EU4GREEN

SURFACE WATER MONITORING DEVELOPMENT PLAN, ALBANIA

EU 4 Green Recovery:
Support the implementation of the Green Agenda for the Western Balkans

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ABBREVIATIONS

ADA	Austrian Development Agency
ALB	Albania
ASIG	State Authority for Geospatial Information
BQE	Biological Quality Element
CA	Competent Authority
CIS	Common Implementation Strategy
DCM	Decision of the Council of Ministers
EC	European Commission
EEA	European Environment Agency
EIONET	European Environmental Information and Observation Network
EQR	Ecological Quality Ratio
EQS	Environmental Quality Standard
EU	European Union
EU ETS MRVA	EU Emissions Trading System Monitoring, Reporting, Verification and Accreditation
GAWB	Green Agenda for the Western Balkans
GC-MS	Gas Chromatography–Mass Spectrometry
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
ISO	International Organization for Standardization
LIMS	Laboratory Information Management System
NEA	National Environment Agency
PAH	Polycyclic Aromatic Hydrocarbon
PFAS	Per- and Polyfluoroalkyl Substances
QA/QC	Quality Assurance / Quality Control
RBMP	River Basin Management Plan
RBD	River Basin District
RBSP	River Basin Specific Pollutant
SOP	Standard Operating Procedure
SWB	Surface Water Body
SW-MDP / MDP	Surface Water Monitoring Development Plan
UBA	Umweltbundesamt (Environment Agency Austria)
WRMA	Water Resources Management Agency
WFD	Water Framework Directive
WISE	Water Information System for Europe

1. EXECUTIVE SUMMARY

This **Surface Water Monitoring Development Plan (MDP)** provides a structured and practical roadmap for the development, implementation, and operation of a **Water Framework Directive (WFD)-compliant surface water monitoring system in Albania**. Developed within the framework of the EU4Green initiative, the plan supports Albania's transition towards **sustainable water management**, improved environmental governance, and alignment with EU acquis under Chapter 27.

The primary objective of the MDP is to establish a monitoring system capable of **reliably assessing ecological and chemical status**, detecting trends and pressures, and evaluating the effectiveness of measures under River Basin Management Plans (RBMPs). Monitoring is recognised as a **core pillar of river basin management**, providing the data necessary for evidence-based decision-making and compliance with WFD requirements.

The document outlines the **technical and methodological foundations** for WFD-compliant monitoring, including the definition of biological quality elements (BQEs), supporting hydromorphological and physico-chemical parameters, and chemical substances such as Priority Substances and River Basin Specific Pollutants (RBSPs). It describes the three monitoring types required by Annex V—**surveillance, operational, and investigative monitoring**—each fulfilling distinct roles in status assessment, pressure analysis, and problem identification.

A central component of the MDP is the **phased implementation framework**, covering:

- baseline analysis and water body characterisation (Article 5),
- monitoring programme design (Article 8 and Annex V),
- operational implementation,
- data management and quality assurance,
- status assessment and reporting, and
- adaptive review and optimisation.

This phased approach is aligned with the **six-year WFD planning cycle**, ensuring a structured transition from planning to full system operation.

The assessment of the **current monitoring situation in Albania** highlights that the country has made significant progress in aligning its legal and institutional framework with WFD requirements, particularly through the adoption of **Law No. 29/2024 "On Water Resources"** as amended and the development of RBMPs. Key institutions, including the **Water Resources Management Agency (WRMA)** and the **National Environment Agency (NEA)**, have clearly defined roles in coordination, data generation, and reporting.

However, the analysis also identifies **substantial implementation gaps**, particularly in:

- biological monitoring coverage and taxonomic expertise,
- chemical monitoring of Priority Substances (including biota and sediments),
- laboratory capacity and quality assurance systems,

- data management, integration, and WISE-compatible reporting,
- institutional coordination and sustainable financing.

These gaps result in limited ability to perform **complete and reliable status classification**, representing a critical challenge for achieving WFD objectives.

To address these shortcomings, the MDP presents a **comprehensive gap-to-action framework and strategic roadmap (2026–2030)**. Key priorities include:

- transitioning from project-based to **fully institutionalised monitoring systems**,
- strengthening **human resources and laboratory infrastructure**,
- expanding monitoring coverage across all quality elements,
- establishing **robust QA/QC systems and integrated data platforms**, and
- ensuring sustainable financing and coordination across institutions.

The roadmap defines a phased implementation pathway from **system completion (2026)** through capacity building and full monitoring implementation (2027–2028), to **data integration, classification, and RBMP updating (2028–2030)**. By the end of this period, Albania aims to achieve a **fully operational, WFD-compliant monitoring system**, capable of delivering robust datasets for status assessment and EU reporting.

In conclusion, the Monitoring Development Plan serves as a **strategic bridge between legislative alignment and practical implementation**. It provides a clear and achievable pathway for Albania to strengthen its monitoring capacity, support sustainable water management, and advance towards **full compliance with the Water Framework Directive and EU accession requirements**.

2. INTROCUCTION AND SCOPE

EU4Green is an important element of the continuous support by the European Union to empower and assist the Western Balkans' transition to modern, resource-efficient and competitive economies where growth is decoupled from emissions of greenhouse gases, resource use and waste generation and where climate resilience is pursued. It is the general objective of the project to support the Western Balkans in the implementation of the Green Agenda, thus in the development and transformation towards sustainability and reaching climate neutrality by 2050. Accordingly, EU4Green is a very broad initiative building on the combined expertise and cooperation within the thematic areas EU ETS MRVA, Circular Economy, Depollution Water, Depollution Air, Depollution Soil, Biodiversity, Sustainable Agriculture, Communication, Green Education, Stakeholder participation and Green Finance.

River basin management is based on monitoring of **surface water bodies and groundwater bodies** and plays a central role in any River Basin Management Plan (RBMP).
Surface water monitoring consists of ecological and chemical monitoring in accordance with the requirements of the Water Framework Directive (WFD). Ecological monitoring includes the assessment of biological quality elements (BQEs), supported by hydromorphological and physico-chemical elements, while chemical monitoring focuses on Priority Substances and certain other pollutants as described in Annex X of the EU Water Framework Directive (WFD). These monitoring components are required to supplement and validate the characterization and risk assessment, to establish the status of surface water bodies (SWBs), and to evaluate the effectiveness of the measures implemented to achieve and maintain good ecological and chemical status.

In addition, surface water monitoring is needed to detect long-term trends in water quality, identify emerging pressures, and support the design and adjustment of programmes of measures under evolving environmental and climate conditions.

Sound monitoring is a fundamental instrument for good **surface water governance**. It provides all stakeholders with up-to-date and reliable information on the status and trends of surface waters within a river basin and enables informed decision-making for water management and the implementation of programmes of measures aimed at achieving the environmental objectives laid down by the Water Framework Directive (WFD).

This **Surface Water Monitoring Development Plan (MDP)** addresses the requirements for ecological and chemical monitoring of surface waters in line with the WFD. The comparison with the current situation provides the basis for identifying gaps, drawing conclusions, and formulating options for the progressive development and successful implementation of a WFD-compliant surface water monitoring system.

3. WFD COMPLIANT MONITORING

3.1. WFD monitoring principles

Article 8 of the Water Framework Directive (WFD) establishes the requirements for monitoring the status of surface waters, groundwater, and protected areas. Monitoring programmes are designed to provide a **coherent and comprehensive overview of water status** within each river basin district.

According to Annex V of the WFD, monitoring of surface waters is required to support the following objectives:

- Classification of ecological and chemical status;
- Supplementing and validating the risk assessment carried out under Annex II;
- Supporting the efficient and effective design of future monitoring programmes;
- Assessing long-term changes in natural conditions and those resulting from widespread anthropogenic activity;
- Estimating pollutant loads transferred across international boundaries or discharged into seas;
- Assessing changes in the status of water bodies identified as being at risk, particularly in response to implemented measures;
- Identifying the causes of failure to achieve environmental objectives where these are not yet known;
- Determining the magnitude and impacts of accidental pollution events;
- Supporting intercalibration exercises (comparison with neighbouring countries);
- Assessing compliance with the objectives and standards for protected areas; and
- Quantifying reference conditions for surface water bodies where these exist.

The results of monitoring programmes are reported within River Basin Management Plans (RBMPs) through **maps of monitoring networks, status assessments, and estimates of the confidence and precision** achieved by the monitoring systems.

Under the WFD, waters to be monitored are assigned to specific geographical and administrative units, in particular **river basins, river basin districts, and individual water bodies**, which form the fundamental units of assessment. Monitoring the status of these water bodies provides the basis for evaluating progress towards achieving the environmental objectives of the Directive.

