

# Localized Wood Resource Depletion in Botswana: Towards a Demographic, Institutional and Cosmovisional Explanation

THANDO D. GWEBU

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**ABSTRACT** *In sub-Saharan Africa, communal land resource utilization and management has reflected changes in sociocultural belief systems, population dynamics, and modes of societal administration and regulation. This paper, based on archival evidence, attempts to substantiate this assumption through an illustrative case study on biomass depletion around large settlements in Botswana. It also suggests that a revisit to certain traditional institutional and sociocultural practices on natural resource management might provide useful insights towards the sustainable utilization of wood resources.*

## Introduction

Botswana is part of the Southern African plateau, lying approximately 1000 m above sea level. It covers a land area of 528 000 km<sup>2</sup> and experiences a semi-arid climate. Rainfall ranges from 250 mm in the southwest to 650 mm in the northeast and is highly variable seasonally. Over 80% of the country constitutes the Kalahari sandveld which consists of infertile sands and shrub vegetation. About 15% is the eastern hardveld with fertile clay and loam soils, savanna vegetation, and dry deciduous forest in the north. Most of the rest of the country is made up of the Okavango Delta with alluvial soils and aquatic vegetation associations.

The sandveld is marginal although it supports some Remote Area communities most of whom still pursue nomadic livelihoods. The eastern hardveld, because of availability of surface water, fertility and vegetation cover, provides the most ideal environment for human habitation and is the most densely populated.

The original occupants of Botswana are the San whose scattered nomadic settlements still remain confined mainly to the arid sandveld. The subsequent occupation of present-day Botswana dates back to the early and middle 19th century when the Zulu empire of Shaka disintegrated during the sociopolitical turmoil termed *umfecane*, in what is now South Africa. The Sotho tribes were forced to migrate northwards and ended up settling the semi-arid hardveld of Eastern Botswana. In the process, they retained their traditional nucleated settlements under the institutional tutelage of chieftainship. No

*Thando D. Gwebu, Department of Environmental Science, University of Botswana, P.B. 0022, Gaborone, Botswana. E-mail: gwebutd@mopipi.ub.bw*

**Table 1.** Forest clearance at varying distances from a village in Eastern Botswana, 1985

Distance (m)	Growing stock of live biomass	Felled	Felled/live biomass (%)
—	39	—	—
500	1159	379	33
1000	355	164	46
1500	7802	6043	77
2000	25 247	8674	34
2500	20 656	1114	5

— = zero variables; 0 = oven dried tonnes.

Source: ERL (1985).

person could move out to establish a homestead outside the main settlement. Only seasonal movements, in response to the agricultural calendar, were entertained, and only after the chief had given the signal.

Currently, the population stands at about 1.7 million which gives a crude density of about 3.2 per km<sup>2</sup>. This, however, is misleading because the population is unevenly distributed. Currently, the concentration ratio is 42% which implies that 42% of the national population would have to be redistributed in order to attain an even distribution. Over two thirds of the population lives either in the rural settlements or in what are called urban villages. The latter were previously known as traditional agro-towns. The rural population is characterized by an elderly population most of whom have not been exposed to modern formal education. Although most of the population profess Christianity to be their religion, practically they still adhere to traditional religious beliefs and practices.

Evidence from the two recent censuses indicates that the national population is becoming increasingly concentrated around the major villages and urban centers. The National Conservation Agency (NCSA) has identified deforestation to be a very serious environmental problem around these settlements:

Wood resources are being depleted locally around urban areas, around large rural villages and even regionally. The most direct causes of depletion have been high population growth and increasing urbanization. (Government of Botswana, 1990, p. 23)

From a study on Eastern Botswana, by Energy Resources Limited (ERL), to estimate the extent to which trees were being felled around settlements, felled stumps were used as evidence of removals. Table 1 shows the results from that study.

- The absence of stumps within zero distance shows that trees had been completely cleared adjacent to the village.
- Intense felling had occurred up to 1.5 km radius. Felled trees constituted 77% of the live biomass.
- Beyond 1.5 km the rate of removals declined up to 2.5 km, where it was more or less insignificant.

