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Sustainable use of land resources: towards a new approach in Uganda

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Abstract

This paper clarifies issues and emerging concepts relating to a new integrated and holistic approach to sustainable use of land resources advocated for by FAO. The paper introduces the elements to be considered, such as planning and management of land resources, Institutional aspects of implementing land use plans, land tenure issues, the need for appropriate information and sustainability evaluation of land use systems. A brief review of problems related with land use and sustainability in Uganda is discussed.

Keywords: Land resources, planning, management

Introduction

After a period of 100 years of agricultural research and development in Uganda, it is time to look back and critically evaluate, in light of the objectives and policies of the agricultural sector, the performance; and accordingly look at the trends in the foreseeable future. At this juncture, it is logical to ask oneself whether, from the agricultural point of view, we are sustainably developing our natural endowment (land resources).

Since 1917 when the Agriculture department was established (Rose and Williams, 1970), it has operated within the policy guidelines of conserving and developing natural resources with which it is so richly endowed, with the aim of achieving four of its major objectives indicated below:

- To ensure basic food supplies of the country.
- To conserve the natural resources.
- To improve the quality and increase the quantity of export crops.
- To blend the *whole* into a system of agriculture which is within the means of the farmers to maintain.
- A recent addition is the objective of diversifying export crops.

The above policies and objectives of the agriculture department, reflect in its wholeness the concept of agricultural sustainability whose five pillars (FAO, 1993a) are: productivity, conservation (protection), risk, acceptability and viability. These are explained later in this paper. It is apparent that the desire to achieve sustainability is not as new as it appears today.

Concerns about sustainable development have been emphasized in Agenda 21 - chapter 10 of the United nations conference on environment and development (UNCED, 1993). Chapter 10 calls for an integrated approach to the planning and management of land resources through reorganization and , where necessary, strengthening of decision making structures, including policies and planning management structures(FAO, 1995).

International and national follow up activities have resulted into formation of environment institutions responsible for coordinating, monitoring and supervision of environment activities at the national level. The National environment management authority (NEMA) is one such Institution. NEMA is faced with a challenge to minimize environmental degradation.

This paper discusses the way forward to achieving a sustainable use of land resources in light of the above new developments.

Agricultural activities and land degradation

Since the issue of achieving sustainable development does not seem to be new in Uganda, it is logical to ask why land degradation is on the increase, and why Agricultural activities should be blamed for the extensive land degradation in the country despite the wonderful policy and objectives of the Agricultural Department mentioned above. This is a puzzle many have found themselves in and also tried to find answers to.

There is a possibility that an imbalance in achieving the above objectives may have occurred some where along the way. Some objectives may have been achieved at the expense of the others during the years. Apparently as food and cash crop production progressed over the years as reflected in the agricultural out put and land area cleared (Rose and Williams,1970), conservation and development of a sound system of agriculture within the means of the farmers to maintain (People centered?) received less attention. Lack of appropriate approach to conservation and development of agriculture may be a probable reason.

This problem seems to have started at a time when independence was achieved. Before independence, bye - laws were used to force farmers to adopt proper conservation practices. After independence, when

enforcement of the policies was relaxed, all soil conservation practices were abandoned and sometimes destroyed by farmers who associated them with colonial masters (Zake and Magunda, 1998; Zake *et al* 1997). This situation worsened during the 1970s to 1980s when the country was in political and economic turmoil.

. Recent work (Ogaram *et al.*, 1997) in Uganda
. identified the following as the major environmental problems:
· Land degradation (especially soil erosion)
· Deforestration
· Loss of biodiversity
· Degradation of wetlands
· Pollution (siltation, nutrient loading and eutrophication of water bodies)
· Unsanitary conditions.

Apparently about 80% of the environmental problems are associated with agricultural activities.

Population has trebled in the last 30 years (Table1) and it has been projected to reach 55 million by 2025 (World Resources Institute1990). This situation, combined with the reduction in per capita index of food production and the less than required daily calorie supply (Table 1), means that there will be continued pressure on resources to produce ever larger amounts of food and cash crop (Meltzer *et al.*, 1994). Consequently, about 80 % of the environmental problems are associated with agricultural activities.

Table 1. Changes in population and food production in Uganda.

Population (Millions)

1960	1990
6.6	18.4

Average annual population growth rates.

1965 - 1970	1985 - 1990
3.9 %	3.49 %

Index of food production: per total (1979 - 1981 = 100)

1967 - 78	1978 - 80	1986 - 88	1988 - 90
111	103	104	127

Index of food production per capitra (1979 - 1981 = 100)

1976 - 78	1978 - 90	1986 - 88	1988 - 90
122	106	82	92

Average daily calories supply (as % of requirements)

1965	1985	1983 - 85
96%	95%	98%

Sources: *World resources Institute 1990, 1992; UNDP 1991.*

Land clearing is one of the major causes of soil erosion and it is indicated that 100.000 ha of woody biomass are cleared for agriculture every year (National Biomass study, 1996).

Most soils in Uganda have their fertility confined to the top soils which is usually 9 to 14 inches deep (Chenery. E.M. 1960). If this is lost by erosion, fertility and productivity go for good. In 1917 soil erosion was not a serious menace because the population was low and rainfall favorable. However this is not the case today. As indicated in Table 1 above, the population has trebled and rainfall is more erratic than before. Tumuhairwe (1986) indicates that traditional cultural practices and failure to use land according to its production potential are some of the other causes of land (soil) degradation.

