst waters, and published reports (Water Action Hub, 2025). However, there are limitations: detailed data, especially for rural karst aquifers, are not fully public, and access often requires collaboration with responsible institutions such as WSMA or international projects.

Data are often dispersed across institutions and not centralized. Updates may be delayed or inaccurate, complicating current status assessments. Continuous monitoring is limited due to technical and financial constraints (World Bank, 2023).

In summary, data and knowledge on groundwater and karst ecosystems are partially publicly available in reports, graphics, and maps, but full access often requires collaboration with state institutions or international partners. A centralized, updated information system is needed for easier access by all stakeholders.

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<sup>12</sup> <https://akm.gov.al/wp-content/uploads/2025/02/Cilesia-e-ujerave-dhe-mbrojtja-e-tyre.pdf>

<sup>13</sup> Eftimi, Romeo. (2020). Karst and karst water recourses of Albania and their management. Carbonates and Evaporites. 35. 10.1007/s13146-020-00599-0.

[https://www.researchgate.net/publication/342091524\\_Karst\\_and\\_karst\\_water\\_recourses\\_of\\_Albania\\_and\\_their\\_management](https://www.researchgate.net/publication/342091524_Karst_and_karst_water_recourses_of_Albania_and_their_management)

<sup>14</sup> [ihp-wins.unesco.org](http://hp-wins.unesco.org)

<sup>15</sup> <https://www.unesco.org/en/articles/call-services-monitoring-water-quantity-and-quality-wells-selected-locations-albania-570rer2000-alb?utm>

In Albania, there are several institutions responsible for collecting and managing groundwater data, including the Water Resources Management Agency (WRMA), Albanian Geological Service (AGS), National Environment Protection Agency (NEPA), INSTAT, Ministry of Agriculture and Rural Development, Ministry of Tourism and Environment, and some regional agencies.

Information sharing between public agencies and between the public and private sectors has some limitations: it is often restricted, fragmented, and not always updated. Monitoring reports indicate a lack of coordination and harmonization of databases (World Bank, 2023), affecting the efficiency of groundwater management and potentially leading to unsustainable use.

Some data are accessible to private operators and farmers through international projects and subsidy programs, especially for irrigation and sustainable management (World Bank, 2023)<sup>16</sup>.

Groundwater level and quality information is mainly disseminated via periodic reports, institutional databases, and regional GIS platforms. Data sharing is limited due to the lack of a centralized, standardized platform, particularly for complex karst areas, which may cause delays or inaccuracies in responding to emergencies (World Bank, 2023).

The private sector, including agriculture, industry, and tourism operators, needs accurate and updated information for sustainable water management. Private companies often receive limited or filtered data from public institutions for licensing or concession purposes.

**There is no common platform where groundwater measurements are accessible to all** private actors. Information is often sensitive due to competition or legal reasons, limiting private sector access.

Many private companies must conduct independent monitoring to comply with legal requirements. To enable an effective information-sharing network, data centralization and standardization are needed, such as a national GIS platform and integrated water management approaches, improving access and reliability for public and private actors.

***Coordination between agencies, standardization of data, and more open access for public and private sectors can be enhanced*** (World Bank, 2023). Engagement of the private sector in decision-making and discussions on groundwater management increases transparency and pressure on institutions to provide public access and ensure effective collaboration.

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<sup>16</sup> Albania Deep Dive Water Security Assessment and Action Planning (2023) World Bank.  
[https://documents1.worldbank.org/curated/en/099062424121128933/pdf/P170030188309b081b5231a90aa079ba93.pdf?utm\\_](https://documents1.worldbank.org/curated/en/099062424121128933/pdf/P170030188309b081b5231a90aa079ba93.pdf?utm_)

## 7. Socio-Economic Setting and Challenges

### Identified National or Regional Challenges in Managing Groundwater in Karst Areas

The general groundwater management plan suffers from absence of dedicated policies, especially for karst aquifers highlights insufficient monitoring and lack of continuous data. Karst aquifers, especially in protected areas, require continuous monitoring of water levels and quality to predict seasonal changes and ensure sustainable management.

Legal limitations and poor enforcement of protective measures are additional challenges. Existing Laws and national strategy establish protective measures and monitoring, but implementation is often superficial

Improving monitoring and databases, creating a unified monitoring system for karst aquifers linked to rivers and lakes, can positively impact groundwater governance, supporting effective legal and sectoral policy implementation.