Before monitoring programmes can be implemented, several preparatory steps must be completed:

- Delineation of surface water bodies;
- Identification of water body types (rivers, lakes, transitional and coastal waters);
- Definition of type-specific reference conditions for all biological quality elements.

Where such information is not yet fully available, particularly at national scale, **pressure analysis combined with expert judgement and/or modelling approaches (risk assessment)** can be used as an interim basis.

Annex V of the WFD distinguishes three main types of surface water monitoring: **surveillance monitoring, operational monitoring, and investigative monitoring**. These are complemented by additional monitoring requirements for protected areas identified under Article 6.

3.2. Precision and confidence

According to Annex V of the Water Framework Directive (WFD), monitoring results shall achieve appropriate levels of **precision and confidence**. What is considered "acceptable", "adequate", or "sufficient" will directly influence key design aspects of the monitoring programme, including:

- the number of water bodies included in the different types of monitoring;
- the number of monitoring stations required to assess the status of each water body; and
- the frequency at which parameters representing quality elements are measured.

The Directive does not prescribe fixed quantitative thresholds for precision and confidence. Nevertheless, it is clear that the levels achieved must be sufficient to enable **robust and meaningful assessments of water status**, both spatially and temporally.

In practice, many Member States begin by evaluating their **existing monitoring networks and datasets** to determine the level of precision and confidence that can be achieved with available resources. Monitoring system design is therefore typically an **iterative process**, involving ongoing adjustment and optimisation of networks, parameters, and sampling frequencies in order to reach levels that support reliable classification and decision-making.

In addition, **expert judgement** often plays an important role, particularly in assessing the risk of misclassification. For example, in cases where a water body may be incorrectly classified as being "at risk", responsible authorities will typically seek to reduce uncertainty through additional investigations before committing to costly measures. This approach helps ensure that management decisions are both **scientifically robust and proportionate**.

3.3. Biological quality elements for surface water

The basis of the classification of surface water bodies are the Biological Quality Elements (BQE) consisting of fish, macroinvertebrates, phytobenthos, phytoplankton, and macrophytes, while physico-chemistry and hydromorphology act as supporting elements.

- Biology
    - Macroinvertebrates (all rivers)
    - Phytobenthos (in small rivers only)
    - Phytoplankton (in very large rivers and lakes/reservoirs only)

    - Fish and macrophytes will be classified by expert judgment or by using local information (fishermen). If no information is available, these BQE will be included in a later phase. The same is true for macroinvertebrates and phytobenthos in lakes.
- Supporting elements
    - General physico-chemical parameters (all rivers and lakes)
    - Hydromorphology (based on a general classification of the river network)

“Supporting” means that the values of the physico-chemical and hydromorphological quality elements are such as to support a biological community of a certain ecological status, as this recognises the fact that biological communities are products of their physical and chemical environment. It is not intended that these supporting elements can be used as surrogates for the biological elements in surveillance and operational monitoring.

General physico-chemical parameters (temperature, O_2, nutrients, salinity, pH) are listed in Annex V of the WFD. In the recent revision of the WFD, the River Basin Specific Pollutants (RBSP) were now being moved to the chemical quality elements.

3.4. Chemical quality elements for surface water

Chemical status assessment under the Water Framework Directive (WFD) is based on a defined set of quality elements, primarily focusing on the presence and concentration of chemical substances that may pose risks to aquatic ecosystems and human health. The core elements are the Priority Substances and Priority Hazardous Substances, which are regulated at EU level and subject to Environmental Quality Standards (EQS) in water, and in some cases also in biota and sediments. These substances include heavy metals (e.g. mercury, cadmium, lead), organic pollutants (e.g. pesticides, PAHs), and industrial chemicals. In addition, River Basin Specific Pollutants (RBSPs) are included at national or river basin level to address locally relevant pressures not fully covered by the EU list. After the recent revision of the WFD, the RBSPs will still need to be identified by the country, but the thresholds are being standardized throughout the member states.

Assessment of chemical status requires monitoring across different matrices, primarily surface water, but increasingly also biota (e.g. fish tissue) and sediments, particularly for substances that accumulate in the food chain. The evaluation is based on compliance with EQS thresholds, with a strict “one out – all out” principle, meaning that exceedance of any single substance leads to failure of good chemical status. A key component of chemical monitoring is also the analysis of long-term trends, especially for substances that tend to accumulate or persist, in order to identify whether pollution is increasing or decreasing over time.

Together, these quality elements ensure a comprehensive assessment of chemical pressures on surface waters, enabling authorities to detect pollution, assess compliance with environmental objectives, and design targeted measures to reduce emissions and improve water quality.

3.5. Quality elements for groundwater and transitional and coastal waters

The Water Framework Directive (WFD) applies to all inland surface waters as well as groundwater and also defines quality elements for **transitional and coastal waters**. Coastal waters are defined as surface waters extending up to one nautical mile seaward from the baseline of the territorial waters. For **chemical status assessment**, the scope extends to territorial waters, which may reach up to 12 nautical miles.

For **groundwater**, EU legislation focuses on achieving **good quantitative status and good chemical status**. In addition, measures must be implemented to **prevent or limit the input of pollutants** and to **identify and reverse significant and sustained upward trends** in pollutant concentrations. (For further details on groundwater, reference is made to the document "Monitoring Development Plan – Groundwater, Albania".)

Healthy **surface water ecosystems** are essential not only for ecological integrity but also for ensuring the availability of clean water for drinking, agriculture, and industrial use. The status of surface waters is influenced by a combination of **hydromorphological conditions and pollution pressures**. The WFD therefore requires that inland, transitional, and coastal waters achieve both **good ecological status (or potential)** and **good chemical status**.

Transitional waters are defined as bodies of surface water in the vicinity of river mouths that are partly saline due to their proximity to coastal waters, but still significantly influenced by freshwater flows. Coastal waters extend seaward from the baseline and include waters influenced by marine processes, as defined above.

Ecological status classification is based primarily on the condition of **biological quality elements**, supported by **hydromorphological** and **physico-chemical quality elements**, and compared against **type-specific reference conditions**. Appropriate classification systems and assessment tools must therefore be developed to evaluate deviations from these reference conditions.

For **transitional and coastal waters**, the following quality elements are defined under Annex V of the WFD:

Biological quality elements

- Composition, abundance, and biomass of phytoplankton (transitional and coastal waters)
- Composition and abundance of other aquatic flora (macrophytes and phytobenthos)
- Composition and abundance of benthic invertebrate fauna
- Composition and abundance of fish fauna (transitional waters only)

Supporting hydromorphological elements

For transitional waters:

- Morphological conditions:

    - Depth variation
    - Quantity, structure, and substrate of the bed
    - Structure of the intertidal zone
- Tidal regime:
    - Freshwater flow
    - Wave exposure

For coastal waters:

- Morphological conditions:
    - Depth variation
    - Structure and substrate of the coastal bed
    - Structure of the intertidal zone
- Tidal regime:
    - Direction of dominant currents
    - Wave exposure

Supporting physico-chemical and chemical elements

- General conditions:
    - Transparency
    - Thermal conditions
    - Salinity
    - Oxygenation conditions
    - Nutrient conditions
- Specific pollutants:
    - Pollution by Priority Substances and other relevant pollutants discharged into the water body
    - Pollution by other substances identified as being discharged in significant quantities

3.6. Surface Water Surveillance Monitoring

The Water Framework Directive (WFD) requires that a sufficient number of water bodies be included in the **surveillance monitoring programme** to provide a representative assessment of the overall surface water status within each catchment and sub-catchment of a river basin district. The design of the monitoring strategy should make use of all available information on **chemical pressures and impacts**, including knowledge of substance properties (as outlined in CIS Guidance Document No. 7), emission sources and data, identified pressures, and results from previous monitoring activities.

Surveillance monitoring must be undertaken for a **minimum period of one year within each six-year River Basin Management Plan (RBMP) cycle**. The Directive specifies that monitoring should be carried out at locations where water dynamics are most relevant at the scale of the river basin district, including:

- rivers with significant flow rates, particularly large rivers with catchment areas exceeding 2,500 km²;

- large lakes and reservoirs where water volumes are significant;
- water bodies that cross Member State boundaries; and
- additional sites required to estimate pollutant loads transferred across boundaries and into the marine environment.

Within surveillance monitoring, parameters representing **all biological quality elements (BQEs), hydromorphological elements, and general as well as specific physico-chemical quality elements** must be monitored to ensure a comprehensive assessment of status.