Given a population growth rate of over 2.5% per annum, and an increase in the number of government institutions such as prisons, Botswana Defence Forces (BDF) camps, secondary schools, and the number of people now owning pickup trucks and vans, the radius within which forests have been more or less cleared might be much wider than is suggested in Table 1. The general practice is to select preferred species which burn longer, have little smoke, and minimum ash, are resistant to insect and termite attack initially.

The argument in this paper is that population growth and accelerating urbanization are necessary but not sufficient causal determinants of wood resource overexploitation and depletion. The qualitative and changing institutional practices and evolving micro-visional perspectives are equally important components of the localized biomass depletion explanation because these can operate even where the normative demographic and urbanization factors are not so critical.

This paper has five sections. After this introduction an overview of pre-colonial management practices of natural resources in the subcontinent is presented. This is followed by a discussion on traditional control of productive resources under chieftainship in Botswana. Change agents and agencies in traditional communal natural resource use management are then analyzed. The section is a necessary background for the discussion on contemporary institutions and management of natural resources. Finally, the paper is summarized and conclusions are made.

### Pre-colonial Natural Resource Management Practices

During the pre-colonial era land resources in Southern and Eastern Africa were held communally, under the tutelage and stewardship of the chiefs. The cosmovisional philosophy of natural resource management was based on a triad perspective of land rights. According to Millar:

Land is the most revered property of all African traditions. It is in the ownership, management, and use of this common property that African traditions best express their cosmovision. (Millar, 1999, p. 131)

Quoting a Konkonba elder he said:

Traditional philosophy ascribed a sacred significance to land. Land was an ancestral trust, committed to the living for the benefit of the whole community, in particular the unborn generation. (Millar, 1999, p. 131)

The sentiments are identical to the ideals of sustainable development as stated in the Bruntland Commission Report (World Commission on Environment and Development, 1987).

One chief articulated this triad even more clearly by noting:

Land belongs to a vast family of whom many are dead, a few are living and a countless host are still unborn. (Millar, 1999, p. 131)

The African cosmovision concept and nature management originates from a culture which embraces a holistic worldview that integrates the environment with the cosmos. The perspective acknowledges the inextricable bond of interdependence linking the natural, spiritual and human components, defined as follows:

In this perspective, the whole of nature is conceived as a living being, like an animal, with all the parts interrelated and needing to perform. Human society is part of nature and mankind works and communicates with nature. Nature does not belong to mankind, but mankind to nature. Thus, human society does not stand in opposition to nature, as in the Western view where mankind is considered the conqueror of natural forces. (Millar, 1999, p. 133)

In that sense, nature holds a sacred significance with a reciprocal relationship with humans.

What is interesting is that even in the Western world there are now signs that the Cartesian materialistic-mechanistic approach derived from the positivistic science of Descartes and Bacon is now being questioned. Gaia theory, chaos theory and synchronicity approaches appear to be questioning those methods of enquiry involving a mechanistic and mathematical description of nature and a narrowly analytical way of reasoning. A phenomenological natural science may be evolving.

Sibanda (2000, p. 39) has defined how the use of natural resources was governed by traditional and religious sanction.

Natural resource utilization, management and conservation were products of people's spirituality, culture, traditional practices, taboo systems and knowledge accumulated over centuries by millions of people, and not a product of research over a few months.

Observations by Dasgupta and Maler (1990) underscore the same point. Drawing from anthropological evidence they have noted:

Many of the production and exchange contracts in subsistence economies over the use of common-pool resources are explicit ones, and compliance with them is enforced by means of elaborate rules, regulations and fines. Many contracts over use are merely implicit; the obligations they entail having often been codified over the years, in the form of social norms. (Dasgupta and Maler, 1990, p. 113)

Evidence from economic analysis, particularly from game theory has also provided illustrative examples of traditional institutional mechanisms ranging from 'taxes' to 'quantity controls' which can, in principle, support desirable allocation of common property resources (Dasgupta and Maler, 1990, p. 113). Game theory has made it clear for quite some time that the enforcement of the agreed upon allocation of resources can be carried out by users themselves (Dasgupta and Maler, 1990, p. 113). Wade (1987) likewise says that local commons are easy enough to monitor and so their use is often regulated in great detail by the community, either through the practice and enforcement of norms or through deliberate allocation of use.