Enhancing inter-institutional coordination, interaction among WRMA, Ministry of Tourism and Environment, and other sectors, incorporating climate impacts into planning, as well as promoting sustainable use of groundwater through extraction tariffs and conditional subsidies, improve karst groundwater governance.

Groundwater and karst ecosystems primarily provide water for human consumption and agriculture. Dinaric karst aquifers are the main source of drinking water for cities and villages and are widely used for irrigation. These waters support surface ecosystems by feeding rivers and lakes, maintaining base flows during dry periods, and protecting local biodiversity.

Under climate challenges, their role ensures resource stability and drought protection. Karst aquifers act as natural reservoirs stabilizing water supply during low rainfall (World Bank, 2023). Ecosystem services include:

- i) provisioning: drinking water, agriculture, small industry;
- ii) regulating: hydrological balance, flood control, natural filtration;
- iii) protective: biodiversity and protected ecosystem conservation.

Urban water supply coverage has increased significantly, but rural areas still experience fragmented supply. According to the 2023–2030 National Water Supply and Sewerage Strategy, about 88% of the population has access to piped water, but 24/7 supply remains challenge (Ministry of Infrastructure and Energy, 2023).

Most major cities have Sewerage Treatment Plant, but only about 50% the population is connected to wastewater treatment plants (European Commission, 2022). Treatment plant capacity is limited and often faces technical problems, depreciation, or lack of maintenance. Not all cities have treatment plants, and proper sewerage network.

Urban waste collection services have improved, but waste often ends in unprotected landfills, impacting groundwater, especially in karst areas.

The 2020–2035 National Waste Plan anticipates increased recycling and new processing plants (Ministry of Tourism and Environment, 2020).

Despite progress, long-term investments, high network losses (up to 60%), low capacity for treating wastewater and hazardous waste, and urban and agricultural pollution impacts remain really challenges. Cases of water pollution risks from diferent factories, industrial users, and livestock and agricultural activities must also be considered.

Karst regions tend to have low population density, with high migration to urban areas or abroad, reducing pressure on water sources in some areas but increasing it in urban centers (INSTAT, 2023)<sup>17</sup>.

The local economy relies on traditional agriculture, emerging tourism (especially ecotourism and mountain tourism), and small-scale industry. Agriculture is important water use sector, including groundwater for irrigation, creating pressure on aquifers. Intensive agriculture, pesticide, and fertilizer use remain reall threaten for karst aquifer infiltration.

Uncontrolled urbanization and infrastructure expansion increase pollution risk from wastewater and urban waste. Tourism growth and increased capacity without sustainable sewerage and waste management threaten groundwater quality. Sustainable tourism strategies include natural resource protection, but implementation is partial due to legal and institutional coordination challenges<sup>18</sup>.

Climate change, low rainfall, and seasonal variations affect aquifer recharge (World Bank, 2023)<sup>19</sup>. The 2021–2030 National Development and Integration Strategy<sup>20</sup> emphasizes sustainable economic development, including protection of water resources (Government of Albania, 2021).

Agricultural and energy policies must align with water protection policies to reduce pressure on karst aquifers and dependent ecosystems. Agricultural policies include subsidies promoting irrigation, requiring strong control instruments for sustainable groundwater use.

Investments in hydropower and energy production (dam HPP) directly affect river regimes and potentially karst aquifer recharge, requiring strict monitoring protocols.

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<sup>17</sup> INSTAT. (2023). *Population and Housing Statistics*. Tirana

<sup>18</sup> Republic of Albania. (2012, updated 2018). *Law No. 111/2012 “On Integrated Water Resources Management” (as amended by Law No. 6/2018)*. Tirana.

<sup>19</sup> World Bank. (2023). *Albania: Climate Risk and Adaptation Country Profile*. Washington, DC

<sup>20</sup> Government of Albania. (2021). *National Development and Integration Strategy 2021–2030*. Tirana.

Overall governance and political leadership *in Albania* are officially prepared and favorable for groundwater governance, thanks to the existing legal framework and national strategies.

Albania currently has a relatively advanced legal basis for water resources management. Law No. 99/2024 “On Water Resource” establish principles for integrated management and protection of surface and groundwater as a single system.

This demonstrates political support for a sustainable and integrated approach. The restructuring of environmental governance, with a dedicated ministry, signals a strong commitment to environmental issues, where water plays a key strategic role.

