

# THE SAVE STUDY

**Relationships between the environment  
and basic needs satisfaction  
in the Save catchment, Zimbabwe**



# **THE SAVE STUDY**

**RELATIONSHIPS BETWEEN THE ENVIRONMENT  
AND BASIC NEEDS SATISFACTION  
IN THE SAVE CATCHMENT, ZIMBABWE**

Edited by

B. M. Campbell, R. F. Du Toit and C. A. M. Attwell

Supplement to *Zambezia*, 1988  
The Journal of the University of Zimbabwe

*Editor:* R. S. Roberts

UNIVERSITY OF ZIMBABWE  
1989

© University of Zimbabwe, 1989

**Published by**

**University of Zimbabwe Publications  
P.O. Box MP 45  
Mount Pleasant  
Harare  
Zimbabwe**

**ISBN 0-908307-08-X**

**The authors acknowledge the support of the United Nations Environment Programme in conducting the research for this study.**

**Typeset by University of Zimbabwe Publications  
Printed through Print Brokers (Pvt) Ltd., Harare**

# **CONTENTS**

List of contributors	iv
Acknowledgements	v
Glossary: Latin–Shona plant names	vi
1. THE SAVE STUDY: BACKGROUND AND METHODOLOGY	1
Introduction, objectives, study area, and method	
2. RESOURCE USE AND AGRICULTURAL PRODUCTION	15
Land-use patterns, crop and livestock production, and use of grass and woodland resources	
3. ENVIRONMENTAL DEGRADATION	34
Changes in vegetation, soils and hydrology, and peoples attitudes to change	
4. SOCIO-ECONOMIC ASPECTS	44
Infrastructure, services, household economy, food and health needs satisfaction	
5. LINKS BETWEEN THE ENVIRONMENT AND BASIC NEEDS SATISFACTION	70
6. POPULATION–RESOURCE INTERACTIONS	84
Growth rates, projections and carrying capacities	
7. POLICIES AND PROGRAMMES	99
References	111

## **LIST OF CONTRIBUTORS**

<b>C. A. M. Attwell</b>	Department of Biological Sciences, University of Zimbabwe.
<b>B. M. Campbell</b>	Department of Biological Sciences, University of Zimbabwe.
<b>J. M. Clarke</b>	Forestry Research Institute, Forestry Commission, Harare.
<b>J. A. Codd</b>	Department of Civil Engineering, Napier College, Edinburgh.
<b>R. F. Du Toit</b>	International Union for Conservation of Nature and Natural Resources, Harare.
<b>B. H. Kinsey</b>	Centre for Applied Social Sciences, University of Zimbabwe.
<b>R. H. Loewenson</b>	Department of Community Medicine, University of Zimbabwe.
<b>D. T. Pankhurst</b>	School of Social Studies, University of Liverpool.
<b>I. Reh</b>	Department of Research and Specialist Services, Ministry of Agriculture, Harare.
<b>M. J. Swift</b>	Department of Biological Sciences, University of Zimbabwe.
<b>S. A. M. Van Oosterhout</b>	Department of Biological Sciences, University of Zimbabwe.

This work represents a group effort with the final written document being compiled by the three editors on the basis of contributions from group members. The compilers and contributors for each chapter are identified; the two analytical chapters (5 and 7) were compiled from a workshop document. In a document of this length covering such a wide range of subjects and written by ten authors, there are bound to be differences in opinion; the views and conclusions expressed are not necessarily a reflection of those of all group members. The most serious differences in opinion have been recorded in footnotes by B. M. Campbell.

B. M. Campbell was the project leader and was responsible for the data analysis; B. H. Kinsey finalized questionnaire design; J. M. Clarke and S. A. M. Van Oosterhout organized the major field expedition, trained and supervised enumerators, and together with R. F. Du Toit and D. T. Pankhurst were responsible for the post-coding of the questionnaires. R. H. Loewenson's major contribution was in the early stages of the project (to questionnaire design and to the methodology concerning health and nutrition).

