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Environment, conservation as a social process : the case of hado project in Kondoa district, Tanzania

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ENVIRONMENTAL CONSERVATION AS A SOCIAL PROCESS: THE CASE OF HADO PROJECT IN KONDOA DISTRICT, TANZANIA

BY

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We Drs C.S.L. CHACHAGE & I.S. KIKULA (Supervisors) certify that we have read this dissertation and approve that it should be tendered for examination.

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ABSTRACT

In August, 1973 a soil conservation project Hifadhi Ardhi Dodoma (HADO) was established in Tanzania. Though the project was meant eventually to span the whole of Dodoma Region, initially it was concentrated in the Kondoa Eroded Areas (KEA) - apparently the most eroded area in the country.

The approach of the project to the problem of soil erosion in the KEA was basically technical, involving the construction of contour lands, check dams, production and distribution of seedlings and tree planting. In October, 1979 the project successfully destocked the KEA using a 1968 district by-law.

Technically speaking the project has so far been a great success. Vegetation has regenerated and sediment transports in the rivers have decreased. The sand rivers have been stabilized. The river coarses have become narrower and more stable thus creating extra land for agriculture.

However, this technical success does not seem to have been well received and/or appreciated by the people of the KEA. Up to the time of this study the soil

conservation measures introduced were still being undertaken amid an atmosphere of hostility and clandestine opposition, especially so from the agro-pastoralist Rangi in the KEA. Acts of arson to conserved vegetation were common while illegal grazing and tree cutting was rampant. At times this opposition had even led to murder.

This dissertation attempts to find a sociological explanation to the problem of why a technically successful programme for saving land resources for a people should have been met with such hostility and opposition from the very people it was meant to benefit.

Using both historical and empirical data three possible explanations are tested in this study. These explanations are presented in the theses that:

(a) Institutionalized environmental management is essentially a social process. It determines and is reciprocally determined by the relevant course of social life. This relationship is continuous unless there is an external interference in the concerned ecosystem.

(b) The failure of the KEA people to come to grips with the deteriorating condition of their environment is therefore, construed as resultant of the historical process whereby the indigenous local level institutions that had traditionally performed the coordinating and regulating functions in environmental resource use had been superceded by supralocal socio-political institutions and interests that were not necessarily promoting prudent environmental resource use.

(c) The top-down approach brought to the socio-political scene in Tanzania, in general, and to Kondoa District, in particular, by the various political regimes also facilitated the use of the same approach by HADO and other soil conservation programmes elsewhere. This top-down approach has conversely forced the superceded local-level institutions to operate in the underground, focusing their attention on resisting the conservation programmes rather than on evaluating and appreciating their advantages.

The fact that there exist different degrees of opposition and resistance among the people to the project is explained by applying the concept <u>image discrepancy</u> to the relationship between the HADO

project and the KEA people. Conflict resolution in this respect is seen to depend to a large extent on the reduction of the image discrepancy between the two conflicting parties.

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This work is dedicated to my wife, Mary, and the children whose love and encouragement have always been very inspirational.

C.G.M. Mung'ong'o

Dar es Salaam, March 30, 1990.

DECLARATION

I CLAUDE G.M. MUNG'ONG'O declare that this dissertation is my own original work and that it has never been submitted for a similar degree in any other University.

Signature: Claude G.M. Mung'ong'o Date: 28th July 1990

CHAPTER ONE

INTRODUCTION

1.1: Background to the Problem

As a process of deterioration in soil structure, nutrient composition, moisture retention levels, and general soil removal, land degradation is one of the greatest threats to millions of people in the world, especially in the developing countries, Tanzania included. The problem is of much concern as it strikes at one of the basic elements of the survival of mankind, i.e. the productivity of the land. Consequently, the main theme of most world literature of the 1970's and 1980's on the interrelations between man and his physical environment has been one of global ecological crisis (Forrester, 1971; Commoner, 1972; Meadows, 1972; Gerasmov, 1977). The literature clearly points out that because of the increasing and uncontrolled use or overuse of the natural resources (specifically land) man is continuously jeopardizing his very existence on the planet earth.

The process of environmental degradation in Africa is said to have grown so acute in the last two decades that millions of people have fallen into

deplorable poverty, famine and miserable death (Timberlake, 1985).

By 1977, for instance, rough estimates indicated that more than 50 percent of the total land area in Tanzania was already subjected to degradation and requiresd remedial measures (Tanzania, 1977). Of the areas affected, Dodoma Region, in general, and Kondoa District in particular, had been among the most devastated areas in the country. The most severely degraded areas in Kondoa District were concentrated in the Kondoa Irangi Highlands or as popularly known, the "Kondoa Eroded Areas" (KEA). Details of the KEA are presented in Chapter three.

The major causes of such severe degradation are both NATURAL and MAN-MADE . The natural causes, on the one hand, include climatic conditions such as rainfall patterns and distribution. They also include the nature of soil structures and the type of soil cover. The man-made causes, on the other hand, include deforestation, overstoking, bushfires, bad road drainage systems, inappropriate farming practices and overpopulation (Mbegu & Mlenge, 1983).

The Kondoa Irangi Highlands have been under the scourge of the problem of soil erosion and general land

degradation for many years. The problem started manifesting itself during the colonial period soon after the clearing of vegetation for the tsetse fly eradication campaigns. For the first time the British also attempted to solve it in an organized manner.

During the 1940s and 1950s soil conservation programmes were generally included in various departments in the then Tanganyika Territory. However, to the indigenous people of the territory these programmes and the accompanying measures, e.g. destocking, population resettlements, etc., became embodiments of the general colonial oppression and wickedness. In fact, in places like Ulugulu, Sukumaland and Usambara, soil conservation programmes became objects of bitter political struggle for Tanganyika's independence (Temple, 1972). Thus by the time of independence most of the conservation programmes had become colonial relics. As a result by the early 1970s, for example, some 1,256 sq.km. representing 10% of Kondoa Districts' total land area, had become seriously eroded (Mbegu & Mlenge 1983).

It was in realization of the seriousness of the problem that the Tanzania government decided in 1973 to establish the Hifadhi Ardhi Dodoma (HADO) Project. Though the project was to cover the whole of Dodoma

Region, initially it was concentrated in the KEA - ostensibly the most eroded area in the Region. (Tanzania, 1973: 30). The approach of the project to the problem was basically technical, involving the construction of contour bunds, construction of check dams, production and distribution of seedlings and tree planting. In October, 1979 the project successfully prohibited grazing within the KEA by using a 1968 by-law.

Technologically, the project has been a tremendous success. As a consequence of the denser vegetation that has regenerated due to the project's activities the sediment transports in the streams have decreased; the sandy rivers have been stabilized; the hitherto wide river coarses have become narrower and more stable; the stream flows extend further into the dry season than it used to; and wells that previously dried up in the dry season now yield water permanently (Christiansson, 1988).

However, despite this tremendous technological success the project has not adequately been recognized or appreciated by the people for whom it was designed. The soil conservation measures have been undertaken amid an atmosphere of hostility and clandestine opposition from the Warangi - especially the agro pastoralists - of

the KEA. Acts of arson to conserved vegetation are rampant, while illegal grazing is a common phenomenon. At its worst this opposition has even led to murder (Ostberg, 1986: 52 - 65).

Why did a technologically successful programme for saving land resources for the people of the KEA meet such hostility and opposition? Would it have possibly been carried out in a way that would not have aroused such hostility among its beneficiaries? These are the questions which this study addresses itself to.

1.2: Literature Review and the Argument.

Researches on soil erosion and general land degradation in Tanzania have overlooked the role of man's action on environmental change. Instead, studies on soil erosion and conservation have predominantly been based on the physical aspects of the environment. Studies by Staples (1942), Mitchell (1965), Murray-Rust (1972), Temple (1972), Rapp et al (1972), Christiansson (1972), just to mention a few, are mostly of this nature.

In that respect the problem of soil erosion and conservation in Kondoa is comparatively well documented. The general erosion processes in this particular environment are well described in Christiansson's

instructive monograph on soil erosion and sedimentation in an area south of Kondoa town (Christiansson, 1981). HADO's history and general achievements are detailed in Mbegu and Mlenge (1983) and its evaluation is comprehensively provided in Carl Wenner (1983). Reports on ecological issues have been published by Mushala (1980) and Banyikwa et al (1981). Apart from these field based studies, however, very little has been done from the socio-economic view point. Wilhelm Ostberg's (1986) anthropological study of the KEA and Henry Fosbrooke's several intermittent papers have thrown some light on the issue, but a more comprehensive sociological study is still lacking.

From these isolated studies, however, it is clear that the process of environmental management is firmly hinged on the relationship that exists between man and his environment, especially so on the attitude that man has towards his environment. As illustrated by Glacken (1967) man's attitude towards the environment has been ambivalent. For thousands of years man has considered the earth and its environment both as useful and beautiful. Consequently, while he has tried to conquer and subdue the environment to his wishes and needs, he has also felt a sense of stewardship and responsibility for his use of it (Mather, 1985: 182).

It is this ambivalence in attitude that has led researchers and practitioners in environmental management to adopt a host of different philosophical perspectives vis-a-vis man environment relationships. Irwin Altman (1973), for example, identifies four such strands, depending on the epistemological demands of the researchers and practitioners concerned. The first one of these is what Altman characterizes as the mechanistic model of man. This philosophical strand views man primarily as part of a complex man- machine system. Originating from the American "human engineering" and hardware oriented systems work of the 1950s and 1960s the model views man primarily as a performing task-oriented organism. Hence emphasis in this philosophical strand is placed on man's capabilities for sensing, processing, and interpreting inputs; and on his skills in evaluating and selecting action alternatives. Man's motivations, emotions and interpersonal relations are considered either as of secondary interest or are treated simply as factors which enhance or degrade man's system-like functioning. Environments in this respect are seen as designed for man's use often in a static sense and with relatively few options for them to influence him or alter his functioning in them.

The second philosophical strand is the so-called Perceptual-Cognitive-Motivational one which conceives man as an internal, subjective, inside - the head processor, and is thus more concerned with subjective psychological processes in relation to the environment rather than with overt behavioural responses. According to this philosophical strand environments are the product of divine creation; are beautiful and should be preserved in their pure state.

The third strand is a variant of the foregoing. It is called the Behavioural model because it emphasizes man's overt behaviour rather than his internal psychological processes or subjective states. Man's action on the environment is deemed necessary for his survival and development. Hence man's needs and requirements are stressed at the expense of his feelings, perceptions or cognition. Generally, the strand posits a situation whereby man-environment relations are best understood through the study of overt transactions between man and his physical environment.

This model is well operationalized in Hadin's (1968) "Tragedy of the commons" Thesis. The thesis rests on the theoretical premise that while private goods are supplied on an exclusive basis, i.e. only those able and willing to pay the price are allowed to

use the goods, and that consumption by one individual precludes simultaneous consumption by others, collective consumption goods or public goods such as common grazing and marginal lands are "non-excludable" and "non-rival". As such the tendency among individuals is towards having a strict incentive to ignore the interests of others and overexploit the resources at the expense of other members of the community. In the case of pastoralists the tendency is said to be towards overstocking. this is the "free-rider" problem whereby the incentive to overexploit is imbedded in the fact that while the cost of overstocking (and hence overgrazing) is borne by the whole community the benefits of free-riding accrue to the individual cattle owner alone. Thus in the absence of enforcement from above free-riding will prevail among pastoralists, and overgrazing will be the inevitable result (Hardin, 1968).

Farming on communal lands is also expected according to the thesis, to have similar negative effects. Peasants who are short of land will penetrate into marginal and vulnerable land without any thoughts of the damage that their action will cause. The damages may not affect the individual directly, but the long-term effects on the whole community will be great and possibly irreversible (Oyhus, 1988:48).

The strictly individual incentives underlying this thesis thus provide only one possible solution to the free-rider problem: the privatization of such grazing lands based on the owner's right to exclude others and thus prevent overstocking and overgrazing; degradation and soil erosion.

The thesis as summarized above has, however, several inherent weaknesses that render it deficient in explaining a case of resource misuse such as is manifested in the severe soil erosion of the KEA (Oyhus, ibid.).

The fourth and final philosophical strand is the Socio-Ecological one which conceives man-environment interrelationships as part of a complex ecosystem that is characterized by four related features. First of all, the environment and human behaviour are deemed as closely intertwined. It is conceived that human behaviour cannot be wholly understood independent of its intrinsic relationship to the physical environment, and that the very definition of behaviour must be within an environment, and hence the appropriate unit of study becomes a ' behaviour - environment or organism environment unit.

Secondly, this philosphical strand assumes that there is a mutual and dual impact between man and his environment. Not only does the environment act upon man, but man acts on environments in a true ecological sense. Man becomes an agent of environmental change and not merely a recipient of environmental influences. As a result the environment becomes an extension of man's being and personality.

Thirdly, the man-environment relationship is conceived as dynamic and changing. Territories are conceptualized as shifting, functions as altering, coping and struggling. And lastly, the man-environment relations are seen as occuring at several levels of behavioural functioning but within a coherent system. Accordingly, perceptions, cognitions, feelings and emotional states become internal forces which eventually become translated into several levels of social action (Altman, op.cit.)

Elsewhere known as the interactionist approach this philosophical strand emphasizes the material interdependencies among the group of organisms which form a community and the relevant physical features of the setting in which they are found. Man and his environment, therefore, become parts of a single unit worthy of study (Maro, 1974:25).

Thus more than any other of the strands discussed above the Socio-Ecological one offers the possibility at the theoretical level to bring together and analytically integrate the geophysical system (whereby the physical processes are analysed and explained) and the socio-economic system (whereby the political-economic relationships which underlie and influence the decisions and actions of the users of the environment are analysed). The consideration of these two sets of specificity thus become necessary in any environmental sociology that attempts a coherent and comprehensive investigation of man-environment relationships (Blaikie, 1985; Gadgil, 1987).

This philosophiscal strand is best operationalized, for example, in Prof. C.F. Runge's (1981) "Assurance Problem" Hypothesis. Unlike the "Tragedy of the Commons" Thesis illustrated above the Runge Hypothesis sees the major problem in environmental use or misuse as one of uncertainty about other people's actions rather than the predominance of individual incentive to use this common resource in a profligate manner. In summary the Hypothesis assumes that:

(a) Profligate use of a common resource depends on expectations, i.e. expected profligate use of a resource by others may lead to one's profligate use

of that resource; while expected prudent use may lead to one's similar behaviour. No single tendency dominates.

(b) Profligate use of a common resource results from expectations which are not coordinated by the existing rules and/or customs, or in which these rules and/or customs promote profiligate use.

(c) Enforcement from above is sufficient, but not always necessary. Necessary solutions involve rules and agreements made at the community level and maintained in the interest of coordination.

(d) Hence institutional prescriptions will vary according to the historical context, the cultural traditions, and the biophysical resources of the community involved.

According to the Hypothesis then any resource use patterns are a funtion of both the community's culture (i.e. the nature of the socio-economic systems; the socio-political relationships that underlie and influence the decisions and actions of the resource users in the concerned areas) and the geophysical system (i.e. the physical properties and processes of the concerned resources, their spatial variability and

interaction, and their immediate causal variables).

It follows then that the man-environment relationship is a reciprocal function: i.e. when man acts on the environment and influences its development he is at the same time influencing himself through it. As such in the case of the KEA, for example, one would have expected that as the Warangi acted on their land to the point of "hopeless" degradation, that environment should have reciprocated by leading the Warangi into technological innovation and/or the invention of new conservation methods for their land (as in the case of the Wakara of Ukara Island in Lake Victoria, the Irawq of Mbulu, ect.) Yet this did not happen to the Warangi. All conservation efforts on record for the area were initiated, as already shown above, by the government (both colonial and post-colonial). Available evidence shows that even these were and still are not popular among a sizeable portion of the local population, especially the agro-pastoralists. What has led to such a situation?