Monitoring frequency of surveillance sites:

The Albanian Decision of the Council of Ministers DCM No. 1015 (2020), in line with the Annex V of the WFD, **specifies the parameters and related frequencies** to be applied in surface water monitoring.

During the surveillance monitoring period, the frequency for monitoring the indicative parameters of the physico-chemical quality elements listed below (**Table 1**) shall be applied, unless longer intervals are justified on the basis of technical knowledge and expert judgment. For biological or hydromorphological quality elements, monitoring shall be carried out at least once during the surveillance monitoring period.

Table 1: Monitoring frequency at surveillance sites according to DCM No. 1015 (2020).

Quality Element	Rivers	Lakes	Transitional Waters	Coastal Waters
Biological				
Phytoplankton	6 months	6 months	6 months	6 months
Other aquatic flora	3 years	3 years	3 years	3 years
Macro invertebrates	3 years	3 years	3 years	3 years
Fish	3 years	3 years	3 years	3 years
Hydromorphological				
Continuity	6 years	—	—	—
Hydrology	continuous	1 month	—	—
Morphology	6 years	6 years	6 years	6 years
Physico-chemical				
Thermal conditions	3 months	3 months	3 months	3 months
Oxygenation	3 months	3 months	3 months	3 months
Salinity	3 months	3 months	3 months	3 months
Nutrient status	3 months	3 months	3 months	3 months
Acidification status	3 months	3 months	—	—
Other pollutants	3 months	3 months	3 months	3 months
Priority substances	1 month	1 month	1 month	1 month

3.7. Surface Water Operational Monitoring

The objectives of **operational monitoring** are to:

- establish the status of water bodies identified as being at risk of failing to meet their environmental objectives; and

- assess changes in the status of these water bodies resulting from the implementation of programmes of measures.

Operational monitoring must be carried out for all water bodies identified as being at risk of failing the relevant environmental objectives. In addition, it is required for water bodies into which **priority substances** are discharged. However, it is not necessary to monitor every individual water body, as the Directive allows for **grouping of similar water bodies** and representative monitoring, provided that the approach ensures reliable status assessment.

Operational monitoring is **targeted and pressure-specific**, focusing on those parameters and quality elements that are most sensitive to the dominant pressures affecting a water body. For example, where organic pollution is a key pressure in a river, **benthic invertebrates** may serve as the most sensitive biological indicator for assessing ecological impacts.

Proposal for monitoring frequency of operational sites:

As outlined in DCM No. 1015 (2020) the monitoring frequency required for **operational monitoring**, for each parameter shall be determined by the AMBU in order to ensure sufficient data for a **reliable assessment of the status** of the relevant quality elements. As a guideline, monitoring shall be carried out at intervals not exceeding those indicated in Table 1, unless longer intervals are justified on the basis of technical knowledge and expert judgment. The frequency shall be selected so as to achieve an **acceptable level of confidence and precision**. The confidence and precision levels resulting from the monitoring system used shall be indicated in the River Basin Management Plan.

Monitoring frequencies shall be chosen taking into account the **variability of parameters** resulting from both **natural conditions and anthropogenic influences**. The timing of monitoring shall be selected so as to **minimize the impact of seasonal variations** on the results, thereby ensuring that the results reflect changes in water bodies due to **anthropogenic pressures**. To achieve this objective, where necessary, **additional monitoring shall be carried out during different seasons of the same year**.

Choosing operational monitoring sites:

The following schemes A, B, and C (Figure 1, Figure 2, Figure 3) are adapted from a publication on implementing the Austrian Ordinance on the Monitoring of the Quality of Water Bodies (BMLFUW, 2008) illustrate the step-by-step approach on operational monitoring site selection:

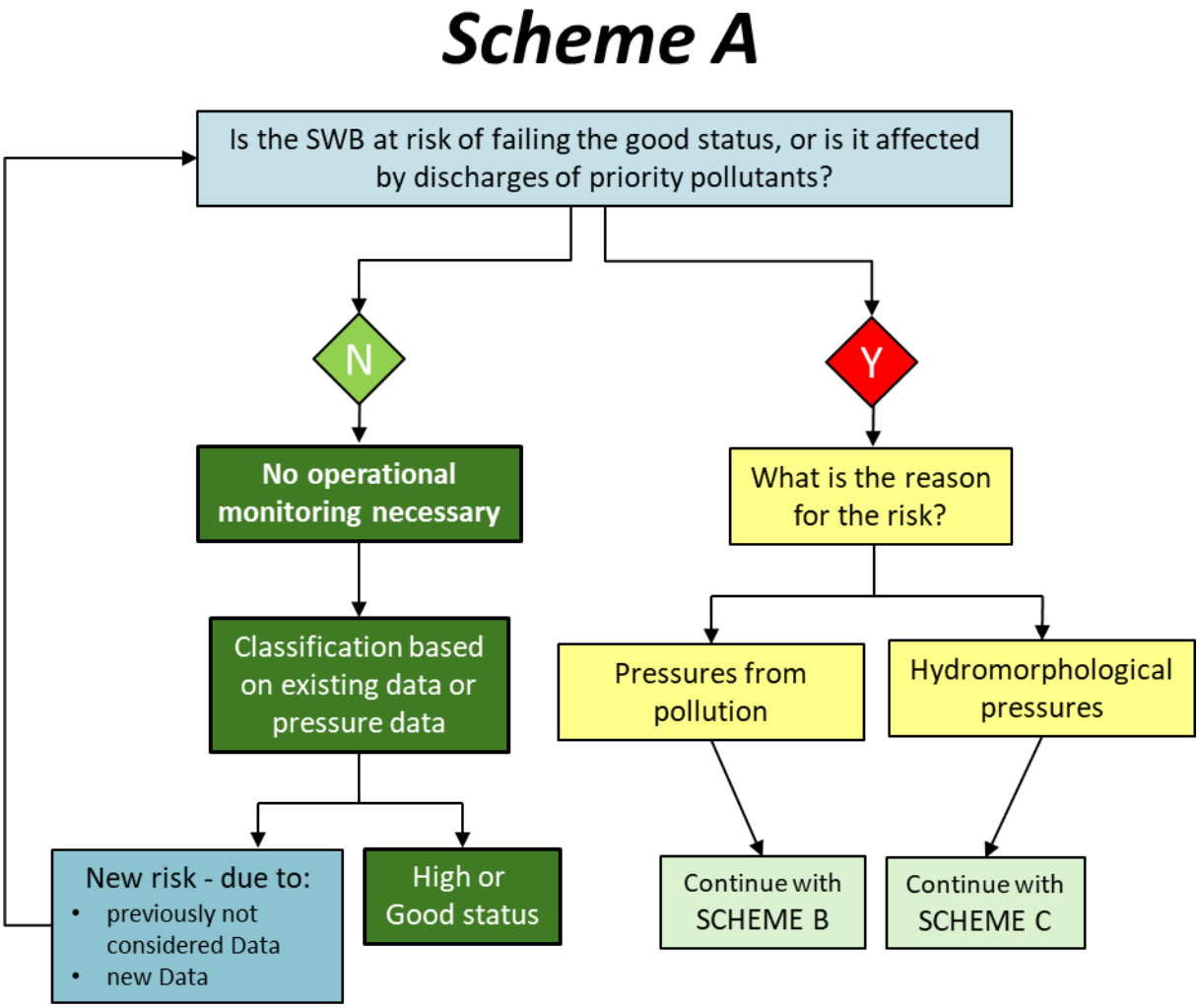

Figure 1: Scheme A of decision tree for choosing operational monitoring sites.