## **ACKNOWLEDGEMENTS**

This book is the culmination of an interdisciplinary project sponsored, for the most part, by the United Nations Environment Programme. Additional sponsorship came from the Research Board of the University of Zimbabwe. The British Council funded the participation of J. A. Codd.

Several people, who do not appear as authors, participated in crucial aspects of the work. We especially thank Mr U. Dabholkar who, as representative of the United Nations Environment Programme, provided administrative support and criticism of draft manuscripts. Prof. M. J. Swift, Chairman of the Department of Biological Sciences, was involved with the project from implementation to completion, and we thank him for his valuable input. Dr S. Cocchi (Technosynthesis, Agricultural and Rural Development Authority) and Ms K. Truscott (Agritex Socio-economic Unit) shared many experiences and ideas during the course of their work in the Save Communal Area. For critical comment on a draft manuscript we thank Prof. M. W. Murphree, Prof. M. J. Swift and three anonymous reviewers. Miss Sioux Harvey typed the original document.

## **GLOSSARY: LATIN-SHONA PLANT NAMES**

<i>Acacia nilotica</i>	muunga
<i>Acacia nigrescens</i>	mukuu
<i>Azanza garckeana</i>	mutohwe
<i>Brachystegia boehmii</i>	mupfuti
<i>Brachystegia glaucescens</i>	muunze
<i>Brachystegia spiciformis</i>	musasa
<i>Colophospermum mopane</i>	masaru/mopane
<i>Combretum apiculatum</i>	mugodo
<i>Dichrostachys cinerea</i>	mupangara
<i>Diospyros mespiliformis</i>	mushuma
<i>Julbernardia globiflora</i>	munhondo
<i>Kirkia acuminata</i>	mubvumira
<i>Strychnos cocculoides</i>	mutamba

# **1 THE SAVE STUDY: BACKGROUND AND METHODOLOGY**

B. M. CAMPBELL, J. CLARKE, R. F. DU TOIT,  
B. H. KINSEY, D. T. PANKHURST\*

## **1.1 Introduction**

Considerable international debate has taken place on the relationship between economic development and its environmental implications (Sandbach, 1980). Historically, developed countries that have single-mindedly pursued economic growth at any price have often discovered that such growth, if it materialized at all, was generally accompanied by direct and adverse effects upon the environment. This led to a polarized view of 'growth' and 'conservation', a view often aggravated by the different time perspectives adopted by 'growth-promoters' and 'conservationists'. Resource economics has tended to stress the maximization of short-term benefits of resource use, whereas long-term, less-quantifiable social and ecological dimensions of resource utilization have received little consideration in this discipline. In contrast, environmental sciences are often concerned with the long-term effects of factors that may show no immediate effect (Dasmann *et al.*, 1974). Resolution of this conflict has subsequently been proposed in the World Conservation Strategy, where conservation is defined as 'the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations, while maintaining its potential to meet the needs and aspirations of future generations' (International Union for Conservation of Nature and Natural Resources, 1980).

In less developed countries the situation is complicated by the fact that underdevelopment is also a major cause of environmental degradation (Tolba, 1977). Social and economic development may contribute to the alleviation of poverty, which in turn may result in decreased environmental impact. In other cases, however, economic growth has not necessarily eliminated poverty, and relative wealth differentials have instead simply been exacerbated. Recognition of this phenomenon led to

\* Compiled by C. A. M. Attwell

the basic needs approach to the development process (International Labour Office, 1976).

### **1.2 The basic needs approach**

There are two qualitatively different approaches to the problem of defining basic needs: a) the basic material needs approach, and b) the basic human needs approach. The former stresses those needs necessary for physical reproduction, while the latter places more emphasis on those features which make life worth living in different cultures. As this latter approach invokes subjective concepts and value judgements for specific cultures, universally valid definitions are impossible. In comparison, material needs are quantifiable, and the basic material needs approach has consequently formed the mainstream interpretation of the basic needs approach. In this study it was considered that only the material needs approach would provide the objective data required to relate the needs satisfaction to the environment. This study focused specifically on two of the 'core basic needs' (Burki, 1980): health and food.

