MORE DATA, LESS MANAGEMENT: PROBLEMS IN COORDINATING LAND INFORMATION SYSTEMS FOR LAND MANAGEMENT IN BOTSWANA

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ABSTRACT

This paper looks at the environment in which land information systems (LIS) for managing land resources for sustainable development are developing in sub-Saharan Africa. It gives an example of Botswana in Southern Africa where a lot of effort has been made to develop LIS. In spite of this effort, however, the impact of LIS in land management has been minimal basically due to the fragmented and uncoordinated nature of the existing databases. For example many people relevant to land management have no access to the databases available and members of the same planning group separate their own component of the duties in land management and develop a database exclusively for their own use. The paper presents a planned Botswana Land Information Systems (BLIS) which is directed at solving these and other similar problems.

1. INTRODUCTION

Land Information Systems (LIS) have received a lot of attention in improving decision making in land management in various countries. In sub-Saharan Africa, attempts made to develop LIS for the effective management of land resources for sustainable development have been complicated by the introduction of land reforms and new administrative structures and institutions relevant land management under the land reforms, uncertainty about the functions of new structures, and, poor coordination of information in institutions and departments that manage the land. This paper discusses the general structure under which building LIS for sustainable development in the sub-continent and gives specific examples of problems Botswana in southern Africa is experiencing in this regard.

Reviews show that there are two primary land tenure practices in sub-Saharan Africa: customary (also referred to as traditional or communal), and statutory (also referred to as “modern”). The basic features of the customary land tenure systems have been very well documented as being anchored on the *right of avail* from which all other rights to the land emanate (Kalabamu, 200; Schapera, 1943; Jeppe, 1980; Biesele et al., 1991Masale, 1988, Mugenyi, 1988). In summary, all members of a particular community, tribe, or clan, have the right to communally use for all common land resources such as grazing areas and could hold farming and residential plots as long as they effectively used them. By contrast, under statutory land tenure systems imported wholesale from Europe during the colonial period, land rights are defined by documentary evidence providing "ownership" of a land parcel to

an individual (Ng'ongola, 1996; Shivji, 1998). Many arguments have been made for and against customary tenure and questions have been raised as to whether it is better than modern land tenure for managing land in sub-Saharan Africa. Of the many reasons that have been advanced in favor of customary tenure two stand out: that it avoids the concentration of land in the hands of a few people by making it available to all, increasing its accessibility to the poor; and that it ensures stability and peace among community members (Mugyenyi, 1998; Jeppe, 1980; Biesele et al., 1991). With increasing population densities, however, these advantages have been eroded. Increased demand for residential plots has encouraged "illegal" purchases of land (i.e. where monetary exchanges are not expected) in a situation where modern information systems for the management of land have not been encouraged by mostly old men who are chiefs (Nkambwe and Arnberg, 1995). In addition chiefs and their subordinates tend to abuse the system as the monetary value of land increases (Ng'ongola, 1988; Shaw and Mlia, 1988; Mathuba, 1989). At independence, many countries throughout sub-Saharan Africa attempted land reforms including various ingenious methods of combining local customary and some aspects of western type land tenures. The rest of this paper discusses problems that Botswana has had in incorporating the information

2. A BRIEF HISTORY OF LAND MANAGEMENT PRACTICES IN BOTSWANA

Botswana is a country with an area of 581,730 km^2 and has a population estimated to be 1.8 m people in 2000 giving it a population density of 3.37 persons per $km^{2.}$ The country is that in general the country has very low population densities. However, up to 87% of the country's population lives along a narrow strip of land about 75 to 100 km wide along the eastern border along the railway line joining Harare (Zimbabwe) and Johannesburg (South Africa). On the other hand extensive areas of semi-desert environments in the western part of the country have population densities as low as 1 person per 5 $km^{2.}$ The combination of contrasts in population densities have encouraged the country to attempt the development of LIS for land management in planning for sustainable development. Cases have occurred when lack of information about the land has been responsible for poor designs of development projects (Government of Botswana, 1976) Rapid increases in prosperity since diamond mining was started in the early 1970's has encouraged high migration rates to cities and large villages. The annual urban growth in the 1980s and 1990's was around 10%. Tribal Territories around the lager settlements have particularly attracted high population increases from the rural areas, creating land use conflicts and disputes among individuals (Government of Botswana, 1992a)

Like many other countries in sub-Saharan Africa, Botswana has customary and "modern land tenure. Communal land tenure and land management practices in Botswana have been described in a number of studies (Schapera, 1943). For the Tswana tribe, for example, with low population densities in the early and mid-1960's every male was entitled to land to build a shelter for his family, sufficient land for arable farming to feed his family, and had the right of access to tribal grazing land. He also had the right of access to tribal hunting grounds. The plots for residence and for farming were allocated by a chief who administered the land on behalf of a tribe, and information on parcel ownership could be

retrieved from witnesses who were present when the allocation was made. This information was passed on to subsequent descendants The chief, together with his several field lieutenants called "overseers" throughout a tribal territory, were empowered, using several methods and techniques including taboos, to manage the land and make sure it was used for the purpose it was allocated. Although written records were not used, all aspects of land management, including allocation, information on changes in allocation and transfers, land use and land use control land use control, were accessible to the chief and his overseers who composed all the personnel for land use management.