A secondary and important effect of soil erosion is the siltation, nutrient loading and eutrophication of water bodies. This has a negative impact on the fish and water quality. The situation is worsened by the presence of water hyacinth that thrives well because of the nutrients from the uplands deposited through erosion. Fishing is an activity with significant contribution to the foreign exchange earning of the order of 5 million USD per year and is expanding. The fishing activity needs to be protected

by diminishing nutrient loading arising from soil erosion (Ogaram *et al.*, 1997).

Following extensive soil survey of the late 1950s that covered the whole country, soils classified as having high, medium to high and medium productivity occupied only 5% of Uganda (Soil Science Program Annual Report, 1997). Our soils may have been fertile for subsistence agriculture where farmers accept relatively low production per unit area or where there was ample land to allow periodic " resting" of the exhausted land to restore productivity. Land pressure has decreased the possibility of restoring productivity through "resting" the land and modernization of agriculture will invariably mean more intensive cropping and higher yields per unit area expectations.

An example of popular belief that Uganda soils are fertile is explained here below.

Contrary to its advocacy and practice of balancing development and conservation, a recent World bank country study on the challenge of growth and poverty reduction in Uganda (World Bank, 1996), does not extensively emphasize the importance of wise exploitation and conservation of the resource base in its strategies for future prospects and policy agenda. The authors were mainly concerned about the demand of agricultural produce which they say will not be a constraining factor. This seems to imply that there is considerable certainty regarding the present state of other agricnltural resource base, the yield potentials, and the long - term ecological consequences of changes in this resource base.

Table 2. Land resources, their state, pressure and response in Uganda.

Land Resource	Area (Km2)	State	Pressure	Response
Lake Victoria Basin	111,241	- severe erosion; - siltation; - lake - eutrophication -crop yield loss; - deforestation; - loss of biodiversity;	*On site*: - burning; - grazing; - over cultivation; - land use conflict (grazing - vs protection). *Off site*: - lake siltation and eutrophication	- SLM work; - development of a DSS - SLM - afforestation - pollution and Agro - chemicals studies. All within a participatory framework.
Cattle corridor	84,000	- severe erosion; - loss of biodiversity; - desertification; famine	- cultivation; - overgrazing; - burning	Proposal for intervention has been developed
Highlands; Elgon and Kigezi	12,077	- severe erosion; - landslides; - deforestration; - over cultivation	- over-cultivation - timber extraction; - river siltation	- AHI: SLM and soil fertility improvement
Wetlands	31,000	- biodiversity loss; - acidification; - lower water table; - pollution	- over cultivation; - grazing; - brickmaking; disposal site	- wetland research - effect of agrochemicals; - classification and characterization

SLM = Sustainable land management DSS = Decision support system
AHI = African highland initiative
Source: KARI, 1996

It is encouraging to note that Government seriously recognizes the important contribution of natural resources to national development and the need to exploit them wisely. In its action plan for poverty eradication, as stipulated in the background to the 1996 - 1997 budget, issues related to land degradation, yield reductions, and appropriate actions are clearly indicated (Ministry of Finance,1997).

Whatever the situation, land management will have to substantially improve to increase and sustain agricultural production. The Soils and Soil Fertility Program at Kawanda Agricultural Research Institute is currently involved in various land management activities aimed at developing technologies that will sustain agricultural production (Table 2)

Planning and management of sustainable agriculture.
Sustainable agriculture and rural development has been defined as "...the management and conservation of the natural resource base, and the orientation of technological

and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such sustainable development (in agriculture, forestry and fisheries sectors) conserves land, water, plant and animal genetic resources, is environmentally non - degrading, technically appropriate, economically viable, and socially acceptable" (FAO,1995).

Sustainable agriculture involves the actual practice of using the land by the local human population which should be sustainable. Sustainability can be achieved through land use planning which is a decision - making process that facilitates the allocation of land to the uses that provide the greatest sustainable benefits(UNCED, 1993: Agenda 21).

Implementation of land use planning is agreed between and with the direct participation of stakeholders. It is achieved through political decisions; legal, administrative and institutional execution; demarcation on the ground; inspection and control of adherence to the decisions; solving of land tenure issues; settling of water rights; issuing of concessions for plant and animal extraction (timber, fuel wood, charcoal and peat, non - wood products, hunting); promotion of the role of women and other disadvantaged groups in agriculture and rural development in the area, and the safeguarding of traditional rights of early indigenous peoples (FAO, 1995).

Creating an enabling environment

According to FAO(1995),there is need to create an enabling environment in the legislative and administrative spheres, leading to negotiation platforms for decision making at all relevant levels, to solve conflicting demands on the use of the land or components of it, such as fresh water resources. These platforms should be both horizontal between Ministries, districts or municipal governing bodies, and vertical between governing and actual or potential users of the land resources, all together linking in top - down and bottom - up directions. Apparently creation of an enabling environment implies putting in place an institutional structure with full legislative and administrative support that will enable it to implement issues related to land management.

In an effort to decentralize environment management activities, NEMA (1997) has established District and sub county planning committees. These committees could be used to implement various land use planning issues. According to FAO (1995),the following institutional components appear (are) to be necessary at the three most common levels of land use planning.

National level.

At the national level, Land use planning issues mostly involve development of policies and monitoring of environment activities. Horizontal interaction of stakeholder institutions (government and non government) involving exchange of information and collaborative execution of land use activities should be encouraged. Proper information on what others are doing helps to get rid of competitive and rivalry tendencies, and also good multidisciplinary program can be developed.

It is recommended that an independent execution and decision making body with a fair representation of stakeholders should be established, and that stakeholders should have an equal opportunity to lead the institutional elections after a specified period.

