

## Coastal Resources Spatial Planning and Potential Oil Risk Analysis: Case Study of Misratah's Coastal Resources, Libya

**Authors :** Abduladim Maitieg, Kevin Lynch, Mark Johnson

**Abstract :** The goal of the Libyan Environmental General Authority (EGA) and National Oil Corporation (Department of Health, Safety & Environment) during the last 5 years has been to adopt a common approach to coastal and marine spatial planning. Protection and planning of the coastal zone is a significant for Libya, due to the length of coast and, the high rate of oil export, and spills's potential negative impacts on coastal and marine habitats. Coastal resource scenarios constitute an important tool for exploring the long-term and short-term consequences of oil spill impact and available response options that would provide an integrated perspective on mitigation. To investigate that, this paper reviews the Misratah coastal parameters to present the physical and human controls and attributes of coastal habitats as the first step in understanding how they may be damaged by an oil spill. This paper also investigates costal resources, providing a better understanding of the resources and factors that impact the integrity of the ecosystem. Therefore, the study described the potential spatial distribution of oil spill risk and the coastal resources value, and also created spatial maps of coastal resources and their vulnerability to oil spills along the coast. This study proposes an analysis of coastal resources condition at a local level in the Misratah region of the Mediterranean Sea, considering the implementation of coastal and marine spatial planning over time as an indication of the will to manage urban development. Oil spill contamination analysis and their impact on the coastal resources depend on (1) oil spill sequence, (2) oil spill location, (3) oil spill movement near the coastal area. The resulting maps show natural, socio-economic activity, environmental resources along of the coast, and oil spill location. Moreover, the study provides significant geodatabase information which is required for coastal sensitivity index mapping and coastal management studies. The outcome of study provides the information necessary to set an Environmental Sensitivity Index (ESI) for the Misratah shoreline, which can be used for management of coastal resources and setting boundaries for each coastal sensitivity sectors, as well as to help planners measure the impact of oil spills on coastal resources. Geographic Information System (GIS) tools were used in order to store and illustrate the spatial convergence of existing socio-economic activities such as fishing, tourism, and the salt industry, and ecosystem components such as sea turtle nesting area, Sabkha habitats, and migratory birds feeding sites. These geodatabases help planners investigate the vulnerability of coastal resources to an oil spill.

**Keywords :** coastal and marine spatial planning advancement training, GIS mapping, human uses, ecosystem components, Misratah coast, Libyan, oil spill

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