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THE MANAGEMENT OF NATURAL WOODLAND  
FOR FUELWOOD AND OTHER RESOURCES:  
Review and Policy Proposals

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Report prepared for  
THE GREEN TRUST  
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## PREFACE

This review was funded by the Green Trust on behalf of the South African Energy Policy Research and Training (EPRET) Project undertaken by the Energy for Development Research Centre (EDRC) at the University of Cape Town. The aim of the EPRET Project is to develop policy options for widening access to basic energy services and resources for the urban and rural poor. Although the EPRET Project focuses specifically on energy, the need to locate that research in a framework which takes land and development issues into account has been recognised.

The core of the EPRET Project is made up of some twenty sectoral studies, one of which, "Afforestation and Woodland Management"... deals specifically with the issue of fuelwood production and supply. While this paper on indigenous woodland is presented here as a stand-alone document, it was written primarily as a key chapter for the above-mentioned sectoral study. Indeed, most fuelwood used in South Africa derives from natural woodland. If a sustainable fuelwood supply for the future is to be secured, policies which are based on models of "best practice" and which recognise the role and importance of natural woodland, must be formulated.

## EXECUTIVE SUMMARY

- \* This report looks at the natural woodland areas of South Africa as potential fuelwood resources and describes factors associated with the utilisation of such resources under four land-use regimes:-

communal land - traditional grazing lands  
communal land - Resource Management Areas  
formally conserved areas under a conservation authority  
freehold commercial ranching areas.

- \* The savanna woodland areas currently provide the bulk of the fuelwood used in South Africa.
- \* The consumption of domestic fuelwood in South Africa is of the order of 11 million tons per annum. There is potentially adequate wood to meet needs provided it can be accessed.
- \* Within the commercial ranching areas, bush encroachment is perceived as a problem, while a scarcity of wood resources characterises many communal areas.
- \* Savanna areas are currently used primarily for livestock ranching. There is very limited potential for increased production from this source on an economically viable and sustainable basis. Possibilities for increasing the productivity and economic viability lie in the woody component where it is presently under-utilised.

### Communal areas

- \* The report describes some traditional systems of control of natural resources in communal areas, and the institutions which apply them. In a changing society, both the institutions and the management systems are being challenged, and are having to adapt to new circumstances.
- \* In principle, intervention in the area of natural resource utilisation should be directed at building on existing practices as far as possible. However, in South Africa, we lack a comprehensive picture of these practices, of the systems of control and access, and of tenure, particularly tree tenure.
- \* Resource Management Areas (RMAs) are a special case of communal land management. Although not as yet as widespread in South Africa as, for example, in Zimbabwe or Botswana, they represent opportunities for sustainable and equitable management of common property resources.
- \* Access to RMAs may be restricted, and resource use regulated, but the benefits accrue to the community as a whole.

### Formally conserved areas

- \* Protected areas controlled by conservation agencies are potential sources of fuelwood. In only a small proportion of the conservation areas in South Africa is wood harvesting actually permitted.
- \* Some logistical problems of access control need to be addressed.
- \* In some quarters, attitudes are changing towards a more people-orientated approach to conservation, but new management paradigms are still being sought to translate the new concepts into practice.

### Commercial farmland

- \* Commercial farmland is a major potential source of fuelwood. A small proportion of this wood is used as fuelwood for farmworker families and some is transported to areas where it is needed.
- \* Wood harvesting can be incorporated into a management strategy to control bush encroachment and invasive species, and some farmers are indeed doing this.

### Recommendations

- \* Any programme of managing communal woodland should be part of a wider programme of social forestry. Social forestry, in turn, would have to be integrated into regional rural development strategies.
- \* Innovative initiatives for sustainable and equitable use of wood resources in protected areas should be supported, rather than trying to impose uniformity of policy among the various conservation agencies.
- \* The support of the agricultural extension services in the commercial sector, and the Agricultural Unions, should be sought in developing a strategy for the exploitation of wood on commercial farms.

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## SECTION ONE

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### INTRODUCTION: WOODLANDS

#### 1.1 WOODLANDS AS A SOURCE OF FUELWOOD

The total annual consumption of fuelwood by low income households in South Africa is about 11 million tons, of which about 6,6 million tons are used in rural areas in the homelands, about 3,5 million by farmworkers, only 0,7 million tons in urban areas, and a smaller amount by other rural communities outside of the homelands (Gandar, in press).

On the basis of scant information available, we estimate that perhaps two-thirds of this fuelwood is obtained from natural woodland sources, particularly savanna. The bulk of the remainder comes from plantations, woodlots, by-products of commercial forestry, and alien invasives.

The total area of South Africa covered by woodland, shrubland, and forest (including plantation) of any description is some 92 million hectares (Millington et al, in press). This gives an estimated sustainable annual yield of some 54 million tons of wood (op cit). At the macro level, this would be sufficient to supply the estimated demand for fuelwood several times over.

Other estimates of wood production in savanna types of woodland indicate that indigenous fuelwood resources are not abundant. Aron et al (1989) estimated that the wood production in savanna within the homelands was 11,6 million tons per year, of which perhaps half was suitable and available for use as fuelwood. Subsequent data has indicated that this is probably an overestimate. Kruger et al (1993) estimated the productivity of indigenous woodland to be 8,4 million tons per year (fuelwood only) in all South Africa. In the latter projection the area of woodland is taken to be 42 million ha or 34% of the total area, made up as follows:

moist woodland 5,5 million ha  
arid woodland 36,6 million ha  
(shrublands were excluded).

Discrepancies between the various estimates of wood yield highlight the fact that there are large gaps in the data base on wood biomass, and particularly on productivity and growth rates. At present there is no reliable wood biomass inventory in South Africa.

## 1.2 SAVANNA WOODLANDS

### 1.2.1 Description

Within South Africa, the savanna woodland regions are the main source of fuelwood. Closed canopy forest, xerophytic grass/shrub associations (karoid vegetation) and macchia (fynbos) contribute minimally in this regard. The term savanna, as used here, encompasses those plant communities containing both a tree and/or shrub stratum and a conspicuous herbaceous layer composed of grasses and forbs.

South African savannas may vary in terms of density and volumes of the woody component, ranging from sparse shrubland to open woodland to dense thicket formations. Climatic and edaphic factors are regarded as the prime determinants of the distribution of savanna woodlands, which generally occupy tropical and sub-tropical regions between the high rainfall canopy forests and semi-arid grasslands.

Two main divisions occur within the savanna woodland biome, namely the more moist, mainly broadleaf savannas generally on less fertile (dystrophic) soils; and the semi-arid microphyllous savannas on more fertile (eutrophic) soils and in which the genus Acacia is well represented (Huntley 1982). In South Africa, this broad division is not always as distinct nor are the woodlands as well developed as in countries to the north (eg Zimbabwe, Zambia) where extensive areas are covered by, for example, tall "miombo"

woodland or Kalahari thornveld. Within South Africa, a mosaic of woodland types is common.