District level

With NEMA at the national level of land management, there is need to set up the district land management committees with basic functions of identifying priorities, allocating resources, making or approving sub - national plans, monitoring implementation and making bye laws. They should also be responsible for the establishment of long term development plans and zoning systems for their areas. Essentially they would link up NEMA activities(Land use planning) with the sub - county / village committees. Membership may be drawn partly from the community (local councils) and partly from government. Expertise can be provided by a cadre of directly employed staff or through subject matter specialists delegated to assist the local land use planning group and operationally under it's control.

None of the districts in Uganda has subject matter specialists on land use planning. Each district planning unit should recruit a land use planner. District production units (committee) can, in addition to other responsibilities, take up duties of the district land management committees.

Sub - county level / Village level.

On the local council committee at the village level, there is only one member dealing with production and the environment. One person cannot effectively handle the complex problems related to land management especially when decisions and negotiations have to be made. It is therefore recommendable to have a four member village land management committee to which the local council production secretary is a member. A four member team would allow some specialization as each would be responsible for one of the following land management component: Agriculture, forestry, livestock and water resources and protected wetlands.

It is essential to bear in mind that at this level, freedom to organize, to debate, and to contribute are essential prerequisites. It is also necessary to create the capacity to coordinate activities and decide on priorities.

This is in order to deal with the overall and long - term interests of the community as a whole, with problems or natural systems that extend over comparatively large areas, such as the lake Victoria basin, and with necessary coordination and collaboration with neighboring communities. At this level, the required resources and expertise will probably be provided partly by the community and partly by government on ad hoc basis

Capital investment in infrastructure versus land quality improvement.

Many loans from national and international development banks are ear marked for improving the physical infrastructure of a country, with the anticipation in part that they will lead to sustainable agricultural and rural development through a trickle - down process (FAO, 1995; Deckers, *per. comm.*, 1998). This approach is in

contrast with the bottom - up long term capital investment policy that aims to improve the inherent qualities of agricultural lands in general and soil qualities in particular, a policy that is gaining sympathy in the World bank circles.

Implementation of such a policy(FAO, 1995) would entail the conscious enlargement, in a fully participatory approach, of the stock of soil organic matter, the use of rock phosphates and lime to overcome the large phosphorus fixation / occlusion and high aluminium content of many Ugandan soils, and the use of mineral and organic fertilizers to build up soil fertility - all for the benefit of an inter - generational sustainable use of the land by a growing rural population.

Land - use planning framework conditions.

Land tenure, land rights and land markets clarification and security of land rights are essential for the success of an integrated approach to the planning and management of land resources.

Settling these rights reduces conflicts between stakeholders, increases the confidence required for sustainable land use practices by the actual land cultivators or protectors.

Settling these rights (FAO, 1995) reduces conflicts between stakeholders, increases the confidence required for sustainable land use practices by the actual land cultivators or protectors, determines the respective responsibilities, and provides the basis for a fair and environmentally - sound allocation of incentives, subsidies or taxes.

However this is not always true. Studies done in Uganda indicate that there is no significant differences in land investments among different types of tenure(MISR, 1989).

Generally, land tenure has many forms (FAO, 1995):

- legal ownership, as confirmed in cadastral ledgers and title deeds, without actual use of the land (" absentee" land holding purely for investment purposes);
- legal ownership with use, or the requirement to use the land in a specified or prescribed way;
- legal ownership by a physical person or an institutional body but with agreed use by other person(s).
- state land with defined use or non use such as national parks or nature reserves;
- state land with "squatters" rights, i.e. the right to own a defined area of land after new occupants have been earning their living on parts of the land during a number of years;
- state land with formal concessions to persons or companies to extract biotic or mineral resources (e.g. logging, mining) whether or not with the requirements to restore the land cover or land surface conditions;
- state, provincial or municipal land with archaeological or cultural heritage value, needing full - scale protection or limitations on use;
- communal lands, vested in traditional rights of indigenous or early occupants of the land, such as hunters or gatherers of products of non - allocated lands; · communal lands with traditional agreements between the settled population and transhumance groups about the seasonal use of the land, or portions of it (dry season rights for nomadic herdsmen; right of crossing); and lands with rights of intergenerational transfer of ownership or lease holdership, and a degree of freedom in sub dividing the land rights among sons and daughters, such as to first born only or to all children, following a land succession system

Land includes the local, unharnessed water resources. In dry lands like Karamoja, water use related land rights may soon become an issue. These rights may include access to water for drinking and sanitation for use in irrigated agriculture including water harvesting and for the watering of cattle.

All rights have to be taken into account in a judicious manner during execution of any land resources plan. They first have to be carefully inventoried, checked against their fairness and their consistency in relation to the overall policy on land tenure of the national or provincial government. These policies are found in the land law.

An addition to this law can be a policy to enhance land consolidation by directing that; a person who wants to sale his/her piece of land, to do so by first giving the neighbor an opportunity of buying it before considering other buyers.

A comprehensive assessment of land tenure and land rights should also include an inventory of land markets (Amani *et al.*, 1994). This entails the socio - economic characteristics of the buyers and the sellers of land, and the geographic distribution of land markets. It will examine what rights are being involved precisely; for what purpose is it being bought (productive, speculations, hedge against inflation, residential purposes); for what reasons people are selling (emergency, immediate survival, moving, cash - in on an investment, compulsion); and how the land markets influence land - use patterns, land productivity, land scarcity and conditions of fragile environments.

Such an inventory of land markets can help check the fears of the current land law skeptics namely; increased landlessness that would be associated with the freehold system of land tenure. This can be achieved by placing limitations on the lease owning, buying or selling of land by non - nationals or foreign companies - a fear expressed by the majority of local citizens; if this is percieved to be detrimental to equitable land - use or conservation. They may also provide incentives, such as subsidies or infrastructural works to ensure more equitable, productive or conservational use of land.

The need for appropriate information.