As an answer to this question and as a mode of investigation this study will test three tentative explanations. It is basically assumed, therefore, that:

(a) Institutionalized environmental management is a social process which determines and is reciprocally determined by the very course of social life, unless there is an external interference in the concerned ecosystem.

(b) The problem of the Rangi as illustrated above is therefore a result of such an anomally. We postulate in this respect that the local level institutions that traditionally performed the coordinating and regulating functions in environmental resource use have been superceded by supralocal socio-political institutions and interests that are not necessarily promoting prudent environmental resource use.

(c) This phenomenon has facilitated the use of a top-down approach by the various soil conservation programmes (including that of HADO) as the only option towards rehabilitation of the bad lands. However, the top down approach has conversely made the superceded local-level institutions to operate in the underground, focusing their attention on resisting the conservation programmes rather than on evaluating and appreciating their advantages.

1.3: Objectives and Significance of the Study

This study has the following four as its main objectives of investigation:

(a) To identify and set in broad perspective the institutional issues that lie behind the problems of land degradation and soil conservation in the KEA.

(b) To identify and explain the reasons that lie behind the agropastoralists resistance to soil conservation programmes as a form of social change in the study area;

(c) To identify and explain the reasons that lie behind HADO's reluctance to change its approach to the problem of soil erosion and soil conservation for the KEA;

(d) To identify and suggest an approach to the conflict that would:

(i) help to mediate and/or resolve the prevailing land use conflicts in the study area, and

(ii) help to mediate and/or resolve potential land use conflicts elsewhere in the region and/or country where similar problems may arise.

In that respect, therefore, this study has both theoretical and practical significance at three different levels. At the local level, it provides a working tool for integrated and multidisciplinary planning and transformation by offering sociological baseline data to the problems of land degradation and soil conservation. At the national level , it aims at contributing to the national theoretical frame of reference for the management and/or resolution of potential conflicts in soil conservation programmes elsewhere in the country. Theoretically, as a study of a concrete historical case, it aims at contributing to the topical and on-going debate on social change, environmental conservation and rural development.

1.4: Methodology

1.4.1 Theoretical aspects.

The questions posed in section 1.1 above cannot, however, be well understood without reference to some form of conflict theory. The duality and reciprocity existing in any man-environment relationship is finally based on the process of labour as a social category. At one level, man's labour forms the basis of the interrelations between man and his natural environment. Marx, for example, is very explicit in this respect when he writes:

> Labour is, in the first place a process in which both man and nature participate, and in which man of his own accord starts, regulates, and controls the material reactions between himself and nature (Marx, 1972: 73)

At another level, however, man's labour also forms the basis of the interrelations between man and his fellow man in the process of production as illustrated in the passage below:

> In order to produce they enter into definite connections and relations with one another and only within these social connections and relations and their action on nature, does production take place (Marx & Engels, 1969: 159)

These two passages in fact throw into relief two contradictory dimensions of man's position in the man environment relationships. At one level there is the dimension of the freely participating individual man in the process of interaction with Nature. But also at another level there is the dimension resultant of the social relations between man and his fellow man in the process of production that bring forth the necessity for organization and thus inevitably the accompanying division of labour and unequal distribution of power (Dahrendorf, 1958). Consequently, these dimensions lead

us to a more complex view of social process, in which man is seen both as an actor who acts and reacts in relation to a multitude of environmental pressures and stimuli. These pressures are simultaneously internal and external to himself in origin, traditional and novel in time depth, and subjective and objective in substance (Cohen, 1962).

In this study we shall, nevertheless, be dealing with only one facet of these stimuli, i.e. that of the pressures for technological change in environmental conservation brought to bear on a rural community in the KEA, and the reaction to these which result from a hierarchical socio-political organization.

The situation chosen is one in which there are conflicts in perception, approaches and standards governing environmental conservation. The centre of the controversy is the confrontation between the HADO project which is bent on using technical solutions to the problem of soil erosion in the KEA, on the one hand, and the agropastoral Rangi people who see the HADO project and its activities as alien elements who are threatening the very existence of their way of life. Each of these two opposing sides is organized around a specific ideological perspective. The HADO project, on its part approaches the problem of soil erosion in the

KEA from a developmentalist viewpoint and adheres to the mythology of progress through technological advance. The agro-pastoral Rangi, on the other hand, want to preserve and protect the indigenous ways of the KEA.

In delineating these two opposing sides and analysing their salient characteristics we shall be using Ralf Dahrendorf's dichotomization of social roles within "imperatively coordinated groups" (Dahrendorf, ibid.) as follows:

(a) The two groups are essentially quasi- groups that are carriers of positive and negative dominance roles, respectively. By "positive dominance roles" we mean the roles to which the expectation of the exercise of authority is attached, while by "negative dominance roles" we mean the roles without authority. In our context then the HADO project are carriers of positive dominance roles, while the agro-pastoralist Warangi are carriers of negative dominance roles.

(b) The bearers of positive and negative dominance roles can organize themselves into groups with manifest interests, unless certain aspects of the conditions of organization, i.e. effective social conditions (e.g. communication possibilities and

recruitment), effective political conditions (e.g. freedom of coalition and association), and effective technical conditions (e.g. economic power, effective leadership and ideology) are not favourable. In our case it appears only the HADO project has a favourable condition of organization.

(c) Interest groups originating in the matter remain in constant conflict over the preservation or change of the status quo. The form and intensity of the conflict is determined by empirically variable conditions of conflict, i.e. the degree of individual or family mobility, and the presence of effective mechanisms for regulating social conflicts.

(d) The conflict among such interest groups eventually leads to changes in the structure of social relations through changes in the dominance relations. However, the kind, the speed, and the depth of this development also depends on empirically variable conditions of structural change, such as the capacity of holders of positive dominance roles to stay in power and the pressure potential of the holders of negative dominance roles.

The analysis to follow will closely adhere to this theoretical frame of reference and will be organized around a theoretical schema first suggested by Gunnar Myrdal (1944) as a method for the description and analysis of causation between repression and rebellion, and as further developed by Alfred Willener (1964) in his study of managerial resistance to change in the French Steel and Iron Mining Industry.

1.4.2: Sampling Strategy and Data Collection Methods:

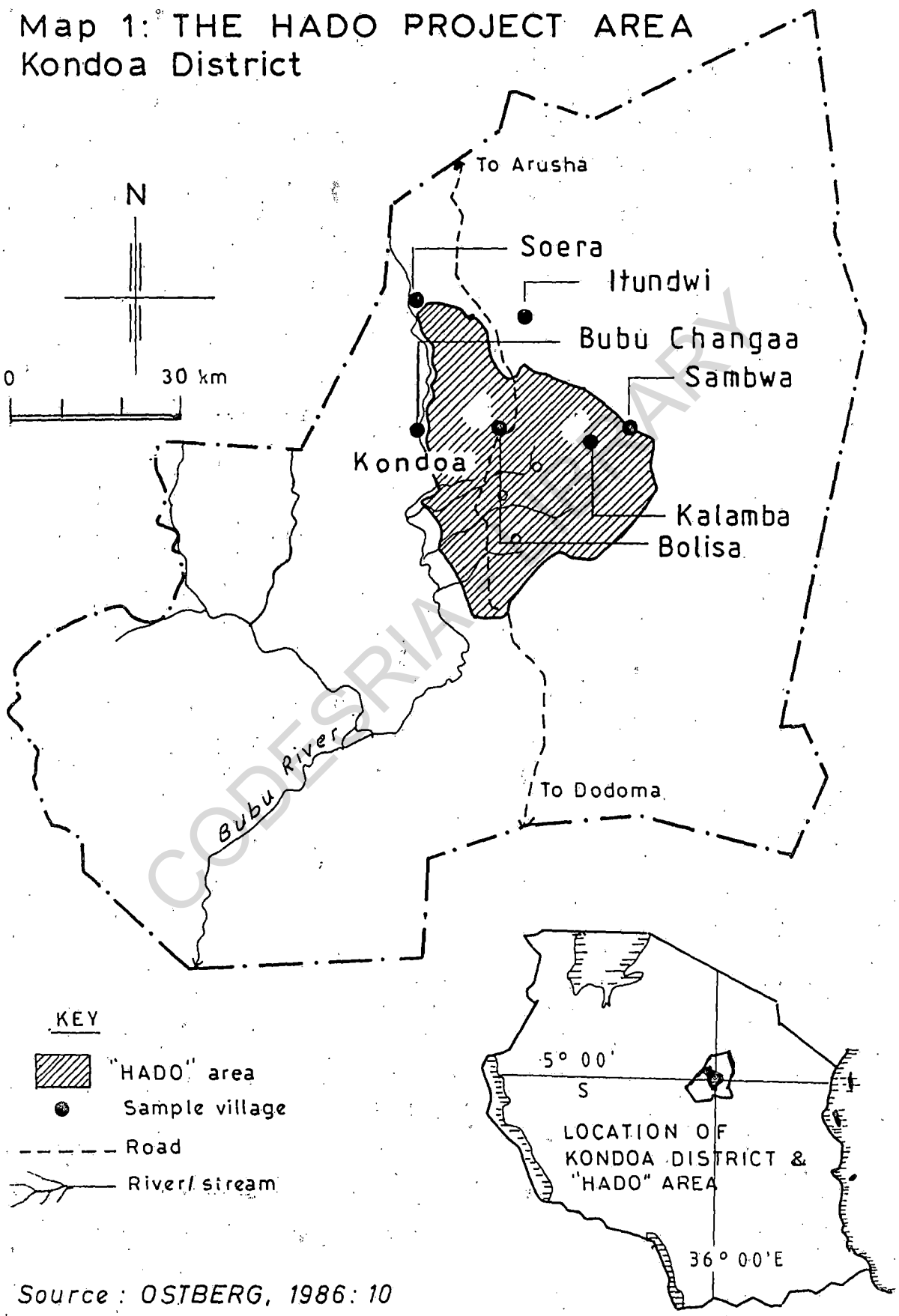
The sample was drawn through a multi-stage stratified sampling procedure. In the first stage a list of all villages in Kondoa District was made and later the villages were categorized into three analytical clusters labeled "KEA Proper", "Periphery KEA" and "Outside KEA", respectively. The KEA cluster comprised the core HADO Project areas which have been directly affected by the Project's activities. It was the assumption of this study that the most far reaching effects of the project's activities on the socio-economic and demographic regimes had taken place within this cluster. The Periphery KEA cluster on its part comprised villages located in the areas bordering the KEA cluster. All villages in this cluster are partly within and partly outside the core area of the HADO

Project. As such they form an intermediate stratum in terms of the effects exerted by the Project. Finally, the Outside KEA cluster comprised villages which, although not directly affected by the Projects' interventions, might have experienced some secondary effects of the programme - especially in so far as a majority of them acted in 1979 as recipients of livestock and migrant population from the destocked areas. Essentially, this last cluster was included in the study for comparative purposes.

In the second stage, two sample villages were randomly selected from each cluster. Thus the villages researched on were: Bolisa and Kalamba, Bubu-Changaa and Sambwa, Itundwi and Soera, for KEA Proper, Periphery KEA and Outside KEA clusters, respectively. (See Map 1.)

In the third stage, lists of ten-cell leaders from each of the six sample villages were used to randomly select the households to be interviewed. At least two ten-cell units in each village were selected and, accordingly, all households in the sample ten-cell units were interviewed. Thus the total sample had 165 households out of which 61 belonged to the KEA Proper, 51 to Periphery KEA, and 53 to Outside KEA clusters, respectively.

Map 1: THE HADO PROJECT AREA
Kondoa District



Source : OSTBERG, 1986: 10

Primary data were gathered from the villages using both structured and unstructured interviews. The structured interviews used a Household Questionnaire which was administered to the heads of households. The questionnaire used (see Appendix II) aimed at gathering general socio-demographic information at the household level. Aspects covered in this questionnaire included household size and composition, household economic activities, land ownership, cropping patterns, information about heads of households (e.g. age, sex, education, marital status, religion, etc.) and migration.

Additional primary data was collected through unstructured interviews with HADO officials, district, ward and village level leaders. Other data was collected from resource persons from among the Rangi people. A list of key informants is shown in Appendix III. Information thus gathered included peoples' traditional organization at the village level; land allocation policies and their changing patterns over time; customs, rituals and other known traditional codified knowledge as far as land use is concerned; government conservation policy interventions and their effects over time.

A wide range of secondary data sources were also consulted. Apart from the literature cited in the Bibliography a variety of other sources were used. Official census reports for 1948, 1957, 1967, 1978 and 1988 were used. More useful information was also gathered from official reports and records of such institutions as the HADO offices in Kondoa, the Forestry Division of the Ministry of Lands, Natural Resources and Tourism, and the National Archives. These sources were useful in establishing the existing information about soil conservation programmes and efforts in Tanzania, in general, and in the KEA, in particular.

Analysis of primary data has been done manually on the basis of the broader clusters of the sampled villages i.e. the KEA Proper, Periphery KEA and Outside KEA clusters, respectively. Because the effects of the HADO Project have been largely the same in any one cluster, no attempt has been made to analyse the data at the individual village level. Comparison has thus concentrated at the level of the three clusters with the aim of identifying the different effects of the Project at that level. Emphasis has especially been placed on the socio-demographic variations between households of the three clusters.

1.5: Plan of Data Presentation

This dissertation has been arranged in six chapters. Chapter two offers a historical panorama of the evolution and development of the processes of land degradation and soil conservation in Tanzania. Chapter Three discusses and sets out the socio-ecological features of the environment of the study area; while Chapter Four traces in detail the efforts made by the British administration to arrest the worsening condition of the Kondoa - Irangi Highlands, the shortcomings and eventual collapse of these programmes. The coming of independence and the emergence of the HADO Project are also discussed. Moreover, we consider the socio-ecological changes that have been precipitated by the Project on the KEA environment. Using the historical evidence and survey data provided in the earlier chapters, and using Willener's concept of Image Discrepancy we finally analyse in Chapter Five the nature and implications of the current conflict in the KEA environmental management process. Chapter Six sums up and concludes the argument of the study.

CHAPTER TWO

THE EVOLUTION OF ENVIRONMENTAL DEGRADATION AND CONSERVATION IN TANZANIA.

2.1: Introduction

This chapter considers in historical perspective the evolution of the prevalent environmental degradation and conservation in Tanzania. The aim is to pinpoint the historical context and specificity of the changing land use systems in the country as a whole and in the KEA, in particular. The historical analysis is meant to serve as a support to the Rungian model discussed in the preceding chapter. Also it is meant to act as a background to the discussion that is to follow in chapters Three, Four and Five. The discussion is divided, as a matter of expediency, into three thematic periods, i.e. the pre-colonial situation, the colonial intervention, and the post-colonial aftermath.

2.2: The African Husbandman

Our understanding of pre-colonial socio-ecological conditions in Tanzania has been well enhanced by the work of such writers as Kjekshus (1977), Illife (1969), Kimambo (1969), Sheriff (1979), Allan (1965,) Koponen (1988), etc. Kjekshus, for example, identifies

thirteen farming systems as existing in pre-colonial Tanzania (Kjekshus, 1977: 29-48). Each of these farming systems is shown to have had its own peculiar but relevant man-land relationships.

Inspite of all these varieties of farming systems and their relevant man-land relationships, historical evidence shows that up to the turn of 19th century almost all of these indigenous farming systems had evolved in a precise relationship with the environmental, social and technological conditions of the time and space.

Fosbrooke (1960) reports, for example, that an unidentified race of pastoralists were using the northern part of the semi-arid zone at least 2000 years ago. They discovered and improved permanent water supply systems as those of the deep wells of Naberera, and developed a fine system of trans-humance. Through all this time these African pastoralists proved to be authorities on grass. They had all along known the feed value of different pastures at different seasons of the year for different age groups of their livestock. Stock movement was as a result tuned to regular rhythms based on the availability of water, pasture and the avoidance of disease.