Examples of broadleaf types include Terminalia sericea - Burkea africana woodland, Combretum apiculatum woodland, and the arid Colophospermum mopane woodland north and east of the Soutpansberg range and in the Limpopo River basin. In the north-west of the country, on deep sands, mixed Kalahari thornveld, with Acacia erioloba, predominates. In the south-eastern Transvaal lowveld and Zululand, taller woodlands with species such as Schotia brachypetala, Scleryocarya birrea, Ziziphus mucronata, Trichelia emetica, Albizia adianthifolia and Syzygium cordatum, and well developed riparian woodland occur. In the eastern Cape, a succulent "valley bushveld" transitional thicket is found in the larger valleys.

#### 1.2.2 Land-use mix

Current and recent past land-use in savannas has been predominantly geared towards livestock production, both in the so-called commercial (mainly white) and subsistence (mainly black) areas. (It is termed "so-called" commercial, because a host of favourable interventions, including various subsidies, place a question mark on the overall economic viability of much of the industry.)

Nature conservation is a further significant form of land-use, given the bio-diversity, particularly of large mammals, which characterises this biome.

Cattle however, remain the most numerous and widespread species and, as such, the focus has invariably fallen on the management and use of the herbaceous layer. Elaborate range management systems, involving rotational grazing/resting, have been developed with the expressed aim of maintaining or enhancing the productive potential of the herbaceous layer. This predominantly agro-pastoral approach to savanna management has resulted in the relative neglect of the potential and utility value of the woody

component. Indeed, in the commercial areas, the woody component has come to be regarded as a threat: so-called bush encroachment is regarded as a national problem, seriously reducing the production potential of the rangeland resource and resulting, in some cases, in subsidised programmes of bush control. Recently, there have been some moves towards incorporating browsers (mainly goats) into commercial ranching systems, but problems such as disease, predators, the need for additional small stock fencing and the limited amount of browse available at the lower level, militate against this becoming a widespread or universal practice. The incorporation of indigenous wild ungulate browsers such as kudu, bushbuck and giraffe, and mixed feeders such as impala and eland, is increasing in woodland areas. The impact on the woody layer is, however, limited by intrinsic social/behavioural characteristics of game and, in most areas, by limits imposed on stocking densities by a winter browse "bottleneck" resulting from the deciduous nature of many woody species.

Wood use in these commercial ranching areas is negligible in relation to the abundance of wood. Most wood is used by resident labourers and there is limited export of fuelwood from these areas of abundance. In contrast, in woodland areas situated within the homelands, wood is often a scarce resource, but the woody component has several uses, including construction material, medicines, fruits, dyes and carving wood, and is the major source of energy.

While current approaches to the management of woodlands emphasise the herbaceous component, earlier and traditional systems recognised the utility value of trees, and practices evolved to regulate the use thereof (see Section 2.6). Many of the controls have fallen into disuse under the pressures of social change and crowding caused by racial policies.

### 1.2.3 Dynamics of woodland ecology

The amount and nature of the woody component of savanna woodlands is influenced by the prevailing driving forces. Fire, large herbivores (especially elephants in natural systems) and use of wood by people, all influence the density and floristic composition of woody vegetation.

Under the prevailing commercial cattle ranching systems, large indigenous herbivores have been largely eliminated and replaced by a single grazing species, cattle. Compared to former times, particularly during the iron age and the early stages of European settlement, there has been a marked reduction in wood utilisation. The presence of cattle on rangeland, year in and year out, militates against the build-up of a herbaceous fuel load able to generate the type of hot fire needed to achieve a kill of woody plants. Trollope (1990) suggests that a fuel load of some 4 tons per ha of herbaceous material (with a low moisture content, ignited when relative humidity is less than 30% and air temperature is 25-30°C) is needed to generate a fire which will achieve an effective kill of woody plants.

The factors described above favour an increase in the woody component. The so-called bush encroachment problem results. On the other hand, in moist savanna regions, herbaceous matter accumulation is often sufficient for frequent firing of such woodlands, thus reducing the regeneration rate of woody vegetation, as fires are most effective in killing seedlings and small woody plants.

The main implication of these dynamic processes is that certain management steps can be taken to "push" the woodland in a desired direction, depending on the land-use objectives. Should sustainable wood harvesting become a major objective, then the woodland can be "held" somewhere near an optimal tree/shrub density by formulating and applying a suitable burning regime, manipulating livestock and other herbivore grazing and browsing

pressure, and implementing a controlled, selective wood harvesting programme.

#### 1.2.4 Development options

We suggest that the current land-use mix in savanna regions is unlikely to change markedly in the near future. There is an inherent upper limit or production ceiling in terms of agro-pastoralism, dictated by climatic and edaphic constraints. The total contribution of rangelands to the GDP is of the order of 2%, although they cover some 80% of the country. The opportunities for increased productivity, incorporating fertilisation and irrigation on a sustainable, economically viable basis, are limited. Fiddling with veld management systems geared primarily towards the herbaceous layer similarly offers little scope for major increases in productivity. The increasing incorporation of wildlife exploitation into the land-use mix does offer opportunities for deriving added value from the savanna resource base, but the land-use mix is unlikely to change dramatically within the near future. This implies that present fuelwood potential will not change much.

Future development initiatives in savanna seem likely to be geared towards increasingly incorporating the woody component into the overall production system, thereby obtaining further added value from the resource base (rather than treating it as an expensive problem). From a policy perspective, interventions or incentives which facilitate any such initiatives are indicated.

### 1.3 LAND-USE REGIMES

The sections that follow address factors associated with the sustainable use of fuelwood under three broad land-use regimes, each of which is made up of a spectrum of land-use practices. These land-use regimes are:

- \* communal lands;
- \* normally conserved areas under a conservation authority;
- \* commercial ranching in freehold areas.

In communal lands, a further subdivision is recognised between ordinary grazing commonage where the traditional systems of tenure and access to resources apply (in theory, at least) and Resource Management Areas in which changes have been introduced in planning and management aimed at sustainable resource use. There is actually a continuum of possible resource management strategies and the dividing line between ordinary grazing commonage and Resource Management Areas is blurred.

## SECTION TWO

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### COMMUNAL AREAS: TRADITIONAL COMMONAGE

#### 2.1 POTENTIAL BENEFITS OF WOODLAND IN COMMUNAL AREAS

The term "communal" is used here to refer to areas which all members of a given community are entitled to enter and use the free and common resources. Access to the resources may be entrenched in the traditional land rights, but it is not necessarily free and unrestricted access. Customary controls which regulate the use of certain resources are discussed below. The communal nature of these areas does not result inevitably in the "tragedy of the commons" scenario (Cousins 1992), though elements of that syndrome may be seen where regulatory customs and practices have been eroded. In Resource Management Areas, access may be more severely regulated, but the basic principle still applies that the common resources belong to the whole community and should benefit all its members.

Woodlands in communal areas provide a wide range of products and benefits;

- \* wood for fuel, construction, fencing, carving and woodwork and, in some cases, for high value timber;
- \* food: fruit, wild vegetables, mushrooms, honey and various insects and animals;
- \* in some areas, ilala palms (Hyphaene coriacea) provide sap for brewing and fronds for basketry;
- \* rope from the bark of Acacia tortilis in particular;
- \* medicines from a wide variety of plants;
- \* dyes from Euclea species, Schotia brachypetela and others;
- \* fish poisons from Euphorbia species;
- \* grasses for thatching and weaving;
- \* grazing for livestock which yield benefits including draft, meat, milk, skins, manure, cash, savings and perhaps social and cultural benefits.