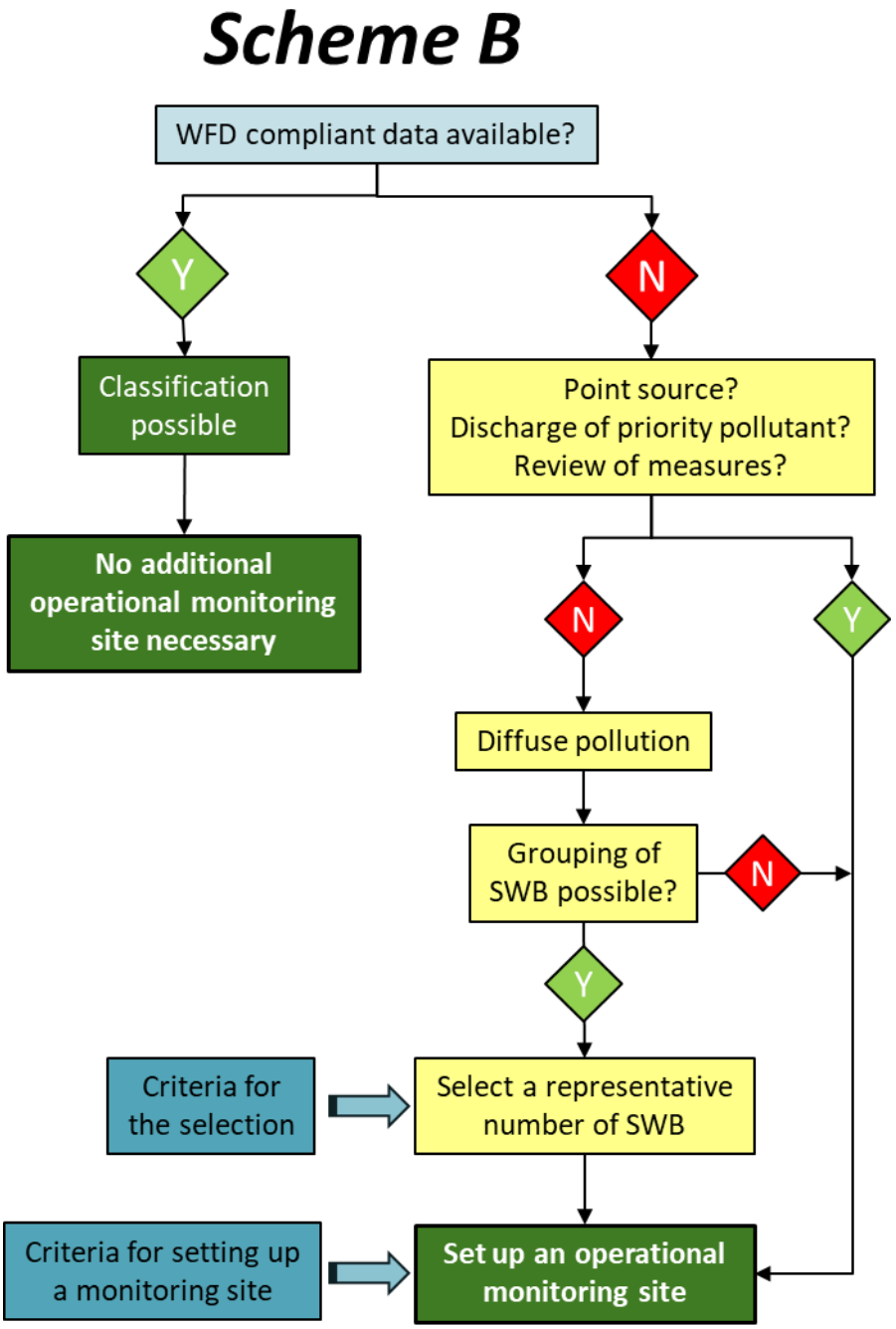

Figure 2: Scheme B of decision tree for choosing operational monitoring sites.

Criteria for the selection of representative water bodies from the group:

- Pollution from diffuse sources
- for successive SWB
    - diffuse load is uniform
    - monitoring site situated in the last SWB (most downstream)
    - Classification results can be applied to the SWB above (upstream)

- for SWB in different regions
    - diffuse load is uniform
    - SWB belong to the same type
    - SWB are comparable in terms of agricultural use
    - Affected SWB of the group are affected by the same substance or combination of substances
    - At least 25% of the SWB in a group are selected as representatives

Criteria for the setting up a monitoring site in rivers

- one site per SWB which is representative for the pollution
- Preferably at the lower end of the SWB
- Beware dilution effects of tributaries
- Distance to possible additional point sources should be at least 1 km or – if the river breadth is >100 m – at least the 10-fold of the river breadth

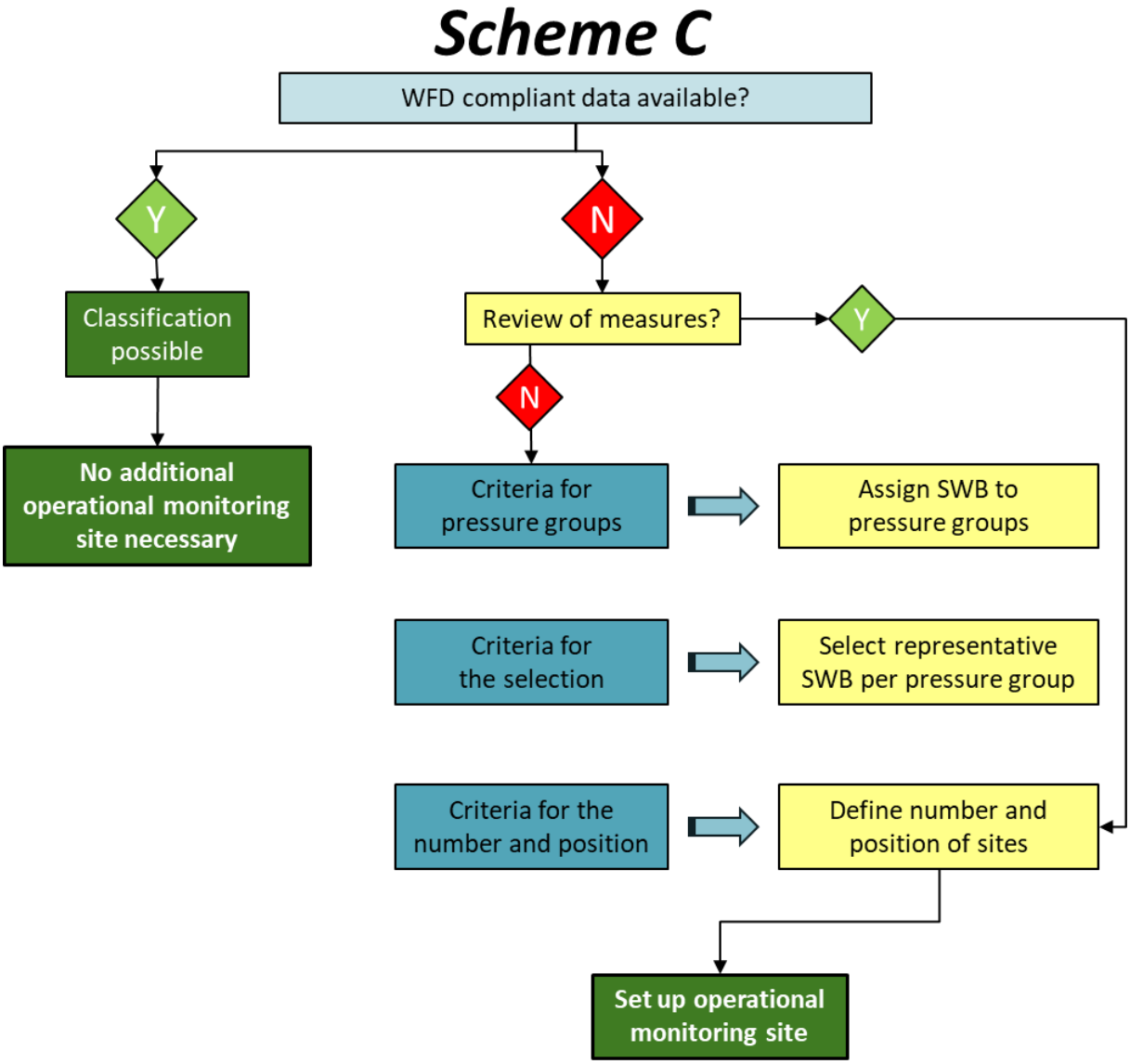

Figure 3: Scheme C of decision tree for choosing operational monitoring sites.

Criteria for pressure groups in rivers

A group of SWB

- with same river type,
- affected by the same pressure,
- which can be investigated and classified by the same indicative biological quality element

Criteria for the selection within each pressure group

- Ideally 1/3 of SWB within each pressure group

- Hydrological context: if possible, select sites within a hydrological subbasin
- No additional pressure (if possible)
- Easy to reach

Criteria for the number and position

- Morphology: one site in the longest uniform section
- Water abstraction: one site directly below the abstraction
- Continuum: one or two sites, above the weir or dam; if there is series of several weirs or dams, another one below the lowest one
- Impoundment: one site beginning (source) of the impoundment, optionally another site directly above the dam

3.8. Surface Water Investigative Monitoring

Investigative monitoring may be required in specific situations as defined in Annex V of the Water Framework Directive (WFD), including:

- where the reasons for exceedances of environmental objectives are unknown;
- where surveillance monitoring indicates that objectives are unlikely to be achieved and operational monitoring has not yet been established; or
- to determine the magnitude and impacts of accidental pollution events.

