

## THE IMPORTANCE OF WATER RESOURCES MANAGEMENT AS AN OBLIGATION OF WATER FRAMEWORK DIRECTIVES

MIRIAM BOGDANI NDINI <sup>a\*</sup>, PALLE D. GREVY <sup>b</sup>

<sup>a</sup>. INEUM Universiteti Politeknik, Tirane, SHQIPERI;

<sup>b</sup> Grontmij | Carl Bro A/S Denmark;

Email: ndinimiriam@yahoo.com

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### SUMMARY

The Water framework Directive, as part of European legislation, aims the improvement of the water environment. It require from the governments to establish a new approach in water management. WFD establish a framework for the protection of inland surface waters, transitional waters, coastal waters and ground water. The overall intention behind the WFD is to protect/ improve the ecological, chemical, physical and quantitative status of surface and ground waters, and to ensure a sustainable water use To meet the requirements of this directive, Albania has to prepare the management plans for its river basins. To support the development of a methodology on preparing a management plan, a pilot plan has been prepared for Mati river basin. In this paper are presented some results from the work done on preparing this pilot management plan together with some institutional issue in water sector.

**Key words:** Water Framework Directive, monitoring, water basin.

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### INTRODUCTION

For future compliance with the requirements of the EU Water Framework Directive (WFD) Albania has to prepare management plans for the river basin districts (RBMP). In accordance with EU legislation the Albanian Law on Water Resources (LWR) [10] requests that a river basin water resources plan must be prepared for each drainage basin. Such a plan is comparable with a river basin management plan as specified by the EU WFD [2]. However, the procedures for drafting, reviewing and approving plans, have not been adopted yet and no river basin water resources plans have been prepared so far.

In order to support the development of the methodology for preparation of river basin management plans, a pilot management plan for the Mati river basin has been prepared as part of the ongoing program: Implementation of the National Plan for Approximation of the Environmental Legislation in Albania [6].

The objectives of the pilot river basin management plan are:

- Development of a methodology for river basin management planning in accordance with the WFD and the LWR (Law on Water Resources)
- Inventory of the needs for human resources, data sources, information systems (e.g. GIS) for preparation of river basin management plans
- Preparation of draft report which should serve as a pilot for river basin management planning.

### METHODOLOGY

To prepare and implement the WFD is a complex activity and the member states got in year 2000, 15 years for preparation and implementation of river basin management plans (RBMP). But the planning concept behind the WFD is simple and logic.

In the first step an answer should be given to the question: Where are we? – by making a description and characterisation of the existing

situation within river basins and make a projection for what will happen in the future with regard to water.(Article 3, 5, 6 and partly article 4, 7 and 8) [2].

In the second step an answer should be given to the question: What do we want to achieve? – by setting up environmental objectives for the future (Article 4) [2].

In the third step an answer should be given to the question: How do we achieve what we want? – by setting up a programme of measures and see to that the programme is implemented within a proper institutional framework.

The pilot plan for Mati Basin has been prepared with this overall approach.

But even a 2-sided approach has been used to prepare the pilot management plan for Mati river basin:

- To prepare a RBMP as far as possible in accordance with the overall requirements of the WFD.
- To make recommendations and guidelines to the implementing authorities on how to introduce procedures and generate information needed for preparation of future BRMP.



Figure 1. Mati River Basin District with administrative borders.

**RESULTS**

The purpose of the WFD is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and ground water.

The overall instrument to fulfil the objectives of the WFD is preparation and implementation of a RBMP for each river basin district of each EU member state.

The main components of the plan refer to:

### **Characterisation of the river basin**

One of the first steps in RBMP is to make a description of the river basin, including an analysis of its characteristics and characterisation of water body types [5].

As part of this plan, it is proposed that the Mati River Basin District is extended to cover the existing area of Mati river basin, and in addition the coastal parts of the districts of Lezhe and Kurbin (Figure 1).

### **Characterisation of water body types**

Characterisation of water body types is the backbone in the whole planning process and the applied methodology for defining “good ecological status” in surface waters and “good chemical and quantitative status” for ground water. In the Mati River basin management plan the procedures to be applied for characterisation of water bodies are described for rivers, lakes and groundwater reservoirs

A part of the characterisation of water body types is to assign quality elements to each water body type. Water body types shall be characterised in relation to 4 different quality elements with regard to good status. A distinction is made between: Biological quality elements, physico-chemical quality elements, hydro morphological elements and specific pollutants with special reference to dangerous and priority substances listed in Annex IX and X of the WFD [2].

All the described surface water body types in the Mati RBM plan are characterised by biological and physico-chemical quality limit values for good ecological status (water quality criteria) to be achieved [4]. Ground water reservoirs are generally characterised by quantitative criteria based on yielding capacity of sub-soils and geology.

### **Pressures and impacts of human activities**

In accordance with requirements of the WFD pressures and impacts of human activities are described in relation to point sources and diffuse sources.

The main pollution in Mati Basin arises from *households*. There are no treatment plants. There

are 8 water supply and sewerage companies operating within the basin [13].

Gravel extraction is a major problem in the lower part of Mati Basin. 35 gravel extraction companies are operating with licenses in this area and probably others are operating without licenses [8].

Mining of especially chromium and copper is still ongoing within the basin.

Random disposal of waste is a major problem within Mati Basin. However 6 official disposal sites for solid waste disposal exist, at Rubik, Rreshen, Burrel, Lac, Mamurras and Pilan [12].

A list of the 9 former and existing most polluting hot spots within the basin is described covering sources of pollution from pesticide storages, smelters for metal processing and tailing dams from mining activities

### **Risk assessments in RBM planning**

The risk assessment shall be done to identify surface water bodies or groundwater reservoirs at risk of not achieving at least good environmental ecological or chemical status within a planning period.

