

## **NATURAL FACTORS DETERMINING VULNERABLE LAND IN LEBANON**

Lebanon is a much dissected country with steep slopes, which makes land very susceptible to erosion in the absence of proper land management practices. Deforestation and unsustainable agricultural practices on slopes have caused accelerated land degradation especially on the eastern slopes of Mount-Lebanon and the western slopes of the Anti-Lebanon where erosion has removed the soil altogether in many places so that the mother rock is exposed. Lebanon has a relatively favorable position as far as its rainfall and water resources are concerned, but constraints consist of the wide variations in average annual rainfall per region. Average annual rainfall is estimated at 840 mm. Moreover there are large seasonal variations with 80-90% of the annual rainfall falling between November and March and less than 5% falling between May and September. This leads to limited water availability during the dry summer months where evapotranspiration may reach up to 200 mm per month and resulting in a large water deficit, severing vegetation, encouraging forest fires and exposing the soil to wind erosion.

Additionally, rainfall events with very high intensity lead to severe water erosion on slopes in the winter season especially in areas with scarce vegetation cover causing flash floods mainly in the north-western part of the country (esp. the Baalbeck-Hermel region). Flash floods cause casualties and serious damage to infrastructure.

The soils of Lebanon are typically Mediterranean in character. Most of the soils are calcareous except for the sandy soils formed on the basal cretaceous strata, basaltic soils spread in Halba plateau and alluvial soils of Central and Western Bekaa. The soils of Lebanon are relatively young and highly fragile and prone to desertification especially on the mountain and hilly lands, which form around 70% of the country. The rate of soil erosion varies with slope intensity, soil type and land cover. Wind erosion, is restricted to the sandy shores and to the arid lands in Northern Bekaa (Zurayk, 1994). Today dense forests cover only 7% of the total Lebanese area (FAO, 1990) and are under permanent threat from forest fires. The remaining natural vegetation is increasingly threatened by intensive agriculture, urban sprawl and pollution. This leaves large areas exposed to desertification processes with little protection. The flowchart below attempts to visualize the relevant pressures and driving forces (including human and climatic factors) leading to land degradation.