Investigative monitoring is therefore **problem-oriented and case-specific**, and its design must be tailored to the particular issue being addressed. In many cases, it involves **more intensive sampling strategies**, higher monitoring frequencies, and a focused selection of relevant water bodies, sub-areas, and quality elements.

In addition, investigative monitoring may include components of **alarm or early warning systems**, for example to protect drinking water abstractions from accidental pollution. Such systems may rely on **continuous or semi-continuous measurements** of selected parameters, including key physico-chemical indicators (e.g. dissolved oxygen) and, where appropriate, biological indicators.

Given its targeted and flexible nature, investigative monitoring is essentially an **"on-demand" approach**, triggered by specific problems or knowledge gaps. As a result, it is not possible to define standard monitoring sites, parameters, or frequencies in advance; instead, monitoring programmes must be **designed dynamically**, based on the specific objectives and pressures under investigation.

3.9. Sampling site selection in surveillance and operational monitoring

Surveillance monitoring sites should be strategically located to provide a representative and long-term overview of surface water status across the river basin district. These sites should

remain **consistent across multiple RBMP cycles**, allowing for the assessment of trends and long-term changes in water quality and ecological conditions.

In contrast, **operational monitoring sites** should be applied in a more flexible manner and should not be considered part of a fixed, permanent monitoring network. Instead, their selection should directly reflect the need to assess **water bodies identified as being at risk** of failing environmental objectives.

Once the ecological status of a water body has been reliably determined through operational monitoring, it is advisable to **shift monitoring efforts to other at-risk water bodies in subsequent monitoring campaigns**. This approach allows for a more efficient use of resources and supports the progressive improvement of knowledge across the river basin district, ultimately contributing to a more comprehensive and targeted understanding of pressures and impacts.

3.10. Sampling and analysis

The representativeness of monitoring programmes begins with **careful and well-informed planning**, making full use of all available data and knowledge within the river basin. A crucial first step is to clearly define the **objectives of monitoring**—that is, the specific questions the monitoring programme is intended to answer.

An equally important aspect is the **planning and execution of sampling**. Errors introduced at the sampling stage—whether through inadequate design or improper field procedures—cannot be corrected by even the most advanced analytical methods. Therefore, it is essential to ensure the use of **appropriate equipment**, accurate selection of sampling locations, correct application of standardised methods, and the deployment of **properly trained personnel**. Effective communication with laboratories is also critical, particularly regarding sampling requirements, sample handling, preservation, and transport, in order to prevent any alteration or degradation of samples before analysis.

A number of international standards define the principles and requirements for ensuring high-quality monitoring and laboratory performance. In particular, **ISO/IEC 17025** provides a widely recognised framework for the competence of testing and calibration laboratories. This standard offers guidance on the key elements required to produce reliable and traceable results, including proper laboratory infrastructure, equipment management, and operational procedures. It emphasises the need for **safe handling, transport, storage, and maintenance of equipment**, as well as the management of consumables to prevent contamination or deterioration.

Quality assurance (QA) is therefore a fundamental component of monitoring systems, ensuring that results are **valid, reliable, and comparable**. It must be embedded as a continuous and evolving process within laboratory operations, supporting the ongoing improvement of analytical performance and the overall quality of monitoring data.

3.11. Data management, maintenance and reporting

Purpose of monitoring is to provide sound data on the current burden of pollution of water bodies, demonstrate long term changes (as result of measures or changes of pressures) as basis for fact-based decision making. Monitoring produces a high amount of data and requires, thus, a consolidated and uniform definition of requirements and format of data. This starts with the output of raw data and their plausibility, storage and maintenance. Full power of data can only be withdrawn, when a complete and consistent set of data is available in a well-maintained database. Pre-requisite is a solid and operational network including a powerful server, which connects all involved institutions.

Collaboration between institutions and entities is key to spreading relevant information and gaining added value from data. This regards checking raw data for plausibility and interpretation of data from different users' angles.

3.12. Sustainable Budget

Any form of monitoring requires sustainable budget to guarantee a meaningful set of data. The WFD provides a concept, which needs to be adapted to the needs of every economy to best suit its demands. This encompasses resources for already existing structures in the competent authorities, Ministries and entities to coordinate and administer the concept of the WFD, but also additional expenses for sampling, analysis and data maintenance. Thus, a high degree of awareness about the tasks and obligations at high level is needed to streamline the activities related to the implementation of the WFD.

- There is need for governmental understanding of the necessity, importance and benefits of water monitoring and for strong commitment of sufficient sustainable financing of water monitoring.
- Detailed cost estimations are needed, covering all aspects of monitoring. The estimate should distinguish between
    - sufficient one-time budget to cover the investment costs like infrastructure, equipment etc.;
    - sufficient and guaranteed permanent long-term budget to cover maintenance of infrastructure and equipment; and
    - operational costs for staff, training and consumables.
- It is necessary to demonstrate the political decision makers the benefits of monitoring. The costs of monitoring should be compared with the national economic benefits gained from e.g. water industries and water related tourism. Such a comparison could strongly convince decision makers of the importance of comprehensive water monitoring.

4. WORKPLAN FOR IMPLEMENTATION

The following chapter gives an overview of prerequisites and steps that can be used as a checklist for establishing a WFD-compliant surface water monitoring system. It covers the governance structure and roles of responsible authorities, the design of the monitoring system based on river basin characterisation, and the development of monitoring programmes including selection of parameters, sites, and frequencies. The chapter further describes the implementation of field and laboratory activities, the establishment of data management and QA/QC systems, and the processes for status assessment, classification, and reporting.

4.1. Governance, Scope, and Responsibilities

4.1.1. Institutional Setup

- Designation of the **Competent Authority** (CA)
- Definition of roles:
    - Monitoring authority / agency
    - Laboratory services
    - Data management authority
    - Reporting authority
- Establish coordination mechanisms with:
    - River basin authorities
    - Nature conservation bodies
    - Stakeholders (where applicable)

4.1.2. Scope Definition

- River basin district(s)
- Surface water categories:
    - Rivers
    - Lakes
    - Transitional waters
    - Coastal waters
- Monitoring cycle aligned with the **6-year WFD planning cycle**

4.2. Phase 1 – Baseline Analysis and System Design

4.2.1. Characterisation of Surface Waters (Article 5)

- Delineation and typology of surface water bodies
- Review of existing data and monitoring programmes
- Identification of:
    - Significant pressures and impacts
    - Waters at risk of failing good status

Deliverables:

- Typology and water body register
- Pressure and impact assessment

4.2.2. Definition of Monitoring Objectives

Biological Elements:

- Establish a compliant sampling method
- Establish a compliant lab method
- Gather data on biology in a consolidated database
- Establish a pressure-response-relationship
- Define criteria for type-specific reference (benchmark) conditions (E)
- Set class boundaries (EQR)
- Compile all methods to a binding guidance document (as a basis for the monitoring)

Chemical Elements:

- Establish a pressure-response-relationship
- Which chemical pollutants and indicators are already monitored?
- Which chemical pollutants are missing?
- Establish a compliant lab method

Define objectives for each monitoring type:

- **Surveillance monitoring**
- **Operational monitoring**
- **Investigative monitoring**

Ensure consistency with:

- Ecological quality ratios (EQRs)
- Environmental Quality Standards (EQS)

Deliverables:

- Monitoring strategy document
- Type-specific EQRs
- National sampling and assessment guidances

4.3. Phase 2 – Monitoring Programme Development (Article 8 & Annex V)

4.3.1. Selection of Monitoring Types

Monitoring type	Purpose
Surveillance	Long-term trends, baseline status
Operational	Status of water bodies at risk
Investigative	Causes of failure or incidents

4.3.2. Parameter Selection

4.3.2.1. Ecological elements:

- Biological quality elements (BQEs):
  - Phytoplankton
  - Macrophytes and phytobenthos
  - Benthic invertebrates
  - Fish fauna
- Supporting elements:
  - Hydromorphology
  - Physico-chemical parameters

4.3.2.2. Chemical elements:

- Priority substances
- River Basin Specific Pollutants (RBSPs)

Deliverables:

- Parameter list by water category & monitoring type

4.3.3. Monitoring Network Design

- Selection of monitoring sites:
  - Representative sites
  - Risk-based site selection
- Spatial and temporal coverage
- Sampling frequency according to Annex V

Deliverables:

- Monitoring network maps
- Sampling schedules

4.4. Phase 3 – Operational Implementation

4.4.1. Field Sampling and Measurements

- Development of Standard Operating Procedures (SOPs)
- Training of field personnel
- Implementation of sampling campaigns

4.4.2. Laboratory Analysis

- Use of accredited laboratories
- Compliance with QA/QC requirements
- Intercalibration where applicable

Deliverables:

- SOPs
- Sampling and analysis reports

4.5. Phase 4 – Data Management and Quality Assurance

4.5.1. Data Management System

- Establishment or adaptation of a central database
- Metadata documentation
- Data validation and plausibility checks

4.5.2. Quality Assurance & Quality Control

- Internal QA/QC procedures
- Participation in interlaboratory comparisons
- Audit and review mechanisms

Deliverables:

- Validated monitoring datasets
- QA/QC reports

4.6. Phase 5 – Assessment, Classification, and Reporting

4.6.1. Status Assessment

- Calculation of ecological quality ratios (EQRs)
- Status classification (high → bad)
- Chemical status compliance check

4.6.2. Trend and Pressure Analysis

- Temporal trend analysis
- Linkage with pressures and measures

4.6.3. Reporting

- Input to RBMPs and Programmes of Measures
- Reporting to the European Commission (WISE)

Deliverables:

- Status classification results
- Assessment reports
- WFD reporting datasets

4.7. Phase 6 – Review and Adaptive Improvement

- Evaluation of monitoring effectiveness
- Review of site selection, parameters, and frequency
- Integration of new methods (e.g. continuous sensors, eDNA)
- Update monitoring programme for next cycle

Deliverables:

- Monitoring programme review
- Updated workplan for next WFD cycle

4.8. Indicative Timeline (6-Year Cycle)

Table 2: Indicative timeline for WFD Monitoring

Year	Key activities
1	Characterisation, design, network setup
2–5	Monitoring implementation & QA
4–5	Status assessment & trend analysis
6	Reporting, review, and redesign

4.9. Key Risks and Mitigation Measures

- **Data gaps** → risk-based prioritisation
- **Resource constraints** → phased implementation
- **Method changes** → harmonisation and documentation
- **Climate impacts** → adaptive monitoring strategies

5. CURRENT WATER MONITORING SITUATION IN ALBANIA

5.1. National Legal and Institutional Framework – Albania

5.1.1. General Context

Addressing water-related issues and ensuring the sustainable and targeted management of water resources is a key priority for Albania. The Monitoring Development Plan (MDP) aims to support the progressive alignment of the national surface water monitoring system with the requirements of the EU Water Framework Directive (WFD).

The MDP provides:

- An overview of WFD monitoring requirements
- An assessment of the current Albanian monitoring framework
- Recommendations for stepwise improvement towards compliance

Albania is progressing towards full transposition and implementation of the WFD and its daughter directives into national legislation and practice. A key milestone is the adoption of **Law No. 29/2024 "On Water Resources"**, which provides a framework largely aligned with WFD principles.

5.1.2. River Basin Management Structure

Albania is divided into **seven River Basin Districts (RBDs)**:

- Drin–Buna
- Seman
- Mat
- Ishëm
- Erzen
- Shkumbin
- Vjosë

Status of River Basin Management Plans (RBMPs):

- **Drin–Buna and Seman RBDs**: Adopted and in force since 2021. Currently being prepared for the second RMBP-cycle by EU4Rivers.
- **Mat, Ishëm and Erzen RBDs**: Adopted and in force since 2024.
- **Vjosë and Shkumbin RBDs**: Currently under preparation with support from the EU4Rivers project. In addition, with the support of the EUSWIM project, AMBU

published a Statement of Significant Water Management Issues on its official website.

After completion of the latest versions of the Drin-Buna and the Vjosë and Shkumbin plans, the entire Albanian territory will be covered by RBMPs in line with national legislation and fulfilling this requirement of the WFD.

The **Drin–Buna and Vjosë RBDs are transboundary**, requiring international coordination.

5.1.3. Institutional Responsibilities

The **Water Resources Management Agency (WRMA)** (Albanian: *Agjencia e Menaxhimit të Burimeve Ujore – AMBU*), established in 2018, is the **competent authority** for integrated water resources management in Albania.

Its main responsibilities include:

- Management of the **national water resources inventory and cadastre**
- Maintenance of the **register of water users**
- Coordination of the **preparation and implementation of RBMPs**
- Oversight of river basin management through **four River Basin Administration Offices (RBAOs)**

5.1.3.1. Responsibilities related to monitoring

- WRMA uses monitoring data to **assess the current ecological and chemical status** of surface water bodies
- WRMA uses monitoring data and other environmental information to **assess the risk of failing environmental objectives** for surface water bodies
- WRMA coordinates data flows from different institutions involved in water monitoring

5.1.3.2. Role of the National Environment Agency (NEA)

The **National Environment Agency (NEA)** plays a key operational role in Albania's environmental monitoring system and supports the implementation of WFD-related requirements, particularly in relation to data generation, assessment, and reporting.

The main responsibilities of the NEA include:

- Implementation of the **National Environmental Monitoring Programme**, including surface water quality monitoring

- Collection and analysis of **biological, physico-chemical and chemical monitoring data** for surface waters
- Performance of **laboratory analyses** and coordination with accredited laboratories
- Assessment and interpretation of monitoring results to support environmental reporting
- Analysis of **temporal trends of priority substances**, in line with DCM No. 246 (2014)
- Contribution to the **assessment of water status** and pressures, in cooperation with WRMA and other institutions
- Preparation of **national environmental reports** and provision of data for international reporting obligations

In institutional terms:

- **NEA** is primarily responsible for **data production, monitoring implementation, and technical assessment**
- **WRMA** is responsible for **planning, coordination, and management decisions**, including RBMP preparation
- In addition, the **Institute of Geosciences (IGEO)**, which is responsible for managing and implementing the national network for **meteorological monitoring** as well as **hydrological monitoring** of surface water bodies

The interaction between the institutions is therefore critical for ensuring:

- Consistent and reliable monitoring data
- WFD-compliant status assessment
- Effective reporting and decision-making

The **National Cadastre of Water Resources** serves as the central data system:

- Functions as a **GIS-based database** for water resources and monitoring data
- Is maintained, updated and managed through an **electronic information system and archive**
- Provides **geo-referenced datasets** for water management and planning

All institutions (public and private) involved in water resource management are legally required to:

- Appoint a **designated contact point**
- Submit monitoring and relevant environmental data to the WRMA
- Follow standardized **formats and procedures** defined by Decisions of the Council of Ministers

Spatial datasets from the cadastre are published via the **ASIG (State Authority for Geospatial Information)** platform.

5.1.4. Legal Framework

The legal framework for water management and monitoring in Albania includes the following key acts:

5.1.4.1. Primary Legislation

- **Law No. 29/2024 "On Water Resources" as amended**

This law establishes the overall framework for water management in line with WFD principles. Relevant chapters include:

- Environmental quality objectives
- River basin analysis
- Register of protected areas
- Monitoring and measures to achieve environmental objectives
- Public information and reporting
- Groundwater protection
- Pollution control and flood risk management
- Water use, permitting, and cadastre systems

5.1.4.2. Secondary Legislation (Decisions of the Council of Ministers)

- **DCM No. 1015 (16.12.2020)** – National water resources management strategy and RBMPs
    - Defines requirements for preparation, content and implementation of:
    - River Basin Management Plans
    - Flood Risk Management Plans
    - Annexes 5 and 6 specify:
    - Monitoring requirements for ecological and chemical status (surface and groundwater)
    - Technical specifications for chemical analysis and status assessment in accordance with WFD principles
- **DCM No. 1189 (18.11.2009)** – National Environmental Monitoring Programme
    - Establishes the framework for development and implementation of national monitoring programmes
    - Provides the basis for current water monitoring activities
- **DCM No. 246 (30.04.2014)** – Environmental Quality Standards (EQS) for surface waters

    - Defines EQS values for relevant substances
    - Assigns responsibility to the **National Environment Agency (NEA)** for analysing **temporal trends of priority substances** listed in Annex I
- **DCM No. 177 (31.03.2005)** – Permitted liquid discharges and zoning of receiving waters
    - Defines emission limit values and classification of receiving water bodies
    - Supports pressure and impact assessment and permitting procedures
- **DCM No. 1122 (30.12.2020)** – Decision on establishing and updating the National Cadastre of Water Resources, regulating
    - Requirements, conditions, procedures
    - Necessary budgetary funds for the establishment, maintenance, management of the cadastre

5.1.5. Observations and Considerations

- The legislative framework shows **substantial alignment with WFD requirements**, particularly following adoption of the 2024 Water Law
- Institutional responsibilities are generally defined, with WRMA acting as the **central coordinating authority**
- Data integration via the **National Cadastre** represents a strong basis for WFD-compliant reporting

However, typical areas requiring further strengthening (to be confirmed in detailed assessment) may include:

- Full operationalisation of monitoring programmes in line with Annex V
- Consistent implementation across all RBDs
- Strengthening of quality assurance and laboratory capacity
- Further development of biological monitoring and RBSP assessment

5.2. Human Resources and Capacity Requirements – Biological Monitoring

5.2.1. General Principles

To ensure successful implementation of WFD-compliant biological monitoring, **trained and experienced experts are essential**. Monitoring teams must be capable of covering all Biological Quality Elements (BQEs) and supporting hydromorphological assessments in accordance with **Annex V requirements**.

