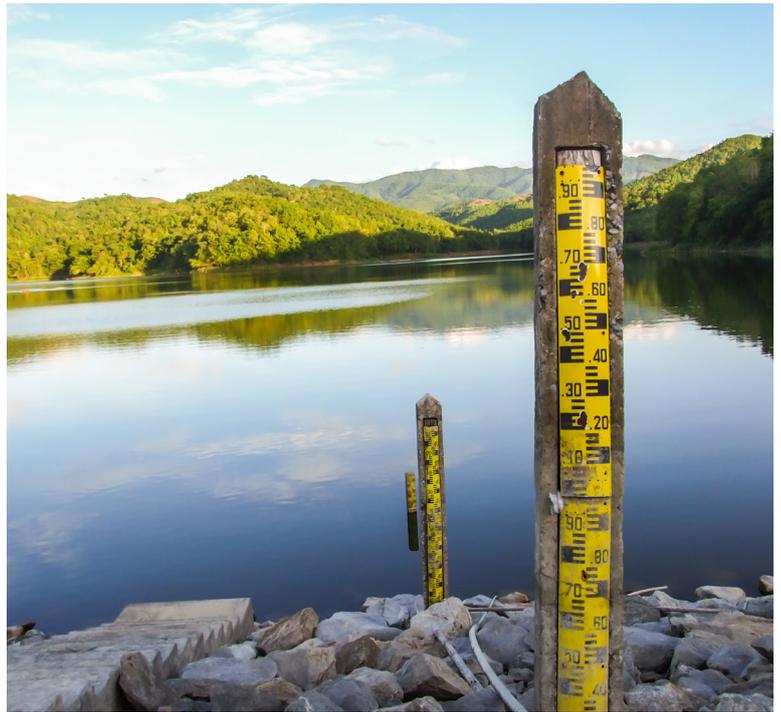


Monitoring the water resources: How to establish the real situation?

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Summary

The current monitoring of water quality and quantity in Macedonia is inadequate to give a realistic picture of the current state of the water resources. The reasons for this situation are the lack of monitoring programs and cartographic representations in accordance with the requirements of the Law on Waters, insufficient financial and human resources, poor condition of the state measuring stations and the failure to meet the internal monitoring obligations. Hence, there is no systematic and continuous monitoring and evaluation, and the authorities cannot obtain adequate water management data. In the context of surface water, this means absence of data on the classification of surface waters status, on changes that occur due to anthropogenic activity, especially from discharges of pollutants. In the context of groundwaters, this means absence of data on the quantitative status of groundwater bodies, on their chemical status, the presence of concentrations of pollutants and the assessment of changes due to natural conditions and anthropogenic activities. The absence of real data on the status of water bodies means that the justification, sustainability, rationality and efficiency of policies and administrative measures for water use and protection are in brought question.

Recommendations for the Ministry of Environment and Physical Planning

- Adopt the bylaws related to introduction and maintenance of the water monitoring system;
- Improve the system for collection and transfer of monitoring data and information and establish a system for managing the data obtained from monitoring in order to create sustainable water management policies;
- Enable access to the system data to the inspection bodies for implementation of the obligations related to water monitoring;
- Enable public access to data from the system in accordance with the regulations for free access to public information, without special requirements and procedures.

Recommendations for individuals and legal entities

- Provide water permits along with specific monitoring responsibilities;
- Provide measurements of the quality of waters and quality analysis of the waters taken and discharged into the nature;
- The monitoring data to be submitted to the Ministry of Environment and Physical Planning.

Recommendations for the Macedonian Government

- Allocate an adequate and regular budget for rehabilitation and maintenance of the hydrological monitoring network and for establishment and maintenance of a state water monitoring network, in order to enable systematic monitoring and assessment of the status of surface and groundwater and the protected zones;
- To define the status of the UHMR and the relationship with the MoEPP in the water condition monitoring system with a law (which will clearly define who is responsible for establishment of the network, its operation, maintenance and development; who prepares and adopts the monitoring program; who actually does the water monitoring, as well as to determine an appropriate and regular budget related to these tasks);
- Prescribe the conditions, the manner and the procedure for establishment and operation of all networks for monitoring the condition of the water bodies and to adopt monitoring programs for each river basin area.

The Law on Waters stipulates that there should be systematic and continuous monitoring of the status of surface and groundwater, and of the protected zones. For that purpose, it is envisaged to adopt and implement monitoring programs (supervisory, operational and research) which will establish a coherent and comprehensive review of the water status in each area of the river basin. The monitoring activities also require cartographic representations of the monitoring networks, of the water condition and the groundwater bodies, which are subject to a significant upward trend of the concentration of pollutants. For permit holders, the law also stipulates an obligation for internal monitoring of catchments and discharges. So far, monitoring and reporting programs under the Law on Waters have not been adopted, and measurements, parameters, methods and dynamics are not in line with the requirements, so there is no systematic and continuous monitoring and evaluation of the data on waters and the protected zones.