The methodology is to compare measured parameter values from ongoing monitoring programmes with parameter limit values applied for good environmental or chemical status. Programme of measures are implemented for those water bodies at risk of not achieving good environmental status based on the risk assessment.

In the plan the quantitative status of rivers within the basin is described as good. The chemical status of river water has been monitored with regard to at least 10 parameters at three stations for several years and there are not one single measurement indicating that the limit values of good chemical status is superseded [11]. In consequence it means that river water is not at risk of not achieving at least good chemical status.

### **ESTABLISHMENT OF MONITORING NETWORKS AND PROGRAMMES**

The WFD requires that appropriate water quality monitoring networks are established and maintained (article 8, annexes V, VI) [2].



**Figure 2.** River monitoring stations in Mati River basin

The monitoring networks should address:

- For surface and groundwater waters, including the flow groundwater levels measurements, physical and chemical and ecological parameters analysis.
- For protected areas - To assess the status of the areas.

Monitoring systems include the following:

- Surveillance monitoring shall be done to provide an overall assessment of the existing surface water and groundwater status;
- Operational monitoring shall be done to follow the status of water bodies at risk of not achieving good status after implementation of programme of measures
- Investigative monitoring is used to find out the reason why a water body does not fulfil requirements of good environmental status.

Surveillance monitoring

Surface water

The surveillance monitoring is proposed to take place at the 8 existing hydrometric monitoring stations downstream the 8 sub-basins shown in figure 2. They represent monitoring stations which have been running during long time periods.

It is proposed that the monitoring of chemical status shall consist of the following parameters: Oxygen, pH, conductivity, total phosphorous, total nitrogen, copper and chromium.

The biological status should be monitored by the Common Metric Index (ICMi) [11].

The frequency of hydrometric monitoring as expression of the quantitative status should be done 12 times a year or continuously while

biological and chemical status should be measured at least 4 times a year for each station.

#### Groundwater

Groundwater surveillance monitoring of the quantitative and chemical status is already ongoing in relation to the Fushe Kuge and Lezhe aquifers. There are six groundwater monitoring stations, monitoring twice a year [2].

The analyses are concentrated on electrolytes, chloride, alkalinity, nitrate and nitrites and sulphate. Metals including chromium, copper and manganese are monitored occasionally and it is expected that changes in groundwater tables are measured as well.

#### Operational monitoring

As no programme of measures has been implemented within the river basin district no additional operational monitoring is needed. Instead supplementary monitoring is proposed under investigative monitoring.

#### Investigative monitoring

#### Rivers

Comprehensive excavation and gravel extraction activities in the river bed in the lower part of Mati River have been ongoing for years. The visual impression is that the river bed in many places has been modified beyond the limits of what is needed for maintaining good ecological status in natural rivers. Most probably it can easily be verified through monitoring and application of biological indices. Monitoring should be done with the purpose to create the background for introducing conditions for re-establishing excavation sites as background for issuing permissions.

Investigative monitoring programmes should as well be established in relation to at least the existing and former hotspots in the basin. Such investigative monitoring should be concentrated downstream Reshen, Rubik, Lac, Reys, Kurbnesh, Burrel, Fushe Arres and monitoring should address dangerous substances like metals, pesticides and other parameters characterising the former or existing production at specific hot spots.

#### Lakes

It is proposed that a three year monitoring programme is established for both reservoirs Ulza and Shkopet, based on sampling three times a year, at one station located in the middle of each reservoir. It is proposed that sampling takes places at three depths over and below the temperature stratification layer. The main parameters to be monitored includes Secchi depth, chlorophyll-a, total-phosphorous, orthophosphate, total-nitrogen, nitrate, alkalinity, and oxygen.

#### Groundwater

As there is a surveillance programme ongoing in the two main reservoirs in the coastal plain any follow-up with additional investigative monitoring should be decided continuously in response to changes in groundwater status which might represent a risk in relation to good quantitative and chemical status at specific locations.

#### *Programme of measures*

Programme of measures in a river basin management plan is generally a main issue, as the measures to be described are those needed for achieving good ecological status. It is costly and is as such an economic controversial programme which must rely on trustworthy assumptions as background for political decision-making.

It means that risk analyses of not achieving good ecological status must be verified through monitoring for at least one or two years if such risks cannot be directly verified before decision-making on programme of measures is provided. As it cannot be shown from existing data from Mati Basin that risks of not achieving good water status exists in the water bodies then a targeted programme of measures may not need to be designed.

For water bodies where uncertainties exist regarding risks, monitoring will have to await the results of investigative monitoring for at least one or two years.

On that background the programme of measures shown in the pilot plan of Mati Basin is very general and will have to await the results of

monitoring before it can be detailed and targeted. This is and has been the situation in all existing EU member states as it must be for this version of the Mati RBM plan. That is especially the case in Albania with regard to implementing a programme of basic measures.

Based on the specific problems encountered during preparation of this plan two category of measures are proposed:

- Legal and institutional and
- Economic and Technical.

The first category measures consist on:

- Adjusting the borders of the Mati Basin by including Kurbin and Lezhe Districts;
- Delegating clear responsibilities to the River Authority in Lezhe;
- Clarifying responsibilities between Prefecture, Districts, Municipalities and water companies;
- Reorganising the water companies into major units.

Besides some of the measures described in the precedent paragraphs, the economic and technical category of measures consists on:

- Revising the tariff structure for water services;
- Assessing the limits of the financing capacity for water utilities within the Mati Basin;
- Delineating and characterise all surface water bodies and ground water magazines.

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