The World Health Organization defines health as a state of complete physical, mental and social well-being, and not merely in terms of absence of disease or infirmity (World Health Organization and Unicef, 1978). In this view, the need for health can be met through the satisfaction of all other needs; the level of satisfaction of health needs will thus be a useful indicator of the degree to which other basic needs are being satisfied. In addition, this study briefly considers other basic needs. Education, transport and marketing systems, even if not regarded as basic needs in their own right, must certainly be regarded as means to facilitate access to other basic needs.

### **1.3 Conservation and development perspectives in Zimbabwe**

#### *1.3.1 Historical perspectives*

Riddell (1978) has reviewed the social and political factors in the apportionment of land by previous governments. Historically, land in Zimbabwe (then Rhodesia) was divided along racial lines by the Land Apportionment Act of 1930. Approximately equal areas of land were designated for White and Black farming although the Black rural population made up over 80 per cent of the total population. The

provision of infrastructure and support services were heavily biased in favour of White farmers, as were marketing and credit arrangements. A strong motivating force for the setting up of the communal areas related to the supply of cheap labour for White capital investment, and hence many measures prevented effective Black competition in agriculture. (For detailed analyses of the history of the communal areas see United Nations, 1980; Phimister, 1977; Roder, 1964; Arrighi, 1970). One result of the Land Apportionment Act was that the majority of the rural population was concentrated in areas of reduced agricultural potential, often lacking essential services. Traditional agriculture had relied on extensive tracts of land on which shifting agriculture could be practised. The restricted land allocation, together with increasing population pressures, rapidly foreclosed this option.

As environmental degradation became apparent, pre-Independence governments devoted considerable attention to environmental concerns, but this was often in isolation from the political, social and economic factors which themselves had contributed to the environmental problems. This period was thus characterized by a relative absence of mutually supportive measures for environmental conservation and poverty alleviation. Indeed, environmental protection measures — sometimes applied coercively — came to symbolize in the minds of the rural population the regime that had appropriated the best land and other natural resources in the first place.

The Native Land Husbandry Act of 1951 (first implemented in 1955) had as its stated objective 'the efficient use of land for agricultural purposes and for conserving natural resources and providing good husbandry'. However, it showed considerable disregard for tribal customs regulating land-use and transfer (Yudelman, 1964). While the Act aimed to intensify production, by making agriculture sedentary rather than shifting, it generated large numbers of landless who were not gainfully absorbed into the towns (Cliffe, 1981). Despite such problems, the Land Husbandry Act contained many sound environmental protection measures, to the extent that some aspects were subsequently incorporated into post-Independence environmental strategies.

### 1.3.2 *Current approaches*

The approach of the present government appears to be more holistic, and

objectives such as the improvement of agricultural production, the generation of employment, and the improvement of education and health services have been explicitly linked in development proposals to programmes aimed at protecting the environment. Not only do major policy statements issued by the Government of Zimbabwe indicate a commitment to environmentally sound development, but governmental support has recently been given to the development of a National Conservation Strategy for Zimbabwe. Policy statements recognize that Zimbabwe's national development task is primarily concerned with the satisfaction of basic needs of the rural poor. 'Strategies are directed primarily to the amelioration of the quality of life for the rural population who are the majority and who have suffered the greatest discrimination and endured the lowest standard of income and service' (Zimbabwe, 1981a). In the sectoral analyses for the *Transitional National Development Plan, 1982/3-1984/5* (Zimbabwe, 1982b and 1983b) a basic needs approach is explicit; the statements 'the provision of adequate and decent housing and housing conditions is a basic need' and 'government recognizes that access to adequate health facilities is a basic right' are but two examples of the development philosophy underlying the Plan.

Environmental concerns are specifically included in two of the fifteen primary objectives spelled out by Government (Zimbabwe, 1981b):

- (a) to develop and restructure the economy in ways which will promote rural development, desired changes in patterns of consumption, technology, exports, etc., and in ways consistent with the most desirable use and conservation of our natural resources and the environment (p. 2); and
- (b) to conserve our natural resources so that production is sustained, to replace renewable resources used, and to exploit our natural resources, especially our non-renewable ones, at rates consistent with the needs of present and future generations of Zimbabweans (p. 3).

