

Land Degradation in the Sudan Savanna of Ghana: A Case Study in the Bawku Area

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Abstract

The study was carried out in the Bawku area, which is located within the Sudan savanna zone. The study examined the physical environment, human factor and the interactions between them so as to establish the degree and extent of land degradation in the Bawku area. Six rural settlements around Bawku were studied with data on soils collected along transects. Socio-economic information was collected by interviewing key informants and through the administration of questionnaires. Land degradation in the area is the result of interaction between the physical and human environments. Physical environmental characteristics influencing land degradation include soil texture, topography and rainfall. The soils in the study area are developed over granite and Birrimian phyllite. In the granitic areas soil texture is an important factor, while in the Birrimian area, it is the steep nature of the terrain that induces erosion. The granitic soils are characteristically sandy and, as such, highly susceptible to erosion. Topsoil (10–30 cm) sand contents of three major soils developed over granite are over 80%. Severe erosion has reduced topsoil thickness by over 30% within a period of 24 years. Rainfall, though generally low (< 1000 mm), falls so intensely to break down soil aggregates thus accelerating erosion. Other observed indicators of land degradation include sealed and compacted topsoils, stones, gravel, concretions and iron pan. The major human activities that affect the physical environment are farming and domestic energy production. Associated practices such as land clearing for farming, total crop harvesting, burning of organic material during land preparation and inadequate manure application aggravate the degradation problem. These activities destroy the soil physical and chemical properties, thus, resulting in nutrient-depleted soils. A major effect is a progressive decline in crop yields as confirmed by 94% of 210 respondents.