

Improved Land Management in Uganda

Gerd Rucker and Abel Lufafa

Aided by Geographic Information Systems (GIS) and remote sensing, ZEF is able to analyze the resource situation in Uganda, with the aim of developing political measures for improved land management in the country.

Soil nutrient depletion is one of the most critical land degradation problems in Uganda. Scientists indicate increasing soil nutrient imbalances, and farmers complain about continuously declining yields, higher disease pressure and soil erosion in their fields. Farmers' efforts to mitigate the negative trend have been constrained by lack of incentives. Few indigenous practices are applied, such as change of crops from high to low nutrient feeders and shifting cultivation. Declining soil fertility coupled with land scarcity due to mounting demographic pres-



Students of Makerere University, Kampala producing „Community Base Maps“ Photo: ZEF

sure has led to encroachment on fragile lands such as steep slopes in the highlands, swamps and traditional grazing areas. With conventional land management practices persisting, the downward spiral of soil nutrient depletion will soon cause tremendous problems to Uganda in maintaining food security. In cooperation with the International Food Policy Research Institute (IFPRI), ZEF is conducting an interdisciplinary research project "Policies for Improved

Land Management in Uganda". Presently a survey is being carried out in over 100 communities representing different conditions of population pressure, market access and agricultural potential. The objectives are to locate and assess site-specific physical, socio-economic and institutional resources and their interaction over time, which have an impact upon soil fertility decline and farmers' land management (e.g. assessment of changes in soil conditions over time with changes in cropping systems due to increased population pressure and better market access). Research assistants draw geo-referenced community base maps (CBM) to facilitate farmers' orientation and subsequent digitization, using enlarged aerial photos and topographical maps. This includes features such as administrative boundaries and roads. Just like GIS themes are organized in layers, a series of transparencies is overlaid on the CBM in a kind of 'Field-GIS' to demarcate the spatial dimension of physical resources, land management and related problems (e.g. soils, cropping system, erosion). On walks along community transects these features are assessed on the ground. Soil samples are collected and analyzed in the laboratory to validate farmers' assessments. Information gathered through questionnaires and secondary data (e.g. contours, climate) complements field and soils data. Aerial photos and satellite images covering the community in different time periods are interpreted to assess temporal dynamics of resources over the last 10 years (e.g. encroachment of cultivation on wetlands, aggravation of erosion problems).

Farmers expressed great enthusiasm about the exercise and can use the maps that are returned to the communities, for assessment and monitoring of soil fertility resources. Researchers overlay the different features such as land use and land management on digital elevation models to identify and assess spatio-temporal dynamics of agro-ecological relationships in soil fertility decline and management. The analysis of the interrelation between the re-

sources shows the hot spots of both degraded and still 'healthy' soil. This leads to a better understanding of the spatial dimension of marginal and favorable lands and highlights the dynamic dimension of pressure factors that force farmers to change their soil fertility management (pathways of development). Results from the community survey will be combined with information gathered during the subsequent survey at household and plot level for up/downscaling and extrapolation.

The resource information collected and analyzed in the GIS bridges research and development between scientists and farmers and could be of use to other stakeholders such as extension service and policy makers in averting soil fertility decline in Uganda.



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ZEI – Window

News from the Center for European Integration Studies (ZEI)

Volume 17 of the ZEI monograph series, published in cooperation with Nomos-Verlag, has been recently released: „50 Jahre Europarat“. The editor of the book, Uwe Holtz, was a member of the Parliamentary Assembly of the Council of Europe for over 20 years and has profound knowledge of the activities of the Council located in Strasbourg. As president of the Committee of Economic Affairs and Development, he particularly addressed issues of economics, north-south politics as well as democracy and human rights. The main focus of this book therefore centres around these issues. (Uwe Holtz (Editor): *50 Jahre Europarat, a monograph series by the Center for European Integration Studies (ZEI), Volume 17, NOMOS-Verlag, Baden-Baden, 2000, pp. 377, bound, 128,- DM, ISBN 3-7890-6423-8*).

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The Center for European Integration Studies (ZEI) closely cooperates with ZEF. Together, the two centers constitute the International Academic Forum Bonn (IWB). The work of ZEI integrates legal, economic and social, cultural and political issues of European integration in an interdisciplinary context. Further information: <http://www.zei.de>