This emphasis on basic needs satisfaction, as well as on the sustainability of resource utilization, highlights the need to view these processes as essentially interacting. The literature on environmental changes in African savanna and woodlands is extensive (see, for example, the reviews by Werger, 1978, and Huntley and Walker, 1983); however, much of this research lies outside any socio-economic context. Similarly,

the information available on the satisfaction of basic needs generally lacks an environmental context. Until recent programmes such as Man and the Biosphere (Unesco, 1972 and 1975) and the United Nations Environment Programme's focus on basic needs and the environment (United Nations Environment Programme, 1982; McHale and McHale, 1978; Tolba, 1977), there has been little emphasis on basic needs—environment linkages, apart from anthropologically based studies (see Scudder, 1973 and 1980, for African examples), and generalized statements in geographical texts. This study attempts to focus on both environmental processes and on basic needs satisfaction, and to analyse the linkages between the environment and needs satisfaction.

## **1.4 The Save catchment study**

### **1.4.1 Objectives**

In the light of the above, the following objectives were arrived at:

- (a) to provide detailed correlative analyses of the linkages between basic needs satisfaction and patterns of land-use, with emphasis on ecosystem perturbation and on the changes in the availability of natural resources;
- (b) to collect data on the nature of peoples' perceptions of human—environment interactions, since environmental changes are in part a function of the manner in which the environment is perceived; and
- (c) to specify the economic, social and environmental measures required to promote protection and improvement of the environment in synchrony with the satisfaction of basic needs. A subsidiary objective within this framework was to arrive at estimates of sustainable population densities.

### **1.4.2 Choice of the Save catchment**

In addressing issues related to basic needs satisfaction and environmental change in Zimbabwe, agriculture must form the focal point. Not only do 70 per cent of Zimbabweans live off the land, but the agricultural sector makes a key contribution to the economy. In 1981, agriculture's share in the gross domestic product was nearly 18 per cent, while — with nearly 30 per cent of total formal sector employment — agriculture was

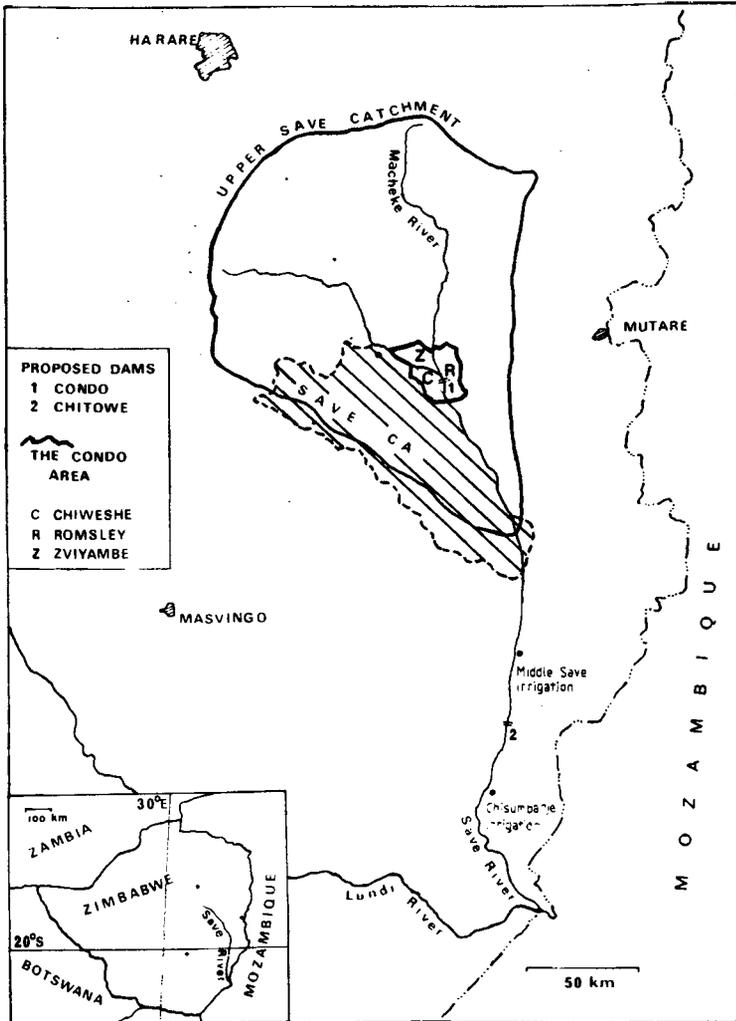
the largest single employer in the country (Zimbabwe, 1982b and 1983b). This sector is an important source of industrial raw materials as well, and in 1981 it accounted for about 35 per cent of merchandise exports.