Sustainable land management requires information on land resources and related issues. FAO - UNEP (1997) has identified the information needed to facilitate the implementation of an improved approach to sustainable land management.

Four sets of information were recommended:

- the land resources, including the bio - physical aspects on soils, climate, flora and fauna.
- the combined needs of all stake holders, including cultivated and grazing land, water supplies, firewood, building material, etc.
- the economic, social, legal and institutional

framework within which negotiation would take place and actions delivered.
- the technologic options and other opportunities to improve the productivity of land resources, including the change from farming to non farming land use.

This implies that a broad array of data and information is required for setting the stage for sustainable land management. However, in reality only critical information is needed though the other information may be potentially useful.

Both top - down and bottom - up approaches to information should be used to complement each other. Participatory rural assessment is common to many rural projects. However, major land issues which are a product of the so called rapid rural appraisal methodology is often too general or too weak to establish a solid and appropriate strategy for sustainable land management (SLM) (Pieri, 1997; Isabirye, 1997). This means that rapid rural appraisals(RRA) should be followed by enhanced thematic appraisal focused on land - related issues.

Pieri (1997) indicates that RRA might be enhanced in the following ways:

- better technical and scientific diagnosis of land issues should be based on a clear understanding of driving forces and the direct and indirect causes of land - related problems.
- ensure that all segments of farming communities are part of the assessment of user needs with respect to SLM.
- finally, those who are directly engaged in information collection should be trained in techniques of conflict resolution, which have to be considered an integral part of the land use planning exercise.

Capturing and storing of farmer's knowledge in automated systems is increasingly becoming possible. Different experiences are now available (Isabirye *et al.*, 1998; Lawas and Luning, 1996).

Data collection can be semi - automated using geographic positioning system (GPS) and photographs. Collection of such material, ensuring that appropriate photo scales (1:16,000 - 1: 10,000) are used, and overseeing the whole process of participatory mapping requires personnel with GIS knowledge to ensure that the integrity of the information is not tampered with.

Such information can be captured and manipulated using the GIS. The GIS software is becoming increasingly affordable and , disciplines and projects have established GIS systems in Uganda.

GIS

In a modern computerized GIS each separate piece of data or information stored in a database is georeferenced. This means that its exact geographical location is also entered into the database, either as a of point reference or as a polygon or mapping unit. The GIS system has the capability to retrieve all the information on a given subject or theme and display it, or hold it as a separate thematic layer. Thematic layer can be overlaid, and either viewed or printed out as maps(FAO, 1995).

For example intersection of layers of Landform, soils, landcover, land - use, climate and base map form unique units referred to as agro - ecological zones (AEZ). Assessment of AEZs provides information that is essential in implementation of SLM. Attempts to zone Uganda into nnique hormogenous units have been made (Maps 1 and 2). The country was divided into four major agro - ecological zones (Map 1) and eleven agro - climatic zones (Map 2). Apparently, there is no similarity between the two and both need refinement. Map 1 indicates that the lake basin has the same agro - ecologic conditions with Masindi, Hoima and Port Portal. This is not true. The lake Victoria basin is characterized by relatively high rainfall (1200 - 1400 mm) compared to Masindi areas. The landform in the basin is composed of low hills (sometimes flat topped) and a lacustrine plain stretching from Rakai to Masaka. On the other hand, Masindi, Hoima and Port Portal are chracterized by the rift valley flats and up - warped surfaces. Each of these landforms are associated with unique soil types. There is a need to develop suitable AEZs using the important thematic layers (Climate, soil and landform)(FAO, 1993).

With the help of Global environment facility (GEF) through NEMA, the National environment information network has been formulated with Kawanda Soils Program, National biomass study, Meteorology Department, National biodiversity databank, Early warning program(Ministry of Agriculture), NEMA, and Surveys and mapping department.

This initiative will allow integration and easy manipulation of information by various users which should result in better decisions on SLM.

However, the network has several challenges to overcome.