The engagement of multiple ministerial sectors in decision-making for integrated water resources management, along with the inclusion of Chapter 27 on the environment as part of Albania’s European integration requirements, builds confidence in sound policymaking and effective management of water resources, including karst waters.

The Water Resources Management Agency reflects this institutional commitment. The National Strategy for Integrated Water Resources Management (2018–2027) and the Water Supply and Sewerage Strategy (2023–2030) integrate groundwater protection into national development plans (Government of Albania, 2018; Ministry of Infrastructure and Energy, 2023), aligning Albanian practices with EU standard protocols.

Growth in tourism and urbanization has increased demand for drinking water and sewage infrastructure, while limited human resource capacity—due to migration and insufficient wastewater treatment infrastructure—raises the risk of pollution to karst resources (UNDP, 2021)<sup>21</sup>.

Furthermore, intensification of agriculture and the use of pesticides and fertilizers pose significant threats, as the karst system is highly sensitive to rapid infiltration and pollutant spread (EEA, 2022)<sup>22</sup>. Investments in hydropower and other infrastructure projects are also altering water flows and hydrological balances, potentially affecting karst areas (World Bank, 2020)<sup>23</sup>.

Demographic changes—particularly migration and depopulation of rural areas—shift pressure on water resources toward urban and tourist centers. Nevertheless, the region’s transition toward a green economy and implementation of the “Green Agenda for the Western Balkans” provide opportunities for more sustainable water management, even

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<sup>21</sup> United Nations Development Programme (UNDP). (2021). *Human Development Report 2021/2022*. New York: UNDP

<sup>22</sup> European Environment Agency [EEA]. (2022). *Water and agriculture in Europe: challenges and opportunities*. Copenhagen: EEA

<sup>23</sup> World Bank. (2020). *Western Balkans: Regional Water Security Report*. Washington, DC: World Bank.

though challenges related to climate change and frequent droughts are expected to persist (European Commission, 2020)<sup>24</sup>.

Albania faces a wide range of groundwater users reflecting diverse social and economic needs as:

- Agricultural irrigators (largest consumers) with approximately 106,000 farmers benefiting from irrigation projects
- Municipal water suppliers - for urban and rural population needs
- Industrial users - for technological processes
- Domestic well owners - for household needs and family gardens
- Environmental/ecological needs - for ecosystem preservation
- Commercial businesses - for various commercial activities
- Hydropower plants
- Urban development - such as public services (gardens, parks, fountains)

However, within the vision of the newly formed government, these challenges present opportunities to strengthen groundwater governance.

Actually no specific developments in the broader economy have been reported, that would directly affect groundwater in the Dinaric karst area. However, uncontrolled economic developments in the Dinaric karst region are likely to impact groundwater directly.

Challenges remain in implementing the law due to limited technical and financial capacity at the local level, institutional coordination issues, uneven progress among institutions, and difficulties in digitizing data systems and procedures.

### Development Stages of Management

Albania is positioned in the intermediate to mature transition phase of groundwater management:

Current challenges:

- Managing conflicts on water demand between different users, over limited resources;
- Complete regulatory framework with Law No. 29/24 “On Integrated Water Resources Management”;
- Consolidating institution’s role of WMRA will facilitate harmonization process with EU acquis;

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<sup>24</sup> European Commission. (2020). *Green Agenda for the Western Balkans*. Brussels: European Commission.

The interlinkage between water use sectors and different development stage, creates complex management challenge in Albania. The growing diversity of needs now requires more formal institutions and structured conflict resolution mechanisms.

The National Strategy for Integrated Water Resources Management (IWRM) **aims to address these challenges through an integrated approach** that includes all stakeholders and ensures sustainable use of groundwater resources for future generations.

## 8. SWOT Analysis for Groundwater Governance in the Dinaric Karst Areas of Albania

The purpose of the SWOT analysis is to identify the **strengths, weaknesses, opportunities, and threats** that influence effective groundwater governance in the Dinaric karst area of Albania. The assessment is based on findings referred to the national groundwater governance diagnostic analysis.

### The Vision IWRM Strategy for Albania aims that by 2030<sup>25</sup>

- There are appropriate and implemented legal, regulatory and institutional frameworks for groundwater,
- All major aquifer systems are properly assessed, and the resulting information and knowledge are available and shared
- Groundwater management plans are prepared and implemented for the priority aquifers
- Groundwater management agencies, locally, nationally and transboundary are resourced and their key tasks of capacity building, resource and quality monitoring, are secured.
- Incentive frameworks and investment programmer foster sustainable, efficient groundwater uses and adequate groundwater resources protection.