The indigenous agriculturalist, on the other hand, used in most parts of the country up to the 19th century a simple hoe and fire for clearing the land and pasture management. Nevertheless, the available evidence shows that these tools were utilized to the maximum and in a way that facilitated utmost conservation of the environment. Even when the pressures of population growth and increase in numbers of livestock manifested themselves within these systems, the systems always managed to readjust themselves to the changes and redress the imbalance in a true ecological sense (Berry & Townshend, 1973:245; Kjekshus, 1977: 46ff; Kopenen, 1988:219-241).

Examples of such adjustments have been well documented from the people of Ukara Island in Lake Victoria, the Wamatengo of Mbinga District, the Iraqw of Mbulu District, and the Wafipa of Sumbawanga District, among many other peoples of this country.

By mid 19th Century, for instance, the population of the Wakara had already outgrown the limits of their small island. Hence the population density of that ecosystem became and remained very high. But since the island is endowed with sandy soils intensive cultivation could not be practiced without the application of proper agricultural and soil conserving methods. It was thus

that the Wakara came to adopt the anti-erosion measures that have fascinated so many observers of that farming system. Mixed farming, stall feeding of livestock, and extensive use of compost and manure had thus become well known and widely applied farming methods many years before the European contact at the turn of the 19th century. Anti-erosion measures such as tie-ridging and terracing, fencing of gullies, and banking of streams had also been established by the time of the European scramble for Africa (Thornton and Rounce, 1936)

Up to the early 19th century the Matengo of Mbinga had been living on the flat uplands of the present Ruvuma Region. However, with the invasion of the Warlike Ngoni in the middle of the 19th century the Matengo were driven to live in the steep mountain areas of Litembo and other adjacent areas. In order for their livelihoods to be sustained in this new and difficult terrain, Stenhouse (1944) reports, the Matengo were forced to evolve a very elaborate farming system,i.e. the now famous Matengo Pit System, which utilized a system of crop rotation that involved the alternate planting of grain and leguminous crops, and applied a system of fallowing that rested the farms after every eight to ten years.

According to Hartley (1938) The Iraqw of Mbulu had up to the turn of the 18th century been living on the comparatively flat lands of Engaruka. It was the intensification of raids by the hostile neighbours from the northeast and from the southwest that drove the mild Iraqw to the mountainous uplands of Murray and Kainum (otherwise known as Iraqwa Daaw or Mama Isala). To be able to survive in this mountain country the Iraqw had to evolve a farming system that took into consideration the peculiar environment. It was thus that the system of reinforced terracing found all over Iraqwa Daaw was adopted to conserve the precious soil and successfully utilize the humus potential of crop residues. Controlled grazing was also practiced long before the coming of the Europeans.

A slightly different example of spontaneous evolution of indigenous environmental conservation is reported by Lunan (1950) from among the Wafipa of Sumbawanga District in Rukwa Region. Faced with an acute shortage of manure due to an inherent shortage of livestock the Wafipa evolved a method of cultivation that both protected the soils from deterioration and erosion. Popularly known as Mound Cultivation the method followed a rotation between mound cultivation, flat cultivation, and then ridge cultivation. The

system had the advantage that it incorporated the grass in the soil to rot down to fine humus.

As far as the preservation of watershed forests is concerned Banyikwa et al (1979) have reported an interesting instance of traditional codified rules vis-a-vis environmental conservation. They report that there has been a common belief among the Warangi of Kondoa that vegetation on steep hilltops provides a home to the good spirits who guard the Irangi countryside. As such no one can clear this vegetation without incurring the wrath of these spirits. This belief has helped preserve several fully developed woodlands in several parts of Kondoa Irangi. Further discussion on these so-called "sacred grooves" will be provided in Chapter Three.

In line with all these impressive successes there also evolved well organized socio-political institutions that controlled and regulated the exploitation of the environmental resources. The evidence we have shows that most of the societies that evolved such efficient farming systems also had comparatively well developed socio-political systems. Ranging from very large ethnic groups such as the Wasukuma to small groups such as the Wangindo all these societies were politically organized around either chiefships or kinship heads. In societies

with chiefs these leaders had the power to grant land to the various clans and minor officials of their own descrition. At places a system of land ownership akin to the European Feudalism had developed. The Nyarubanja and the Obusi systems of the Bahaya and the Wakerewe, respectively, are examples of this.

In smaller ethnic societies the chiefs had a very minor socio-political role to play. In such societies land was allocated to individual homesteads by the various kinship heads as it was deemed fit and just.

Generally, however, in all these ethnic societies the proper use of land resources was regulated by the application of ideologies based on customs, religious beliefs and other codified forms of local knowledge. Given that the population was still small and that arable land was still abundant the 19th century saw little or no problems at all of land degradation.

In general the scenario drawn from the above examples portrays the African husbandman as an efficient and capable farmer who could identify, evaluate, utilize and finally conserve the available land resources. Where environmental, demographic, or social factors exerted themselves the various peoples were able to adopt themselves to the changes and thus ensured their

survival. In this respect, for example when the population pressure increased the agricultural systems became the more advanced and intensive. Particular care was, however, always taken to maintain soil fertility and prevent soil erosion. Consequently, these systems did not only provide subsistence production of food but also provided surpluses for local and long distance trade. The Ugogo farming system for instance, was capable of yielding important surpluses to the caravan carriers passing through the country. The annual grain demand of the caravans was about 1,200,000 pounds - a large part of this was grown in Ugogo (Kjekshus, 1977: 47). In the final analysis they also facilitated the attainment of sustained development for a future that met with colonialism.

2.3: The External Perturbations

From the middle of the 19th century onwards drastic changes have taken place in the man-land relationships and general environmental conservation in Tanzania. Though these changes in land use can, generally be attributable to the process of "opening up" that was taking place within the various societies during this period (Koponen, 1988: 126-7) specifically they can be traced back to three important socio-political events, i.e. the Rinderpest Epidemic of 1890s,

the pacification campaigns and World War I, and the age of population concentrations. In this section we will consider the effects of each of these events one at a time. In the process we shall also be attempting to establish their aggragate effects on the indigenous societies of this country as a whole.

2.3.1 The Great Rinderpest Epidemic: Considerable disagreement exists among researchers on the recent historiography of Tanzania - especially so on the role the Great Rinderpest has had on the socio-ecological havoc that took place during the last decade of the 19th century. While, for example, Kjekshus (1977:126) and his followers hold that the disease "represents the dividing line between initiative and apathy on the part of a large number of African peoples", Koponen and researchers of his ilk argue that the role of the disease has been overemphasized at the expense of other earlier cattle diseases such as the East Coast Fever and Pleuropneumonia that raged in the country during the same period. Koponen actually maintains that as it is one cannot say with any certainty whether it was the Rinderpest or pleuropneumonia or both or even some other diseases that lay behind the said havoc. He concedes, however, that severe but related cattle epidemics did ravage the country during the last two decades of the 19th century in an area reaching from Ubena in the

south, over Unyaturu, Usandawe, to the shores of Lake Victoria, Ukerewe and Masailand (Koponen, 1988: 168-170).

From our point of view, however, we think it unlikely that two or three different cattle epidemics could have broken out in the same area during the same period. We tend to think that the epidemics were of one and the same disease. And that the disease was Rinderpest as suggested by so many commentators (Mettam, 1937; Ford, 1971; Branagan and Hammond, 1965, etc.) Hence Kjekshus' account would seem to us to be the more plausible.

According to Kjekshus the Great Rinderpest Epidemic first entered East Africa independently via Ethiopia and the Sudan. In both instances its entrance was associated with European wars in the two countries. Once it got itself established the disease spread fast all over East Africa, reaching Tanganyika towards the end of 1890. And its ravages were as widespread. With the decimation of more than 95% of all the cattle in the country the economic backbone of many of the most prosperous and advanced communities was broken. Peoples totally dependent on cattle for livelihood were the worst hit. For apart from the inevitable famines that ensued out of the calamity the epidemic changed the

entire way of life of these proud people. A large number of the Bahima of Karagwe and the Maasai, for example, perished, while those who survived had to do so by begging and/or stealing from their agricultural neighbours. In favourable environments they survived by taking up crop cultivation.

Ecologically, the depopulation of both bovine and people led to vast areas of land formally used for grazing and agriculture to revert to bush; thus facilitating the onslaught and encroachment of the hated tsetse fly and ferocious wild animals. Man-eating lions, for example, became a scourge of the country for at least a quarter of a century (Sinclair, 1979). Where mixed farming had been practiced cultivation became static and inferior. It became more and more dependent on soil mining rather than on conservation. Moreover, the debilitating effects of the epidemic on the human population sort of facilitated the onslaught of other minor but no less serious epidemics such as the small-pox, sand-flea and sleeping sickness during the last years of the decade.

Socio-politically the epidemic had far reaching effects. Inter-ethnically, the epidemic had an equalizing effect among the otherwise stratified societies: as when the proud and powerful pastoral

people came to depend on their weak agricultural neighbours for food and shelter. Elsewhere the epidemic accentuated the already existing intra-ethnical social differentiation. In many areas the surviving cattle became concentrated in the hands of a few powerful chiefs and/or clan headmen. The overall effect, however, was that the epidemic destablized the traditional socio-political structures and relations, and hence facilitated to a large extent a comparatively easy colonial penetration in the country.

2.3.2: Pacification Campaigns and World War I: The advent of colonialism in Tanganyika began in 1884 when large strips of land were granted to Dr. Karl Peters by several local chiefs in exchange with a few worthless presents (Illife, 1969). Due to the pressure of Dr. Karl Peters and the members of the Society of Germany Colonization, Germany officially issued, in 1885, a charter recognizing and extending her protection to all the territory acquired by Peters. Subsequently, Peters formed the German East Africa Company to administer all the lands alienated to him.

Meanwhile, the so-called "Scramble for Africa", i.e. that hasty acquisition of tropical Africa by rival European powers, was at its peak (Coupland, 1968). The

havoc created by the scramble led to the formation, in 1886, of a Delimitation Commission to demarcate each scrambling power's sphere of influence. The Commission's report resulted in the partition of East Africa into German and British spheres of influence. But due to the lack of clearcut geographical boundary limitations the partition agreement was more often than not breached - resulting into serious hostilities between the two colonial powers.

This situation led to a further treaty in 1890 which clearly demarcated each colonial power's sphere of influence. Accordingly, Germany got the area currently comprising Tanzania Mainland, Ruanda and Burundi, and a protectorate was henceforth effectively proclaimed over these territoties in 1891. Germany also took the administrative powers over them away from Peters' German East Africa Company.

The motives for Germany's colonization of Tanganyika were several though related. Germany had become a nation only in 1871 and as a result it started industrializing very fast. The aim was to catch up or even overtake Britain and other industrial nations of Europe. Hence it needed some overseas territories to supply it with plenty of tropical raw materials; the most important being rubber, coffee, sisal, mica and

other useful metals. Germany also needed a secure market overseas in which to sell its excess manufactured goods. In order to facilitate this it made sure it took over all the traditional communication and trade routes in Tanganyika and built a cordon of military stations, roads and railway lines along them (Kjekshus, 1977: 147; Chachage, 1986: 26). Apart from these two motives Germany also needed a territory of its own to which it could export its excess capital and population. This it did by sending settlers to Tanganyika with enough capital to establish plantation agriculture and mineral prospecting.

In fact the encouragement of European settlement in the so-called German East Africa became an integral part of the Kolonial politik of Imperial Germany. Using an Imperial Ordinance of 1895 which declared all unowned land as Crown Land a great part of the northern highlands was alienated to German settlers who subsequently turned it into plantations for such cash crops as coffee, sisal and tea. About 1.300.000 acres of land in the Usambaras, Tanga, Pangani, Kilimanjaro and Meru were thus taken up by European settlers (James 1971:13-15).

For the following fifteen years defacto German rule was, however, established all over Tanganyika by a

series of wars, punitive expeditions and oppressive compaigns which had serious socio-ecological effects on this already epidemic devastated country. For apart from the obvious depopulation effects that these pacification campaigns had on the societies resisting colonization, the forceful procurations of foodstuffs for military purposes and the scorched-earth policies of the German forces laid a greater part of the territory bare and barren (Kjekshus, 1977:142-151). The ecological havoc started by the Rinderpest Epidemic was thus effectively emphasized and made virtually irreversible.

It is therefore no wonder that the German administration had also to commence as early as in 1909 the enforcement of the first ever conservation measures to the agriculture of the indigenous people. Influenced by environmental position reports by Herren Bruchhausen and F. Stuhlmann an area of 277sq.km. for example, was declared Forest Reserve in the Uluguru Mountains. Local people who had shambas within the boundaries of the Reserve were expelled and compensated. The aim of this step was to safeguard constant stream flow in the surrounding lowlands where sisal and rubber plantations were fast being established by European settlers (Temple, 1973: 111-113).

The German attempt to introduce effective rule and sweeping changes in Tanganyika as soon as possible did not, however, go without a reaction from the local people. Many more people came to be filled with bewilderment and bitter resentment to these changes. Consequently, the small group of resident German officials and troops became increasingly isolated in many areas.

To protect themselves from this growing hostility the Germans often acted with swift brutality against suspected rebellion. The event which nevertheless, triggered off the now famous Maji Maji uprising was forced cultivation of cotton as a cash crop in communal farms. Every jumbe or headman in whose area these farms were established was charged with the responsibility of developing the farms with the local peasant labour force. However, the soils in many areas were not good enough to produce a successful crop. Determined to make the scheme work the German officials and their agents forced people on with exorbitant taxation and naked brutality.

Getting fed up with these exploitative and brutal relations the peasants first rose up in arms at Matumbi Hills against their akida and all foreigners of the Matumbi area. That was July, 31st, 1905. But the

peasant uprising could not be confined to Umatumbi alone. By and by it spread to Mahenge, Ungindo, Lindi and Songea in the south, and to Dar es Salaam, Morogoro, and Kilosa in the north. Though the uprising was brutally suppressed in 1907 with the characteristic use of the notorious scorched earth policy in full swing, it brought a drastic revision of the German policies towards their colonies (Were & Wilson, 1972: 209-10).

Forced labour and land alienation were undertaken more cautiously and the colonial state reverted to a policy of "scientific colonialism" (Chachage, 1986:49). One important aspect of these revisions was to de-emphasize settler agriculture in favour of the not-so-fashionable idea that Tanganyika had to remain a peasant colony. The implications of this decision were that henceforth the peasantry were to be subtly separated from the control of the production process and be made to become, so to speak, "proletarianized" despite their continued owning of the land on which they cultivated.

This decision was to augur a grave future for the integrity of the environment. Regulations were introduced to enforce the proper planting, breeding, harvesting and selling of cotton and other such cash crops at the pain of fines and/or imprisonment for the defaulters. And the effects of these measures were

several. In the first place, the temperate agricultural practices and conservation measures imposed on the indigenous population did consider neither the realities of the soils, and climate, nor labour budgets of the concerned societies. Secondly, the formation of permanent cash crop production and the alienation of the best lands to settlers and for forest reserve changed the very basis of the indigenous farming systems. These processes reduced the original fallow period on the subsistence farms and intensified the exploitation of the remaining non-reserved and unalienated lands (Temple, op. cit.). Elsewhere these processes pushed large numbers of peasants and herders onto more marginal and vulnerable lands, resulting in land degradation and increased soil erosion by sheet wash. The overall result was that while at the village level many peasants failed to produce enough food for themselves, serious land degradation and soil erosion started manifesting themselves in several areas of the country.

The environmental havoc described above was to be further aggravated ten years later by the outbreak of the First World War. Once again the people of Tanganyika became deeply embroiled in an externally induced conflict. A considerable number of the able bodied male population was conscripted either as fighting soldiers or as carriers for both the warring

powers. Conservative estimates have it that at any one time about half a million people were directly involved in the war (Kjekshus, 1977: 152)

Apart from withdrawing able labour from direct production the war also had a depopulating effect on the concerned societies. The large death tolls left vast tracts of land prone to tsetse flies and wildlife infestations. At another level, this phenomenon had the effect of concentrating the remaining population on smaller and smaller areas that soon enough became easily degraded and/or eroded. This latter process was to be the harbinger of future state policy for rural development in Tanganyika. It is to the discussion of the various population concentration policies in the country that we turn to in the next section.