#### **Traditional Control of Productive Resources under Chieftainship in Botswana**

The focal institutional point under the traditional Tswana sociopolitical system was the chief whose day-to-day legislative, political and administrative decisions were based on consensus reached during open deliberations at a public debate arena, the *kgotla*. The nucleated main village constituted the spatial epicenter for each tribal authority. Such villages, sometimes referred to as agro-towns, had populations in excess of 20 000 inhabitants. Village population growth occurred through natural increase and immi-

gration by weaker tribes, seeking political refuge from the powerful paramount chiefs. Spatially, each main village had the main settlement (*motsi*) as its core, immediately surrounded by arable lands (*masimo*), with the cattleposts (*miraka*) at the periphery. Settlements did move periodically and one of the main reasons for relocation was ecological pressure, in the form of depletion of soil and firewood resources in their vicinity (Silitsheba, 1979). Wild trees, bushes and other plants belonged to the person on whose assigned land they were located. Without his permission, these could neither be cut nor their products harvested (Schapera, 1943, p. 262). Apart from these homestead resources, nobody could claim exclusive or even preferential rights over any form of natural vegetation; it was available equally to all members of the tribe. Each individual had usufructuary rights to land. Since the land belonged to all the past, present and future generations, private expropriation and entitlement was inconceivable.

The key aspect of chiefly control over spatial organization was his management of productive resources, notably, communally held land. He himself did not own the land but held it in trust for his tribe (Silitsheba, 1979, p. 63). He regulated its distribution among his subjects, controlled its occupation and use. The chief made laws about the use of land and its resources. For example, with regard to vegetation-conservation, paramount chiefs Khama and Bathoen I regulated veld burning and the cutting down of trees in their villages (Schapera, 1943, pp. 42–43). Certain regulations on the cutting down of trees and bushes applied to all citizens. For example, trees growing around either the village, or along river banks, or in big forests, could not be cut indiscriminately because of religious and conservation purposes (Schapera, 1943, p. 263). Seasonal taboos were also observed and enforced by chiefs to preserve valuable plant species (Schapera, 1943, p. 187). For example, it was taboo to cut *mokgabo* (*Zisophus mucronata*), *mogonono* (*Terminalia sericea*), *mosetlha* (*Peltophorum africanum*) and *motlopi* (*Boscia albitruncata*) and thatching grass during certain seasons (Schapera, 1943, p. 263). The violation of the taboo was believed to prompt hail-storms which could ruin crops and cause famine. Reverence for spiritual and communal authority ensured collective monitoring and public compliance for the sake of public prosperity. Compliance presented a 'no regrets' solution by ensuring the preservation of valuable species and preserving biodiversity.

There were no rigid administrative boundaries then. Once a village had almost exhausted the resources in its adjacent environs, it could relocate en masse to exploit fresh resource frontiers whilst permitting the overused resources to recuperate and regenerate. The chief was responsible for the choice and change of village sites. Once he, in consultation with his personal spiritual and political advisers, had decided that a move should take place, he merely summoned his people and informed them of the impending move (Schapera, 1943, p. 66). Consecration ceremonial rites, collectively known as *sebettela* were then performed by his spiritual advisers at the new site to provide the village with protection. They also provided him with spiritual advice on the appropriate disposition of the respective wards for the various clan members at the new settlement.

#### Change Agents and Agencies in Traditional Communal Natural Resource Use Management

Wily (1999, 2001) has noted that common property rights have not fared well in Eastern and Southern Africa over the past century, mainly as a result of three main influences.

First there are social transformation factors. These have emanated from the penetration of capital, nation-making and the Europeanization of the pre-capitalist African society.

A critical element associated with this dynamic has been the commodification of land as the core means of production, the provisions for which have been central to the essence of modern national land legislation (Wily, 1999, p. 78).