### Institutional Context

The **River Basin Councils (RBCs)** are the principal governance bodies responsible for sustainable water resource management within Albania's river basins. Guided by national legislation and the EU Water Framework Directive (WFD), RBCs apply the principles of **Integrated Water Resources Management (IWRM)** through the **River Basin Management Plans (RBMPs)**.

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<sup>25</sup> Global Framework for Action to achieve the Vision on Groundwater Governance

**Table 6.: SWOT Analysis**

Strength	Weakness
<ul style="list-style-type: none"> <li>• Existing River Basin Management Plan in majority of rivers.</li> <li>• Existing local and regional water management institution.</li> <li>• Still good groundwater condition.</li> <li>• Existing communication with transboundary countries.</li> <li>• There is no intensive groundwater abstraction in karst water basin.</li> </ul>	<ul style="list-style-type: none"> <li>• Missing continuing groundwater monitoring.</li> <li>• Lack of formally designated protection areas.</li> <li>• Enhanced national and regional cooperation on transboundary waters.</li> <li>• Insufficient long-term ecological / biological datasets</li> <li>• Multinational extension attitude of groundwater.</li> <li>• Illegal groundwater abstraction.</li> <li>• Data not fully aligned with EU WFD standards.</li> <li>• Insufficient integration of climate change considerations.</li> <li>• Limited public disclosure / data accessibility</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Participation of regional countries in several common international water resource management projects (DIKTASS II, etc).</li> <li>• Development of transboundary River Basin Management Plans.</li> <li>• National good willing cooperation in general and in water management transboundary issues in particular.</li> <li>• Understanding that water resource management is common resource for transboundary country which need strong cooperation for better utilisation.</li> <li>• Standardisation of dataset.</li> </ul>	<ul style="list-style-type: none"> <li>• Worsening of environmental and ecological condition in general and the groundwater condition in particular</li> <li>• Reducing water availability for different water use sector.</li> <li>• Dilution of water resource availability for different economic sectors.</li> <li>• Increasing the price of water use.</li> <li>• Worsening/lowering population standard of living.</li> </ul>

## SWOT Analysis: Groundwater Governance in the Dinaric Karst Areas of Albania

### Strengths

- 
- **Existence of River Basin Management Plans (RBMPs):** Provides a strategic framework for integrated water resource management.
  - **Presence of local and regional management institutions:** Ensures a governance structure is already in place, even if capacity is uneven.
  - **Generally good groundwater conditions:** Maintains a strong baseline for sustainable use and protection.
  - **Established communication channels with transboundary countries:** Facilitates regional cooperation and dialogue.
  - **No intensive groundwater abstraction in the Dinaric karst basin:** Reduces immediate pressure on resources and prevents overexploitation.
- 

## Weaknesses

- **Absence of continuous groundwater monitoring:** Limits ability to detect trends, risks, and pollution events in real time.
  - **Lack of formally designated protection areas:** Exposes groundwater to potential contamination and unsustainable use.
  - **Persistent risk of groundwater pollution:** Linked to agriculture, waste disposal, and insufficient enforcement.
  - **Low civic awareness of groundwater issues:** Reduces support for conservation measures and compliance.
  - **Inconsistent and temporary transboundary communication mechanisms:** Weakens long-term cooperation and information exchange.
  - **Fragmented data-sharing between institutions:** Leads to inefficiencies and knowledge gaps.
  - **Data not fully aligned with EU WFD standards:** Hampers integration with EU frameworks and compliance.
  - **Illegal groundwater abstraction:** Undermines governance and creates inequities.
  - **Insufficient integration of climate change considerations:** Leaves the sector vulnerable to future stressors such as drought.
- 

## Opportunities

- **Participation in multinational groundwater projects:** Opens access to funding, expertise, and best practices.
- **Development of transboundary River Basin Management Plans:** Strengthens integrated management across borders.
- **Enhanced national and regional cooperation on transboundary waters:** Builds trust, efficiency, and resilience in governance.
- **Growing recognition of water as a shared, transboundary resource:** Creates momentum for stronger collaboration and legal frameworks.

