Evaluation of remediation recommendations: Stakeholder Workshop 3 Nestos River Delta, Greece

1. Introduction

During the decades of ’50s and ’60s, a variety of flood-controlling engineering works were constructed, in the eastern plain of Nestos River Delta (West Thrace, Greece) in the framework of “conceived wetlands management system”. These works included river diversion, caisson, modification, draining of wetlands and construction of drainage canals. These interventions have been carried out without any provision for the induced changes in the ecological balance and the interruption of groundwater recharge regime. With the progressive implementation of land improvements, the arable area was protected from the floods and significantly expanded. Furthermore, the expansion of the cultivated land required additional quantities of irrigation water, in local scale and a large number of groundwater wells were installed. Thus, groundwater table declined during the following years and seawater intruded into the coastal aquifers up to several kilometres inland, causing soil salinization.

Water and soil salinization is a major threat for irrigating agriculture in the East Nestos delta river. Almost, 10 km^2 of land in the study area have been devastated by high concentrations of soluble salts and exchangeable sodium. Some recent results for groundwater salinization are shown in Figure 1. It is evident that ~15 km^2 of the unconfined aquifers are hindered problematic with increasing quantities of soluble salts. Consequently, the soil quality for agricultural purposes is often problematic.

For this reason, stakeholders working with the DESIRE project identified fresh water transport as a key remediation strategy, which was subsequently trialed. The strategy is to use freshwater from local streams for irrigation purposes, in order to replace the traditional irrigation way (by pumping saline ground water from wells). The major inputs of the technology are a pumping station placed by the stream/river, pipe network for water transport and diesel or electricity for pump operation.

Figure 1: Saline-sodic soils in the coastal area of Maggana

Figure 2: Soil desertification due to accumulation of salts

2. Priority Remediation Strategies

The main remediation strategy (fresh water transport) was discussed during the final workshop. The presentation of the lab analysis results showed that the use of fresh water for irrigation not only improved soil characteristics but also doubled the crop yield. Additionally, despite the high establishment cost (pumping station, network pipes), the technology seemed to be cost effective according to DESMICE model outputs. After debating the applicability, the labour required, the efficiency, the environmental impacts and the costs involved, the technology remained prioritised by participants, who were more in favour of the technology than they had been during the previous workshop where the technology had originally been selected for trial. Thus, the participants were willing to adopt the technology.

3. How can we enable priority remediation options to be adopted?

After a thorough discussion it was decided that the best way to disseminate the selected strategy is through local Agricultural Unions and the Regional Department of Water Management. Also, the adoption of the remediation strategy can be achieved through local press and small debates at local coffee shops.

One barrier towards broader application of this technology that must be altered in the study site is the local water policy. The latter permits water transportation in a distance not higher than 500 m from the water source. Consequently, the permission for water usage and accordingly the permission to install of an electrical supply for pumping station operation can take place only within those distance limits (500 m).

Another thing that was mentioned in the workshop concerns possible future subsidies from EU in order to apply the remediation technology.

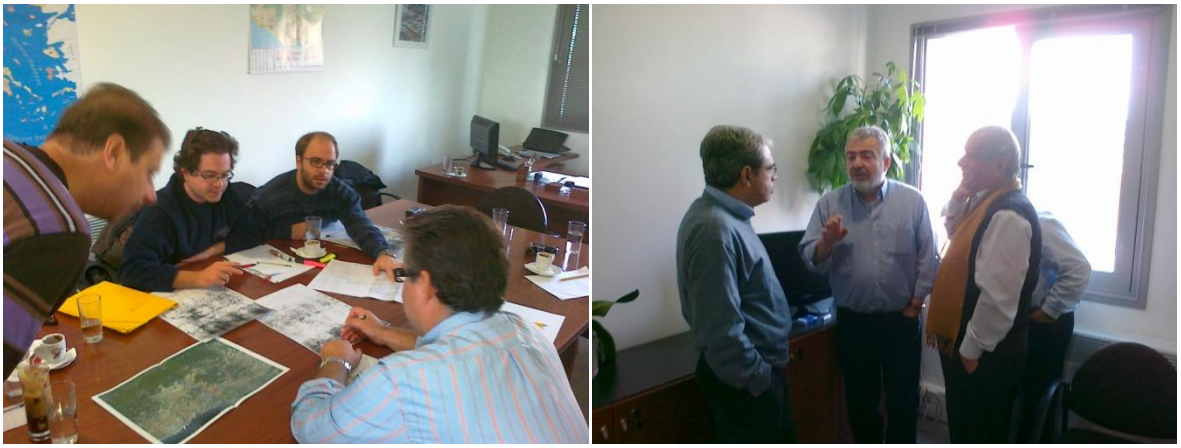

Figure 3: Workshop participants during discussion in Nestos Basin, Greece

4. Feedback from participants

The third Workshop was organized in the facilities of Democritus University of Thrace. The overall aim of this workshop was to inform local stakeholders with recent outcomes of implementation and the monitoring of the reclamation strategy. In this workshop participants (except our research personnel) from the Regional and Local Department of Water Management, the District of Agriculture and only one farmer (owner of the study plot) were present. Taken into account the promising results of the research which showed a crop increase around 100% and better soil characteristics, after the implementation of the remediation strategy, the feedback from the participants was positive and they agreed to compel things in order to change the water policy concerning the legal water transport distance.

The participants were also interested in some other study sites of "DESIRE" project besides Nestos River Basin especially about how these partners not only applied a certain technology but also how they managed to disseminate such information and make it more accessible to local farmers. They found some ideas like the Harmonized Information System (HIS) really intriguing and they seemed willing to help in order to achieve the desirable dissemination of such information within the region.

5. Next steps

The following next steps were agreed:

- Alteration to water transport legislation must be applied in order to cover bigger parts of (eastern) Nestos Rivers Basin with fresh surface water for irrigation. But, first of all a detailed hydrological/hydrogeological study in the area must be conducted to determine water quantity and quality in the basin
- It was proposed to the participated stakeholders to try to promote the SLM technology to more farmers of the study area, as well as to other areas of the region that faces similar problems
- Participants were informed about the workshop report orally and by fax