Justification for basing the study in the Save (formerly Sabi) catchment in south-eastern Zimbabwe is threefold. Firstly, the area is of national importance in Zimbabwe's agricultural development. The Save River and its tributaries are utilized for major irrigation schemes that have been established in Zimbabwe (Williams, 1981). On the Save River, these include the Chisumbanje and Middle Save schemes, established in the mid-1960s (Fig. 1.1). The importance of the Save and associated rivers to the development of the country can be gauged from an annexure to the *Integrated Plan for Rural Development* (Rhodesia, 1979), which includes statements such as 'it has long been realized that the south-eastern lowveld has by far the best potential for extensive irrigation development' (p. 17). Major developments proposed for the Save River include two large dams, Chitowe and Condo (Fig. 1.1), and an expansion of the Chisumbanje irrigation scheme, from its present area of 24 km<sup>2</sup> to 400 km<sup>2</sup>. If developed to its maximum, Chisumbanje will rank among Africa's largest irrigated settlement schemes (Atkins Land and Water Management, 1983). The proposed reservoirs will each have storage capacities of around 3 000 million m<sup>3</sup> and will flood an area of 194 km<sup>2</sup> in the case of Condo and 320 km<sup>2</sup> in the case of Chitowe.

Secondly, the Save catchment typifies many of Zimbabwe's socio-economic and environmental problems. Most of the area falls within agro-ecological regions characterized by unreliable rainfall and sandy granite-derived soils of poor quality (see Section 1.5.4). Human populations exceed the carrying capacity (Whitsun Foundation, 1980), and environmental degradation is now widespread (Whitlow, 1980). Half of Zimbabwe's population lives in the south-east basin formed by the Save and Lundi rivers, and their future is severely threatened by soil loss, desertification and siltation. In addition to these environmental factors, poor agricultural performance in this region can be attributed to lack of credit facilities and input supply, inadequate marketing services, insufficient extension staff and relatively undeveloped infrastructure.

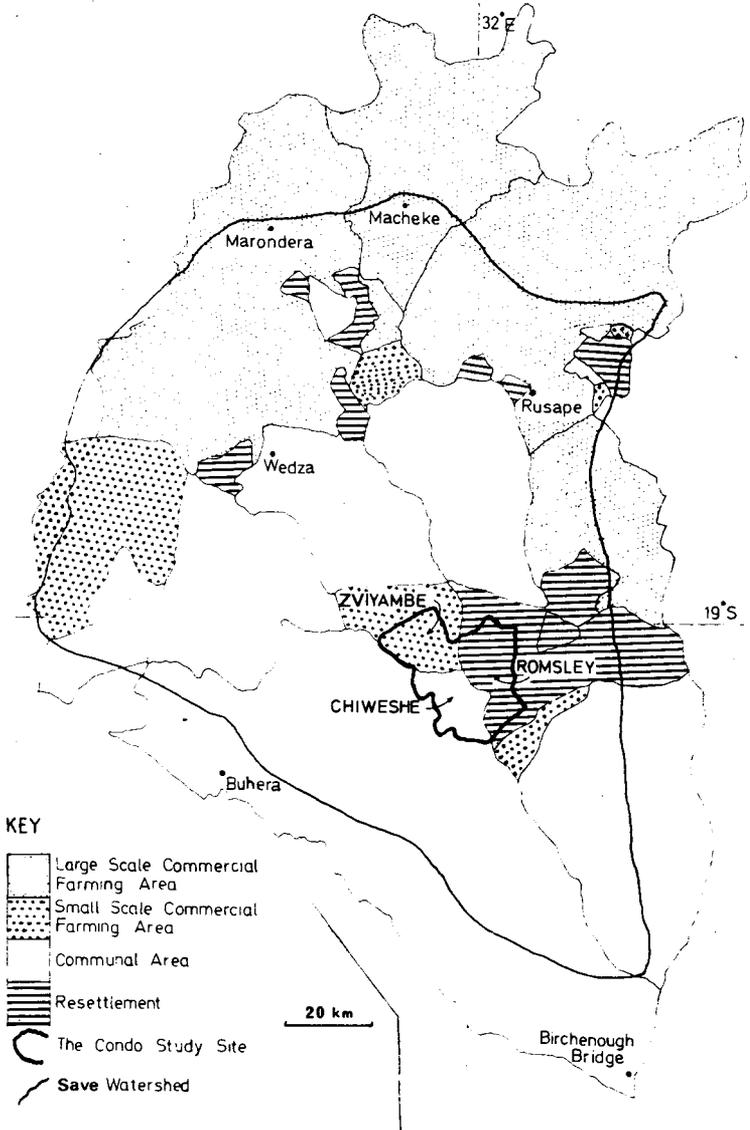
Thirdly, choice of the Save catchment as a study area was based on the availability of three land-tenure systems (Fig. 1.2):