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## Threats

- **Potential deterioration of groundwater quality:** From pollution, lack of protection areas, and weak enforcement.
- **Reduced water availability for multiple sectors:** Agriculture, energy, tourism, and domestic use could face increasing stress.
- **Loss of biodiversity in Dinaric karst ecosystems:** Ecosystem services and natural heritage may be degraded.
- **Rising costs of water use:** Due to scarcity, infrastructure needs, or treatment requirements.
- **Declining living standards:** Water shortages and poor quality could negatively impact health, livelihoods, and social stability.

## Strategic Recommendations for Groundwater Governance in the Dinaric Karst Areas of Albania

### ➤ Strengthen Monitoring and Data Systems

- **Build on:** Existing RBMPs and institutional framework.
- **Actions:**
  - Establish continuous groundwater monitoring stations in karst zones.
  - Standardize data collection and reporting in line with **EU Water Framework Directive (WFD)**.
  - Create a centralized national database accessible to all institutions.
- **Benefit:** Enhances early-warning capacity, prevents deterioration, and enables compliance with EU standards.

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### ➤ Formalize Groundwater Protection Areas

- **Build on:** Good current groundwater conditions and low abstraction pressure.
- **Actions:**
  - Legally designate karst springs and recharge zones as **protected areas**.
  - Integrate groundwater protection into **land-use planning and licensing**.
  - Strengthen enforcement against illegal abstractions.
- **Benefit:** Safeguards water quality and ensures long-term ecosystem and biodiversity protection.

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### ➤ Improve Transboundary Cooperation

- **Build on:** Existing communication channels and opportunities for multinational projects.
- **Actions:**

- Transform temporary agreement into **permanent bilateral/multilateral working groups agreement**.
  - Develop joint **transboundary RBMPs** with Montenegro, Kosovo, and North Macedonia.
  - Use DICTAS and other EU-funded projects to harmonize monitoring, data-sharing, and enforcement.
  - **Benefit:** Prevents conflicts, aligns with EU integration, and supports regional resilience.
- 

#### ➤ **Integrate Climate Change into Water Governance**

- **Build on:** Growing recognition of water as a transboundary and strategic issue.
  - **Actions:**
    - Include **climate scenarios** (drought, extreme rainfall, reduced recharge) in RBMPs.
    - Promote **water-use efficiency measures** across agriculture, tourism, and domestic supply.
    - Access climate adaptation funds through EU and international financing mechanisms.
  - **Benefit:** Reduces vulnerability to future water scarcity and secures long-term water security.
- 

#### ➤ **Raise Civic Awareness and Stakeholder Engagement**

- **Build on:** Existing institutions and positive momentum from international projects.
  - **Actions:**
    - Develop **awareness campaigns** on groundwater importance and pollution risks.
    - Engage local communities in **monitoring and protection activities**.
    - Encourage public participation in RBMP consultations.
  - **Benefit:** Builds public support, improves compliance, and reduces pollution from local activities.
- 

#### ➤ **Enhance Governance and Coordination**

- **Build on:** Institutional presence and opportunities for cooperation.
- **Actions:**
  - Strengthen coordination between ministries, agencies, and municipalities through a **national groundwater governance platform**.
  - Introduce clear roles, responsibilities, and accountability mechanisms.

- Ensure alignment of groundwater policies with **agriculture, tourism, energy, and environment strategies**.
  - **Benefit:** Reduces fragmentation, improves efficiency, and supports integrated water resource management.
- 

**Overall Strategy:**

Leverage Albania's **good groundwater status and existing frameworks** to:

- **Protect** (designated protection zones, stricter enforcement),
- **Monitor** (continuous and EU-standardized),
- **Cooperate** (permanent cross-border mechanisms),
- **Adapt** (climate resilience and efficiency), and
- **Engage** (local communities and civil society).

## 9. Gaps and Opportunities in Groundwater Governance in Dinaric Karst Areas of Albania

The results of the SWOT analysis serve as the basis for assessing gaps and opportunities in strengthening groundwater governance in Albania's Dinaric karst regions as part of water resources.

Albania is required to prepare **DSIPs** for all directives for which they are seeking transition periods in their accession negotiations.

