



## Integrated coastal zone management of Sfax region including the Kerkennah island (Tunisia)

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The coastal zone of Sfax region is a particular ecosystem that includes some sensitive areas such as wetlands of Thyna and the Kerkennah island, shoreline, urban and industrial zones, etc. This ecosystem constitutes a space of particular importance both on the economical plan, by the value of the natural resources which is provided, and on the environmental plan, by the sensitive and fragile coast knowing a multiform exploitation for a long time and sheltering an important urban agglomeration plus the essential industrial activities.

The study revealed that several factors such as coastal geomorphology, bathymetry, climatic conditions, non sustainable use of the natural resources and the damages of industrial pollution on some coastal areas could affect severely this ecosystem. Coastal erosion, for example, has been a severe problem over the years especially in the Kerkennah island. Thus, only an integrated approach of all environmental and socio-economical aspects could help us to solve problems met in this coastal area.

The Geographical Information System (GIS), carried out within this work, allowed the elaboration of a geo-referenced database easily updated, having for objective the treatment and the coherent exploitation of basis data relative to the coastal ecosystem of the Sfax region, and the monitoring of their various components evolving continually. Existing maps and High resolution Satellite images were used for the land use monitoring. The data were analyzed with GIS and Statistical tools which allow processing and displaying coastal information. They offer significant advantages such as the ability to handle large databases and to integrate data from a wide range of sources.

In this study, we tried to determine, on one hand, the sensitive areas in terms of pollution taking into account physical, biological and socio-economical factors, and on the other hand, the areas which present a particular risk of pollution according to the land use. With the computer-based tools and some analytical functions developed within the GIS, we have combined information layers relative to the sensitive factor with those constituted by the risk factor in order to obtain synthesis maps of vulnerability. These maps permitted, thus, of having a synthetic view of vulnerable areas to a type of pollution. The interest is of being able to:

- advise the managers in managing zones, which present a high vulnerability index, prior to others;
- supervise the most sensitive areas.

Keys words : GIS - Remote sensing - Coastal ecosystem - Integrated approach - Management - Environment - Pollution - Sensibility - Risk - Vulnerability.