Figure 1.1: THE STUDY AREA



The Condo area consists of the southern half of Zviyambe SSCFA, the western half of Romsley Resettlement Scheme, and the north-eastern half of Chiweshe Ward of Save CA.

Figure 1.2: LAND TENURE SYSTEMS OF THE UPPER SAVE CATCHMENT



- (a) Communal Areas (CAs) formerly the Tribal Trust Lands. These areas were reserved for Black farmers, and land was held under communal tenure. Much of the catchment consists of such Communal Areas.
- (b) Small-Scale Commercial Farming Areas (SSCFAs) formerly African Purchase Areas, where small- and medium-scale free-holding constitutes the tenure system. This was the only land where Blacks were able to purchase and own land individually, the purpose of which was to encourage the development of a limited number of Black commercial farmers (Ndelela, 1981). About 15 per cent of the former African Area in the upper Save is devoted to SSCFAs with 85 per cent being CA — a pattern repeated throughout Zimbabwe.
- (c) Resettlement schemes, initiated in 1980, where land was acquired by the state in the former European Areas (now the large-scale commercial farming areas) on a willing buyer-willing seller basis.

It was assumed that each tenure system would display a specific set of environmental and socio-economic conditions, and that such between-site variation might clarify the nature of the linkages between basic needs satisfaction and the environment. However, this study concentrates on a CA, as this area demonstrates the most severe environmental and socio-economic problems. Data from an SSCFA are included for comparative purposes. The data collected from the resettlement areas are not considered in any detail, as the very recent establishment of such systems had resulted in too great a state of flux for valid comparisons to be made.

### 1.4.3 *Methods*

Much of the agricultural and socio-economic data were derived from a questionnaire survey of just over 150 households, administered during 1983 in a 300 km<sup>2</sup> area (which included a total of about 650 households in a CA and about 200 households/farms in a SSCFA). Here, a household unit is defined as including those members normally living and eating together on the same home-site. This includes 'resident' household members who are more or less permanently in the area, as well as other members who may be working or residing away part of the time. This latter inclusion constitutes the 'self-defined' household (Truscott and Pambirei, 1983), as indicated by the household members themselves

(household composition data can be found in Table 6.1). Although sample sizes are relatively small, the socio-economic data tend to agree very closely with those obtained in a census of all households in the same study area (Truscott and Pambirei, 1983).

The questionnaire examined farming operations, services, facilities, nutrition, health, social organizations and aspects of demography. Statistical analysis of the data was performed via the SPSS computer program (Nie *et al.*, 1979). Chi-squared analyses were performed on discontinuous data, and ANOVA on continuous data. In the interests of brevity, the statistical results are highly summarized, with the following indicated: the test, the degrees of freedom (d.f.), and the significance level. Classes were combined or deleted when expected frequencies were too low to apply the chi-squared test.

