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## Monitoring of Land Use Intensification and Linkage to Soil Erosion in Nigeria and Benin

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### Abstract

Since the 1960s, a dramatic acceleration in urban growth has unfolded in sub-Saharan Africa. The increasing population density involves the intensification of land use through expansion of the cultivated area and shortening of the fallow period. Not adapted land use practices inevitably lead to soil degradation like loss of topsoil due to water erosion. Avoidance of soil deterioration by enhanced conservation is therefore necessary to maintain its productivity and to contribute to food security and poverty alleviation in rural communities.

The study presents the intensification of land use and the evolution of soil erosion features for some pilot villages across a transect from the Derived to Northern Guinea Savannah of Benin and Nigeria. For monitoring land use and erosion within the last decades, aerial photographs from the sixties and seventies and the satellite images LANDSAT 7 ETM (1999, 2000 and 2001) and IKONOS (2000) were interpreted. Interviews concerning past and current farming systems, tillage, use of crop residues etc. as well as the development of the families also were made in the study areas.

The interpretation of photos and images clearly shows the increase of farm land within the last decades. The cultivated area of many pilot villages has reached the border of neighbouring settlements, and there is no fallow in many places any more. Only one test site located in Central Nigeria is characterised by recent settlement of different tribes due to the availability of fertile soil. The analyses and questionnaire also show that the land use system in Southern Benin is characterised by oil palm trees and maize. Systems with cereals and root crops dominate in the centre of Nigeria and with sorghum/maize or pearl millet and cowpea in Northern Nigeria. Legumes like cowpea or groundnut have been introduced into the farming systems in the last decades. Linear soil erosion features that were infrequently extended in the sixties and seventies have spread until now. Sheet erosion has already led to the exposure of iron pan on lower slopes and destroyed farm land in some pilot villages of Northern Nigeria.

**Keywords:** Benin, land use intensification, Nigeria, soil erosion