The value of all the benefits has been estimated for woodland in Zimbabwe, but estimates vary widely depending on the basic assumptions and methods of economic analysis (Bojo 1993). A study based on the market prices valued the benefits at Z\$200 to Z\$300 per hectare per annum at 1992 prices (op cit). However, a contingent valuation analysis, whereby relative importance is placed on woodland and non-woodland items, yielded estimates of only Z\$24 to Z\$94 per hectare per annum (Campbell et al 1991, quoted in Bojo 1993). The latter estimate is equivalent to Z\$120 to Z\$470 per family per annum, since the study assumes 5 ha of woodland per family. (Z\$1.00 is approximately R1.60)

All households are able to derive benefits from the resource. There is evidence that poorer households are more dependent on some common resources, namely fruit (Bradley and Dewes 1993) and fuelwood (May et al 1993) than the wealthier households. This highlights the importance of woodland resources in meeting the basic needs of the poorest. On the other hand livestock ownership is characteristically skewed: the majority of families, particularly the poorer ones, own less than the mean number of head per family. The grazing resource is inadequate for all families to hold sufficient animals to meet their primary needs.

Elsewhere in Africa, there has been a shift in emphasis in forestry to give greater consideration to options for the management and conservation of indigenous woodland. There is greater appreciation of the value of the indigenous woodlands and concern that excessive utilisation is causing degradation of the woodland. New policies are being aimed at enabling rural communities to secure the sustainable utilisation of their own indigenous woodland resources. Although the emphasis of this paper is on the fuelwood resource, this cannot be regarded in isolation from other woodland resources, and from the ecological and management processes which regulate the whole woodland system.

Communal areas, therefore, represent a resource for meeting certain basic needs and for maintaining and possibly accumulating cattle which, in turn, have a benefit stream in which cash earning is a relatively minor consideration.

## 2.2 THE STATUS OF COMMUNAL RANGELAND

There are 14 million hectares of communal non-commercial rangeland. The total annual wood biomass increment from this area was estimated to be 11.6 million tons, of which it is reasonable to assume that half is suitable and available for use as fuelwood (Aron et al, 1989).

By the conventional standards of pasture science, the condition of communal rangeland is generally poor. Stocking rates of livestock are high by commercial management standards. However, over much of the communal rangeland, livestock numbers seem to have stabilised at a level approximating to the prevailing ecological carrying capacity, defined as the level at which a herbivore population will stabilise in relation to available forage. Both sheet and gully erosion occur on a wide scale.

Although the remarkable resilience of savanna rangeland continues to defy prophecies of imminent collapse (C Shackleton 1993a), there are localised indications of irreversible breakdown, and the long term sustainability of intense use by livestock remains questionable.

Rangeland management has continuously confounded rural developers. It is an area which has proved intractable and resistant to innovation. Solutions to the perceived problems of overgrazing seem remote.

## 2.3 CHANGES TO THE TREE COMPONENT IN COMMUNAL AREAS

### 2.3.1 Deforestation: immediate and underlying causes

Deforestation threatens some of the areas in savanna regions under traditional (or so-called tribal) control.

There is a complex web of both immediate and underlying causes. Clearing land for arable and residential areas, the cutting of live trees for building poles, the effects of grazing, browsing and fire are important immediate factors. Underlying factors are found in the socio-economic and political circumstances which surround rural communities. Deforestation is a symptom of poverty and high population densities resulting in an over-dependence on inadequate local resources. This is compounded by a history of rural neglect and apartheid policies (Durning 1990) which have led to high population densities and a high dependency ratio. Furthermore, the policy of betterment planning has led to destruction of wood resources as people and arable fields were relocated, and has also weakened the social cohesion of rural communities.

### 2.3.2 The impact of fuelwood gathering

The extent to which fuelwood gathering is implicated in the process is obscure. Gatherers will go to considerable lengths to collect dead wood before resorting to cutting live trees and, in many areas, little or no live wood is cut for fuel. There, the impact of wood gathering is minimal. However, in other areas, there is considerable cutting of live trees and shrubs for fuel, and the signs of such intensive harvesting may be obvious. These are mainly areas of high population, or areas with mosaic vegetation such that harvesting is concentrated on patches of woodland. Another factor which affects the proportion of live wood harvested, is the commercialisation of fuelwood. Wood sellers may harvest a limited area intensively for a truck load. There is, however, little or no data on the quantities or sources of fuelwood sold in the informal sector in South Africa.

A study of the impact of wood gathering in the area of valley lowveld in Zululand showed the following:

- \* the offtake of wood (including building and fencing material) was roughly equal to the utilisable production;
- \* 8% of fuelwood was cut live;
- \* fuelwood accounted for 92% of all wood taken, but only 41% of all live wood cut;
- \* over a 20 year period, the overall effect of this and other impacts has been to convert open savanna with tall trees to a shrubby type with smaller woody plants: woody aerial cover had increased by 38%, but the number of tall and medium sized trees had been halved (Gandar 1988).

The picture of the impact of utilisation may change according to the measure used to evaluate it. In comparing a heavily utilised area of communal grazing land in the Mhala District (Gazankulu) which had been subjected to wood harvesting for decades with an adjacent protected area, C Shackleton (1993b) found that the utilised area carried markedly lower species richness and number of woody plants, but no significant difference in total wood biomass.

In parts of the Mhala District, canopy cover of woodland has been declining by an average of 0,9% per year over a 34 year period (Schwabe and Martin 1992).

The effect of wood harvesting is not an isolatable factor in these changes. Using a simple stage-structured model to simulate the effects of wood harvesting in an area of the Zululand coastal plain, Cleminson (1993) found that the parameters to which the model was most sensitive were seedling recruitment and seedling growth and mortality. These quantities are affected most by influences such as livestock and fire. In other words, the impact which wood cutters have on the woodland, depends more on other influences which act on post-chopping recovery, than it does on the actual number of trees which they cut.

Wood harvesting, on the other hand, can influence the impact of grazing. There is evidence from Botswana that wood harvesting acts as a brake on bush encroachment induced by overgrazing (Parris and Childe, 1973).

## 2.4 RESPONSES OF SAVANNA WOODLAND TO WOOD HARVESTING

Savanna woodland, unlike forest, which has a high degree of ecological resilience. It is naturally subjected to widely fluctuating rainfall conditions with periodic severe droughts and to hugely disruptive fires from which it recovers.

Most of the trees and shrubs coppice and regrow with compensatory rapid growth, provided the regrowth is not kept down by browsers. The growth rate of trees on commonage in KwaZulu was found to be consistently higher than that of trees in the neighbouring Umfolozi Game Reserve (Gandar 1988), possibly because the heavy utilisation keeps the trees in a younger (or coppiced) more vigorously growing form and also because of reduced competition from grasses.

## 2.5 COMMUNITY INSTITUTIONS IN RESOURCE MANAGEMENT

### 2.5.1 Management of common property resources

The management of common property resources is a political issue which reflects local power relations, since management brings into question the issue of control. The term "community" is sometimes taken to imply cohesion and homogeneity, but there are inevitably different interest groups. Conflicts over property rights and access to communal resources may arise as groups assert their particular interests.