Interpretation of the questionnaire results was aided by information generated from less formal discussions with individuals and groups. The discussions were held with two women's groups and two farmers' groups, each comprising about 20–30 persons; the farmers' groups were all male.

Features of vegetation, geology and the extent of arable land were mapped from aerial photographs. Field survey using the Braun-Blanquet technique, in conjunction with numerical classification techniques, were used to derive a classification of plant communities (Campbell and Du Toit, in press).

Methods of demographic analysis require more specific comment, and are discussed separately in Chapter 6.

## **1.5 Study area**

### *1.5.1 Location and tenure systems*

The study area in the upper Save catchment centred on the area of the proposed Condo dam and is here referred to as the Condo area (Fig. 1.1). The Condo area covers some 55 000 ha. It consists of portions of three tenure systems: Chiweshe Ward of Save CA, Zviyambe SSCFA, and Romsley Resettlement Area (Fig. 1.2). Although data were collected in Romsley they have not in general been presented for the reasons outlined above (Section 1.4.2).

Major attention in the study is devoted to Chiweshe Ward, the northern portion of Save CA in Buhera District. Chiweshe is bounded to

the west by the Mavangire Hills, to the south by the Mwerahari River, and to the north and east by the Save River (Fig. 4.2).

Some quantitative parameters of the Chiweshe study site are given in Table 1.1. In Chiweshe, the village boundaries are not entirely spatially defined, their definition being based on traditional clan relationships. Huts and fields are scattered throughout a village area with little tendency towards nucleation of huts, though there are concentrations of huts along the major roads. Fields are farmed individually but the grazing area is communal. The average area of land used for crop production by each household is 3,6 ha (Truscott and Pambirei, 1983). Although Chiweshe is part of a long-established CA, there is considerable dynamism with respect to settlement patterns, as many households have been on their present home-site for less than 10 years.

Zviyambe SSCFA (Fig. 2.1) was established in the 1950s, and most households have therefore been in the area for 25–30 years. Unlike Chiweshe, each landholding is fenced, often with internal fencing of paddocks. There is a single homestead complex on each farm. Study definitions pertaining to Zviyambe are included in Table 1.1. Data on household composition are presented in Table 6.1.

*Table 1.1*

**GEOGRAPHICAL CHARACTERISTICS OF THE  
STUDY SITES IN THE CONDO AREA**

	<i>Chiweshe Ward of Save CA</i>	<i>Zviyambe SSCFA</i>
Total area (ha)	32 700	37 780
Total number of socio-agricultural units	36 villages	570 farms
Area considered for major analysis (ha)*	16 500	17 000
Socio-agricultural units addressed in analysis	22 villages; 650 households	200 farms/ households

\* The area for major analysis is that closest to the Save River.

### 1.5.2 *Geology and soils*

Geologically, much of the Condo area is formed of gneissic granite. This gives rise to fersiallitic soils, consisting mostly of coarse-grained sands overlying relatively unweathered granite. Such sands are inherently poor, both in fertility and in available water-capacity. In addition, dolerite intrusions give rise to reddish fersiallitic soils, which have high inherent fertility together with favourable moisture-retention properties (Thompson and Purves, 1978).

### 1.5.3 *Vegetation*

In its unmodified form, vegetation of the Condo area consisted principally of 'miombo' woodland on gneiss-derived soils. (Campbell and Du Toit, in press). This community has the deciduous trees *Julbernardia globiflora* and *Brachystegia boehmii* as co-dominants, which constituted about 60 per cent of the Condo area. About 20 per cent of the Condo is characterized by land which supported, and to a large extent still supports, a *Colophospermum mopane* woodland community. This community is usually restricted to drainage lines where there is an accumulation of sodium-rich bases and clays translocated from up-slope soils. Such areas are prone to erosion.

Other climax communities are represented in the Condo area, but of this remaining group no single community occupied more than 5 per cent of the total area. These communities are: *Brachystegia glaucescens* community; *Kirkia acuminata* community; *Combretum apiculatum* – *Acacia nigrescens* community; and an evergreen riverine community of varying species composition.