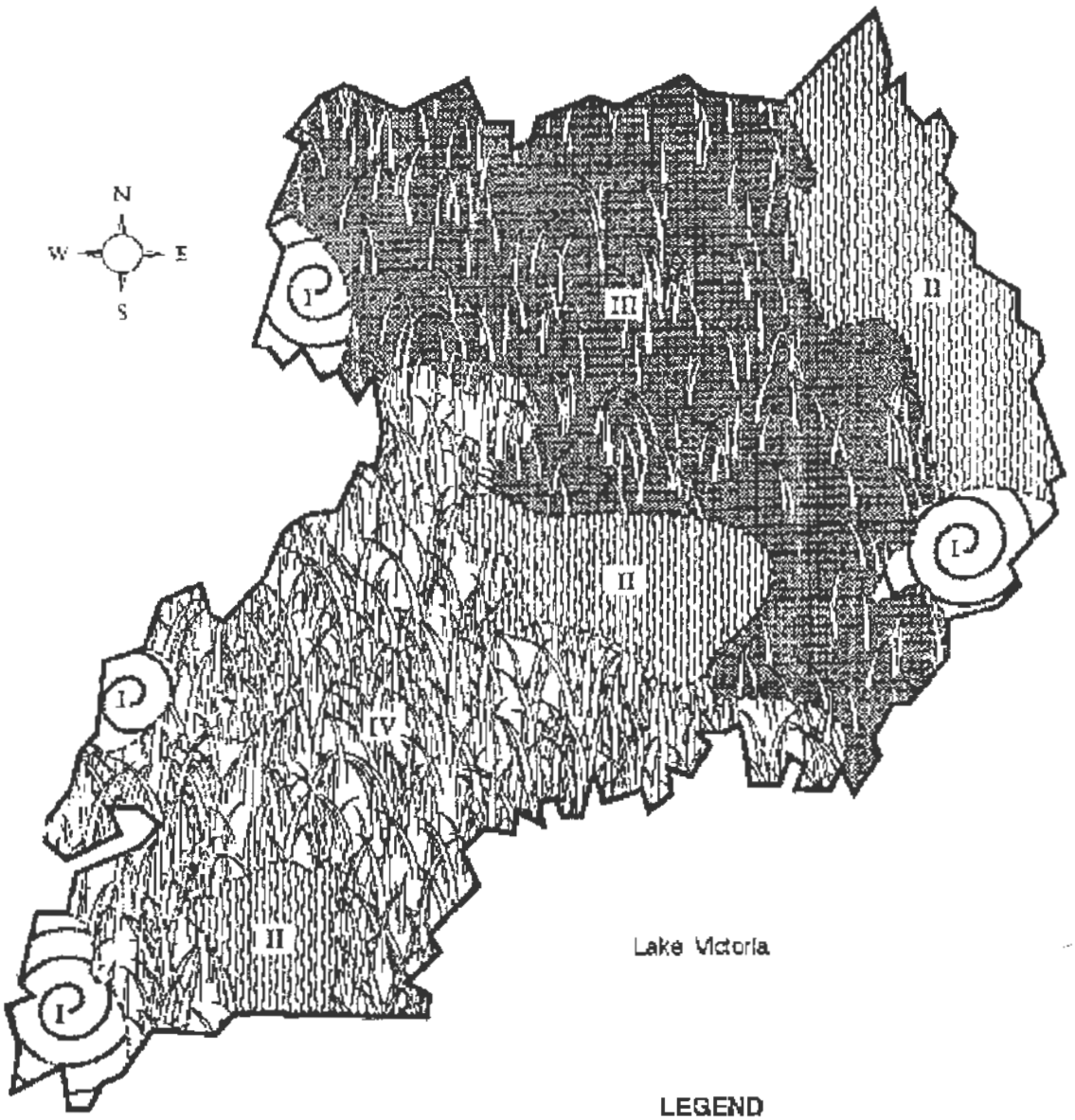
Each of the various disciplines uses specialized GIS softwares that best suit their objectives. There is need to ensure that the different soft wares to be used are compatible and that data can easily be imported from one system to the other.

To ensure that thematic layers of maps from various disciplines can be overlaid, there is need to create a base layer that can be used as a frame to give the same coordinates for all the network members. It is also necessary to harmonize the classification procedures. For example, the National biomass study project, Early warning and Soils program at Kawanda could decide on what Land - use / cover classification to use since the three disciplines are currently using different classifications.

Most of the land - resources information available was done over 40 years ago and needs serious updating. The latest information available is on socio - economics and also the land use / land cover maps which were updated in 1996 by the National biomass study. Recent information on climate and biodiversity exists but may not be in map forms. Soils need to be urgently updated since a lot of misconceptions about soils and their classification exists.

Several local soil surveyors are involved, mostly individually, in the characterization and mapping of small areas of land in the country; and also out of demand, several have attempted to independently correlate the reconnaissance soil information with either the FAO - UNESCO or USDA soil Taxonomy classification systems. Map 3 indicates that the major soils in Uganda are *Ferralsols*. Interpretation of the soil analytical data

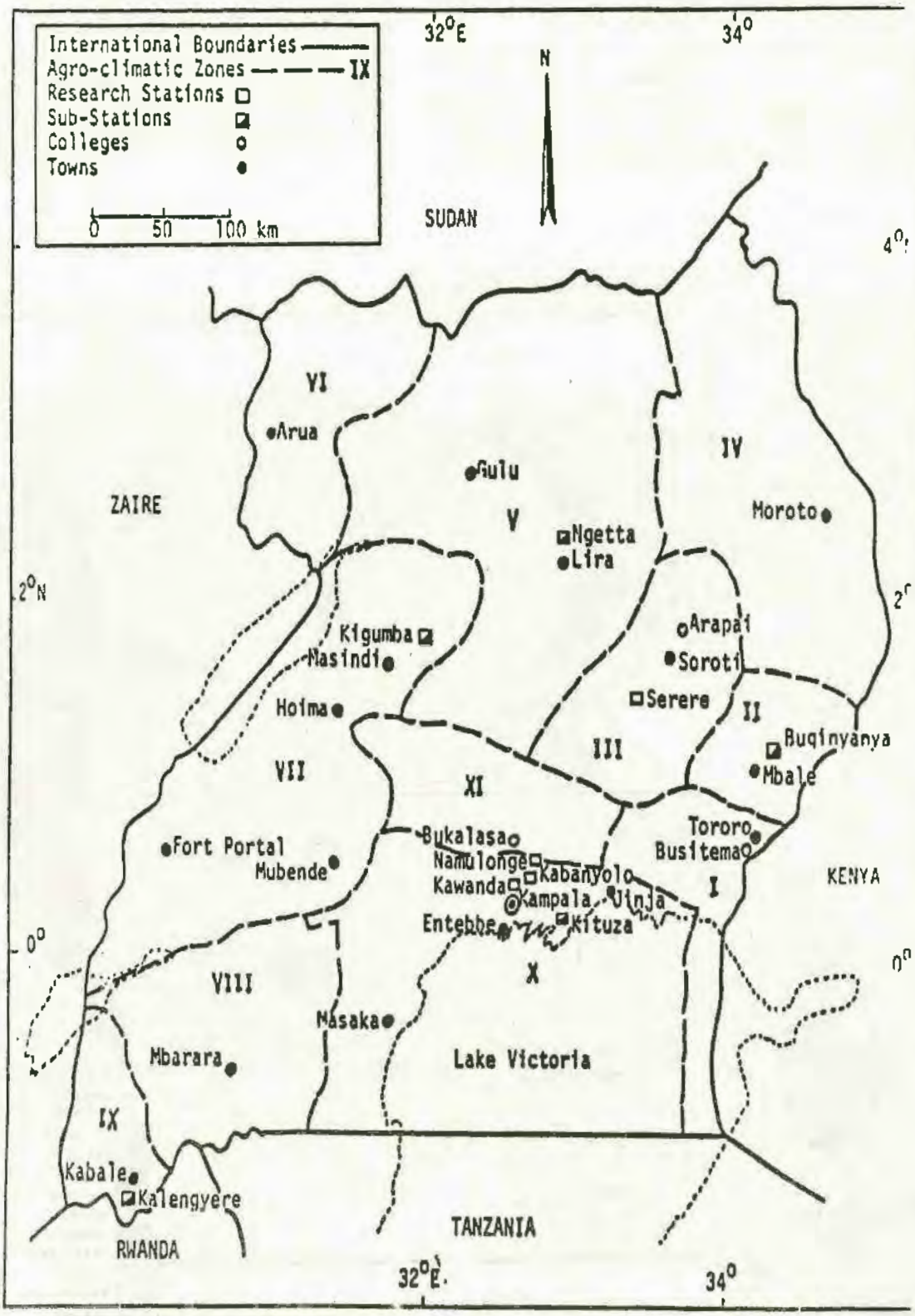
Map 1 **Distribution of the four major agro-ecological zones of Uganda.**



