

INTEGRATED WATER MANAGEMENT OF MEDITERRANEAN PHOSPHATE MINING AND LOCAL AGRICULTURAL SYSTEMS : THE EL'MAA PROJECT

1- Introduction

The phosphate industry is a major contributor to the economy of some Mediterranean countries (i.e. Morocco, Jordan, Tunisia, etc).



Large volumes of water are required by the mining industry from areas where water resources are scarce or limited. Water scarcity may be worsened by a degradation of the water quality after phosphate processing.

The pressure on water results in competition with other water-reliant economic sectors such as agriculture or tourism.



ELMAA project: Management of scarce water resources in phosphate mining areas

Methodology for integrated management of water resources

Technological innovations both in mining and agricultural practices to reduce pressure on water resources

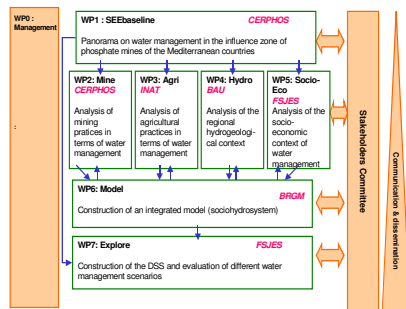
2-Partners

8 partners from 6 countries:

Morocco (Cerphos, FSJES Marrakech),
 Tunisia (INAT, CERTE),
 Jordan (Al'Balqa Univ.),
 Belgium (Brussels Univ.),
 Greece (AUA),
 France (BRGM)

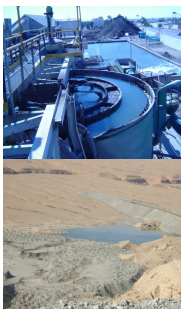
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3- The ELMAA structure and methodology



Mining sector

- Optimisation of washing techniques to reduce water consumption
- Optimisation of solid/liquid separation circuits to improve the recycling of process water
- Test of municipal waste water re-use as phosphate washing water
- Optimisation of the management of slime ponds:
 - analysis of the laws of behavior of slimes in consolidation;
 - design of the geometry of tailing ponds allowing an increase in the rate of water recycling and minimising the environmental impact of the deposits.



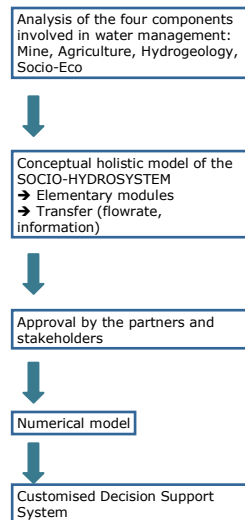
Agricultural sector

- Study of the potential of use of mine and process waters
- Identification of the potential risks
- Identification of crop practices compatible with the physicochemical characteristics of slammings and minimising the risks of contaminant transfers to the crops.
- Analysis of the agronomic potential of slimes for agricultural use or for the subsequent remediation of phosphate mining sites.



Development of a Decision Support System (DSS)

It is dedicated to water management at the scale of a phosphate mining district in close collaboration with the stakeholders. This tool aims to provide a simplified but realistic representation of water management (quantity and quality) at the interface between mining and farming activities, integrating technical, economic, social and environmental dimensions.



4-The expected outcomes and benefits

Strategic impact

- The sustainable development of the Mediterranean phosphate mining industry
 - to reduce potential tensions on water resources
 - to reinforce phosphate industry with a positive impact on the local socio-economic context

Innovation-related activities

- "tailor-made" DSS: a tool for the integrated water management in the phosphate mining context
- upstream investigation of technological innovations

Source of inspiration for decision-makers and institutional players to propose action plans and foundations of an incentive institutional framework European-Mediterranean relations

Reference

[1] Abdellah CHIK, Rachid M'HAMDI and Hervé GABORIAU (2005), Integrated water management of Mediterranean phosphate mining and local agricultural systems : The El'Maa project, AFA 18th International Annual Technical Conference & Exhibition, 5-7 July 2005, Casablanca

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