The staffing levels presented below represent **minimum requirements per sampling campaign**. Field teams should consist of **at least two persons** to ensure safety, quality

control, and validation of results. Efforts should be made to promote **gender balance** in staffing.

5.2.2. Minimum Staffing Requirements per Biological Quality Element

Biological Quality Element	Number of Staff	Prerequisites
MZB (macrozoobenthos)	3 (min. two hydrobiologists + one chemist)	Coverage of all macroinvertebrate groups at required taxonomic resolution; strong coordination between field and laboratory; chemist responsible for physico-chemical measurements
PHB / PHP (phytobenthos, phytoplankton)	1	Experienced algae specialist (especially diatoms); laboratory capacity required for chlorophyll-a analysis
MAC (macrophytes)	1	Specialist in aquatic vegetation; diving skills may be required depending on site conditions
FIS (fish)	4 (1 expert + 3 trained staff)	Expertise in river-type-specific sampling methods (e.g. electrofishing); high level of experience required, particularly in large rivers
HYMO (hydromorphology)	2	One expert in hydrology and one expert in morphology; understanding of river processes and habitat structure

Abbreviations: MZB = macrozoobenthos (invertebrates); PHB = phytobenthos (diatoms); PHP = phytoplankton; MAC = macrophytes; FIS = fish; HYMO = hydromorphology

5.2.3. Competence and Qualification Requirements

- Staff must have **relevant academic backgrounds** (e.g. hydrobiology, ecology, environmental sciences, chemistry)
- Taxonomic expertise is critical, particularly for:
  - macroinvertebrates
  - diatoms
  - macrophytes
  - fish fauna
- Laboratories must be equipped and staffed for **specialised analyses**, including chlorophyll-a and biological sample processing
- Competence must be aligned with **intercalibration requirements** and WFD classification systems

5.2.4. Training and Capacity Development

- Continuous **professional development and training programmes** are essential to maintain and upgrade skills
- Institutions should establish **formal internal and external training plans**, with proper documentation
- Regular participation in:
    - interlaboratory comparisons
    - intercalibration exercises
- Training should specifically address **RBMP-identified gaps**, including:
    - limited biological datasets
    - insufficient taxonomic resolution
    - inconsistent application of methods

5.2.5. Organisational and Institutional Requirements

- Monitoring activities should be **centrally coordinated** to avoid fragmentation and ensure consistency
- Clear **roles, responsibilities, and job descriptions** are required
- Regular communication and exchange between field teams, laboratories, and data managers is essential
- Monitoring responsibilities should not be treated as secondary tasks but require **dedicated staff and structures**

5.2.6. Staff Retention and Workforce Planning

- Adequate remuneration is necessary to attract and retain qualified staff
- High levels of motivation should be supported through:
    - clear task definition
    - recognition of expertise
    - career development opportunities
- Forward-looking workforce planning is required to:
    - ensure balanced staffing
    - avoid loss of expertise
    - promote recruitment of young professionals

5.3. Human Resources and Capacity Requirements – Chemical Status Assessment

5.3.1. Required Functions and Roles

Chemical status assessment under the WFD requires a combination of **field sampling staff, laboratory analysts, QA/QC specialists, and data experts**. Minimum functional roles include:

- **Sampling teams (2–3 persons per campaign)**:

    - Trained technicians for water, sediment, and biota sampling
    - Knowledge of WFD-compliant sampling protocols and preservation requirements
- **Laboratory analysts**:
    - Chemists specialised in trace analysis of Priority Substances
    - Expertise in organic and inorganic pollutant analysis (e.g. metals, pesticides, PAHs)
- **Instrumentation specialists**:
    - Operation and maintenance of advanced analytical equipment (e.g. GC-MS, LC-MS/MS, ICP-MS)
- **QA/QC officers**:
    - Oversight of quality systems, calibration, validation, and interlaboratory comparisons
- **Data management and assessment experts**:
    - Processing of analytical results
    - Compliance checking against Environmental Quality Standards (EQS)
    - Preparation of WISE-compatible datasets

5.3.2. Competence and Laboratory Requirements

- Laboratories must achieve and maintain **accreditation (e.g. ISO/IEC 17025)**
- Analytical methods must meet **WFD performance criteria**, including:
    - limits of quantification below EQS values
    - validated and standardised methods
- Staff must be trained in:
    - trace-level chemical analysis
    - sampling and preservation techniques
    - uncertainty estimation and quality control

5.3.3. Equipment and Technical Capacity

- Adequate infrastructure is required, including:
    - advanced analytical instruments (GC-MS, LC-MS/MS, ICP-MS)
    - laboratory information management systems (LIMS)
- Capacity for **biota and sediment analysis** must be ensured, not only water samples
- Regular calibration and maintenance of equipment is essential

5.3.4. Training and Quality Assurance

- Continuous **training in analytical methods and QA/QC procedures** is required
- Mandatory participation in:
    - interlaboratory comparison exercises

    - proficiency testing schemes
- Training should target RBMP-identified weaknesses, including:
    - incomplete monitoring of Priority Substances
    - insufficient detection limits
    - inconsistent QA/QC application

5.3.5. Organisational Considerations

- Chemical monitoring should be **institutionalised and not project-based**
- Strong coordination between:
    - sampling teams
    - laboratories
    - competent authorities (NEA, WRMA)
- Clear workflows are required from sampling to reporting to ensure **data traceability and compliance**

5.4. Link to RBMP-Identified Gaps

The requirements above directly respond to key gaps identified in the currently exisiting RBMPs:

- insufficient availability of trained experts for biological and chemical monitoring
- lack of taxonomic and analytical expertise
- incomplete monitoring of BQEs, Priority Substances, and RBSPs
- limited institutional capacity to sustain regular monitoring programmes
- insufficient detection limits to assess compliance with EQS
- gaps in laboratory accreditation, QA/QC procedures, and intercalibration
- fragmented data flows and limited WISE readiness

Addressing these capacity needs and strengthening human resources is essential for achieving **robust and WFD-compliant ecological and chemical status assessment**.

6. GAP ANALYSIS VS. EU REQUIREMENTS (WFD IMPLEMENTATION ROADMAP)

6.1. Purpose of the Gap Analysis

This section provides a structured comparison between the **target state defined by this MDP (Phases 1–6)** and the **current status of surface water monitoring in Albania**, based on River Basin Management Plans (RBMPs), EU screening findings (Chapter 27), and recent EU-supported project assessments.

The analysis identifies key gaps and translates them into **priority actions**, forming a practical implementation roadmap toward WFD compliance.

6.2. Phase-by-Phase Gap Overview

MDP Phase	WFD Requirement	Current Status in Albania	Gap Level
Phase 1 – Characterisation	Full typology, pressures, risk assessment	Largely completed through RBMPs, but based on limited monitoring data	Moderate
Phase 2 – Programme Design	WFD-compliant monitoring (BQEs, chemicals, network)	Partially developed; strong focus on physico-chemical parameters, limited BQE and chemical coverage	High
Phase 3 – Implementation	Regular, systematic monitoring campaigns	Limited spatial coverage; inconsistent frequency; partly project-driven	High
Phase 4 – QA/QC & Data	Accredited labs, QA/QC systems, integrated databases	Fragmented systems; limited QA/QC implementation; weak interoperability	High
Phase 5 – Assessment & Reporting	Full classification (EQR, EQS) and WISE reporting	Partial assessments; incomplete datasets prevent full status classification	Very High
Phase 6 – Adaptive Improvement	Continuous optimisation of monitoring system	Improvements ongoing but largely driven by external projects	Medium–High

6.3. Key Systemic Gaps Identified

Across all phases, several **cross-cutting structural weaknesses** are evident:

- **Insufficient biological monitoring capacity**, particularly for fish, macrophytes, and phytobenthos
- **Incomplete chemical monitoring**, especially for Priority Substances in biota and sediments
- **Limited laboratory capacity**, including detection limits and accreditation gaps
- **Fragmented data management systems**, lacking full interoperability and WISE integration
- **Insufficient staffing and technical expertise**, especially in taxonomy and advanced chemical analysis
- **Dependence on donor-funded projects**, rather than fully institutionalised monitoring programmes

These constraints are consistent with findings from EU screening and technical assistance programmes, which highlight the need for **capacity strengthening, improved coordination, and significant investment in monitoring infrastructure and systems**.