Secondly, the thrust of colonial and present tenure ideology towards the privatization of land-ownership through Western modes of entitlement has been coupled with the failure to institute statutory provisions for the non-European regimes of landholding (Wily, 1999, pp. 78–79). According to Wily, customary African tenure has been regarded as a paradigm from which modern society should depart. The general expectation has therefore been that over time, through market forces, and with the assistance of programs of tenure conversion, common rights and regimes which sustain them would eventually disappear. They would be absorbed into modern statutory forms, and into those providing absolute and individual rights in particular (Wily, 1999, pp. 78–79). Dasgupta and Heal (1979) have however warned that privatization of village commons, although hallowed at the altar of efficiency, can have disastrous distributional consequences by disenfranchising entire classes of people from economic citizenship. Nowhere has this been more dramatically demonstrated than in Central, Eastern and Southern Africa.

Finally, there has been a steady appropriation of much of the most valuable local common properties by colonial and then post-colonial governments in Eastern, Central and Southern Africa. Such action has been based on the assumption that the state is the only and proper guardian of such properties, and the rightful primary beneficiary of their worth. Governments have thus vested the ownership of the common lands, not on their rightful inhabitants, but variously on the state and local authorities (Wily, 1999, p. 80). Nowadays councils may unilaterally allocate customarily occupied land for purposes which they themselves consider beneficial to the residents. Essentially, therefore customary owners occupy and use their land as but tenants of state and state agencies, with their property being directly vulnerable to arbitrary reallocation (Wily, 1999, p. 80). Their local rights have, to all intents and purposes, evaporated to that of permissive occupancy.

Several other researchers have noted the mechanisms through which those who subsist on common-pool resources have become disenfranchised (Dasgupta, 1982; Hecht, 1985; Feder and Noronha, 1987). They all seem to agree that the erosion of common property bases can come about in the wake of unreflective public policies, predatory governments, thieving aristocracies, growing and shifting populations.

### **Contemporary Institutions and Chiefly Control over Natural Resources**

Botswana was a British Protectorate from the late 19th century until 1966. Britain secured and maintained the statutory national boundaries and assured the country protection from hostile external interests, particularly those of the Boers. The colonial government maintained and reinforced chiefly authority.

Since independence, however, the chiefs have lost most of their sociocultural, administrative, and sociopolitical functions. Individuals can now relocate out of the main village at will. The District Council Law 1966 implied their loss of legislative and administrative functions. Chiefs have been deprived of power to regulate the social and economic life of their tribes. As a result of Tribal Land Acts of 1967–70, chiefs have lost control over resources and with it the power to order the use of space (Silitshena, 1979, p. 73). The Land Boards have taken over all their traditional rights with regard to land administration. The Boards now allocate fields, residential plots, and commercial plots. They settle land disputes and can, as they deem fit, withdraw land rights from individuals or organizations. In consultation with District Councils, the Land Boards

have to identify and fix the boundaries of the Planned Areas, with the technical assistance of the District Land Use Planning Units.

The traditional agro-towns have now been designated as urban villages. They are now part of the 'Planning Areas', under the Country and Planning Act. According to the Act:

The Minister may, from time to time, declare, by order published in the gazette, areas of land in Botswana to be Planning Areas and the provision of this Act shall apply to any Planning Area declared as aforesaid from such date or dates as shall be appointed by the Minister.

The implications of this Act, with regard to land use planning are:

... to make provision for the orderly and progressive development of land in both urban and rural areas and to preserve and improve the amenities thereof and ... the grant of permission to develop land and for other purposes of control over the use of land; and for purposes ancillary to or connected with the matter aforesaid.

The former traditional agro-towns are now all Planning Areas and their Village Plans are initiated at the local level by either Village Development Committees, The Village Planning Committee, the Land Board or the District Council. The Department of Town and Regional Planning, in consultation with village residents draws up the land use plan for each village and its immediate environs.