There is now a large body of literature on the subject of common property rights. Analysis of common property problems must take account of the dynamics of conflict and competition between different social groups located in history and social systems (McCay and Acheson 1987 quoted by Cousins 1992). Emphasis is also

placed on economic and ecological factors and the need to see the place of common resources in the context of a larger production system.

The politics of common resources also includes relations between communities and other forms of power and authority, notably the state. Addressing the issue of woodlands specifically, Shepherd (1992b) states that many of the difficulties over trees and forests derive from the State's modification of locally-evolved tenure systems. Local political authority is undermined and land rights simplified to fit national norms. Rights of dispute settlement pass from the local level to a more remote body. However, there is currently a swing back towards the recognition that assets such as woodland may well be more effectively managed and protected by those who live nearby (Shepherd 1992b).

A large body of relatively recent international literature has emphasised the importance of control and management of indigenous woodland and forest to village level institutions and individual farmers, and of management strategies built on local traditions and practices (e.g. Poffenberger 1990, Shepherd 1992a&b).

There are three main components to the management of natural woodland:

- \* planning and decision making;
- \* regulation, administration and implementation;
- \* policing and enforcement.

The institutional arrangements may or may not be the same for all of these functions and there may be involvement of external agencies in one or more of the areas. The crucial issue is that whatever institutions are involved, there needs to be legitimacy and accountability.

Some of the community institutions involved in the management of common resources in South Africa are described below.

### 2.5.2 Traditional Authority (TA): Regional differences

"Traditional Authority" (TA) refers to the so-called tribal authority under a chief or headman. The TA systems differ slightly from area to area, but all are based on hereditary leadership by a chief. While some of the differences are unimportant, there is a significant distinction between traditional authority in the eastern and south-eastern parts of the country, and in the dry extensive western parts. It has been suggested that the differences in traditional authority, differences in settlement pattern and differences in the ecology of the two areas are all interrelated (Preston-Whyte and Sibisi 1975).

Due to the richer resource base in the eastern areas, extended households or kinship groups were able to satisfy much of their needs from the immediate vicinity of their homes. Thus, a pattern of settlement with scattered homesteads arose.

In the drier western areas, this form of self-sufficiency was not possible. Livestock required larger areas of rangeland and resources generally were more dispersed. In this situation, settlements were more nucleated. Villages formed and communities utilised the extensive areas in between. Mobility was important, and households tended to have outposts for herders as well as at their fields.

With the scattered homesteads and dissected terrain of the eastern seaboard making communication difficult, a more devolved authority structure arose. The system of land allocation, for example, was based on the practice of khonsa whereby a newcomer needed to canvass the sponsorship of an established kin group. Although the chief's authority was necessary for a formal allocation of land, the kin group head had a lot of influence in land allocation. There was thus a high degree of autonomy of kin group heads in the control of resources (Preston-Whyte and Sibisi 1975).

In the western areas, there was clearly much more opportunity and need for centralised authority over resources. This was indeed the case, and TA,s were in a more powerful position in relation to resources than their eastern counterparts. The centralised control of resources, together with the village pattern of settlement, created the need and opportunity for mechanisms to involve villagers in decision-making. The kgotla or village forum, under the chief or headman, is a particular characteristic of these communities.

Thus, in the traditional system of the eastern parts, the TA has less influence in resource control, whereas in the west the TA has more influence but, at the same time, is more answerable. In the changing times of late 20th century, the authority of the latter over resources seems to be proving to be the more durable.

### 2.5.3 The future for Traditional Authorities

The suitability of TA,s as vehicles for rural development has been questioned (Daphne 1982, McIntosh 1990). Amongst the points raised are:

- \* leadership is hereditary, not based on merit;
- \* TA's do not have to be answerable to their people;
- \* TA's respond in a reactionary manner to new developments if seen as a challenge to their power;
- \* homeland administrations have usurped some of their powers;
- \* various administrations have allegedly co-opted or bribed chiefs as agents in imposing unpopular laws and regulations;
- \* TA's are inefficient and often corrupt;

While the need for more democratic, responsive and answerable local structures is widely accepted, traditional authorities will not simply wither and die, and indeed may have a positive role to play in a society in transition. Statements from the ANC seem to indicate that the future of the traditional leadership is recognised, though the actual role has not been articulated (McIntosh 1990). The emergence of the congress of Traditional

Leaders of South Africa (Contralesa), which is sympathetic to the ANC, indicates that a significant number of these leaders are not satisfied with the present status quo and recognise the need for traditional authority to adapt to new circumstances.

#### 2.5.4 New community based structures

Community-based organisations (CBO's) are constantly forming at village level around development issues. These include an assortment of farmers' associations, interest groups, women's groups, etc. For the most part, these structures are answerable to a section of the community only and have little or no control over natural resources.

Exceptions are found in the area of water supply, where several village water committees have formed, particularly around spring protection projects in the eastern and southern areas. In the arid areas, provision of borehole water supplies is a state responsibility. Community committees have also formed around the establishment of woodlots with the intervention of an NGO, but these are rare and nearly all "community" woodlots fall under TA's (Gandar 1991).

These water and woodlot committees have an uncertain and sometimes uneasy relationship with TA's. They are most effective where the TA is either co-opted or is very weak.

Sometimes, with NGO intervention, umbrella development organisation have been formed from a number of smaller interest groups, such as Simunya in KwaZulu (Mann and Ndelu 1988) and Ncedisiswe in Transkei. These have a high degree of accountability via the participating groups. They also have fairly wide scope for planning the use of community resources and the allocation of land to projects, but at the end of the day, TA approval is required.

In Ciskei, traditional authority was disbanded in 1990, but the chiefs were retained. Local TA structures (known as Area

Authorities) were replaced by Resident's Committees, but the whole experiment collapsed in the wake of confusion about roles as well as political upheavals (Manona 1990).

A more successful institutional transition occurred in the Inanda area of KwaZulu with the formation of the Qadi/Nyuswa Services and Development Board. This is a representative organisation covering two chiefs' wards. TA's are on the board, but do not dominate it. This sort of mixed solution is a possible model for building accountability into local authority in the short term at least. Solutions which are wholly dependent on TA or completely independent of it do not seem to offer realistic solutions (McIntosh 1990). The viability and legitimacy of new and participatory institutions in the long term will depend largely on the extent to which they can channel services and development. In the Qadi/Nyuswa case, their effectiveness at delivering and administering services is one of the reasons for success.

The range of issues around which CBO's have formed goes beyond development and delivery of basic services. CBO's have emerged around winning rights, resisting removals and other issues of local political importance. The rural CBO's are often politically powerful in their areas, though weak in planning and management, and usually have minimal resources. However, the CBO's are the embryonic forms of future rural administration which will come with the political transition in South Africa. We are likely to see many CBO leaders winning elections to local or regional government in their areas. It is, therefore, critical that the organisational and institutional capacity of CBO's should be developed. There is already a trend among rural development funding organisations to direct funds to CBO's, either directly or through an intermediary.