Source: Uganda: Agricultural Research Strategy & Plan 1991

Map 2

Uganda: Agro-climatic Zones, Agricultural Research and Training Facilities



Legend to Map 2.

Zone	Agricultural System
I	Banana, Millet and Cotton
II	Montane system: Arabica coffee - banana
III	Teso: Millet, cotton and cattle keeping
IV	Pastoral system - cattle keeping

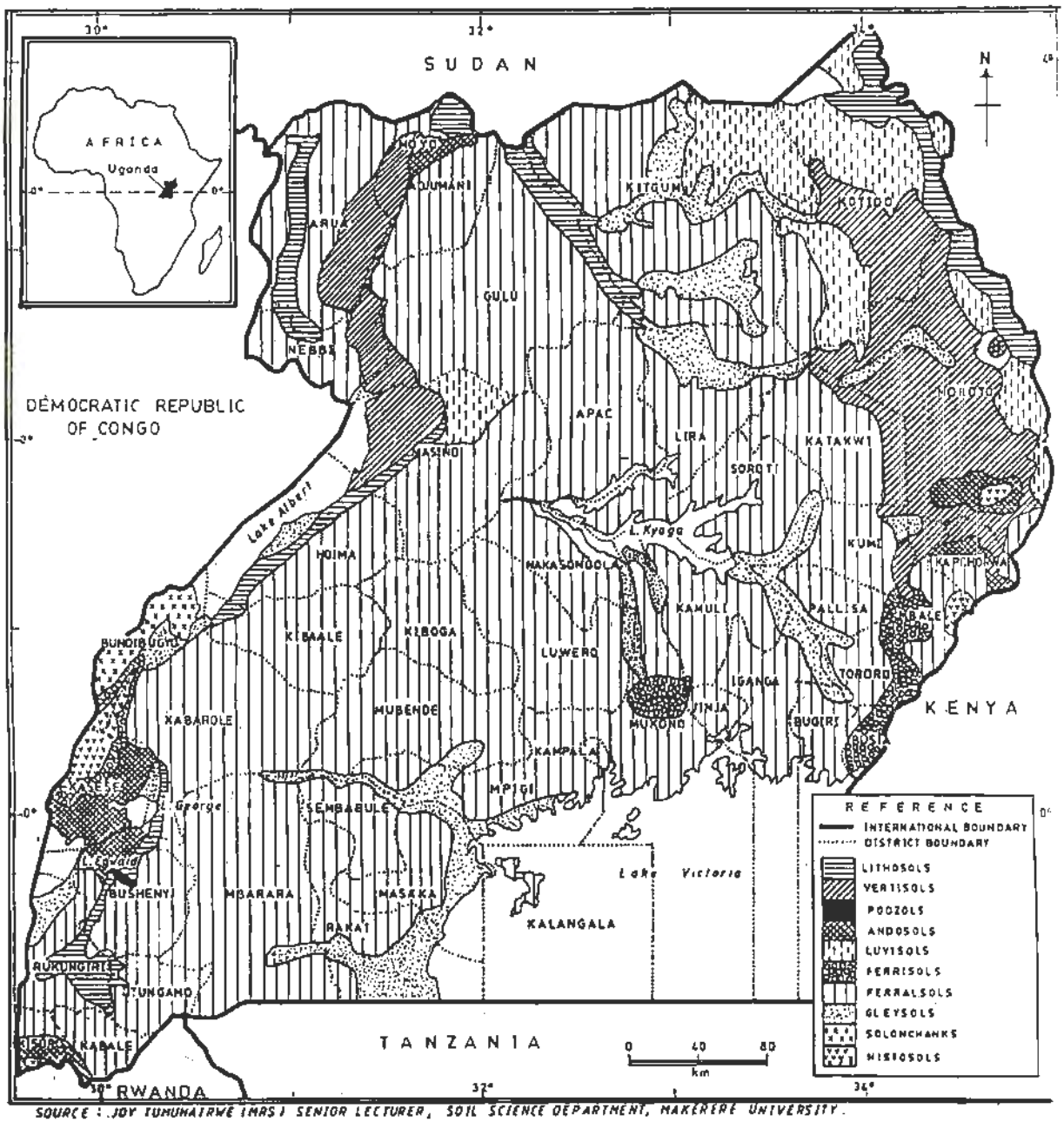
according to the FAO - UNESCO (1990) soil legend reveals that most of these soils (classified as *Ferralsols* in map 3) have an argilic B horizons ('significant clay migration from the top soils to the sub soils') and therefore disqualifying them from being *Ferralsols*. For example, a stretch of soils from Mukono to Jinja with pockets in Busia and Mbale, and at Kawanda classify as *Rhodic Nitisols*.