2.3.3: The Age of Population Concentrations: Germany renounced all rights over her colonial possessions in favour of the Allied Nations by the Versailles Treaty of 1919. The Allies then agreed that German East Africa, with the exception of Ruanda and Burundi should be administered by Great Britain as a Mandated Territory with effect from 1922. One of the first measures taken by the British was to issue the Tanganyika Order in Council under the Foreign Jurisdiction Act of 1890 which

provided among other things for the acceptance of English Law. According to Article 8 of that Order all rights in any public lands became vested in and exercisable by the Governor in trust of the British Crown. The Governor was empowered to make grants and leases of public lands on behalf of the King (James, 1971:15-16).

On the socio-political front the Mandate imposed an obligation on Great Britain to safeguard the interests and laws of the indigenous people of Tanganyika. As an attempt to fulfill this obligation and as a matter of expediency the British administration implemented the policy of Indirect Rule in the local administration. The policy of Indirect Rule involved the principle that local matters including the administration of justice should be governed by local law and custom and be left to recognised local chiefs with final responsibility to the administrative officers. To the British government this proved to be a very good arrangement in three respects. First, it was economical in that it required very few British administrative staff in the territory. Secondly, and most important, was the fact that it ameliorated local opposition against potentially unpopular measures as these measures would be introduced to the indigenous people by their own leaders. And thirdly, it was a way

of winning the chiefs' and other local leaders' loyality as it facilitated and reinforced their claims to authority (James, 1971: 19-20).

In many areas, however, these chiefs did not command the respect of their people, as many of them did not come from recognised traditional leadership clans. As such many of them were bound to rely more and more on the support of the British administration to stay in power (Kaniki, 1979). In fact the situation came later on to play a great role in a population concentration effort initiated by the British administration and administered by the various Local Authorities.

The history of the British population concentrations and resettlements due to sleeping sickness and/or as a development policy in Tanganyika is well documented in Kjekshus (1977) and Chachage (1986). The discussion which follows borrows heavily from those sources. The loss of cattle due to the Great Rinderpest of the 1890s and the depopulation processes that took place during the following two decades of pacification campaigns, colonial wars and the First World War had triggered off an ecological transformation that resulted in the regeneration of bush over vast areas of the country. This extensive regeneration of bush had facilitated a large-scale advance of the tsetse

fly belt and an increased incidence of human sleeping sickness and animal trypanosomiasis, nagana, that greatly perturbed the colonial authorities.

Using the policy of total tsetse eradication as advocated in the Desart Committee Report of 1914 for Uganda the colonial government embarked on a programme of mass evacuation of populations at risk and resettling them in large-scale concentrations (Kjekshus, 1977: 168ff.). Peasant households living in scattered homesteads in the "tsetse-infested bush country" were brought together in areas which were thought to have fertile soils and permanent water. Apart from halting back the tsetse fly advance these concentrations were also intended to facilitate internal development as centres of education, helath, water and conversion to Christianity. It was also planned that new methods of agriculture and animal husbandry would be introduced to:

> ... induce the native to become a producer directly or indirectly, that is, to produce or to assist in producing something more than the crop of local foodstuffs that he requires for himself and his family (Governor Cameron quoted in Odegaard, 1985: 33-34).

Meanwhile, vast areas of land thus vacated were gazetted as game or forest reserves. The Gombe stream reserve in Kigoma, the Mbulu reserve, the Katavi reserve

in Mpanda and the Selous game reserve in Liwale were all created during this period.

In general, these population concentrations were the first effort by the state in this country to regiment peasant agriculture and natural resources at the lowest level. And for the period 1930-1940 population concentrations remained the favourite rural development policy for the colonial administration. Peasant production was maintained by "a carrot and stick" policy whereby different rules and regulations were imposed on the peasants. Minimum acreage laws were for the first time introduced. Taxes were increased and cooperatives were introduced partly to facilitate the marketing of peasants' crops and partly as a convenient "carrot" offered to the peasants for their production efforts (Odegaard, 1985:38).

Nonetheless, these population concentrations' ecological effects were disastrous. In areas with fertile soils and plentiful of water the population concentrations led to serious overpopulation and overstocking. On the other hand, where new settlements had been established in areas of poor soils no sustainable agriculture could be carried out without the application of exotic agricutural methods (Tanganyika Territory, 1947). So while in general a great majority

of the concentrated population became impoverished and bitter about the schemes the land itself became heavily overutilized and degraded in many places. Thus the ecological transformation that had been at work since the 1890s was hereby effectively bolstered.

Hence by 1930 land degradation and soil erosion had become a real problem in such areas as Usukuma, Ugogo, Irangi, Unyaturu, the Usambaras and the Ulugurus. Though the British administration in 1923 had passed the Land Tenure Ordinance that declared the whole of the lands in the territory to be public lands it does not appear to have taken serious attention to the problem of land degradation and soil erosion until the year 1930.

By that year a new Director of Agriculture, E.H. Harrison, had been appointed. Mr. Harrison had a special interest in matters of soil erosion, which had by then gained prominance in the international scientific fora. As such he was prepared to make soil conservation a matter of priority in his department. The rampant droughts of 1929 which were followed by a season of unusually heavy rains in 1930 only gave him the chance of making his dream come true.

From then on conferences and meetings were held to discuss the situation of soil erosion in the country

and find ways of combating the problem. An advisory committee was formed to advise the different technical departments on the possible measures to be taken to solve or at least alleviate the problem.

Consequently, demonstration plots and conservation orders were introduced in several places, especially in the mountain areas of Kilimanjaro, Uluguru, Usambara, Pare and Meru. The Local Authorities of these places were charged to administer the orders to their people. Meanwhile, experiments were carried out at the Agricultural Research Stations of Mpwapwa, Amani, Ukiliguru and Lyamungu to measure soil and water loss under different types of land management.

The conservation measures so introduced and enforced by the Local Authorities during the 1930s were mostly unpopular among the people. The high handed approach by government officers by exhortation and instruction and by punishment in the local courts for failure to comply with the rules led to some unwilling action in implentation.

Only in a few areas, especially among the Chagga of Kilimanjaro, did years of pressure result into discernible adoption and appreciation of simple conservation measures as a matter of routine in field

cultivation. Apart from the fact that they were hard to work many of the measures were unpopular because they were alien to the acceptable farming practices. In many places they were at variance with the local culture and socio-economic organization while in others the problem of soil erosion itself seemed to be overemphasized in the first instance. In some areas, the people doubted even the very mandate of their leaders to rule and order them to adopt the conservation measures. Many of these leaders had merely been imposed on the people in the name of Indirect Rule and consequently the people deemed them as puppets of a foreign power. They thus found the conservation measures as threatening the traditional socio-cultural system in which the very basis of their subsistence lay, especially so the freedom to control and utilize their land as they deemed fit.

During the early 1940s the British administration became lukewarm; at best they only paid lip service to the idea of conservation. This is understandable especially if one considers the fact that Great Britain by then was in the thick of battle against Germany. It was after 1944, when a favourable outcome of World War II appeared certain, that the situation began to change. From a piecemeal approach to soil conservation the British administration embarked on the initiation of integrated large scale schemes in the worst hit parts of

the country. A comprehensive post-war development plan was drawn for the period 1947-56. 1.25 million sterling pounds out of a projected budget of 19million was allocated to eight agricultural schemes encompassing 68,500 square miles and affecting two million people.

In Sukumaland and at Kolo in Kondoa, pilot areas were set aside for rotational grazing and resettlement schemes. These were the beginnings of the two most important conservation schemes in the semi-arid areas - i.e. the Sukumaland Development Scheme (1946) and the Kolo Rehabilitation Scheme (1948). Another scheme for land management in the plains was the Masai Development Scheme which emphasized the provision of more and better distribution of stock and to enable wet-season grazing to be used for a longer period. It also involved the clearing of tsetse bush.

The other five schemes were for rehabilitation and protection of mountain areas. The main schemes in this respect were the Uluguru Land Usage Scheme, the Usambara Development Scheme and the Pare Development Scheme. Meanwhile, settler agriculture was being encouraged through guarantees on prices for crops produced, minimum returns per area cultivated, financial advances against these minimum returns, and on grants to open up new lands for cultivation.. The financial

lending was done through the Land Bank of Tanganyika (established in 1948).

With the failure of state farms in the Northern Province (wheat), in Central Province (ranching), and in the Southern Province (groundnuts) a renewed interest in peasant agriculture also grew and its development was based on the so-called Focal Approach, i.e the encouragement given to "progressive farmers" who could act as "focal points" to be emulated by the lesser peasants. The African Productivity Loan Fund was therefore established in 1955 to help these farmers. Despite this renewed interest, however, a contemptuous view was constantly maintained of the indigenous agricultural systems, and paradoxically in a majority of the development schemes, plans and projects the conservation element was subordinated to commercial goals.

Despite all these later day efforts by the British administration, most of these agricultural programmes proved a failure. One thing was common in all of them. They all favoured the larger progressive farmers comprising the local chiefs and other rural petty bourgeoisie, while utterly disregarding the wisdom and interests of the ordinary peasant majority. No one within the administration thought of incorporating the

agricultural and environmental knowledge and experience of these people in the concerned areas. Instead complicated sets of rules were attached to cultivation, grazing and eventually to most facets of peasant agricultural life, thus effectively alienating a majority of the people from their own well known environment.

As time went by a hostile reaction to the new agricultural techniques, or to their implications, developed. The hostility came to be expressed through unauthorized political channels and eventually to open defiance and the use of force. The emergent comprador bourgeoisie[1] comprising of an elite drawn from the professions, the workers' movement and the cooperative movement, and acting through the Tanganyika African National Union Party (TANU) did not fail to take this opportunity to discredit the British administration and add one more brick to their struggle for political power (Cliffe 1964; Maguire, 1969).

And thus by 1954 many of the schemes had been disbanded. By 1958 people were busy pulling down many

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1. By "comprodor bourgeoisie" we mean a social group that acts as a social structural mediator between the metropolitan and satellite countries. They are clearly distinguishable by their socio-economic interests and political needs that are in harmony and in firm linkage with those of the metropolis.

of the terraces and banks that had been constructed. Accompanying these processes was the breakdown of extension services and law enforcement efforts in areas such as forest conservation.

2.4 The Internal Perturbations

2.4.1: The Pre-Arusha Declaration Phase: Tanzania achieved its independence in 1961 with a government committed to socialism. For some time after independence there was comparatively little attention paid to soil conservation. Various agricultural schemes did incorporate some conservation measures but this was only at a subsidiary level. The Party TANU had earlier on denounced conservation measures as part of the bad colonial rule. After independence the agricultural extension staff found it difficult to promote soil conservation programmes as an agricultural package among the people. In general government policy became one of non-interference. In areas of land shortage such as in the Usambaras the government actually allowed people to clear forests for agricultural expansion. Meanwhile improved land management and general agricultural development became imbedded in rural development policies known as "improvement" and "transformation" approaches.

Reminiscent of the "Focal Approach" mentioned

above, the "Improvement Approach" aimed to encourage agricultural development through the use of extension services. It involved the progressive improvement in peasant methods of crop production and animal husbandry by working on the peasant on both the psychological and technical planes to induce an increase in his productivity without any radical changes in traditional social and legal systems. It allowed for the continuity of existing social institutions and land tenure systems. Development was to be initiated through improved extension work methods which would encourage farmers to apply new crop varieties and new methods of production. New lands were to be opened up for more modern and mechanized farming.

The "Transformation Approach", on the other hand, involved (like the sleeping sickness concentrations of yesteryears) the establishment of new village settlement where selected peasants would produce cash and food crops under supervision and guidance of agricultural extension workers using modern farming technology. It was a long term programme whereby shifting cultivation would make room for more permanent settlement and more efficient agricultural systems.

In an attempt to establish new forms of agricultural and social organization it envisioned a

radical break with the existing peasant systems in terms of scale of operation, production techniques, and socio-legal structure (Long, 1977:144). Officially launched in 1963 it was expected that 74 villages would be established between 1964 and 1969 with each village holding 250 families (Darkoh, 1989:215). However, the scheme was a failure. Not only was it abandoned because it was expensive to implement; it was also unpopular because it widened the intra-rural income differentials. In 1966 the scheme was finally abandoned. Nevertheless, it had started the recent thoughts on socialization and collectivisation of land tenure.

2.4.2: The Post-Arusha Declaration Phase The drought of 1965 that greatly reduced the output of several important crops, the fall of world prices of sisal, cotton and coffee in the same years, the uncooperative nature of foreign donors, and more important, the deteriorating relations with each of the three major Western countries, Britain, the USA, and Germany, during the latter half of 1964 and through out the first months of 1965 rendered the implementation of the First Five Year Devevelopment Plan difficult if not impossible. It was in response to these problems that the Arusha Declaration of February 1967 that was meant to give the comprador bourgeoisie economic power and set the country on the road to socialism as a strategy for accumulation (Chachage, 1986) was launched.

Development in the rural area was to be achieved through the setting up of ujamaa villages where production and reproduction were to be achieved on a cooperative basis. Land became a common property to be communally exploited and developed. Socialism and self-reliance became the most important ideological basis for the mobilization of the initiative and the enthusiasm of the peasant masses. Each village was to be led by democratically elected leaders who would organize its activities and formulate plans. Each village was treated as a separate political and socio-economic unit where plans would be integrated into district and regional programmes (Darkoh, 1989:217).

The establishment of ujamaa villages was to progress through three stages of development. In the first stage peasants were to move their homesteads together to form villages while they went on cultivating their land on individual basis. In the second stage some form of communal production was to be taken up. And lastly in stage three all activities in the village were to be accomplished on a communal basis (Odegaard, 1985:46).

While most villages developed to the second stage none of them reached the third stage. There were two main reasons for this lack of progress. First of all the concept of ujamaa villagization posed fundamental problems of property rights, especially so in such

relatively developed areas as Kilimanjaro, Bukoba and Tukuyu. In these areas established farms were individually owned and cultivated with coffee trees and other permanent crops. Consequently, no vacant lands could be found for communal enterprise. Secondly, in other areas the introduction of communal farming meant an additional demand on peasant labour which was already in short supply at the critical time in the agricultural production cycle. Hence a conflict of interest ensued between labour required to secure optimum output on the individual farm and labour needed for communal farming (Odegaard, 1985:48).

By 1969 the Presidency became unhappy with the way these ujamaa villages were developing. As a result it issued the Presidential Circular No. 1 of 1969 which virtually reversed the voluntary implementation of ujamaa of 1967 and imposed on it the element of coercion. Living in ujamaa villages thus became a presidential order and ujamaa itself became, as it were, an agricultural policy.

Despite this change of heart on the part of the President things did not turn for the better. With the resultant destabilization of the producers in the agricultural sector there ensued a serious communication breakdown between the state and these social groups leading to a corresponding drop in agricultural

production. It was this crisis that necessitated the formulation by TANU of the Party Guidelines on modern agriculture known as Siasa ni Kilimo of 1972. It was in that document that the state gave due prominence to the problems of soil erosion and land degradation that seemed to be threatening to get out of hand. Though the Guidelines did not facilitate immediate response to environmental conservation they did improve the environmental consciousness of the Party members and their leaders.

At the political level, however, developments were at the same time undergoing a major shift. Backed by international capital the tripartite state[2] was convulsively undergoing a metamorphosis. It was labouriously consolidating itself to promote the extension and intensification of export crop production. This it did, among other things, through the formulation and enforcement of two important schemes: the Villagization Programme and the HADO Project in Dodoma Region.

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2. The Tanzanian state is in this respect construed to comprise three parts, i.e. the Presidency, the Party and the Bureaucracy, that have more often than not been in disagrement on the nature of the development process in the country. For example, while the Bureaucracy has always been economistic, the Party has been for a Maoist like mass line. Meanwhile, the Presidency, especially under Nyerere, has been swinging between those two perspectives precipitating the discontinuities and policy swings that have characterised state action todate.