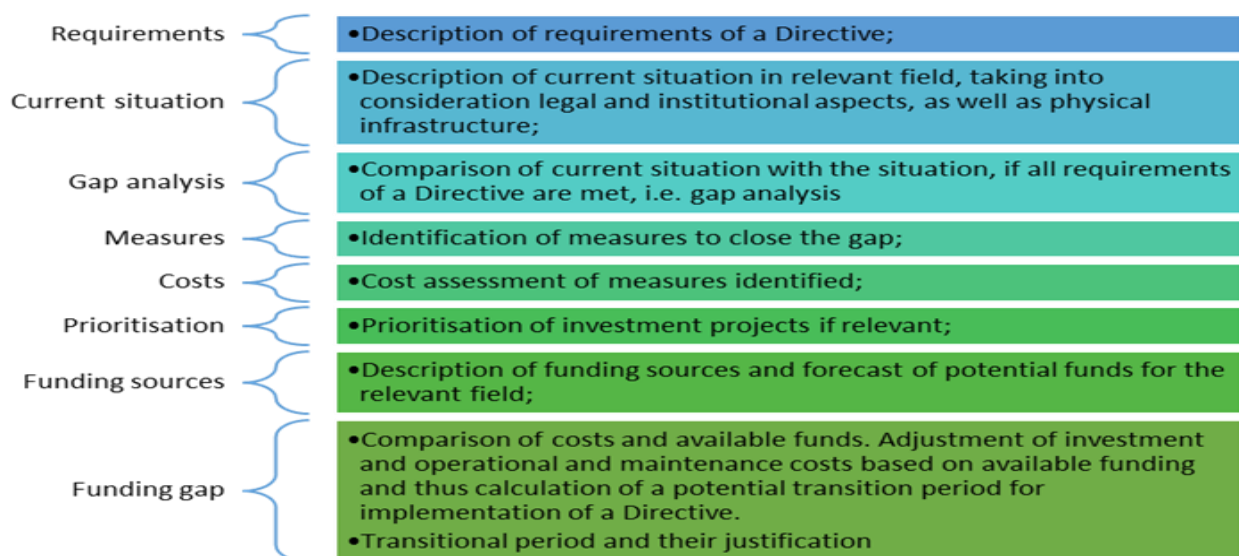
In order to fully comply with the environmental acquis. **DSIPs** are documents which help to plan:

- i) **legal**,
- ii) **institutional** and
- iii) **implementation & enforcement activities**

Based on all above the gaps identification process will pass through a long process of eight steps starting with understanding directive requirements up to determination of gaps based on local conditions from environmental, social and availability of funds. The important approach in this process is prioritisation of measures and acts.

This process is illustrated schematically below.

**Figure 1:** *Prioritisation Measures for preparation of DSIPs.*



The assessment addresses both horizontal and vertical dimensions of institutional involvement, focusing on water management and monitoring authorities engaged in the implementation of River Basin Management Plans (RBMPs).

The Water Resources Management Agency (WRMA) is the lead authority for developing and implementing RBMPs. However, several other government agencies, line institutions, and local authorities also play significant roles in various aspects of the RBM process.

Despite progress, several institutional gaps remain, particularly at the executive level, leading to inefficiencies and overlaps in practice. Key challenges identified include:

### Identified Gaps

- **Limited vertical coordination** – Interaction between WRMA and municipalities is often confined to formal processes (reporting and permitting). Monitoring and control of private wells and groundwater use remain fragmented.
- **Inefficient horizontal cooperation** – While the National Water and Territory Council exists, cross-sectoral decision-making is frequently dominated by sectoral priorities (e.g., agriculture, energy), with groundwater protection receiving limited attention.
- **Lack of integrated data systems** – Albania lacks a unified, accessible database on groundwater quality and quantity that can be shared across institutions.
- **Insufficient local capacities** – Municipalities generally lack hydrogeologists or trained staff to conduct groundwater monitoring, limiting their ability to enforce legal provisions.
- **Weak enforcement of legislation** – Although Albania’s legal framework is largely aligned with EU practices, implementation remains partial, especially in formulation of required bylaws, onsite inspections, compliance monitoring, etc.

### Opportunities for Improvement

- **Strengthening WRMA’s coordinating role** – Establish mandatory mechanisms for reporting and data exchange between Ministries/Municipalities and sectoral institutions.
- **Digitalization of the water cadastre** – Develop a national online system for registering wells, water licenses, and groundwater quality monitoring.
- **Capacity building at local level** – Train municipal staff and encourage closer cooperation with universities and hydrogeology experts.
- **Strengthening horizontal mechanisms** – Ensure the National Water and Territory Council adopts transparent and balanced decision-making procedures across sectors.
- **Community and civil society involvement** – Engage the public in monitoring and transparency initiatives related to groundwater use and pollution.
- **Cross-border cooperation** – Establish regular collaboration with neighboring countries for sustainable management of transboundary water resources, in line with international environmental standards.