There is insufficient and unreliable data on the status of surface and groundwater

The monitoring data available through the state hydrological network provide only a partial overview of the **surface water** status in the country. There is no reliable data on the quality and quantity of **groundwater**, which makes the state hydrological network inoperable for monitoring in relation to the objectives of the Law on Water. There is also no data on specific interactions with the ecosystems. There is insufficient data to assess the possible negative impacts of the anthropogenic activities (waste, wastewater, agricultural activities - nitrates, pesticides and industry), especially in hydrogeologically sensitive karst areas. The hydrological monitoring network of

the Hydrometeorological Service (UHMR) consists of 110 surface water stations and 115 groundwater stations, of which, as of 2018, only 65 surface water stations and 38 groundwater stations are operational. It is also important to note that the UHMR network, from where the water monitoring data is received and used, is established in order to obtain data on the hydrometeorological needs and, although they may not to some extent coincide with the monitoring provided by the Law on Water, still the network is not designed to provide all relevant management data.

Despite the attempt to conduct monitoring in accordance with the Law on Waters and the relevant instruments of the European Community (although the Law on Waters does not have such direct authority and is the responsibility of the Ministry of Environment and Physical Planning), the UHMR faces difficulties in monitoring some quality parameters, due to the lack of adequate and modern laboratory and equipment. This means that only certain parameters are analyzed: heavy metals (Cd, Pb and Ni) and only three biological parameters (benthic invertebrate fauna, phytobenthos and phytoplankton), while others (macrophytes and fish) are not yet subject to routine monitoring. The UHMR monitoring focuses on rivers and reservoirs, so lake monitoring data is not included.

Furthermore, continuous monitoring and evaluation is carried out on the **quality and safety of drinking water** and the public water supply systems. In accordance with the public health programs, the ten public health centers, through sanitary-hygienic inspections, sampling and laboratory analyzes of relevance for the population health, examine the safety of drinking water and the sanitary-hygienic condition of the water supply and implement and propose drinking water safety measures. Annual reports on monitoring the quality of drinking water are prepared



by the Institute of Public Health. Control monitoring of the municipal public water supply systems is carried out periodically by the Institute.

According to the Law on Waters, the public utility companies (JKP) are required to monitor the taken and exhausted quantities of **water for public** water supply and to install and maintain in good condition instruments for analysis of the water quality and for water measurement. They are also required to submit the data to the relevant authorities in accordance with a specific dynamic. Not all public utilities have installed instruments for measuring the taken and exhausted water quantities, nor they regularly submit data on the amount of water they take.

In terms of monitoring of wastewater, the operators of the installations are required to monitor the quantity and parameters of the **wastewater** they discharge. The public utility companies that discharge wastewater are also required to install instruments for measuring the discharged quantities as well as instruments for analyzing the quality of those waters. Furthermore, they are obliged to submit the data to the MoEPP. The obligations for the operators and public utilities are also included and set out in the discharge permits issued. Only public utility companies that have functional treatment plants, as well as public utility companies without functional plants (such as in Skopje and Shtip), have instruments for measuring the quantity and quality of the discharged water, but the records and data from those measurements are usually not submitted to the MoEPP. The other municipalities/public utility companies do not have instruments installed and do not measure the quantity and quality of the untreated water that they discharge directly into the recipient. An additional issue with this situation is the problem of wastewater monitoring for the plants and public utilities that discharge without a permit.

No monitoring has been established for the quantity and quality of water that is taken/ discharged and used for irrigation, drainage and other individual purposes.

Why the system does not work?

The absence of systematic and continuous monitoring is due to several main reasons.

The first is that the bylaws relevant for implementation of the legal obligations related to the monitoring system have not been adopted. Most of them are under the jurisdiction of the MoEPP, independently or in cooperation with other ministries.

The second main reason is the inadequate distinction of the institutional competencies for water monitoring. The role of the UHMR is not explicitly defined by the Law on Waters and it manages the state hydrological network which is created in accordance with hydrological rules. It is different from the state water monitoring network, which should be established according to the Law on Water and be designed depending on the pressures, as an environmental medium. Although the monitoring in both networks - hydrological and environmental - is separate, in some cases the locations for the metering points and parameters may coincide. The UHMR has the capacity, knowledge and equipment to conduct water monitoring but its role is not legally defined in order to enable an effective water monitoring program under the Law on Waters.

Furthermore, the budget constraints affect the operation of the existing hydrological network as well as the investment costs for establishment of new metering stations and a new state water monitoring network.

The small number of wastewater treatment plants and the non-installation of instruments for measuring the quantity, quality and analysis of the discharged water, and the non-submission of measurement data are the additional problems that prevent us from obtaining the full picture on the condition of the water bodies.

The indicative budget for preparation of a program for monitoring of water bodies is estimated at 109,867 euros. This does not include the cost of operational monitoring, for which there will be additional financial implications in terms of laboratories and equipment, and these need to be calculated depending on the needs identified by the actual programs.

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Please read more on this topic in the policy paper

„Challenges of water resource management:
How to use and protect water“.