### 1.5.4 *Agro-ecology*

Agricultural potential in Zimbabwe can be broadly categorized according to five natural regions, based on the amount and variability of rainfall (Vincent and Thomas, 1960); local topography and soils are regarded as secondary factors that condition the land-use system recommended for a natural region. In the Save catchment, there is a trend of decreasing agricultural potential towards the south, corresponding to decreasing annual rainfall of increasing variability. The Condo area falls mostly within Region IV; Region III is confined to the north-east corner. The agricultural potential of these regions may be summarized as follows:

- (a) Region III: Rainfall moderate (650–800 mm per annum) but subject to fairly severe mid-season droughts. It is marginal for intensive cropping and is better suited to livestock production.
- (b) Region IV: Rainfall low (450–650 mm per annum), with severe mid-season droughts, therefore only suitable for livestock production and drought resistant fodder crops.

As rainfall is the major agro-ecological determinant, it should be stressed that the study period coincided in part with the drought of 1982/3. This season was one of the worst on record for Zimbabwe, with overall rainfall about 270 mm below normal (Torrance, 1983). Hence, the intensity of specific linkages between needs satisfaction and the environment may have been heightened over the study period.

Agricultural land, once assigned to any specific natural region, may be further classified according to the capability of the land for permanent production. In Zimbabwe, land is classified into one of eight land capability classes, whose numerical code increases as the choice of land-use becomes more limited (Ivy, 1981). For most practical purposes, the original climax vegetation communities can be equated with a specific land capability class, as shown in Table 1.2, which also indicates the relative extent of the land capability classes.

Table 1.2

THE ORIGINAL PLANT COMMUNITIES  
AND THE AGRICULTURAL CAPABILITY CLASSES  
IN THE STUDY AREA

Original plant community	Capability class	Area (%)	
		Chiweshe	Zviyambe
<i>C. apiculatum</i> – <i>A. nigrescens</i> (plains)	II	12	0
<i>J. globiflora</i>	III	50	73
<i>C. mopane</i>	(IV)/V	20	21
<i>B. glaucescens</i>	VII/VIII	3	4
<i>K. acuminata</i>	VII/VIII	1	3
<i>C. apiculatum</i> – <i>A. nigrescens</i> (hills)	VII/VIII	13	0

For the Condo area as a whole, a maximum of about 65 per cent of the land is classed as arable, falling into capability classes II and III. Class II is characterized by moderate limitations to cropping, and Class III is characterized by severe limitations. In land falling within Class III (the most extensive class in the Condo area), cropping should only be done with intensive protection measures. At least 2 per cent of the total land area is devoted to huts and roads; other non-arable features which were not mapped include small rock outcrops and shallow soils. If all these are taken into account, then the maximum land available as arable is probably closer to 50 per cent in Chiweshe and 60 per cent in Zviyambe.

Drainage lines cover about 20 per cent of the Condo area and fall into capability Class V. As such, they are mostly not arable, although small portions fall within capability Class IV. This latter class includes land subject to very severe permanent limitations for cultivation, and cropping would normally be considered only under intensive protection regimes. About 10 per cent of the Condo area is hilly country in either Class VII or Class VIII, both suited only for rough grazing and wildlife.

This book is the culmination of an interdisciplinary project sponsored, for the most part, by the United Nations Environment Programme. The work represents a group effort with the final written document being compiled by the three editors on the basis of contributions from group members.

The Save catchment area in south-eastern Zimbabwe is of national importance in Zimbabwe's agricultural development; it also typifies many of Zimbabwe's socio-economic and environmental problems. The researchers propose eleven general areas in which policies and programmes must be developed in order to raise agricultural productivity, improve needs satisfaction and halt environmental degradation.



**U**NIVERSITY OF  
**Z**IMBABWE  
**P**ublications



This work is licensed under a  
Creative Commons  
Attribution – NonCommercial - NoDerivs 3.0 License.

To view a copy of the license please see:  
<http://creativecommons.org/licenses/by-nc-nd/3.0/>

This is a download from the BLDS Digital Library on OpenDocs  
<http://opendocs.ids.ac.uk/opendocs/>