Officially announced in late 1973 the Villagization Programme started being implemented in 1974. The aim of the programme was to restructure the rural economic and socio-cultural institutions so as to reproduce a relatively stable undifferentiated peasantry that would be engaged in specialized crop production. About eleven million peasants were in this way resettled in about 8000 registered villages situated along major roads, the railways, schools, dispensaries and sources of water.

The environmental effect of that programme was disastrous. Due to lack of proper planning most of these villages were located in areas whose carrying capacity and/or suitability of the land for crop production were unknown. In other areas little provision was made for future expansion. Consequently, several villages became suddenly overpopulated beyond the maximum 600 households envisaged by the Village and Ujamaa Villages Act of 1975. Land degradation in the form of deforestation and soil erosion became the inevitable results (Kikula, 1986). On the other hand, vast tracts of land were left open and at the mercy of tsetse flies and wild animals.

Coupled with the destablization of the peasantry in rural Tanzania land degradation and soil erosion led to serious drop in agricultural production. The

decrease in food production was so serious that the government had to institute in 1975 an emergency food production programme known as Kilimo cha Kufa na Kupona (Farm or Perish). The result was extensive and indiscriminate clearing of land for cultivation. The programme had a very serious impact on the environment an impact that aggravated the problem of land degradation and soil erosion in the country to a point that it could no longer continue being ignored.

2.5: Conclusion

The foregoing discussion has tried to establish that up to the mid-nineteenth century the African husbandman was, contrary to the belief of many people, an efficient and capable agriculturalist who could manage his land resources for sustainable development. Where environmental, demographic or social factors exerted themselves the various peoples were able to adjust themselves to the changes and thus ensure their survival. Things started, however, to go wrong with the eruption of the Great Rinderpest epidemic that decimated about 95 per cent of all the cattle, killed many people through hunger and disease, and left the survivors helpless and debilitated. Nevertheless, it is the ecological perturbations brought about under colonialism that are to a great extent responsible for the phenomena of land degradation and erosion in the country. Pacification campaigns, imperialist wars, and the

enforcement of rapid change weakened the people's hold over nature and led to a substantial disintegration of the ecological balance. Through the colonial administration embarked on a policy of land reclamation and coservation the paradox of colonial capitalism remained, so that in a majority of the development programmes the conservation element remained subordinated to commercial interests.

Things did not improve with the coming of independence. The notion of the superiority of Western ways of agricultural production and land management has always been present in the post-independence developmental thought. The "improvement" and "transformation" approaches, the Villagization Programme, the Siasa ni Kilimo campaign, etc, all have been congruent with the objectives of the former colonial policies. The new agricultural programmes have remained commercial systems designed to incorporate machinery and fertilizers. An interesting example of such programmes and projects is the HADO Project in Dodoma region. Initiated as a land reclamation programme in the semi-arid areas of central Tanzania the project has come to bear all the contradictions of induced social change.

CHAPTER THREE

THE KONDOA ERODED AREA IN HISTORICAL PERSPECTIVE

3.1 Introduction

This chapter describes the geophysical and the socio-historical features of the study area. The aim is to highlight the historical parameters which lie behind the conflict model presented in chapter one and the discussion we shall be having later on in chapter five The chapter is divided into two sections. The first section deals with the geophysical environment while the second deals with the human environment.

3.2: The Geophysical Environment

Kondoa District lies between latitudes $4^{o}10'$ - $5^{o}44'S$ and longitude $34^{o}54'$ - $36^{o}28'E$. The total land area covers some 14.435 sq.km. Of these 1.256 sq.km. form the KEA (Nshubemuki & Mugasha 1986:161). Generally the district is dominated by inselbegs, peneplains and pediment plains that are underlain by Precambrian basement rocks. The altitude and topography of the district have two distinctive features. To the east the district is dominated by more or less flat, vast and low lying plains that stretch into the Maasai Steppe. To

the north-east and north-west the district is dominated by the Kondoa Irangi Highlands which are partly determined by faulty lines associated with the Central Rift Zone (Christiansson, 1973: 319).

The Kondoa Irangi highlands are characterized by a landscape that is dominated by steep rocky hills with broad river valleys in between. The hills rise up to 200m above these valley bottoms. The general altitude ranges from 1000m to 2100 metres above see level. The average altitude of the highlands is, however, about 1,500 metres above sea level (Nshubemuki & Mugasha, 1985).

In general Kondoa District lies within the 600-800mm rainfall regime with an annual mean of 640mm. The climate is thus semi-arid, and years of comparatively less rain are regular and expected. The probability, for example, of a year having below 500mm rainfall is said to be 1:6 (Wenner, 1983: 62).

Because of such low rainfall soil development has been poor. Accordingly, the soils have grown to be generally thin and low in organic composition, bulk density, water retention capacity and in inherent fertility and base exchange capacity (Tosi et al 1982:12). Though the soils are worse off in the upper

slopes of the highlands and inselbergs black or grey clayey deposit of high fertility soils occur on valley bottoms and flood plains (Christiansson, 1988).

As such the vegetation cover consists of short seasonal grasses and scattered scrub and bushland. At least some 10-15% of the Kondoa Irangi Highlands are covered with miombo woodlands (Banyikwa et al, 1979).

The districts' drainage pattern is dentritic. The Bubu River which drains the western part of the Kondoa Irangi Highlands watershed is the only permanent waterway. All other rivers are ephemeral flowing only during and after heavy downpours. The tributaries of the Bubu River flow towards the south west and west (Christiansson, 1981).

Within the KEA there are also several internal drainage basins. The largest of these is Lake Haubi situated in the north-east of Kondoa town. Other significant natural basins are Lake Bicha, just outside Kondoa town, and the Seese Swamp situated a few kilometres south of Kondoa. These water bodies face a big problem of siltation (Christiansson, 1978) to the extent that Lake Bicha is all silted up.

The rainfall pattern in the district is one of scattered, short but intense convection storms. The rainy season is between October/November to April/May with a characteristic short and dry spell from January to late February. The genuine dry season, however, lasts six to eight months, i.e. from April/May to October/November. Nevertheless a considerable variation exists in rainfall between the Irangi Highlands and the lowlands in the east. The highlands characteristically tend to receive more rain than the lowlands. All the same at 2123mm per annum, the evapo-transpiration in the district exceeds the average rainfall nearly four times (Mbegu, 1988: 3).

These short but concentrated rainy seasons in conjuction with the sparse vegetation, steep slopes and thin soils make a greater part of Kondoa district heavily susceptible to erosion. The clearing of natural vegetation from the hillsides for agriculture and pasture has further compounded the problem resulting in extensive sheet and gully erosion. In the KEA, for example, the most hit with the problem of soil erosion in the district, alluvial fans and pediment slopes are dissected by up to twenty metre deep gullies (Mbegu, 1988:5). The overall effect of the erosion process in many areas has thus been a barren pebble-strewn surface, often with a residual ferruginous crust or lateritic

layer. Earth pillars capped by quartz boulders or crusts are a common feature in many of the gullies, and buried horizons of laterite and quartz pebbles are evidence of earlier erosion surfaces possibly resulting from fault movements, with intervening periods of relative stability (Christiansson, 1973: 319 - 20).

3.3: The Human Environment

The population in Kondoa district comprises mainly the Rangi and the Sandawe. The other ethnic groups are the Alawa or Waasi, the Burungi, the Nyaturu and the Barbaig. Table 3.1 below illustrates their distribution. The KEA is, however, predominantly Rangi. According to one account, this group of people developed from a small unit

Table 3.1: Ethnic Origins of Heads of Household by clusters (in %)

Tribe	KEA	Periphery	Outside
Alawa	-	8	32
Burungi	-	-	-
Nyaturu	-	-	-
Rangi	100	92	64
Iraqw	-	-	4
TOTAL	(61) 100	(51) 100	(53) 100

Source: Survey Data, 1989

which during the 18th century colonized a limited but ecologically balanced and healthy highland area at Haubi (Ostberg, 1986: 28). From this well wooded and well-watered highland area the Rangi population is said to have grown rapidly putting extra pressure on the land. Early travellers, for example, are said to have seen definite signs of gully erosion and dust devils by mid-19th century (Christiansson, 1982: 147) However, there is also evidence that a certain amount of ecological balance did prevail up to the later half of the century. Table 3.2 for example shows the trend of the districts population growth rate as compared to Dodoma Region's population between 1948-1988. As it can be observed there has been a steady decline in the growth rate of the district's population vis-a-vis the regional one.

Table 3.2: Population of Kondoa District as compared to Regional Population, 1948 - 88.

Area	1948	1957	1967	1978	1988
Kondoa District	114.797	158.834	212.195	275.082	340.554
Dodoma Region	446.197	514.425	709.380	967.600	1.237.919
% to Regional Population	31.3	30.9	29.9	28.4	27.5

Source: Population Census Reports, 1948 - 1988.

Population growth of both human and bovine cannot, therefore, by itself explain the incidence of the severe land degradation and soil erosion that were to be witnessed in the first half of the 20th century. It is our thesis here that it was the advent of the overland caravan trade, the outbreak of the great rinderpest epidemic in the last quarter of the century and the advent of colonialism that aggrevated the erosion process in the Irangi Highlands and beyond.

But before we consider the effects of these three external factors in detail let us first have a quick look at the traditional social organization, land tenure and economic systems of the Rangi.

The Rangi trace their origin to twenty clans that moved south from the Mbugwe country at the turn of the 18th century and settled at an area surrounding Lake Haubi. Prior to the advent of the overland trade caravans and hence also Islam, all these clans were matrilineal. All property relations within an individual clan were therefore strictly based on the matrilineal principle (Gray, 1955: 40).

Politically, the Rangi are said to have had no indigenous organizations larger than the small village or parish of related homesteads. If as advocated by Peter Rigby in his Cattle and Kinship Among the Gogo(1969: 304-5) the structure of homestead groups and that of the neighbourhood units are to be conceptualized as partially independent developmental processes within the context of the extant economic processes and ecological conditions of the given society then among the Rangi community we must acknowledge the role of the Mweneisi in holding society together through the ties of kinship and lineage.

The Mweneisi, or "the owner of land", was traditionally a very influencial person in the Rangi community. Being the head of the clan he was the individual who kept the history of the clan and hence also claimed and maintained the ritual authority over the clan's land. Succession to the chair of the Mweneisi followed the rule of matrilineal primogeniture. The first son of the senior sister was normally the heir to the position. Just like the Gogo Mutemi described elsewhere by Rigby (1969:97 - 108), the Mweneisi had ritual authority over the clan's lands and all the people who lived within them. He controlled the annual agricultural cycle, from the allocation and blessing of agricultural land, through the rituals of

praying for rain, to purification of land in times of calamity. After consultations with a mganga or medicineman the Mweneisi could also restrict the use of certain parts of the clan lands for various reasons. A good example of this was the restriction put on the cutting of wood from the sacred groves used for circumcision and initiation ceremonies. The contravention of this restriction carried a severe penalty. These groves still stand today in places like Mafai, Kolo and Soera as testimonies to the power and influence of the Mweneisi in the Rangi Society.

Just like the Gogo Mutemi mentioned above, the Mweneisi also played the political role of an arbitrator in cases of inter homestead conflict. Cases of witchcraft, theft and murder were normally referred for settlement to the Mweneisi by the afflicted clansmen.

Nevertheless, apart from these extra-homestead or neighbourhood relations the basic socio-economic unit for the Rangi community was the homestead. Land that had been allocated and subsequently blessed by the Mweneisi was thus owned and cultivated by a man and his homestead on usufructuary rights. This meant that any one could be deprived of land not effectively cultivated. But this could happen only if the land was

required by another clan member. However, this occurred very rarely as there was by then an abundance of land both for agriculture and pasture expansion. Each homestead could for example, cultivate up to 30 acres of land extensively in which Pennisetum and several varieties of sorghum were cultivated. As years went by these crops became increasingly supplemented by maize and finger millet (Ostberg, 1986:19).

Most of the agricultural work was done using family labour. Cultivation was performed with ridges or magereka using handhoes. Oxploughing is of a fairly recent adaptation. As such communal help was a very necessary ingredient in the every day homestead agricultural work, especially so with the harvest and threshing of Pennisetum. To facilitate natural land fallow the homesteads were often.moved every five or six years.

In addition to pure agricultural work most Rangi also kept livestock in their homesteads. Cattle were the most important, acting both as a store of wealth and insurance against famine. The Rangi also kept small stocks like goats, sheep and donkeys. It is not easy here to estimate the herds of cattle an average Rangi homestead owned. For from these times the Rangi were extremely secretive about the number of cattle they owned. Moreover, the Rangi did not keep all the cattle

they owned within the homesteads. A rich man in this respect would keep only a few animals at home, the rest being let out to be tended by his clansmen. Meanwhile, a poor man with no cattle at all of his own would have in his keeping a dozen or so herds of cattle. The reward for keeping other people's cattle was the milk and manure (Gray, 1953:51).

This system facilitated a patron-client relationship whereby the cattle owners held strong socio-political power over the non-cattle owners in the Rangi society. On the positive side though, the system did have some good effects. Socially, for instance, the system managed to maintain an egalitarian distribution of protein and manure among the community, while environmentally this practice also had the good effect of spreading the herd across a wide geographical area. This had the added advantage of lessening the stress on grazing lands and watering points.

The current cattle distribution in Rangi homesteads is illustrated in Table 3.3 below.

Table 3.3: Household Cattle Distribution by Clusters (%)

HERDSIZE	KEA	PERIPHERY	OUTSIDE	TOTAL
1 - 5	20	5	24	49
6 - 10	5	11	12	28
11 - 15	2	6	3	11
16 - 20	-	3	9	12
21+	-	-	-	-
TOTAL	27	25	48	100

N = 66

Source: Sample Survey 1989.

It has also been recorded that the Rangi were skilful iron-smiths. Kjekshus (1977:86-87) reports, for example, that one such centre of iron-smelting was found in Irangi, particularly in the areas of Busi, Nkondusi and Uriwa. These three areas are reported to have been well cultivated and supported very dense populations. The hoes, spears and arrows from these smitheries were reported to be of superior quality, hence they were traded especially to the Mbugwe, the Wasi, the Nyaturu, the Sandawe and Maasai peoples against cattle, grain and salt. The ritual and secrecy involved in iron-making made the iron smiths a very rich and powerful social group. In the precarious ecological conditions of Kondoa Irangi and with the relatively low level of

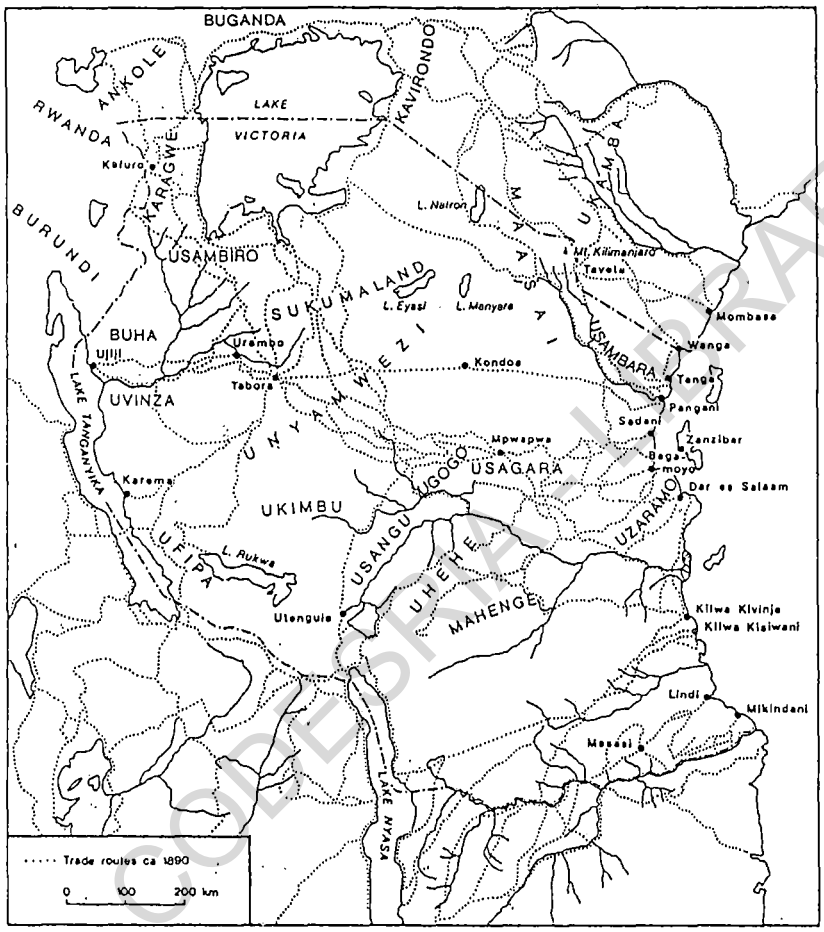
technology prevalent in the area the iron smiths also became a political force that maintained order and cohesion in society and secured the conditions for its reproduction.