In Bophuthatswana, on the initiative of Bophuthatswana Parks Board, regional Community Development Organisations (CDO's) have been formed. One of the functions of the CDO, consisting of nominated members of the community representing all interest

groups, is the identification and management of Resource Management Areas (see Section 3.4). Although in an early stage of development, it is envisaged that these CDO's, which operate in tandem with the Traditional Authorities, will have increasing input into the way the renewable natural resources, including wood, are used.

When it comes to planning and management of communal areas, the legitimacy of the institution is of paramount importance. Adequate policing of large areas is not feasible, so the success of any resource conservation or management strategy depends on the involvement of the people in its formulation and the nature of the institutions involved.

## 2.6 TRADITIONAL MANAGEMENT AND CONTROL OF RESOURCES

### 2.6.1 Traditional resource management strategies

Management strategies which require radical changes to established patterns of resource utilisation are almost certainly doomed to failure. It is very important to be aware of and to understand customary practices of resource use and to build on these. Several are undergoing change or falling into disuse and it is also necessary to understand the underlying causes.

There are numerous such practices which have the effect of regulating the utilisation of indigenous common resources (Cunningham and la Hausse, undated). Some may have a deliberate conservation intention, others may inadvertently regulate utilisation. Most important amongst the former are tenurial regulations and/or usufructory rights controlling access to resources. These are or were effected by spiritual or hereditary political leaders. The inadvertent controls include taboos, seasonal and social restrictions, and technical inadequacies.

## 2.6.2 Traditional and customary controls on tree harvesting

In this section we look at some of the ways in which regulation and control is exercised.

### i) Tenure and access

An understanding of the customary practices and systems of access and tenure is important in developing strategies for the management of common resources. Tenure of trees was a strong customary regulatory mechanism. Tenure issues related to trees have not been researched and documented to the same extent in South Africa as they have in some other countries (Fortmann and Bruce 1988), so we have to rely on anecdotal reports.

Trees in the communal areas traditionally belong to the chief or TA. The gathering of dead wood for fuelwood was freely allowed, but harvesting of live trees was forbidden unless specific permission was obtained from the TA, often for a small fee.

In much of KwaZulu, the controls on the cutting of live trees has fallen into disuse, and people are only vaguely aware that these controls still exist in theory (Gandar 1988). This is probably true of many other areas as well. Sometimes a token attempt at enforcement is made by the chief's "police". In some parts of Gazankulu, at least, there is a serious attempt to enforce this traditional custom, with the policing function being taken over by the Gazankulu Nature Conservation Department's rangers. People are aware that they may be arrested for cutting live trees, but this has not eliminated the practice (Griffin et al 1992).

In Gazankulu, too, the issue of access to trees with economic value, is under review (S Shackleton, 1993). Commercial woodworkers use almost exclusively kiaat (Pterocarpus angolensis) which is a fairly common constituent of the communal rangeland. At present, they register as woodworkers with the TA, but the Department of Nature Conservation ranger supervises the cutting, collects the money and certifies the wood as legal. Alternative

systems are under discussion, but what is significant is the involvement of the woodworkers, now formed into an association, in the process of negotiation about their role in the planning, managing and policing of the resource.

The officers of Bophuthatswana Parks Board also supervise the cutting of commercially valuable trees in communal rangeland, particularly tamboetie (Spirostachys africana), which is used for furniture.

An interesting adaptation of tree tenure in response to the commercial value of certain trees occurs in the Maputaland area of northern KwaZulu. The ilala palm (Hyphaene coriacea) has value as a source of fronds for basketry and, particularly, for sap for traditional palm wine. A palm tapper may be granted sole right to all the palms within delineated portions of the communal areas, for which a tribute to the chief is due in cash or kind. This becomes the tapper's own economic resource and it is his (tappers are men) responsibility to manage it sustainably (Cunningham and la Hausse).

When an area of land ceases to be communal and is allocated to an individual for residence or cultivation, the trees thereon become the property of the "owner" of the land, as does the rest of the biotic component, including wild spinach, etc.

#### ii) Inadvertent regulation of tree harvesting

Amongst the customs and practices which inadvertently regulate the impact on the wood resources of communal areas are the following:

Women frequently go out collecting wood in groups, both for conviviality and for safety. As a result, they choose to gather in areas which they do not have to forage so widely that the cohesion of the group breaks up. When a gathering area starts becoming denuded, they will switch, if possible, to another gathering ground.

Gender divisions, which place the task of wood harvesting on women, limit the amount of effort that can go into wood harvesting. To what extent this reduces the amount of fuelwood used and possibly accelerates the switch to other fuels, is a matter of conjecture. However, it is noticeable that the involvement of men in fuelwood harvesting is increasing as the resource becomes more commercialised.

## 2.7 TENURE REFORM DEBATES

There has been an ongoing and unresolved debate about land tenure reform of communal areas. The argument for a freehold system is based on the premise that it is necessary for greater productivity and environmental care, while the argument for communal tenure is based on principles of equity and security for the poorest. It is argued that over-exploitation of resources is an issue of poverty and crowding rather than insecurity of tenure. A purely freehold solution for the present commonage would have obvious adverse social and environmental repercussions if the poorest people were even further dispossessed. In reviewing the issues, Cross (in the World Bank's Agricultural Study in South Africa, in prep.) sees the need for flexibility and responsiveness in tenure reform, with a mixture of land rights and a body of tenant protection law.

The implications for communal areas is that tenure reform should recognise the diverse forms of benefits and the different interest groups. A two- (or more) tiered tenure system of land and resource rights might well be most appropriate: one which recognises the different circumstances of graziers and of the wider community which uses the common resources.

Although circumstances change from place to place and from time to time, ownership of a resource (it may or may not be community ownership) is absolutely fundamental to management, and that recognition of ownership in a public way is a *sine qua non* (Shepherd 1992a).

## 2.8 SOME PRACTICAL OPTIONS FOR WOOD MANAGEMENT

The options for management of the wood component of the communal areas are essentially forms of regulation of the utilisation. In theory, tree planting is also an option, but the practical problems of protecting the young trees are immense.

### 2.8.1 Regulation of the area of wood harvesting

The woodland is divided into blocks which are harvested in rotation for poles and fuelwood, allowing a cycle of intensive harvesting, followed by periods of recovery. This is basically a coppice system or a coppice-with-standards system, in which a few mature trees of the utilised species are left as seed sources for natural regeneration. Such systems are the oldest known wood management systems. There is archaeological evidence of coppice-with-standards systems being used in Europe and the Middle East 5000 years ago.

A management system incorporating a coppice-with-standards system was proposed for the Acacia erioloba - Terminalia sericea woodland of the Matsheng villages in Botswana (White 1979), but there seem to be no subsequent reports or evaluations.

### 2.8.2 Regulation of the time of wood harvesting

Areas may be closed to wood gatherers for periods by decree of the TA, to allow for regeneration. There is hearsay evidence of this in parts of Bophuthatswana, and in Transkei some patches of indigenous forest within communal areas are managed in such a manner.