### Steps and Main Activities (Aligned with WFD Requirements)

Compilation of the RBMPs will use the **DPSIR (Drivers, Pressures, State, Impacts, Responses) concept**, underpins the development of RBMPs. It captures the relationship between society and the environment, helping to identify human activities (drivers and pressures) that affect

water resources, assess their impacts, and define responses to address challenges effectively. This approach ensures a comprehensive understanding of basin dynamics and supports the design of robust, sustainable management strategies.

#### DPSIR components:

- **Driving Forces:** Social, demographic, and economic trends influencing water use and pressures.
- **Pressures:** Direct effects of human activities on water resources.
- **State:** Current physical, chemical, and biological conditions of water bodies.
- **Impacts:** Environmental consequences resulting from changes in the state of water resources.
- **Responses:** Policy, legal, and technical measures taken to mitigate pressures, restore ecosystems, and manage impacts.

In line with the EU Water Framework Directive (WFD), the following steps and activities are essential for the preparation and implementation of RBMPs:

- **Common understanding** of RBM cycle objectives, definitions, and steps (WFD Articles 1–2).
- **Institutional framework setup** – Establish competent national and basin-level authorities (WFD Article 3).
- **Drafting an outline RBMP** (WFD Article 13, Annex VII).
- **Identification of Significant Water Management Issues (SWMIs)** and definition of visions/objectives (WFD Article 5, Annex II).
- **Delineation of surface water, groundwater bodies, and protected areas** (WFD Article 5, Annex II–IV).
- **Defining environmental objectives, quality standards, and reference conditions** (WFD Articles 4, 16; Annex V).
- **Monitoring and status assessment** for surface and groundwater (WFD Article 8, Annex V).
- **Programme of Measures (PoM) and RBMP development** (WFD Article 11, Annex VI; Article 13, Annex VII).
- **Methodological analysis of monitoring programs** following EU guidance (WFD Article 8, Annex V).
- **Economic analysis of water uses, revenues, and cost recovery** (WFD Article 9, Annex III).

#### Financial and Institutional Considerations

Budget allocation remains a critical factor in implementation. In many cases, institutional responsibilities exceed available resources, hindering effective execution. A detailed review of budgetary provisions across relevant institutions is needed to ensure realistic planning and implementation of measures.

To strengthen governance, Albania must:

- Develop **realistic and costed measures plans**.
- Increase **funding and resource allocation** for national water agencies.
- Adopt a **capacity development plan** for staff at all institutional levels.
- Establish a **national water monitoring program** with adequate coordination and financing.

## EU Requirements and Challenges

Key EU directives and related requirements include:

- **Finalization of RBMPs** for all river basin districts and securing financial support for their implementation.
- **Operational monitoring systems** for polluted waters, including designation of nitrate-vulnerable zones.
- **Alignment with environmental quality standards acquis** by strengthening monitoring capacities for surface and groundwater.
- **Investment in treatment facilities and infrastructure**, alongside legal and institutional reforms.
- **Enhanced water safety and pollution monitoring**, including emerging pollutants.

Addressing these challenges requires robust governance, comprehensive river basin planning, targeted investments in infrastructure and monitoring, and the operationalization of key regulatory instruments such as permitting, pollution control, and economic incentives for efficient water use,

- **Phased investment planning** (short-, medium-, and long-term).

## Institutional and Data-Management Challenges

- **Clarification of institutional roles and responsibilities** in surface and groundwater management.
- **Improved inter-institutional coordination** to reduce overlaps and inefficiencies.
- **Further harmonization of legislation** with EU Water Directive 2000/60/EC and Floods Directive 2007/60/EC.
- **Development of an electronic water cadastre** as a central repository for water data.

The water cadastre is still at an early stage of development and requires substantial improvement. Strengthening it will:

- Enhance WRMA's capacity to cross-check and validate institutional standard dataset.
- Provide a centralized platform for storage, dissemination, and decision-making.
- Support RBMP development and day-to-day institutional operations.

In the medium term, a **shared water data platform** should be created, integrating key institutions. This system would facilitate real-time data sharing and ensure consistency in monitoring, reporting, and decision-making across Albania's water sectors.

