

Mapping Desertification Vulnerability in Morocco

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Abstract

Moroccan Natural resources have a slight resistance to desertification. More than 93% of country is arid and semi-arid. Drought is frequent and severe. Soils are mainly not very developed, shallow (<50 cm), silt-sandy, with a low content of organic mater (<3%) and consequently very sensitive to all forms of degradation (mostly water and wind erosion, salinization, crusting, compression). The natural vegetal cover, mainly constituted by steppes and matorrals, is little resistant.

For more than 50 years, natural resources are suffering from an intense degradation. Under the pressure of a fast growing demography, cropping lands (subsidence) are taking the place of forest and range lands. Forests are overgrazed and overexploited, respectively for 3.5 and 3 times their capacities. Surface cover is losing more than 35 000 ha/year. Cropping lands with unsuitable cultural techniques are becoming eroded under the action of aggressive rains and runoff. Dam reservoirs are silted at an unacceptable rate (1.5 % yearly). Desertification is one of the most serious handicaps for the development of the Country. National Agriculture Strategy and National Forest Program developed for 2020 have as a main objective: combat desertification. Morocco signed the CCD and developed a national program to combat desertification. A lot of studies (diagnostic, processes) were necessary to reach this target.

This paper presents a study undertaken to map the sensitivity of Moroccan territory to desertification via three layers: climate, soil and vegetation cover. The climate was featured by an index of aridity. The data (T°C, P mm, ETP mm) of sixty five stations were used. The quality of the soils was determined by the maps of texture, depth, slope and parental materials. The quality of vegetation to combat desertification was determined by it's resistance to drought, it's fire risk and it's capability of erosion control.

More than 2/3 of the national territory has a low climate quality. More than 63% are very arid. The vegetal cover has a low quality to protect against desertification. The most part of Morocco has a low fire risk (94.25%), a low protection against erosion (90%) and a low resistance to drought (75%). More than 40% of soils have a soft parental material. More than 50% are shallow. More than 73% have loamy and sandy textures. More than 80% of the Moroccan soils are vulnerable to desertification. In conclusion, the most part of the Moroccan environment has a low resistance to desertification mainly in the south and near the desert regions. The Government, in a common action (involving population and NGO) has to act quickly and efficiently. Human and rural developments are necessary to combat a deep poverty, the most responsible of deserts spreading and human emigration to Europe. Social security is closely linked to Ecological security.

Key Words: Morocco, Mapping, Desertification vulnerability, Climate quality, vegetal cover quality, soil quality.