The larger demarcated forests in Transkei are subject to government regulations which prohibit the cutting of trees and allow only the gathering of dead wood. However, these regulations do not apply to smaller so-called "headman's forest". The headman, or sometimes the sub-headman, has the prerogative to stop harvesting in such forests. The period of closure may be

months or a year or two. While these periods allow a degree of regeneration, the period is too short to allow complete recovery. The system does, however, serve to regulate the offtake of wood averaged over a long period of time. The same system of management is sometimes applied to planted woodlots which fall under a TA (Gandar 1991).

In cases in which a ward contains a few headman's forests, the closure of the forests is sometimes implemented rotationally, thus approximating to a system like those described in 2.8.1 above.

### 2.8.3 Regulation of the material harvested

Control over the cutting of live trees is traditionally vested in the TA, with prior permission being required before live wood might be cut. However, the custom has largely eroded away.

Regulation could relate to quantity, species or size of trees cut, and could be administered on a permit system. Permit systems for wood harvesting are sometimes used to regulate wood harvesting in conservation areas and Resource Management Areas.

A management system on these lines would need:

- \* a harvesting plan based on sustainable offtake (in practice, the cost of research and monitoring in order to match the allowed harvest to sustainable offtake may exceed the cost of growing alternative sources (Muir 1990), so an adaptive rule-of-thumb approach is needed);
- \* a means of implementation;
- \* a means of enforcement.

One chief in KwaZulu claims to encourage people to selectively harvest an invader species, Dichrostachys cinerea (which is a favoured fuelwood species anyway), but it is doubtful whether this has much effect.

#### 2.8.4 Regulation of access

The restriction of access to a group of professional wood harvesters has sometimes been put forward as a management option for forest and woodland management (Muir 1990). This may be appropriate in conservation areas and Resource Management Areas. In communal areas, such a system might well conflict with the goal of the equity, although it need not necessarily do so.

## SECTION THREE

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### COMMUNAL AREAS: RESOURCE MANAGEMENT AREAS

#### 3.1 INTRODUCTION TO RESOURCE MANAGEMENT AREAS (RMA's)

Resource Management Areas (RMA's) comprise a special case of communal area management and many of the planning and institutional issues covered in the previous section are applicable to RMA's.

The main attribute of RMA's is that these are proclaimed as areas for sustainable resource use and are managed as such for the benefit of the whole community. Access to the area may be restricted, but access to the benefits should be equitable and any profits belong to the community as a whole.

The proclamation and management of communal Resource Management Areas is evident in southern Africa. The extent of RMA's in the South African homelands is, however, limited as a result of land pressure caused by resettlement and the various racially-based Land Acts.

In Botswana, fairly elaborate management plans have been drafted for large parts of the country, while in Zimbabwe the CAMPFIRE (Communal Area Management Programme for Indigenous Resources) gains momentum (Martin 1986).

In parts of South Africa, including Bophuthatswana, KaNgwane and KwaZulu, RMA's contribute towards meeting people's natural resource needs (e.g. fuelwood, thatching material, magico-medicinal plants, etc), as well as providing economic and employment opportunities where the commercialisation of woodland products and/or tourism form part of the land-use mix. Where commercialisation has occurred, the emphasis has largely been on the faunal component: for example, in the sale of surplus game to fee-paying hunters. These areas do, however, contain harvestable or saleable plant products including fuelwood.

Although still very limited in extent in South Africa, the concept of such areas may prove to be a useful model for the future.

### 3.2 NATURE AND OBJECTIVES OF RMA's

The approach to organising and managing RMA's may differ in detail from region to region but the common essence is usefully illustrated by reference to the Zimbabwe CAMPFIRE model.

Conceived by the Department of National Parks and Wildlife Management and incorporated into the National Conservation Strategy in 1985, its declared objectives are inter alia to:

- \* initiate a programme for the long term development, management and sustainable utilisation of natural resources in the Communal Areas;
- \* achieve management of resources by placing the custody and responsibility with the resident community;
- \* allow communities to benefit directly from the exploitation of resources within the Communal Area;
- \* establish the administrative and institutional structures necessary to make the programme work.

A useful set of guidelines for the management of RMA's, embracing and summarising all relevant factors, has been developed by the Bophuthatswana Parks Board (Bop Parks) in the form of Project SECURE (Sustainable Environmental Conservation through the use of Resources). The five main principles are:

- \* detailed knowledge of the community;
- \* generation of income, and both financial and ecological sustainability;
- \* the use of community development expertise;
- \* effective communication, which underpins the whole programme;
- \* the establishment of an appropriate formal and registerable institutional framework.

Only 33% of the farms in the sample had any bushveld and an additional 12% had other indigenous species. However, the potential yield of fuelwood from bushveld was on average 430 tons per annum from each farm with bushveld. Taking all farms together, bushveld was responsible for 66% of the fuelwood resources, excluding forestry waste.

## 5.2 FUELWOOD HARVESTING IN FARM MANAGEMENT

The harvesting of fuelwood can be a useful tool in the control of wattle, and some farmers have incorporated it into ad hoc efforts to control wattle. The same principle might apply to indigenous savanna rangeland. Most farmers in the extensive ranching areas perceive bush encroachment as a problem and encourage fuelwood harvesting, some providing workers with saws for the purpose, but generally regard the impact of wood gatherers to be minimal (Gandar 1992).

The impact of wood harvesting on bush encroachment is likely to be more significant where wood cutters with transport take large amounts to sell. This may occur when there are dense rural settlements near commercial ranches with an encroachment problem. Such a situation exists in the Natal Midlands for example, where loads of fuelwood are cut from indigenous acacia species (especially Acacia nilotica) on white-owned farms for use on the African freehold areas, or so-called "black spots" (AFRA 1991).

Some examples have been noted of fuelwood from cattle or game farms in the eastern Transvaal being taken to nearby Gazankulu. There were three different approaches (Dr J Venter, Ecological Consultantancy Services, Klaserie, pers comm). The first had clear management objectives, with wood being cut by a contractor according to strict bush thinning strategy to create a desired woodland structure. The contractor stacked the wood in cords in the veld. Wood merchants then purchased the wood and removed it themselves in their own vehicles. In the second system, there was

#### 4.2.2 Fuelwood in formally conserved areas

The formally conserved area network is well represented in the savanna woodland areas - over 7% of the savanna biome is conserved, compared to the national average of just under 5%. At a rough estimate, the potential contribution of these areas to the fuelwood supply is some 1 to 2 million tons per annum in total. However, their potential impact in this regard lies more in their proximity to resource-poor local communities. For example, present fuelwood harvesting rates in parts of Gazankulu, bordering the Kruger National Park, have been shown to be non-sustainable (Griffin et al 1992).

Just how much of this wood is accessed by rural people is uncertain. Much of it is not recorded. Bophuthatswana, for example, records permits, but does not, at present monitor quantities, though this will soon change. The KwaZulu Bureau of Natural Resources records permits for live-cut building material, but not dead fuelwood.

TABLE 1 gives the rates of fuelwood removal from three reserves where it is measured. While it is risky to extrapolate from such limited data, it indicates that the total fuelwood yield of conserved areas may be of the order of a few thousand tons per annum and most certainly less than one percent of the potential sustainable offtake.

a "one for one" basis with a bale of thatch going to NPB for each bale removed. During periods of drought, hay is cut and supplied by neighbouring communities. Wood is available from measures to eradicate alien invasive species such as wattle, and from bush control programmes. In the latter case, local people are permitted to cut the encroaching bush under supervision and keep the wood (see TABLE 1 below).