Contradictions occur in land terrain classification (maps.5 and 6.). Map 5 is crude and needs a lot of revision. The way it is presented indicates that no field work (Ground truthing) was done as a follow up of the work before publication. For example the legend indicates that you find aridic foothills at 20 whereas this is lake Albert and its immediate rift valley flats. The same map indicates that one finds Kabale mountains at 1 and its foothills at 2! Map 6 needs geomorphological descriptions to be included. One can not derive a lot of information from "Ankole and Koki surfaces".

Where do we go from here?

Harmonization is necessary so as to decide on which methods and systems of classification to use in Uganda. This is crucial especially at this time when the national environment information system is in place. Updating of

Map 3. Major soil types of Uganda



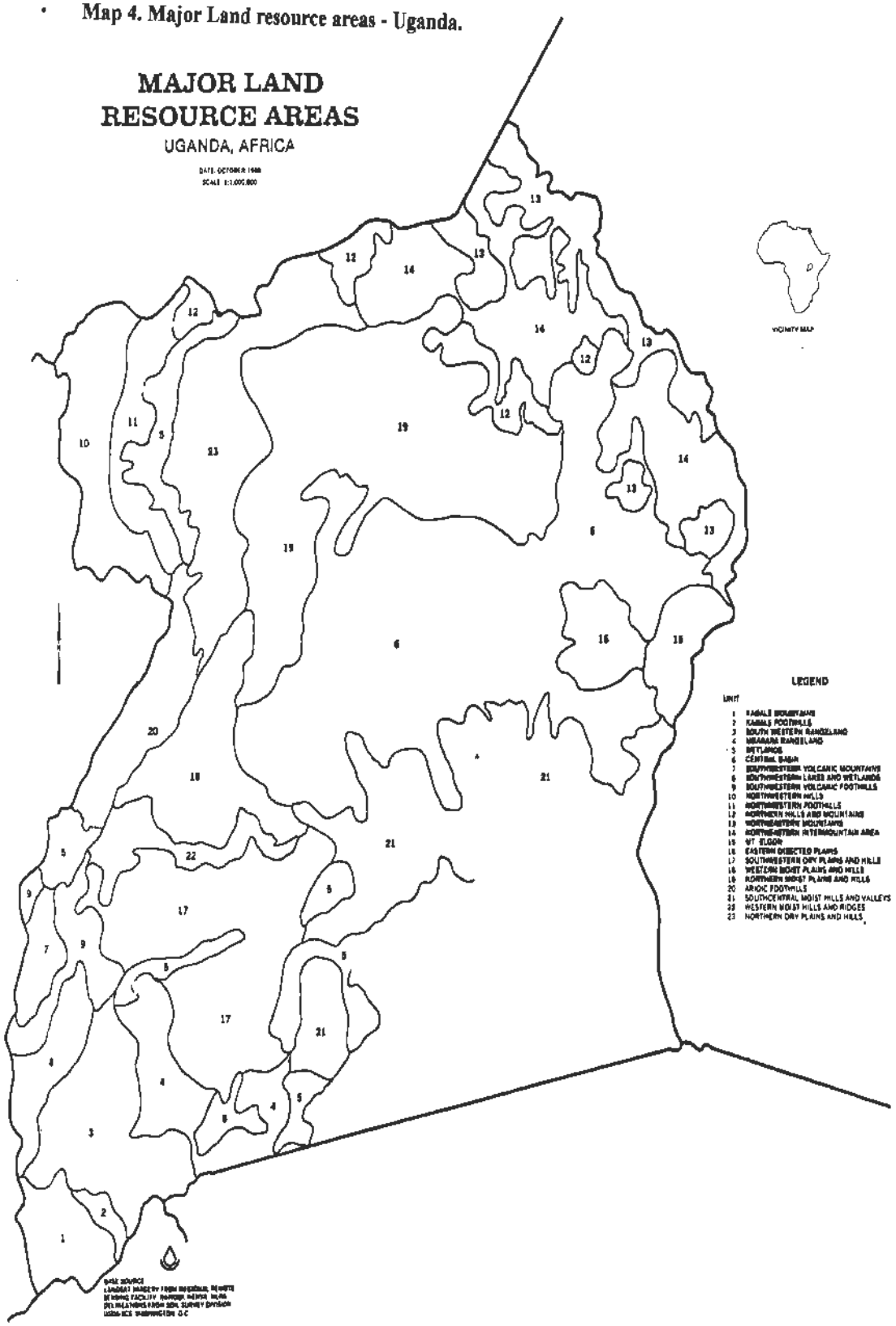
Source: **Tumuhairwe J.K. 1996 (Unpublished)**