The introduction of cattle as movable wealth seems to have been the major and powerful factor of social differentiation. A rich man married many wives and begot many sons and daughters. This increased his labour force, wealth and his socio political power. He received cattle for his daughters' marriages and gave cattle for the marriages of his sons. He also maintained a patron-client relationship with his poorer clasmen (Koponen, 1988:389).

It was to this environmentally well adapted, almost self-sustaining but socially differentiated ecosystem that the long distance caravan trade, the great rinderpest epidemic of 1890 and finally colonialism came to pass and influence its future development.

In the middle of the 19th century the Pangani route of the caravan trade reached Kondoa Irangi and flourished. (See Map 2). The huge amounts of foodstuffs and artifacts required by the formidable caravans had, to start with, a stimulating effect on the Rangi

Map 2: Long Distance Trade Routes



Source: Koponen, 1988:82

economy. Apart from increased production of both foodstuffs and artifacts Kondoa town itself grew from a mere provisioning depot to a permanent trading centre attracting a small colony of Arab entrepreneurs. The effect of this phenomenon on the Rangi ecosystem was however, double-edged. At one end, the provisions for all these in-migrants required an extensive exploitation of this fragile geophysical environment. More and more land came to be put under cultivation without in many cases applying the proper land management practices. Thus the land that seemed untouched by accelerated erosion in the 1890s became suddenly engulfed in incipient degradation. Gullies developed, first along cattle tracks, and then rapidly extended in the weathered gneiss and affected even areas which retained dense deciduous thicket vegetation (Berry & Townshend, 1973: 245). By 1911 sand rivers 40-150m wide could be noticed along valley bottoms (Ostberg, 1986:27).

On the other hand, the small colony of Arab entrepreneurs had brought with it an aggressive Islamic culture amidst the Rangi community. This process came to change the very foundations of the Rangi socio-cultural environment. The Rangi community thus became predominantly Moslem and effectively adopted Islam's patrilineal principle in place of their own matrilineal one. This had the effect of eroding the very basis of

the socio-political institutions of the Rangi community. Indigenous customs and beliefs were vilified and branded ungodly.

Traditional customs and rituals dealing with environmental management and conservation such as rituals for praying for rain, purification and blessing of land, and warding off of natural calamity were thrown into the dustbin of history and the Mweneisi effectively lost most of his religious and political authority to the sheikhs. Slowly social differentiation on religious lines set in, and land management became the responsibility of the heathens and slaves. Land mining and overstocking became the normal practices of land husbandry. The economic and political power that had accumulated on the iron smiths of yesteryears suddenly shifted ground and became imbedded on the imams and the small group of traders who controlled the caravan trade.

However the great rinderpest epidemic hit the area in about 1890-91. Apart from the thousands of livestock it decimated the repeated droughts and locust invasions that hit the country almost simultenously, brought untold sufferings to the people of Kondoa Irangi. Severe famines followed killing and/or

debilitating thousands of the Rangi.

Some writers have argued that the rinderpest epidemic was ecologically advantageous to the Kondoa Irangi environment in that it eased the grazing pressure on the land and held the population density low (Ostberg, 1986: 27). We consider this argument to be fallacious. The available evidence proves that the epidemic initiated the breakdown of a long established socio-ecological balance and tipped the scales in favour of nature. Kjekshus (1977: 164-5) and Mushala (1980:5), for example, clearly show how, after the epidemic, the tsetse flies intensified their advance southwards towards Kondoa Irangi; forcing the expansionist Rangi people into concentrated static and intensive exploitation of the fragile Kondoa Irangi Highlands. Moreover, the debilitating effects of the epidemic made the Rangi susceptible to disease like sleeping sickness, small pox, abdominal problems, etc, that made them too physically weak to properly manage the land. Intra-ethnically, therefore, the The Great Rinderpest Epidemic had an equalizing effect. It broke the economic backbone of many of the prosperous and advanced imams and caravan traders based in Kondoa and undermined established authority and status structure. At the inter-ethnical level the Epidemic completely altered the socio-economic contacts between the Rangi and their

neighbours and facilitated to a large extent an easy colonial penetration (Kjekshus, 1977: 126-7).

Meanwhile, at the international political scene things were developing in a trend that would soon have a great impact on the Kondoa Irangi environment. And the most important event in this respect was perhaps the establishment in 1891 of German colonialism over the then Tanganyika.

Although it suffered its own share of the pacification campaigns of the Germans, Kondoa Irangi remained for many years largely unaffected by the German presence. The fact that it did not seriously resist the German occupation because of the socio-political upheavals brought about by the above mentioned caravan trade and the Great Rinderpest Epidemic, and that it lacked the arable land and weather that could attract German settlers to it, enabled Kondoa Irangi to stay in the periphery of the German administration in Tanganyika. The Akida (i.e. the local level leader under the German Administration)came from a well known caravan trade clan and, apart from the garrison at Kondoa, they remained relatively out of external exploitation and oppression.

The situation remained that way for at least another nine years, i.e. until 1914 when the First World

War broke out. It was that war that finally brought to an end any socio-ecological balance that had somehow survived the other two external pressures discussed above.

The First World War affected the ecosystem of Kondoa Irangi in basically two ways. First of all, being situated just about two hundred kilometres or so south of the British colony of Kenya Kondoa became a frontier district that had to supply a considerable amount of men into the German East Africa army. One account has it, for example, that the Boma at Kondoa had in fact a sizeable garrison of African soldiers that stood bravery to the test of battle against the Allied Forces at Kwamtoro (Bee, 1968). The conscription of the Rangi men into the German East Africa Army had thus the bad effect of taking the most able bodied labour away from the Rangi community and leaving women, children and old men to work and manage this fragile environment.

Secondly, apart from the actual conscription of the Rangi into the German East Africa Army the First World War had another environmentally more serious effect. According to one account from this period Kondoa Irangi became also the granary where troops of both armies ie. the German and later the Allied Forces,

depended on their food supply (Christiansson, 1982:163). The procuration policies of these warring colonizers reduced local stores to mere survival rations (Kjekshus, 1977:151) and forced the Rangi into putting more and more of their fragile environment under cultivation (Ostberg, 1986:27).

At the socio-political level, however, and behind these two effects of the war lay a more serious problem. As the local ruling group in Kondoa Irangi became increasingly aligned with the interests of the German (and later of the British) colonialism, serious cleavages emerged between the people and their ruling cliques. It was during this time, for example, that the rangi are recorded to have started migrating enmass out of their homeland and fleeing into neighbouring areas (Kjekshus, ibid.).

The overall effects of these processes were severe soil erosion and general degradation of the Kondoa Irangi environment. By the end of the War and the early years of British rule the Kondoa Irangi socio-ecological environment had thus thoroughly been eroded and degraded both socio-culturally and geophysically.

From 1922 when the British were conferred the

Mandate to administer Tanganyika under the trusteeship of the League of Nations the British government embarked on a coarse of rehabilitation of this trend of socio-ecological degradation. It did this through the implementations at the socio-political level of the policy of "indirect rule" and, at the geophysical level, through the establishment of agricultural programmes and actual soil conservation schemes. In the next chapter we turn to a discussion of these efforts and their results, the advent of independence and of HADO, and the effects of these upon the present socio-ecological environment of the KEA.

CHAPTER FOUR

THE HADO PROJECT

4.1: Background to Soil Conservation in Dodoma Region

We saw in the foregoing chapter that by the end of the First World War and the early years of British rule the Kondoa Irangi socio-ecological environment had thoroughly been eroded and degraded both socio-culturally and geophysically. This situation was, however, not confined to Kondoa Irangi alone. Available evidence shows that it traversed the width and length of the whole of the then Central Province which also embraced the districts of Dodoma, Mpwapwa, Manyoni and Singida.

However, it was not until the Soil Conservation Advisory Committee had been established in 1930 that the British government embarked on a conservation policy. At the practical level the government started by improving land use methods rather than carrying out extensive conservation schemes. Throughout the 1930's and 1940's anti-erosion measures thus consisted of reduction of stock numbers, matuta or ridge cultivation, contour banking of uncultivated land and gully control (Mbegu & Mlenge 1983:8). By 1942, for example, 145

miles of bunds were already pegged out. By 1950 these had increased to 552 miles.

However, these results were attained with a lot of legal coercion using the Native Authority Ordinance of 1927 and the Native Courts Ordinance of 1928. In Kondoa District alone, for instance, 431 people were convicted in 1947 for not following the soil conservation orders (Fosbrooke, 1987).

And in order to facilitate destocking and depopulation, particularly of the already badly eroded Irangi Highlands, tsetse clearing in lower Irangi began in 1927 and was to continue throughout this period.

It was during this period too (1948) that the Irangi Development Scheme was launched at Kolo. Started first as a pilot project the scheme aimed at ascertaining how the land was traditionally used, what the crop yields were and how the livestock was kept. It was also intended to assess the extent to which the land could be improved by a reduction in stock numbers and by better agricultural methods.

The results of the pilot project were to be used in the preparation of a larger scheme that would encompass the whole of Kondoa Irangi. The scheme was

meant to be an integrated development programme for the plains to the east of the great escarpment of the Irangi Highlands for human and livestock resettlement. The aim was to relieve the highlands from the pressures of a deteriorating man - land relationship (Moffet, 1958: 160-1).

Indeed, the rotational grazing schemes simultaneously started on the plains proved quite useful in the protection of the environment. However, attempts at destocking met with little success. There were many reasons for this, but the following were the most important. First of all, the dams that had been constructed in the 1930's to multiply the watering points had only resulted in growing numbers of livestock and hence also growing pressure on land. Secondly, the orders and rules on destocking and general soil conservation were unpopular and unacceptable to the indigenous people. For to start with the British administration had, from the very beginning, not appreciated the adaptations that the indigenous agricultural systems had achieved to control soil erosion. Moreover, the destocking and depopulation measures uprooted the people from a well known environment and planted them into a completely new and unfamiliar one. Thus people became insecure with their future. But above all, it was the bush and forestry

clearing for tse tse fly eradication that especially crystallized the large-scale opposition to the scheme. Apart from the druggery and back-breaking nature of the job, some of these works were carried out as punishment for disobeying local chiefs or tax evasion; as such the local people became filled with a general revulsion against them. In 1927, for example, several gangs of the Rangi people migrated to Arusha to escape from the tsetse and land reclamation measures and the destocking harrassments (Kjekshus, 1977:174).

The ecological effect of this desertion by the most able-bodied labour was that land management was again in a decade left in the hands of less efficient and at most weak population of the Rangi. Land mining and overgrazing that had set in during and after the First World War became characteristic features of this farming system.

As we saw in Chapter Two above, these conservation measures began to lose ground as soon as the independence struggle gained momentum in the late 1950's. And when independence came in 1961 almost all orders, restrictions and regulations governing soil conservation were completely abandoned (Ostberg, 1986:28), and a <u>laissez faire</u> atmosphere towards conservation, seems to have descended on most of the

government policy makers. The now largely unprotected land in Kondoa District thus came to cater for the demands of a rapidly growing local population, both human and bovine, as well as a fast growing urban population within the region and beyond. (See Table 3.2). The results were accelerated soil erosion and generalized land degradation (Ostberg ibid.). See Table 4.1 below.

Table 4.1: The Severity of Erosion, Kondoa District, 1981

EROSION SEVERITY	AREA (Km2)	% OF ERODED AREA
Heavy Erosion	186	15
Moderate to Heavy	724	57
Light to Moderate	285	23
Light	61	5
TOTAL	1,256	100

Source: Mbegu & Mlenge 1983:23

By 1968 the situation had become so serious, especially in the Kondoa Irangi Highlands, that the Kondoa District Council was forced to enact a bye - law prohibiting grazing, cultivating, digging water channels for irrigation and cutting down of trees within the eroded areas without official permits. Though for a

while the bye-law could not be implemented due to a lack of political will on the part of the district leadership, these were the small beginnings of a major conservation scheme. For in 1972 the post-independence state initiated a study on soil erosion and degradation in Dodoma Region with special emphasis on Kondoa District. The Forestry Division of the Ministry of Natural Resources and Tourism was appointed to carry out the study. The study team's proposals and recommendations formed the basis for the establishment of the HADO Project in August, 1973 (Mbegu & Mlenge 1983:10). Though the project was to span the whole of Dodoma Region special emphasis was in the first phase put on the KEA, Its objectives however, became similar to those of the British efforts in the 1950s: to prevent land degradation, and soil erosion through destocking, but with a sharper focus on rehabilitation of badlands by afforestation.

4.2: Socio-Ecological Changes in the KEA, 1973-89

The approach of the Project to the problem of soil erosion and generalised land degradation has basically been technical. It has involved contour bunding, construction of check dams, production and distribution of seedlings, tree planting and destocking.

In October 31st, 1979, using the aforementioned 1968 District Council bye-law, the Project successfully destocked the KEA and transferred some 85,000 livestock to Lower Irangi. The reaction of the rangi people to this decision was hostile. First of all, the decision making process leading to this action did not involve the local people nor their local institutions. The decision was taken by the Project staff in collaboration with the district Party and Government leaders before being communicated to the Rangi people for implementation. The fact that the destocking process itself managed to take-off at all was because it was supported by influential politicians at the regional and national levels (Ostberg, 1986:16-18). A detailed analysis of this conflict is given in Chapter Five.

The opposition to the destocking process was not, however, confined to cattle owners alone. Due to the patron-client relationship existing between owners and non-owners of cattle as discussed in Chapter Three above, almost every single Rangi of the KEA felt he had something to lose in the destoking exercise. By losing the livestock the cattle owners lost both physical wealth and the socio-political power commensurate with it. The non-cattle owners, on the other hand, lost not only a reliable source of protein but they also lost a reliable source of a very important component in their

agricultural livelihood - animal manure. It was thus that at the general level, many Rangi believed that the authorities were infringing on their right to live a life they knew, preferred, and deemed fit.

The Project has been operating for a decade and a half now and its effects on the socio-ecological environment of the KEA have been both remarkable and ambivalent. In the following sections we consider in detail the major changes and contradictions that have taken place within the KEA because of the activities of the Project.