Transkei Conservation authorities also permit thatch cutting, and the custom of "teza", the gathering of dead wood, is permitted in forest reserves by law.

In Bophuthatswana, neighbouring communities are permitted to gather dead wood from parks and reserves. A letter of authorisation from the traditional authority is presented to the Park Warden, who issues the necessary permit. Policy is formulated with local communities by means of a Joint Management Committee. Guidelines for sustainable harvesting of resources such as thatching grass, fuelwood and medicinal products, and access to sacred places, ancestral burial grounds situated within the parks are jointly discussed. Around Pilanesberg National Park, this process has progressed to the stage where partnership ventures, in the form of development and management of rest camps, outdoor recreational facilities and entrance gates are being implemented. The community in whose area a particular gate is situated receive a percentage of gate takings and, in some cases, own a share in the local rest camp. Management of such projects is conducted by a formally registered Community Development Organisation, formed for the purpose of managing the funds generated from joint ventures.

The National Parks Board does not permit the removal of any fuelwood from the Kruger National Park.

and peer pressure were overridden (Cunningham and la Hausse, op cit).

Proclamation of conservation areas also often involved relocation of local communities. The extent to which unilateral interventions were rejected by angered local communities is exemplified by the systematic "protest killings" of rhinoceros in the Amboseli National Park by Masai people incensed about the alienation of land for wildlife preservation (Western 1992). Removal and exclusion of people from reserves typifies the eurocentric thinking of the time. Man was seen as external to, an intruder in, "natural wilderness".

#### 4.1.3 Recent policy initiatives

Latterly, a more modern approach of "Conservation by Utilisation" and "Peoples Conservation" has gained acceptance among some conservation agencies, spurred on by the IUCN-UNEP-WWF Strategy for Sustainable Living (Caring for the Earth). Internationally, the concept of Integrated-Conservation-Development Projects (ICDP's) has gained increasing interest and support in principle (Wells and Brandon 1992).

In South Africa, sustainable harvesting of animal and plant products has been permitted in some (but not all) formally proclaimed reserves.

## 4.2 WOOD HARVESTING IN CONSERVATION AREAS

### 4.2.1 Conservation policies related to wood harvesting

Conservation bodies in the greater South Africa have varying policies relating to the harvesting of wood and other products from formally proclaimed areas. Some examples are given below, although it is not a comprehensive list of policies of all conservation bodies in South Africa.

Natal Parks Board (NPB) permits the cutting of thatching grass and reeds on a sustainable yield basis. Thatch cutters operate on

## SECTION FOUR

### FORMALLY CONSERVED AREAS

#### 4.1 OVERVIEW

##### 4.1.1 Description

By formally controlled areas, we mean those areas such as National Parks, and Game and Nature Reserves which have been formally proclaimed as "protected areas" under relevant legislation. Control over these areas is vested in either the National Parks Board of South Africa, the various homeland authorities, and the four Provincial conservation bodies, each with their own legislation. This fragmentation, while undoubtedly causing duplication and non-uniformity, has allowed the emergence of progressive agencies, who have developed policies and strategies reflecting the needs of the developing societies which they serve.

##### 4.1.2 Historical perspective

The proclamation of Reserves or Hunting Areas has a long history and tradition in South Africa. For example, during the nineteenth century, the Zulu king, Shaka, established royal hunting rights in the areas occupied by the present Umfolozi Game Reserve (Hall 1977). Hunting reserves persist in Swaziland today.

Subsequent to the widespread decimation of wildlife which characterised the first few centuries of European settlement, a rearguard attempt at preservation by legislation and proclamation of sanctuaries was implemented during the late 19th and early 20th century. The "big stick" punitive and deterrent approach adopted hardly endeared the conservation movement to the local populace, whose access to and customary use of resources was summarily curtailed. Subsistence harvesting of wildlife products, including fuelwood became a punishable offence. Customary controls, often enforced quite strictly by community policemen

### 3.5 THE FUTURE OF RMA's

RMA's are limited in extent in RSA at present. As SADT and other State land becomes available, various RMA models might be appropriate.

A programme of land redistribution is likely to find that marginal land is more readily available than high potential land suitable for intensive smallholder schemes. RMA models might allow some of the dry savannas to make a contribution towards land equity, although clearly it is not possible to build meaningful redistribution predominantly on marginal land.

None of the land for the present and proposed RMA's in Bophuthatswana has been under any form of communal use or tenure in the recent past. However, the RMA's might also be established on commonage, as evidence by the large (about 10 000 ha) RMA at Nkomazi West in KaNgwane. This is currently being established on the combined grazing lands of four villages. It differs from the RMA described above in that the grazing of livestock is included with the other forms of utilisation, including hunting.

on the initiative of Bop Parks to oversee development in the region, including the RMA. One of the responsibilities of the CDO is to allocate the profits from the RMA to community projects.

#### 3.4.1.5 Current situation

The area has been fenced at the expense of the community, though they obtained donations for some of the materials. At the time of writing, stocking with founder populations of game is about to begin. Bop Parks is "donating" some R200 000 worth of animals, though it is not actually a donation, but part of a belated compensation package for land the Ba Kgatla lost in the establishment of the Pilanesberg Game Reserve.

While broad policy for the area has been agreed, the CDO is formulating some of the details. Mechanisms are still unfolding with regard to, for example, the details of the permit system(s) of access to wood and other resources, and the concession to operate the kiosk.

#### 3.4.2 Other initiatives

Although the Ba Kgatla RMA is not yet fully up and running and proven, there has been spontaneous interest as a result of the perceived benefits of such a model and, at the time of writing there are indications that at least three similar schemes are envisaged by other communities in Bophuthatswana. The interest comes particularly from areas characterised by a strongly skewed ownership of cattle. The RMA model is perceived as inherently more equitable than individual freehold by those already owning cattle. As one Councillor expressed it: "If this land is used for cattle, three or four people will benefit. If we develop it (as an RMA), the whole community will benefit".

#### 3.4.1.3 Plan for the RMA

The plan for the use of the reserve has three components:

- \* Hunting safaris and, outside of the hunting season, game-viewing for tourists. Initially, a rustic camp will serve these visitors. At the same time, a preferential package with lower fees will apply for the local people wanting to hunt. It is anticipated that local demand will account for about 10% of hunting permits, but if its proportion becomes so high as to threaten the viability of the project, the system will be reviewed.
- \* Outdoor recreation facility for local use. This need arises particularly from the fact that many members of the community are weekly migrants and want recreational facilities when they return at weekends. An area has been set aside for high density outdoor recreation with a kiosk, music and picnic area.
- \* Access to natural resources. A permit-based system of access to natural resources such as fuelwood, medicinal plants and thatch will apply. The permits are for regulation rather than income and the cost of the permit scarcely covers the administration cost. Another resource in the RMA available for local people is a deposit of usable (noritic) clay, and a slightly different system of regulation is needed in this case since it is non-renewable and economically exploitable.