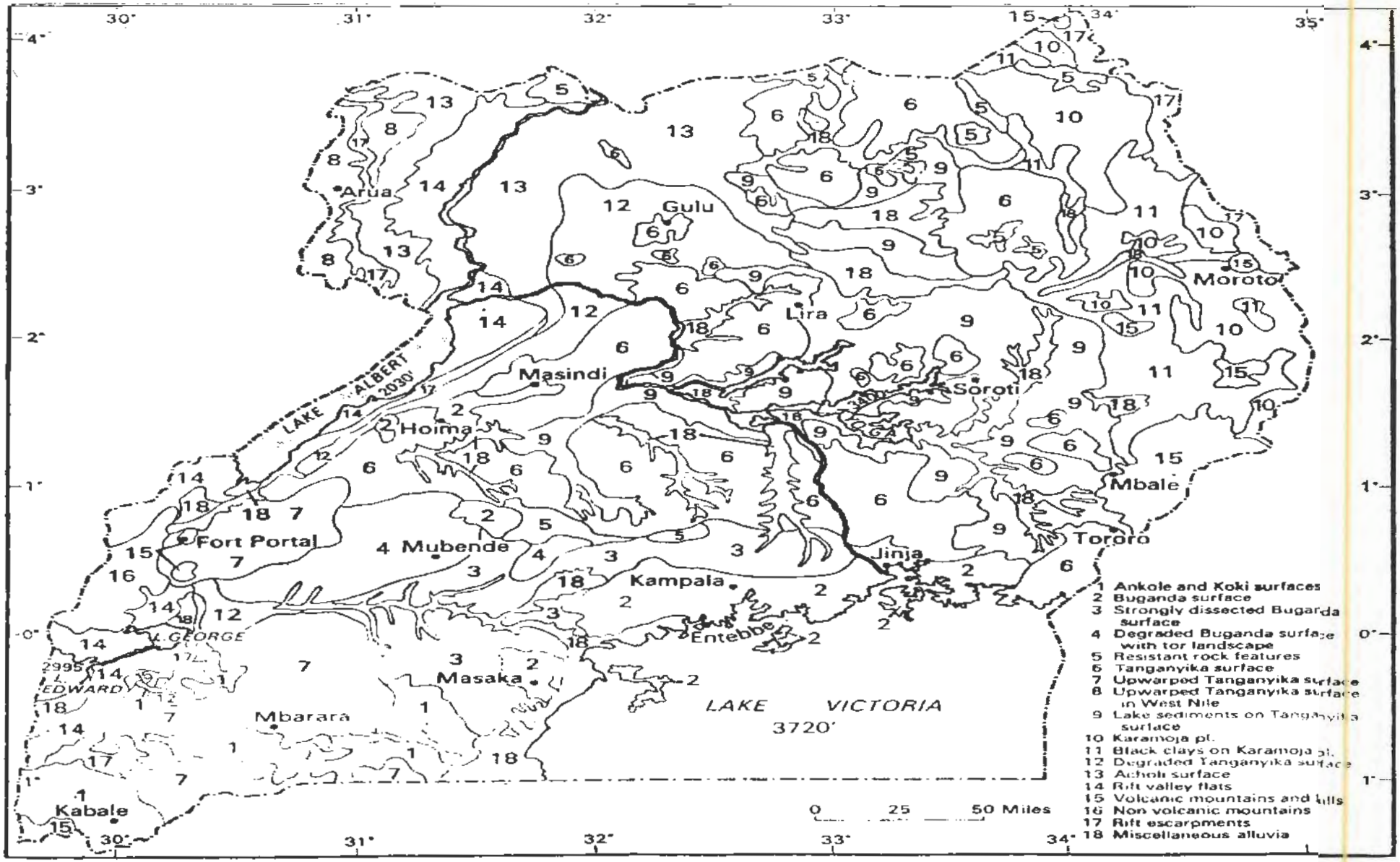
land resource information can be quite cost effective with the presence of satellite remote sensing materials.

All land - use planning should result in local land - uses that are sustainable. Monitoring and evaluation of current land - use systems both at the national and farm level is necessary to ensure that we are moving towards sustainability and away from it in the foreseeable feature. Sustainability evaluation should be done based on the five pillars of the internatiooal framework for evaluating Sustainable Laod Managemeot namely:

- maintain or enhance production services

- **Map 4. Major Land resource areas - Uganda.**

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Arua
Gulu
Lira
Moroto
Masindi
Soroti
Hoima
Mbale
Fort Portal
Mubende
Jinja
Tororo
Kampala
Entebbe
Masaka
Mbarara
Kabale
LAKE ALBERT
2030'
LAKE EDWARD
2995
L. GEORGE
LAKE VICTORIA
3720'
0 25 50 Miles
1 Ankole and Koki surfaces
2 Buganda surface
3 Strongly dissected Bugarda surface
4 Degraded Buganda surface with tor landscape
5 Resistant rock features
6 Tanganyika surface
7 Upwarped Tanganyika surface
8 Upwarped Tanganyika surface in West Nile
9 Lake sediments on Tanganyika surface
10 Karamoja pl.
11 Black clays on Karamoja pl.
12 Degraded Tanganyika surface
13 Acholi surface
14 Rift valley flats
15 Volcanic mountains and hills
16 Non volcanic mountains
17 Rift escarpments
18 Miscellaneous alluvia

(Productivity)

- reduce the level of production risk services (security)
- protect the potential of natural resources and prevent degradation of soil and water quality (Protection)
- economically viable (viability) and
- socially acceptable (acceptability) (FAO, 1993).

Conclusions

Uganda government has set itself a mission to modernize agriculture as the lead sector of the economy by adopting short and medium term strategies in which effort must initially be focused. One of these strategies is to sustainably develop the land resources of which Uganda is so richly endowed. This calls for the need to manage and conserve the natural resource base within the five pillars of sustainability namely: Productivity, security, protection, viability and acceptability. Land use planning is an effective natural resource managerial tool. However, to ensure it's success, creation of an enabling environment, framework conditions and provision of appropriate information on land resources are a necessity.

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