6.4. Gap-to-Action Matrix (Priority Measures)

Gap Area	Specific Issue	Priority Actions (Workplan Alignment)
Monitoring Network	Insufficient spatial coverage and representativeness	Expand monitoring network; include reference sites; align with Annex V requirements (Phase 2–3)
Biological Monitoring	Missing or incomplete BQEs	Implement full BQE programme; recruit and train taxonomy experts; integrate intercalibration (Phase 2–3)
Chemical Monitoring	Incomplete Priority Substance coverage	Upgrade laboratory capacity; expand monitoring to biota and sediments; ensure EQS-compliant detection limits (Phase 2–3)
QA/QC Systems	Weak quality assurance and inconsistent methods	Establish national QA/QC framework; ensure ISO accreditation and interlaboratory testing (Phase 4)
Data Management	Fragmented databases and poor integration	Develop centralised data system; implement validation workflows; ensure WISE compatibility (Phase 4–5)
Assessment Capacity	Incomplete ecological and chemical status classification	Develop classification tools; strengthen analytical capacity; ensure integration of datasets (Phase 5)
Institutional Capacity	Insufficient staff and coordination	Implement staffing strategy; strengthen coordination between WRMA and NEA (cross-phase)
Sustainability	Project-based monitoring	Establish permanent funding and institutional frameworks; integrate monitoring into national budgets (Phase 6)

6.5. Strategic Roadmap (From Planning to Implementation)

The analysis shows a clear pattern:

- **Phases 1–2 (planning and design)** are largely in place but require refinement and completion
- **Phases 3–6 (implementation, QA/QC, assessment, and adaptation)** represent the main bottleneck

To achieve WFD compliance, Albania should prioritise:

1. **Transition from pilot/project-based monitoring to fully operational national systems**
2. **Strengthening human resources and laboratory capacity**
3. **Completing monitoring coverage (biological + chemical)** in line with Annex V
4. **Establishing robust QA/QC and data management systems**
5. **Ensuring full integration of monitoring results into RBMP assessment and reporting cycles**

6.6. Relevance for EU Accession (Chapter 27)

This gap analysis directly reflects key findings of the EU accession screening process under **Chapter 27 (Environment and Climate Change)**:

- Albania shows **good legislative alignment with the EU acquis**, but
- Requires **substantial improvements in implementation capacity**, particularly in monitoring and data systems

The MDP therefore serves as a **practical implementation roadmap** to:

- close compliance gaps with the Water Framework Directive
- support evidence-based RBMP implementation
- facilitate **progress in EU accession negotiations**

6.7. Conclusion

Bridging the identified gaps requires coordinated investments in **infrastructure, human resources, institutional capacity, and data systems**. The phased approach outlined in this MDP provides a structured pathway to achieve **full WFD-compliant monitoring and reporting in Albania**.

7. ROADMAP 2026–2030 (PHASED IMPLEMENTATION PLAN)

The following roadmap translates the identified gaps into a **time-bound implementation plan (2026–2030)** aligned with the WFD planning cycle and the progressive preparation of the next RBMP update cycle.

Phase	Timeframe	Strategic Focus	Key Actions	Expected Outputs
Phase A – System Completion	2026	Finalisation of monitoring design and legal framework	- Complete monitoring programme design (all BQEs + chemicals)	• Adopt/update secondary legislation and technical guidelines • Define national QA/QC framework

Phase	Timeframe	Strategic Focus	Key Actions	Expected Outputs
				• Fully defined WFD-compliant monitoring programme • National standards and SOPs approved
Phase B – Capacity & Infrastructure Build-up	2026–2027	Strengthening operational capacity	Recruit and train biological and chemical experts	• Upgrade laboratory infrastructure (equipment + accreditation) • Expand monitoring network (sites, reference conditions) - Operational monitoring teams in all RBDs • Accredited laboratories (or roadmap to accreditation) • Expanded monitoring network
Phase C – Full Monitoring Implementation	2027–2028	Regular and systematic monitoring	Implement surveillance and operational monitoring campaigns	• Introduce monitoring of Priority Substances in water, sediment, and biota • Ensure consistent sampling frequencies • Complete datasets for ecological and chemical parameters • Improved spatial and temporal data coverage
Phase D – Data Integration & Assessment	2028–2029	Data validation, classification, and reporting	Establish centralised database and validation workflows	• Apply EQR-based ecological classification tools • Perform EQS compliance assessment • Prepare WISE-compatible datasets • First fully WFD-compliant status assessment • Integrated national monitoring database • Improved RBMP evidence base
Phase E – RBMP Update & Optimisation	2029–2030	Integration into planning cycle and optimisation	Use monitoring results to update RBMPs (next cycle)	• Refine monitoring network and parameters based on results

Phase	Timeframe	Strategic Focus	Key Actions	Expected Outputs
				• Integrate advanced methods (eDNA, sensors where feasible) • Updated RBMPs based on robust monitoring data • Optimised monitoring system • Increased cost-efficiency and effectiveness

7.1. Link to WFD Planning Cycles

The phased roadmap is aligned with the **WFD 6-year planning cycle**:

- **2026–2027**: Transition phase from planning to full implementation
- **2027–2029**: Data generation for status assessment
- **2029–2030**: Input to next RBMP cycle and reporting obligations

By following the outlined steps by the next RBMP update, Albania would have:

- **robust biological and chemical datasets**
- **fully operational monitoring programmes**
- **WFD-compliant status classification and reporting**

7.2. Strategic Priorities (2026–2030)

To ensure successful implementation of the roadmap, the following priorities must be addressed:

1. **Institutionalisation of monitoring systems** (move beyond project-based approaches)
2. **Investment in human resources and laboratories**
3. **Completion of monitoring coverage (BQEs and chemicals)**
4. **Development of integrated data management systems**
5. **Strong coordination between WRMA, NEA, and supporting institutions**

8. REFERENCES

8.1. EU Legislation and CIS Guidance Documents

- Directive 2000/60/EC establishing a framework for Community action in the field of water policy (Water Framework Directive)
- Directive 2008/105/EC on environmental quality standards (EQS Directive), as amended by Directive 2013/39/EU
- Commission Implementing Decision (EU) 2018/840 establishing a watch list of substances for Union-wide monitoring
- CIS Guidance Document No. 7 – Monitoring under the Water Framework Directive
- CIS Guidance Document No. 13 – Overall Approach to the Classification of Ecological Status and Ecological Potential
- CIS Guidance Document No. 19 – Surface Water Chemical Monitoring under the Water Framework Directive
- CIS Guidance Document No. 25 – Chemical Monitoring of Sediment and Biota under the Water Framework Directive

8.2. National Albanian Documents

- Law No. 29/2024 “On Water Resources”
- DCM No. 1015 (2020) – National water resources management strategy and RBMP framework
- DCM No. 1189 (2009) – National Environmental Monitoring Programme
- DCM No. 246 (2014) – Environmental Quality Standards for surface waters
- DCM No. 177 (2005) – Permitted liquid discharges and classification of receiving waters
- River Basin Management Plans (RBMPs):
    - Drin–Buna RBMP (2021)
    - Seman RBMP (2021)
    - Mat RBMP (2024)
    - Ishëm RBMP (2024)
    - Erzen RBMP (2024)
    - Shkumbin RBMP (under preparation)

- Vjosë RBMP (under preparation)

- National Environmental Monitoring Programme reports (NEA)
- National Cadastre of Water Resources (WRMA database and GIS platform)

8.3. Other

- GZÜV – Oberflächengewässer (Gewässerzustandsüberwachungsverordnung) Umsetzung 2007 – 2009 (BMLFUW - Bundesministerium für Land- und Forstwirtschaft, Umwelt Wasserwirtschaft – Sektion VII, 2008)
- Monitoring Development Plan – Groundwater, Albania (EU4Green, 2026)