4.2.1: Changes in the Geophysical System:

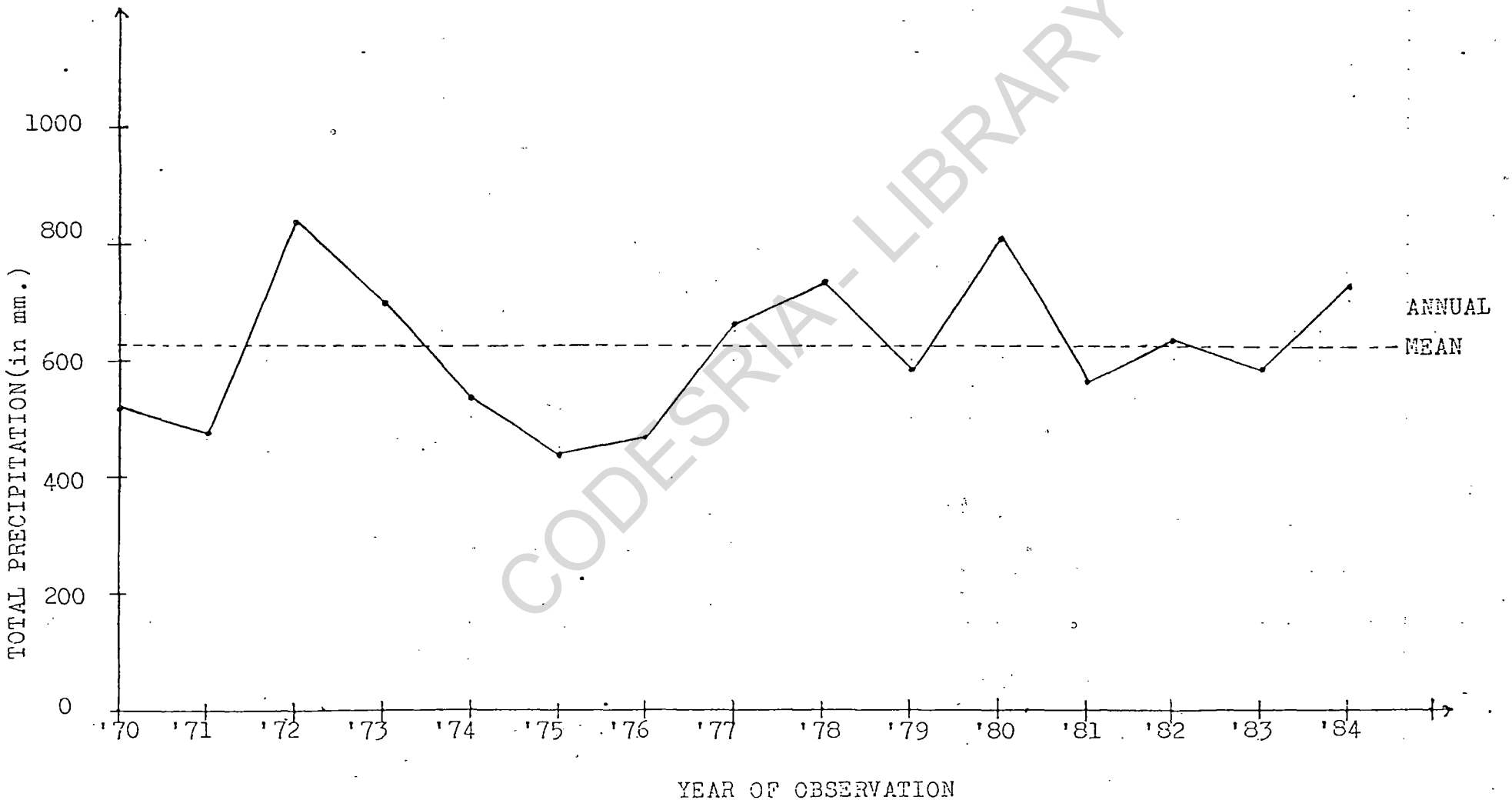
Technologically the Project has recorded tangible success on the geophysical environment of the KEA. A major change that one notices when passing through the Kondoa Irangi Highlands is the recovery of the so-called bad lands. The destocking process of 1979 has undoubtedly given respite to the land and allowed a generally dense revegetation of the bad lands. Consequently, the sediment transports in the streams have decreased as now much less water and soil are being washed away during the rains. Hence the sand rivers have also stabilized. The hitherto wide river coarses have become narrower and more stable creating new agricultural possibilities.

The stream flows now extend much farther into the dry season than they used to before destocking. Wells that previously dried up in the dry season now yield water permanently. Generally, there has also been an increase in the organic composition of matter deposited in the soils (Ostberg, 1986; Christiansson, 1988).

Figure 4.1. below illustrates how the rainfall distribution variation has been stabilizing around the annual mean. Though this might not necessarily be a result of a local phenomenon, as the area in question is too small, the observation seems to bear witness to the people's perceived change of weather within the KEA (See section 4.2.2.1 below). Rainfall is said to have become more predictable and more constant now (Ostberg, 1986: 62).

These geophysical changes have not, however, been always for the better. Some of these changes have had some serious side effects to the KEA socio-economic environment. The most important of these effects has perhaps been the increased incidence of vermin and fierce wild animals within the KEA in the last decade or so. The Villagization Programme of 1974-76 that brought large numbers of people in concentrated villages and the destocking process of 1979 that left the grazing land open have facilitated the onslaught of wild life in the

Fig. 4.1: Rainfall Distribution, Kondoa Town, 1970-84.



Source: HADO Files.

KEA causing a lot of problems to the farmers. Monkeys, warthogs, antelopes and birds eat crops while lions devour the farmers themselves. Meanwhile, there are reports of a tsetse fly advance towards KEA from the south-west. (Ostberg, 1986; Daily News, November 10, 1989:3).

4.2.2: Changes in the Economic System: However, the most significant changes have been taking place within the KEA economic system. Because of destocking and the new agricultural opportunities opened up by the rejuvenated environment many more people in the KEA have now reverted to pure agriculture as their major economic activity. Table 4.2 below illustrates this phenomenon succinctly. While a whole 87 per cent of the respondents in the KEA are agriculturists the tendency seems to taper off as you move out. Thus in Periphery and Outside KEA clusters the percentages decrease to 71 and 42, respectively.

Table 4.2: Major Household Economic Activities by Clusters (%)

ECONOMIC ACTIVITY	KEA	PERIPHERY	OUTSIDE
Agriculture	87	71	42
Agro-Pastoralism	13	26	55
Salaried Employment	-	-	3
Business	-	3	-
TOTAL	(61) 100	(51) 100	(53) 100

Source: Sample Survey, 1989

The situation gets, nevertheless, reversed as one comes to consider the case of agro-pastoralism. While only 13 per cent of the respondents are agro-pastoralists in the KEA the percentages rise progressively to 26 and 55, respectively, for the Periphery and Outside HADO clusters. The 13 per cent of agro-pastoralists within the KEA represents those people who own some livestock but keep them outside the cluster. At a more discrete level, however, this also includes those few but smart fellows who despite the destocking exercise still manage to keep their livestock within the KEA (See Table 4.9 below and the discussion that follows).

More significant changes in this respect have however, been taking place within the KEA agricultural subsystem itself. The data we have in Table 4.3 to 4.8 clearly show that changes have taken place in the type of crops grown, the type of agricultural inputs and implements used, the intensity of agricultural land use and pattern of livestock ownership.

4.2.2.1: Crops Grown: The range of crops currently grown in the three clusters can easily be visualized by consulting Table 4.3 below. From the table, maize is the most widely grown crop in all the three clusters. It is, however, more predominant in the KEA (36 per cent) than in any of the other two clusters (25 per cent and 28 per cent, respectively), followed by fingermillet (30 per cent, 20 per cent, and 21 per cent, respectively), and oilseeds (19 per cent, 20 per cent and 14 per cent, respectively).

Table 4.3: Crops Grown by Households by Clusters (%)

CROPS GROWN	KEA	PERIPHERY	OUTSIDE	TOTAL
Maize	36	25	28	89
Millet	14	18	13	45
Sorghum	9	8	10	27
Fingermillet	30	20	21	71
Oilseeds	19	20	14	53
Fruits	4	2	1	7
Cassava	5	-	2	7
Others	18	7	12	37

N = 165

Source: Sample Survey 1989.

But the situation was not always like this. Asked to name the crops the various households were already growing before HADO was established in 1973, 21 per cent of the respondents indicated that they had since changed the type of crops they grow. A majority of these belonged to the KEA cluster. Table 4.4 below illustrates the magnitude of this change. According to it 29 per cent of these respondents grew, first and foremost, bullrush millet, followed by sorghum (24 per cent) and other lesser crops. Maize was just one of these lesser crops: in fact, grown by as many households as those that grew cassava.

Table 4.4: Crops Grown by Households Before 1973 by Cluster (%)

CROPS GROWN	KEA	PERIPHERY	OUTSIDE	TOTAL
Maize	6	3	6	15
Millet	29	6	9	44
Sorghum	24	15	15	54
Fingermillet	6	3	3	12
Oilseeds	3	15	-	18
Fruits	9	3	-	12
Cassava	6	6	-	12
Others	3	-	3	6

N = 35

Source: Sample Survey, 1989.

The reasons given for the change in crops grown since the establishment of the Project are interesting in that they all reflect in one way or another, the effects of the Project on the KEA environment and beyond. The range of these reasons include the scourge of vermin (21 per cent, 15 per cent and 9 per cent, respectively), followed by the availability of modern farm inputs (15 per cent), improved soil fertility (12 per cent) and changed climatic conditions (9 per cent) within the KEA. The increase of quelea quelea birds and the change of weather brought about by the undisturbed growth of bush have especially played a significant role

in the change from the growing of bullrush millet and into increased growing of maize and fingermillet (Ostberg, 1986:42).

These changes in crops grown within the KEA have certain environmental implications which have to be pointed out at the very outset. The emphasis placed on the growing of maize and fingermillet at the expense of other traditional crops seriously narrows the opportunities for crop rotation and leaves these highly demanding crops to deplete the soil moisture and plant nutrients from the same depths each season. Soil moisture and plant nutrients can be replenished by the application of animal manure and/or fertilizers. Nevertheless, with the taking away of livestock and the existence of a highly inefficient system of distribution of farm inputs in the district, manure and fertilizers are hard to come by in the KEA for the average Rangi peasant. But even if fertilizers were available and affordable by the ordinary peasant in the KEA the small response to fertilization characteristic of semi-arid environments would render the effort worthless (Isom and Worker, 1979: 215).

The effect of all these is that land degradation becomes a continuous process. The social implication of this process is that while the few rich Rangi who are able to have two households, i.e. one in the KEA and the

other in Lower Irangi are concentrating more and more wealth in their hands, a majority of the Rangi are increasingly becoming vulnerable to impoverishment and drought.

4.2.2.2: Farm Implements Used: The range of farm implements used in agricultural work within the KEA is quite wide. The hand hoe, ox-plough and tractor are the most predominant. Nevertheless, in the last ten years the use of the ox-plough has increasingly intensified. This is evidenced by the records of the number of ploughs sold in the district. While in 1975/76 the total number of ox-ploughs sold in the district was only 798, by 1983/84 this number had grown to 9,890 (Ostberg, 1986:76). The opening up of former grazing lands to agriculture has most probably led to this intensified use of the oxplough.

Table 4.6 below illustrates the current rate of use of these implements in the three clusters. Although according to that table the use of both the hand hoe and plough ranks high in all three clusters this farming practice is more pronounced within the KEA (62 per cent) than in any of the other two clusters (51 per cent and 47 per cent, respectively). The use of tractors appears to be minimal.

Table 4.6: Types of Agricultural Implements Used by Clusters (%)

IMPLEMENTS	KEA	PERIPHERY	OUTSIDE
Hand hoe	15	31	25
Ox-plough	23	10	28
Tractor	-	4	-
Hand hoe & Oxplough	62	51	47
Tractor, Handhoe & ox-plough	-	4	-
TOTAL	(61) 100	(51) 100	(53) 100

Source: Sample Survey 1989.

The increase in the use of ox-ploughs within the KEA seems to have been facilitated by the expansion of maize and fingermillet cultivation as discussed above. It has also been facilitated by the fact that draught animals are allowed into the area during the cultivation period. If you add the percentage of households using ox-ploughs for most of their cultivation work and those using both hoes and ox-ploughs the figure is quite high for KEA (85 per cent) compared to those of Periphery HADO (61 per cent) and Outside HADO (75 per cent) clusters.

With the single stand or sole cropping pattern characteristic of the KEA farming system it is not

difficult to understand why this type of mechanization should have been easily adopted in the area. In fact, the use of the ox-plough should have been the best technological adaptation for the KEA if it were not for the environmental problems that are associated with this type of technology - especially if used in an environment like that of the KEA. Extensive use of the ox-plough allows the breaking and loosening up of the top soils from the depths of 10 to 100 centimetres. With the thin, sandy and comparatively infertile soils of the KEA this type of farming practice has serious environmental consequences: it disturbs the fragile soil structure and leaves the land vulnerable to degradation and erosion (Handerson, 1979: 235). Thus unless one has the economic power to purchase fertilizer and/or manure at any price the social consequence of the above process is increased impoverishment.

4.2.2.3: Land Ownership and Land Use: The size and distribution of land owned is shown in Table 4.7 below. A majority of 36 per cent seem to own 4-6 acres in the KEA followed by those who own 7-9 acres (26 per cent), more than 10 acres (22 per cent), and finally those who own 1-3 acres of land (16 per cent). This trend is replicated in the other two clusters.

Table 4.7: Acreage Distribution of Land Owned by Clusters (%)

ACREAGE	KEA	PERIPHERY	OUTSIDE
1-3	16	20	15
4-6	36	31	49
7-9	26	10	15
10+	22	39	21
TOTAL	(61) 100	(51) 100	(53) 100

Source: Sample Survey 1989.

The distribution pattern of operated farms seems to be somewhat different from that of acreages owned. The data we have show that the majority in all three clusters cultivated between 1-3 plots. It means, therefore, that the pattern of land ownership and operation has not changed much. The farms remain fragmented and small. What has changed perhaps is the intensity of land use. With the sending away of livestock farmers in the KEA seem to have switched from the use of animal manure to the use of fertilizers and compost. But with the difficulties encountered in acquiring fertilizers through the normal channels and the problems of fertilizer response as mentioned above the not so well-off peasants are forced to mine their soils rather than conserve them.

4.2.2.4: Ownership of Livestock: About 40 per cent of the respondents in the three clusters owned some livestock. The type of livestock owned is shown in Table 4.9. Cattle ownership is predominant in all three clusters, followed by goats, sheep and donkeys, in that order.

Table 4.9: Type of Livestock Owned by Clusters (%)

TYPE OF LIVESTOCK	KEA	PERIPHERY	OUTSIDE	TOTAL
Cattle	26	26	41	93
Goats	5	21	38	64
Sheep	3	12	11	26
Donkeys	3	11	11	24

N = 66

Source: Sample Survey, 1989.

The pattern of livestock keeping is however, different in the three clusters. The data we have show that while 98 per cent of the livestock owners in the KEA kept their livestock outside the respondents' villages, all the livestock owners in the other two clusters kept their animals within the villages. It is interesting to note here that despite the destocking exercise of October 1979 some people (2 per cent) still manage to keep their livestock within the KEA in defiance of HADO's and district authorities orders.

This perhaps illustrates well the kind of opposition and defiance that the Project receives from the people at the village level.

4.2.3: Changes in the Social System: Changes in the economic system have caused changes in the social system as well. The changed dependence from agro-pastoralism onto pure crop cultivation in particular has had some effects on the socio-demographic variables such as marriage, migration patterns, household sizes, social and nutritional status. This section identifies these changes and considers their effects on the social system as a whole. A consideration is also made of their environmental implications.

4.2.3.1: Marriage Patterns: Table 4.11 below shows the range of the age of heads of households at first marriage. Key informants in the area point out that the normal marrying age among the Rangi was beyond 30 years. From the table it is clear, however, that a majority of the KEA Rangi are currently marrying before age 30. The changed bases for household economy from agro-pastoralism to pure crop cultivation seems to have also necessitated changes in the type of dowry paid in marriages. Young people now no longer have to wait until their parents get enough livestock to enable them to marry. The increased opportunities in agriculture allow young people to easily come into and raise money for marriage (Ostberg, 1986:47-48).

Table 4.11: Age at First Marriage by Clusters (%)

AGE	KEA	PERIPHERY	OUTSIDE
11-20	29	35	38
21-30	68	61	52
31-40	3	4	6
41+	-	-	4
TOTAL	(61) 100	(51) 100	(53) 100

Source: Sample Survey, 1989.