Today land tenure and land use administration in the country is the jurisdiction of what Kuper (1970) has called the 'new men'. These administrators are technocrats more imbued with modern science and less encumbered with the trappings of indigenous knowledge systems of governance and resource management. They have effectively taken over the chiefs' powers of administration, resource management, and spatial organization. The curbing of the chiefs' powers by the post-colonial administration and secularization, due to modern formal education and the adoption of external religious beliefs have all created a situation in which individuals can now behave in ways which they deem rational. The introduction of external tenure systems, and commodification of land and land resources has often led to its unregulated utilization overexploitation. Silitshena has, for example, noted that the unlicensed sale of firewood to the villages and towns has resulted in the localized mismanagement and depletion of wood resources (Silitshena, 1979, p. 31).

The National Conservation Authority has also attested to the above observation. The situation of land and its resource mismanagement has gotten out of control to the extent that in 1991 a presidential commission of inquiry, into land problems in Mogoditshane and other peri-urban villages, was instituted. The main problem revolved around 'a bundle of illegalities in land activities, conflicting land claims and developments not conforming to the Village Development Plan' (Government of Botswana, 1991, p. vii). This was attributed to the lack of law enforcement because the Ministry of Local Government and Lands, the Kweneng District Council, the District Commissioner and the Land Board did not employ the judicial powers at their disposal to arrest the situation (Government of Botswana, 1991, p. xi). The Kweneng District chiefs said that they could not get involved in land-related cases because no law confers on them the right to exercise judicial power vis-à-vis such cases. They claimed that the Land Board had told them not to get involved in cases where land is an issue. The Land Boards did not take recourse to the chiefs for remedies for fear that the chiefs would rule against them in disputes if only to show that Land Boards are incapable of administering the land properly (Government of Botswana, 1991, p. xv).

The failure by the Ministry of Local Government and Lands clearly to demarcate the

area which falls under the urban village's Planning Area has encouraged the tragedy of commons in the utilization of natural resources. Unsubstantiated and yet substantial claims have been made on unused virgin land by total strangers in this previously Bakwena tribal common land. Coupled with this have been illicit land expropriations and sales by some of the 'new men'. This has led the loss of confidence in and persistent suspicion of Batswana in high government positions and brought government reputation and credibility at stake (Government of Botswana, 1991, pp. xii, xvii).

There is no clear line of command structure for neither action execution nor strategic co-ordination on resource management by stakeholders. The conflict between the Ministry and the Land Board is now well documented. The Land Board has become discouraged because of being overruled by the Ministry in cases in which it feels its own decisions were sound.

### Summary and Conclusion

In sub-Saharan Africa, communal land resource utilization and management has reflected changes in sociocultural belief systems, population dynamics, and modes of societal administration and regulation. This paper has substantiated this assumption through an illustrative case study on biomass depletion around large settlements in Botswana.

The population growth of major settlements in Botswana has always imposed a strain on the natural resources in their environs. The traditional response, under traditional chiefly authority, involved controlled use of vegetation and/or en masse village relocation. Indigenous natural resource management knowledge systems, with their time-tested solutions, provided useful insights as to how best to utilize resources sustainably. The introduction of modernization, through formal education, imported institutions and legislation are ensuring the gradual erasure of time-tested resource management practices.

Today villages continue to grow but they have stabilized, spatially, in the sense that they can no longer relocate once they have depleted the biomass resources at their peripheries. Individual families may now relocate and settle wherever they choose, partly because of the weakened chiefly authority. Such individuals tend to use the communal resources as dictated by their individual discretion, having been freed from traditional and collective responsibility on the sustainable utilization of common property. The tendency has been towards a tragedy of commons usage. Modern forms of tenure and legislation have created new bases of power and hierarchies in which Ministers, Councillors and District Commissioners are now more powerful than the chiefs. These are the 'new men' who are gradually now discovering that after all the management of people and natural resources demands some acquaintance with traditional ways of doing things. Participatory grass-roots-based approaches to resource management will only be achieved when the role of traditional leadership and the value of indigenous knowledge are acknowledged. Village chiefs, government agencies and NGOs need to work together to develop relationships based on mutual trust and confidence and local ways for environmental management.

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