



## PRESPA LAKE

### Integrated Ecosystem Management.

## Intervention 2: Reducing Environmental Impacts of Agriculture

### Project Summary and Scope

Recent analyses of the status of Prespa Lake show dramatic ecological changes, caused by the synergetic influence of natural and anthropogenic factors. One of the factors affecting the lake's water quality and ecosystem is the rapid drop in water level over the past 15 to 20 years (mainly as a result of unfavourable hydrological conditions but also due to water abstraction for irrigation purposes). The reduced quantities of fresh water have resulted in the increased concentration of various pollutants, including nutrients, which has an impact on the status of the ecosystem. At the same time, an increasing area of land is being cultivated (mainly apple production), leading to a rise in the quantities of nutrients across the basin. The river corridors that provide fertile soil and access to water for irrigation are particularly important for apple farming. Based on analyses carried out by various institutions, in addition to natural hydrological factors, the changes taking place in the Prespa Lake ecosystem can largely be attributed to the excessive use of agrochemicals (fertilisers and pesticides), sedimentation and erosion.

The project supported the farmers' association to monitor and control agrochemical use by analysing the presence of nutrients (nitrogen, phosphorus and potassium) and a wide range of microelements (micronutrients) in the soil. An agrochemical laboratory established by the project and currently run by the farmers' association provides soil analysis services for local farmers. Based on the tested samples, trained personnel from the association provide recommendations on the most appropriate selection of fertilisers and fertilisation dynamics that will result in minimum economic losses and the minimum environmental damage. The project focused on collaboration with local apple farmers to lower production costs and enhance productivity while reducing negative impacts on the lake's ecosystem from the unsustainable use of pesticides, fertilisers and irrigation water. It also promoted transboundary cooperation in agriculture between the former Yugoslav Republic of Macedonia and Albania in the Prespa region through the sharing of knowledge and best practices.



#### INVESTMENT

GEF USD 4.13 million

UNDP co-financing (Intervention 2)  
USD 220,000

#### PROJECT DURATION

2005–2010

Intervention 2: 2005–2006

#### NUTRIENT CHALLENGES

- Agriculture, particularly apple production, which is the primary source of income for the local population
- The exposure of the lake and tributaries to continuous input of nutrients from untreated wastewater from settlements that do not have access to a wastewater collection and treatment system (around 40 percent of the total population of Prespa, and almost all industrial installations)
- Land-use and cropping patterns in Prespa, which largely contribute to the nutrient load in the lake, mainly because of erosion processes and sediment transportation

#### EARLY NUTRIENT BMP "WINS"

- The controlled use of fertilisers based on improved knowledge of nutrient status in the soil



## Best Practices

- **Controlled use of fertilisers based on an improved knowledge of the nutrient status of the soil** — This approach provided a solid basis to introduce good agricultural production principles using agrochemical laboratory testing and disease monitoring, managed by farmers' associations. The project reduced pesticide applications and excessive levels of nutrients (nitrogen, phosphorus, and potassium) in the soil by establishing a scientific monitoring and community-based information sharing system.
- **Sustainable irrigation practices** — These practices focused on demonstrating wise use of groundwater and surface water resources through piloting alternative apple orchard management.
- **Consideration of actual crop needs** — Optimal fertilisation was determined based on several factors, such as apple variety, expected yield etc.
- **Maximisation of use of nutrients by plants** — Minimisation of the quantities of nutrients transported by runoff to surface water bodies and groundwater.

## Additional Benefits

- Reduction of the environmental impacts of agriculture.
- Possibility for reducing production costs as a result of reduced fertiliser and pesticide use, and the improved marketability of products.

## Other Key Successes

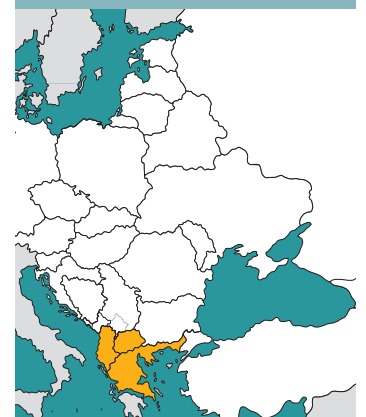
- Collaboration with local apple farmers to reduce negative environmental impacts (pesticides, water- and soil-use patterns etc.) while enhancing their productivity in a sustainable manner.
- The potential application of the technology on any farm, regardless of size and crop type.
- Reduction of the negative environmental impacts of agriculture.

## Key BMP Indicators

- The number of farmers using the services (records maintained by farmers' associations).
- Sustainable functioning of the laboratory.
- Number of farmers applying environmentally sound agricultural practices.
- Number of farmers attending the training programme on good agricultural production principles and number of farmers complying with those principles (certificates issued by the Faculty of Agricultural Sciences and Food).

## Further Information

Project Contact: **Anita Kodzoman**, Programme Officer for Energy and Environment at UNDP, the former Yugoslav Republic of Macedonia, 8-ma Udarna Brigada, 2, PO Box 305, 1000 Skopje  
Tel.: (389-23) 249-560, E-mail: [anita.kodzoman@undp.org](mailto:anita.kodzoman@undp.org), Website: <http://prespa.iwlearn.org>



### About the Living Water Exchange

The Living Water Exchange, a GEF/UNDP project promoting nutrient reduction best practices in Central and Eastern Europe, will share information and accelerate the replication of the most appropriate nutrient reduction practices developed from GEF and other investments in the region.

For more information, please visit <http://nutrient-bestpractices.iwlearn.org/> or email Chuck Chaitovitz [chuck@gef.org](mailto:chuck@gef.org)