#### 3.4.1.4 Management

The TA approached Bop Parks to manage the RMA on behalf of the community, but Bop Parks refused flatly because it conflicted with its policy in regard to community development, which is to assist communities to build the capacity to manage their own affairs. The reserve, instead, is under Ba Kgatla management, with Bop Parks providing advice and appropriate training in park management. A Community Development Organisation (CDO) was formed

In summary, as Leach and Mearns (1988) stated, the critical issue is not so much what rules are applied but the strength of the community institutions which set and enforce these rules.

### 3.4 RMA's IN PRACTICE: THE EXPERIENCE IN BOPHUTHATSWANA

#### 3.4.1 The Ba Kgatla RMA

##### 3.4.1.1 Background and land acquisition

A recent example of the development of an RMA comes from the Ba Kgatla region in Bophuthatswana. The community has demarcated an area of 3600ha for an RMA/game reserve.

The area, about 40km north of Pilanesberg, bought by the Ba Kgatla to establish a game reserve because of the perceived benefits of the Pilanesberg Reserve nearby. A decision was taken, the Kgatla (see Section 2.5.2) to impose a levy of R40 per head to raise the sum of almost R1 million to purchase the land.

##### 3.4.1.2 Feasibility study

The community approached Bop Parks to undertake a feasibility study to look into the ecological sustainability and the economic viability of the project. The study concluded that the project was acceptable on both counts. The most cautious scenario predicted a profit of R6 per hectare per year, or upward of R20 000 per year. The financial projections were similar to those for cattle ranching, but the RMA had more economic benefits. It would create more jobs, more turnover in the local economy, it would be more equitable and serve the whole community, not just a handful of stock-owners, and would provide non-commercial benefits in the form of resources for local use.

no contractor - the fuelwood dealer cut, loaded and removed the wood. Thus, there was less fine control over the resulting woodland structure. In the third example, wood gatherers (mainly women) were permitted to gather dead wood and trim dead branches, which were removed in headloads. The objective in this case was presumably not woodland management.

A large pilot project is proposed for the Thornybush private game reserve with the involvement of the Independent Development Trust. It is estimated that about 17 000 bakkie loads of wood could be cleared from Thornybush in about 14 to 18 months. This will cover an area of roughly 1 800 ha at a cost of roughly R600 per ha. Labour, herbicides and tools make up most of this cost and it is suggested that a few small businesses could be built up around this operation (Davies 1994). Partial cost recovery will be possible through the sale of fuelwood to nearby areas in Gazankulu and Lebowa, wood sales to local wood-craft workers, and charcoal manufacture (op cit).

Sometimes farmers themselves have marketed fuelwood derived from bush clearing, as a luxury item in the cities: "genuine bushveld braai wood". Frequently, they have found that they have not been able to cover the packaging and transport costs. However, there is a well-developed fuelwood trade with professional woodcutters clearing Acacia saligna (Port Jackson willow) and Acacia cyclops (rooikrans) on private land in the western Cape and selling it through formal outlets. It is lucrative, with a turnover of over R20 million a year (Azorin 1991).

## SECTION SIX

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### CONCLUSIONS AND RECOMMENDATIONS

#### 6.1 PRIMARY GOALS

The savanna areas are the main source of domestic fuelwood for rural people in South Africa. Overall the savannas produce substantial quantities of wood, but most of it is on commercial farmland and conservation areas where only a fraction of the potential is used. Meanwhile in communal areas in the homelands, the resource is often over-used and in some areas its long term survival is threatened.

We suggest two main broad policy goals:

- \* to secure sustainability and equitability of use in the communal areas,
- \* to make better use of the under-utilised savanna areas.

#### 6.2 KEY ISSUES FOR A WOODLAND MANAGEMENT PROGRAMME IN THE COMMUNAL AREAS

##### 6.2.1 Social forestry

The management of wood resources in communal areas should be regarded as an integral component of a social forestry programme. Social forestry can be described as the planting and management of trees in populated environments by local individuals, groups or communities.

We recommend that a national programme for social forestry be established and that it be located in the Department of Forestry. However, we recognise that social forestry is multi-faceted, and that arguments could be made out for locating it a department of agriculture, conservation, or rural development.

An associated policy issue will be the establishment of an appropriate institutional framework. Here we merely draw attention to three components:

- \* a national body whose functions would include policy, co-ordination, macro-budgeting and resource allocation,
- \* regional structures for planning and operationalising programmes, integrating social forestry into regional rural development and land-use strategies, rural energy planning and service provision,
- \* building local institutional capacities - issues of ownership and control of resources are fundamental.

#### 6.2.2 The trigger and process for implementing resource management strategies

It is important to focus on what triggers the process of implementing resource management strategies. While there are no simple answers, international experience indicates that the integration of natural resource management into the wider development sphere is a prerequisite.

The starting point is to create the framework for natural resource management to be integrated into the wider development sphere. Sustainable management of resources should be on the agendas of all major rural development initiatives.

There is no simple formula for implementing resource management programmes. Either top-down or bottom-up planning, or a combination of the two, can be viable, depending on local specificities, the content of planning and the macro-environment (Nhira 1992).

There is very little experience to draw on in this area in South Africa, at present. It would therefore seem advisable to direct efforts to supporting innovative initiatives for the time being, rather than formulating a uniform set of procedures for resource management projects.

### 6.2.3 Research on traditional management systems

While we acknowledge and emphasise the importance of building on local or traditional practices in the management of resources, there is limited published material on the subject in South Africa. It has been necessary to rely on patchy and anecdotal information.

Traditional practices are changing. In some cases they are adapting positively to new circumstances, and in others they are being eroded by the influences of modern society and of racial policies. There is no clear overall picture of these practices here.

A co-ordinated programme of research would be needed to rectify this. In the meantime, specific projects will probably require their own surveys into local systems, and how these are changing.

### 6.2.4 Social forestry extension

Changes would be necessary to both the structure and methods of rural extension. Firstly, the divisions between sectors in rural extension (forestry, agriculture, health etc) would need to be bridged to allow a more holistic approach to extension.

Secondly, the conventional linear paradigm for extension - "from research to extension to farmer" - should be questioned. More responsive and participatory approaches are needed so that management of resources and development are, as far as possible, built on appropriate local practices.

### 6.2.5 Support for RMA's

We suggest that support for RMA's requires specialist inputs and should therefore be the responsibility of the appropriate nature conservation authority, which could be called upon should the possibility of an RMA be indicated. This would require a redirection of conservation efforts towards outreach.

### 6.3.2 Commercial farms

There are huge underutilised wood resources on commercial stock and game farms. While there are logistical constraints on its use (particularly distances between source and demand), the amount of fuelwood obtained could certainly be increased. There are two main conditions needed to achieve this:

- \* co-operative farmers with an understanding of the benefits of wood harvesting in a farm management strategy,
- \* groups of wood-entrepreneurs who are trusted by farmers and who have their own transport.

The opportunities for intervention are limited, but the extension services and the Agricultural Unions could help to facilitate the former, and small business development units or NGOs could possibly assist with the latter. In large bush clearing programmes such as the Thornybush project in the eastern Transvaal, there is a role for development agencies (the Independent Development Trust in this case) as brokers, and in funding feasibility studies and planning phases.

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