The Government of Botswana has shown its preference for customary land tenure to avoid concentration of land ownership in a few hands. At independence, customary land tenure was 42% of all land but by 1992 it had been increased to 71% by converting state land to customary tenure. State land decreased during the same period from 48% to 23% (Mathuba, 1992). Systems of leasing land have been introduced in both urban and rural areas where land is newly allocated and Government has encouraged those who had plots under customary tenure before the new systems were introduced to have their plots surveyed and registered. To keep track of the data that has been generated by these activities, improvements of the administrative structure and methods of organizing information on the land have been attempted. In 1986 The Tribal Land Act introduced several important administrative changes in tribal lands. Most importantly, the allocation of land parcels was changed from the chief, who was responsible to a tribe in its tribal territory, to a Land Board whose responsibility was to a national Minister of Local Government and Lands (MLGL). Although the Chiefs were useful in the settlement of disputes, their role was not central to the administration of tribal lands. The Land Boards are advised by three key officers: the Physical Planner from the Department of Town and Regional Planning (DTRP), and the District Officer, Lands (DO(L)), both from MLGL Under this administrative structure, various efforts have been made to develop information systems with different levels of sophistication. Early efforts were made on urban and peri-urban areas (McCormic, 1982; Zao, 1993; Swedeplan, 1990; Government of Botswana, 1992) It was obvious, however, that the efforts made were uncoordinated and that a national strategy for developing spatial information systems was necessary. In 1994, a consultancy was awarded to Associates in Rural Development (ARD) to provide advice on this issue. Unfortunately very good advice was side tracked by an IT group which had no skills in spatial information systems.

3. CURRENT EMPHASES IN LIS DEVELOPMENT AND FUTURE PLANS

In spite of a lot of effort in the development of LIS for land management over more than 15 years, very little can be looked as a "system" providing information for decision making for all those concerned. The systems so far, where they exist, have remained very localized for individual Land Boards with no overall strategy. Nkambwe and Arnberg (1995) have analyzed the flow of data among the various officers concerned with land management as discussed above. While all officers meet in the District Land Utilization Planning Unit (DLUPU), they do not share data useful in having an overall view of land management. The physical planner collects data on the built-up environment at very large scale and reports it to DTRP, while the DO(L) does the same using medium scale sources of data but

reports to the Lands Department where his data is stored and analyzed. The Chiefs, who are very important in solving problems of disputes at the local level are completely excluded from the data that both the DO(L) and the Physical Planner collect. Instead, almost without exception, they the Chiefs use paper files (one file per plot) including hand drawings of the location of land parcels. Other officers in the DLUPU are just as disconnect as these are. Analyses that involve the different managers in the Unit is very difficult to make. Thus although more data has been recorded and some computerized, its use in managing the land is very limited; the emphasis is on allocating land parcels and not on managing the land. Nkambwe and Arnberg (1995) have suggested a model which would improve data flow in land management for sustainable development.

The Government of Botswana has identified the major weaknesses in the major weaknesses in the organization of information in land management. It has planned a comprehensive information system code-named BLIS (Botswana Land Information Systems). It is realized under BLIS that the problems of developing LIS on state and tribal land may be different. Consequently BLIS will have two components: SLIMS (State Land Information Management Systems) and TLIMS (Tribal Land Information Management Systems). At the time of writing this paper, tenders were about to be awarded for developing BLIS. Some ideas saw BLIS as a distributed spatial database with information available to all. Several Government of Botswana Departments will work together in the development of BLIS, but the Department of Surveys and Mapping, currently providing leadership in the development of base data has been identified as the core in this development in collaboration with the Lands Department.

CONCLUSION

This paper illustrates some of the pitfalls that many countries in sub-Saharan Africa have experienced. In spite of a lot of effort to build up data base in land management, compartmentalization of flow of data in Botswana's case have reduced the effectiveness of the spatial databases in the management of land resources. The development of BLIS shows a higher level reached in the development of spatial databases in Botswana. Several Departments relevant to land management will work together with the aim of making land management data available to all.

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BIOGRAPHICAL NOTES

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