

Terms of Reference
for Laboratory services for measuring of concentrations of
biogeochemical parameters in water samples

Project name:	Enhancing Dojran Lake Unique Biodiversity through Engagement of all Stakeholders and Implementation of Ecosystem-Based Approaches
Location:	Dojran Lake, Republic of North Macedonia
Description of the agreement:	Laboratory services
Period of duration of agreement/services:	20 months after signing the Agreement
Application Deadline:	16.09.2019

Introduction

Dojran Lake is one of the most important biodiversity spots in North Macedonia, which is also highly valued because of its natural beauty, hydro(bio)logical and geomorphological characteristics, and its importance to science. The lake hosts several endemic species and subspecies of fish as well as eleven endemic invertebrates and many protected bird species.

Dojran Lake has been also recognized internationally for its rich biodiversity and abundance of species, and thus has been proclaimed as an important area for the conservation of European species and habitats. To date, Dojran Lake has been included in many different international networks and initiatives for the conservation and protection of nature, such as: the Emerald network of areas of special conservation interest (2002; Bern Convention), North Macedonian important plant areas (2004), the Balkan Green Belt (2004; IUCN), Ramsar site – Wetlands of International Importance (2008; Ramsar Convention), Important Bird Area (2010; BirdLife International), candidate Natura 2000 site (EU Birds and Habitat directives). Since 1977 Dojran Lake has been protected with national law and holds a protected status of a Monument of Nature (Official Gazette of SRM N° 45/1977, Official Gazette of NM N° 51/2011).

Today, Dojran Lake's ecosystem and biodiversity are under big threat mainly from anthropogenic activities (enhanced by climate change) that cause pollution, eutrophication, habitat loss and fragmentation, species disturbance and loss, depletion of fish stocks and introduction of invasive species, deterioration of the water quality and excessive water fluctuations. The degradation of the lake ecosystem has started in the late 80's of 20th century when excessive quantities of water were abstracted, which put the whole lake system out of its natural balance. As a consequence of this ecological catastrophe as well as the continuous increasing anthropogenic pressures, today the lake is highly eutrophic and has completely lost its ecological resilience and the capacity for self-recovery.

The system will face irreversible and fatal damages to its biota unless conservation actions are undertaken and a proper sustainable management focusing on restoration and protection of the lake is established. Inaction will further have large negative consequences on the tourism, fisheries, and the regional economic situation as well as the livelihood of the local communities.

Location of the project

Dojran Lake is one of the three natural tectonic lakes in North Macedonia and is located in the southeastern part of the country (41°23' N 22°45' E). The lake occupies an area of 43.2 km² of which 27.2 km² belong to North Macedonia, while the smaller part lays within the territory of Greece. Dojran Lake is a shallow lake with the deepest point of 10 m found in the southeastern part. The lake is located in a topographic depression (148 m altitude) surrounded by the mountains Belasica in the north, Krusha in the southeast and Mehek in the west. The project activities will take place in the North Macedonian part of the Lake Dojran.



Figure 1 Location of Dojran Lake. Source www.google.com/maps

Background

Municipality of Dojran is the responsible authority for the management of the Monument of Nature Dojran Lake. However, so far neither conservation actions to save the lake have been undertaken nor a management plan has been developed, leaving this protected area under no active management. This is a result mainly of the lack of knowledge, managing capacities and financial means.

Expected results of the project

The Project focuses on achieving two main results: (1) Strengthening governance of the catchment management zone, and (2) Achieving sustainable management, conservation and restoration of the lake through implementation of ecosystem-based practices.

Within the project all relevant stakeholders, such as the local management authority, local community, land owners and the lake concessioner will be engaged to develop the first Protected Area Management Plan with Action Plan for Dojran Lake. During this process the stakeholders will be informed of the most pressing issues that negatively impact the lake ecosystem and will receive intensive trainings on best Integrated River Basin Management (IRBM) practices with the aim to ensure long-term sustainable provision of ecosystem services and improvement of the lake status and its biodiversity. In order to achieve continuous sustainable management of Dojran Lake, the project will focus on capacity strengthening of the responsible authority for planning, implementation, monitoring and review of management activities that influence the lake.

The project encompasses also conservation activities that aim to directly mitigate the anthropogenic impacts on the lake, to stabilize the shoreline, improve the water quality through biomanipulation by fish removal and restore the ecosystem balance through ecosystem-based approaches.

Specific Objectives of the Project

1. Strengthen capacities for sustainable lake management
2. Develop a lake management plan
3. Develop monitoring protocols and guidance for lake protection and sustainable management
4. Initiation of trans-boundary lake basin governance
5. Improvement of water quality of Dojran Lake through ecosystem approaches
6. Develop a plan for prevention of anthropogenic pollution of the lake water
7. Rehabilitation and stabilization of the lake shoreline
8. Education on sustainable agricultural practices

The project is funded by the Critical Ecosystem Partnership Fund (CEPF). The Critical Ecosystem Partnership Fund is a joint initiative of l'Agence Française de Développement, Conservation International, the European Union, the Global Environment Facility, the Government of Japan and the World Bank. A fundamental goal is to ensure civil society is engaged in biodiversity conservation.

Requested services

High accuracy laboratory measurements of the concentrations of the following environmental parameters in water samples:

1. **Nutrients** (Total Phosphorus, Total Nitrogen, Nitrates, Nitrites)
2. **Oxygen** (Dissolved Oxygen, Biochemical Oxygen Demand)
3. **Chlorophyll a**

for a total of **40 samples**. It is expected that 2 samples are processed/measured each month in the period of November 2019 - June 2021.

Methodology and Approaches

Collection and in-situ fixing of the water samples will be performed by the project team, after which the samples will be transported for analysis in the selected laboratory.

Dojran is a highly eutrophic lake, and hence substantially above-average concentration values for all nutrient parameters are expected.

Working Schedule - Timeframe

Step	Deliverables	Timeline	Total duration of activity
1.	High accuracy laboratory measurements of concentrations of nutrients, oxygen and chlorophyll a in water samples from Dojran Lake	2 samples / month	20 months

Required Qualifications and Experience

It is expected from the selected company/laboratory to have the following laboratory equipment, qualifications, skills and competences:

- All necessary instrumentation and a fully equipped laboratory for the determination of concentrations of environmental parameters in water samples;
- Experienced and competent laboratory technicians and personal;
- Long-term experience in working with environmental samples;
- Accreditation for the methods for analysis of biogeochemical parameters in water samples.

Required documents for application:

- Document for company main activity
- Legal entity form
- Company portfolio and reference list (at least for the past 3 years)
- Statement for technical equipment, detection limits and methodology
- Certification for accreditation
- Copy of ISO 9001:2008 for quality management systems and ISO 14001 for environmental management systems certificates
- Quote/Financial offer
- CV and contact of the responsible person, who will perform the laboratory measurements

How to apply

To apply, please send an e-mail with all requested documents along with the financial offer/quote to the e-mail address: info@mkm.mk using the subject line: “**Laboratory Services**”.

Deadline for submissions of documents is 16th September 2019 (Monday), 17.00 p.m. We encourage applications to be submitted well before the stated deadline date.

If you need help, or have queries, please contact: info@mkm.mk or petra@mkm.mk
E-mails sent only during three (3) days upon the announcement of the vacancy will be replied to.