Table 4.12 corroborates the key informants' observation that cash dowry has become increasingly more predominant within the KEA. To the young people the project appears to have had a liberating effect for them from the fetters of custom and tradition. With money gradually becoming more important than cattle as a store of wealth young people no longer depend on their parents for social development. This has had the effect of altering the power relations within the household and the community at large. Key informants further observe that financial wealth has suddenly become more important than age as a means to socio-political power in the community.

Table 4.12: Type of Dowry Paid by Clusters (%)

TYPE OF DOWRY	KEA	PERIPHERY	OUTSIDE
Livestock	41	51	36
Cash	49	35	47
Livestock & Cash	7	14	17
Not Applicable	3	-	-
TOTAL	(61) 100	(51)100	(53) 100

Source: Sample Survey, 1989

Data on the size of households, however, show that there has generally been no major change in the KEA in that respect. The average household size remains five. This trend of affairs even manifests itself in the population growth rates of Kondoa District. Table 3.2 above, for example, shows that the intercensal growth rates for the census years 1967, 1978 and 1988 have actually been steadily declining, i.e. from 2.9 to 2.4 and 2.1, respectively.

4.2.3.2: Migration Patterns: The data on migration show that there was very little movement of population in the whole of the KEA. The survey data show that only 5 per cent of the respondents in the KEA were born outside the villages they were living in 1989. This is against 10 per cent and 30 per cent in the Periphery

and Outside KEA clusters, respectively.

Of the respondents who were born outside the villages they were living in during the survey 2 per cent had moved into the constituent villages before the establishment of the HADO Project in 1973. Of those who had moved into the constituent villages 1 per cent had moved in due to the Villagization Programme of 1974-76 while the rest had come to rejoin their families.

Of the respondents born within the constituent villages only 2 per cent expressed an intention to out-migrate in future in search of land (1 per cent) and food (1 per cent). However, 10 per cent of the KEA sample households had had members who had out-migrated since 1979. Of these 3 per cent had gone to do business, 3 per cent because of HADO's destocking activities, 2 per cent had gone to get married and another 2 per cent in search of land. Most of these migrants had, nevertheless, moved within the same district.

All in all, migration does not seem to be a significant factor in solving the shortage of land problem within the KEA. But we should hasten to note here that the problem of assessing the migration patterns of the KEA is a little bit complicated in that some people within the KEA have two or more households - one situated in the KEA and the other in the Periphery

or Outside HADO clusters. And when people move between and within these households they do not consider themselves as migrants. That explains, for example, why only a minority of individuals indicated to have migrated, normally to Periphery and/or Outside HADO clusters.

Thus the hostilities observed by Ostberg (1986:52-65) as existing between the KEA people and the HADO administration do not seem to have resulted out of a perceived shortage of land, due to closure or population pressure. The setting of fire to regenerated vegetation, the indiscriminate cutting down of trees and illicit grazing on conserved areas does not seem so much as coming from a desire to improve the personal well-being of the people involved. Rather, they originate from a desire to sabotage the very efforts of the Project.

4.3: Conclusion

From the foregoing discussion one could conclude that the HADO Project activities have changed the KEA socio-ecological environment for the better - at least for the time being. The HADO administration is in fact euphoric about these results. It points out that because of destocking agricultural land has increased by about 10-15 per cent, allowing for new opportunities for crop cultivation. Moreover, with improved infiltration

rivers and streams now yield water for a longer time into the dry season. Meanwhile, as we have seen, there has been an obvious rapid coverage of the soil by vegetation.

However, as we have also seen, these results have affected different people differently at the socio-economic level. On the positive side, we have seen that young people have apparently benefited from the Project. Because of the traditional scarcity of arable land it was normally extremely difficult for a young person to get land in the Kondoa Irangi Highlands. One had either to migrate to Lower Irangi in search of land or move to Arusha and other urban centres in search of paid employment. With the destocking process, however, this group of Rangi people has suddenly got access to some new arable land. According to key informants their attitude to the Project and, particularly to the destocking process, has mostly been positive.

This technical success and project acceptance notwithstanding a considerable portion of the KEA population remain to this day quite unimpressed, uncompromizing and unforgiving. We have already noted that though a majority of this group come from the elderly Rangi cattle owners who suffered the brunt of the destocking process of 1979, considerable criticism and open opposition have also come from the elderly non-

livestock owners. And this not for the destocking process alone. What have been the reasons for this differential response to the Project? What has been the nature and dynamics of the conflict observed here and within the changed KEA socio-ecological environment? And finally, why has this opposition to the Project been sustained for so long despite the "changing" attitude of the HADO administration? In the next chapter we attempt to answer these questions and others derived from them, and try to draw relevant conclusions towards the present and future development of the KEA ecosystem.

CHAPTER FIVE

DYNAMICS OF ENVIRONMENTAL CONSERVATION IN THE KEA

5.1: The Nature of the KEA Environmental Management Conflict

According to Willener (1964) exploring resistance to change in one particular instance in a social process, particularly if it happens to be a fairly central instance, may be regarded as defining resistance or acceptance of change vertically. Though in principle it cannot be said that every resistance along one vertical dimension can be considered as necessarily indicative of general resistance, in our case the KEA people's resistance to destocking and other soil conservation measures may be nominally defined as a struggle against external domination in the area. How?

With the going of British colonialism the people of the KEA had acquired a sense of freedom that had facilitated the hope that under the post - colonial state the expansive land use systems of the 19th century would be possible again. New lands would be opened up to ease pressure on degraded land and the labour consuming and backbreaking erosion control measures would thus not be necessary again. They would again be able to substitute land for labour and farm extensively

instead. For to many of them land degradation and soil erosion in the Kondoa Irangi Highlands was not a perceived problem at all in the first place (Banyikwa, et al. 1979; Kikula, 1986; 1989).

But when the HADO Project was established in 1973 and its erosion control activities became similar to those attempted by the British in the 1940s the KEA people became apprehensive. And when in October, 1979 the Project decided to completely destock the KEA the Rangi people came out in the open to oppose the move. To them the Project had become a mere continuation of the hated matuta regime interests of the British whereby livestock keeping and other non-developmentalist economic activities had been deemed primitive and the Western version of agriculture had been taken as the modernist pursuit.

What distressed them most was the fact that even their own elected leaders at the district and regional levels defended these alien interests instead of helping them avert this perceived calamity. It was this factor which really drove underground the KEA people's resistance to destocking and other soil erosion control measures.

It is the adverse effects of the Project itself

that have, however, further aggravated the momentum of the conflict. Apart from the direct economic los that was suffered by the agro-pastoralists of the KEA due to destocking, the regeneration of bush and the perceived change in climate have also led to a change in cropping patterns. As we have already noted in Chapter Four above, bullrush millet inter-cropping has slowly given way in the KEA to the cultivation of the more nutrient demanding and land degrading pure stand maize and fingermillet. Moreover, the sending away of cattle has also led to a change in patterns of social relations. We have already seen how, for example, young people are no longer dependent on their parents for development; that money has become gradually more important for them than custom and tradition. At another level, destocking has also led to a change in power relations. The old patron-client relationship that existed between livestock owners and non-owners has been rendered unworkable by the equalizing effect of destocking.

Presently, this resistance is thus mostly manifested in the field by the people's actually observed decision to go on sabotaging HADO's efforts via setting fire on vegetation, especially in Gubali and Kidongo Cheusi areas of the KEA and illegal grazing and cutting down of trees, especially in the Periphery HADO cluster. At the general official level accusations of corruption are being voiced within the ranks of HADO

staff itself to the effect that some of the Project's workers are believed to be taking bribes to allow some KEA people to graze and/or cut trees in the enclosed area.

As far as HADO is concerned they embarked on the soil conservation programme in 1973 virtually believing that the cause of the soil erosion problem within the KEA was due to overpopulation and the peasants' misuse of land -especially so through "bad agricutural practices", large-scale deforestation for shifting cultivation and fuelwood collection, burning of grasslands for pasture preparation, and overstocking (Mbegu & Mlenge 1983:11-19). Shere Ignorance, "uncivilized" customs and sometimes plain lethargy were thought to be the main obstacles to the KEA peasants' inability to conserve their environment. Accordingly, HADO commenced the conservation programme within the KEA with the unusual zeal of the technocratic fanatic; and to-date they have, though to a lesser extent, maintained that perception.

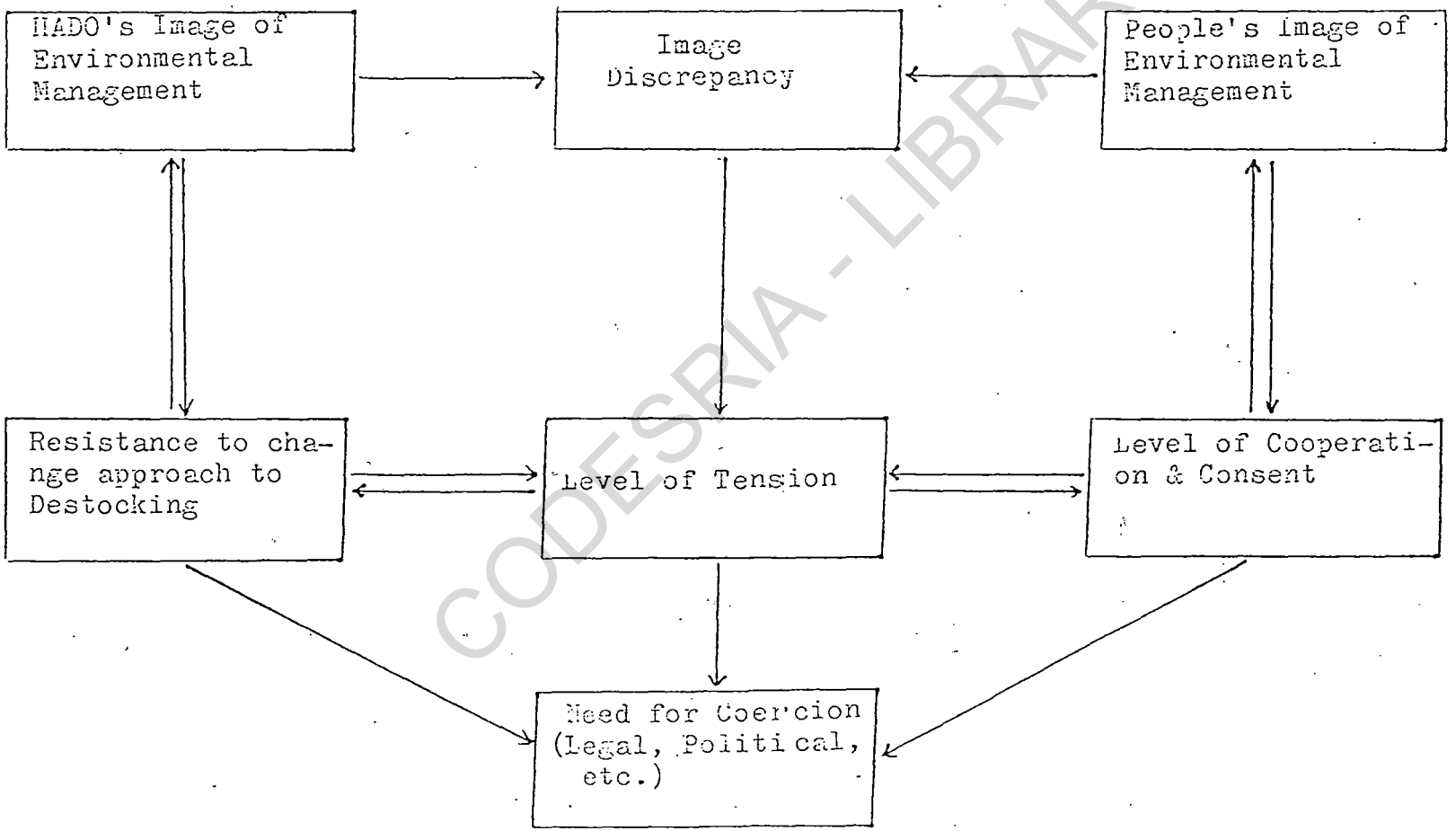
Thus HADO's resistance to change its approach to destocking as the fundamental environmental conservation method may, in this respect, nominally be defined as a developmentalist or modernist reaction to the KEA people's resistance and a desire of this institution to

exert its authority in the area as far as environmental conservation issues are concerned. This is defined operationally in this study by HADO's actually observed decision to continue applying alien and unpopular technical solutions to the problem of soil erosion within the KEA and elsewhere in total disregard for either the consent, trust or the participation of the indigenous population.

Figure 5.1 illustrates this conflicting relationship. The lower half of the figure represents a version of the vicious circle process as advanced in Myrdal's Principle of Cumulation and as used in many of the applications of the idea of circular causation between repression and rebellion.

In our case study, therefore, we observe that as the tension between HADO and the KEA people has been increasing so has the level of consent and trust on the part of the KEA people to HADO's destocking and other soil conservation proposals been lowered. Reciprocally, this lowering of the level of consent and trust on the part of the people of KEA has justified HADO's use of coercion through the courts and the Party against them.

Fig. 5.1: Image Discrepancy and Tension Cycle Relationships in the KEA.



Source: Willener, 1964.

This process has in turn justified, facilitated and maintained HADO's kind of approach to environmental conservation; to which the KEA people have naturally reacted against by further lowering of their level of cooperation. This has included organized political action (such as the 1979 demonstrations against destocking) clandestine resistance and generalized sabotage of HADO's conservation efforts. Thus HADO's insistance on destocking as the means to effective soil conservation in the KEA and the KEA people's lack of cooperation have been reinforcing each other in a vicious circle fashion.

The idea of the vicious circle as depicted above does not, however, by itself explain the process of change that has been taking place within the KEA social milieu. It does not, for example, explain why despite the bitter opposition and hostile reception of the Project by the older agro-pastoralists there are people within the KEA who have actually accepted the Project and easily acclimatized to changes brought about by its activities. People who are economically well-off and have managed to establish themselves in both lower Irangi (with cattle) and the KEA are now actively utilizing what new opportunities are available in agriculture in both clusters. Moreover, even among the agro-pastoralists who suffered the brunt of 1979

impoverishment by destocking, it is hard to find uniform resentment. Opposition appears to exist in a continuum.

In order to be able to explain why there are these different degrees of acceptance and resistance to this type of induced change we introduce the concept image discrepancy[1] in the upper part of the model in Fig. 5.1. The consequencies will be twofold and reciprocal. This time the level of tension will be seen to influence not only the level of resistance to change the approach towards destocking and environmental conservation on the part of HADO, and the level of consent and cooperation on the part of the people of the KEA, but it also indirectly influences the perception and image the two groups of social actors have on each other and on the proper way of managing the environment. Hence image discrepancy as derived from discrepancies in material interests can be conceptualized as a fundamental factor behind the conflict of environmental conservation in the KEA.

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1. By image discrepancy we mean the difference in the perception of a problem and the method of solving that problem that exists between two social actors in a given time and space. A closer concept to this one is perhaps the "perception gap" defined and extensively used by Kikula elsewhere (KIkula, 1989).

Thus as image discrepancy has been growing so has the level of tension been increasing between HADO's and the KEA people's perception of environmental conservation In this respect image discrepancy can be seen operating as an inhibitor of change.

Alternately, however, when the image discrepancy is at its lowest level the interests of the two social antagonists have tended to coalesce and become non-antagonistic. To the young people and the pure agriculturists, for example, destocking the KEA has been a blessing; as more and better land is now available for agriculture. And even among the agro-pastoralists themselves there are people who have successfully made adaptations to a life without livestock (Ostberg, 1986).

On the other side of the coin the HADO administration has of late shown signs of changing its approach to environmental conservation. It has even started thinking about the necessity for an inter-disciplinary approach to soil conservation and of addressing the project to farmland conservation in the KEA (Mbegu, 1988:27-28). These things were unheard off a few years ago.

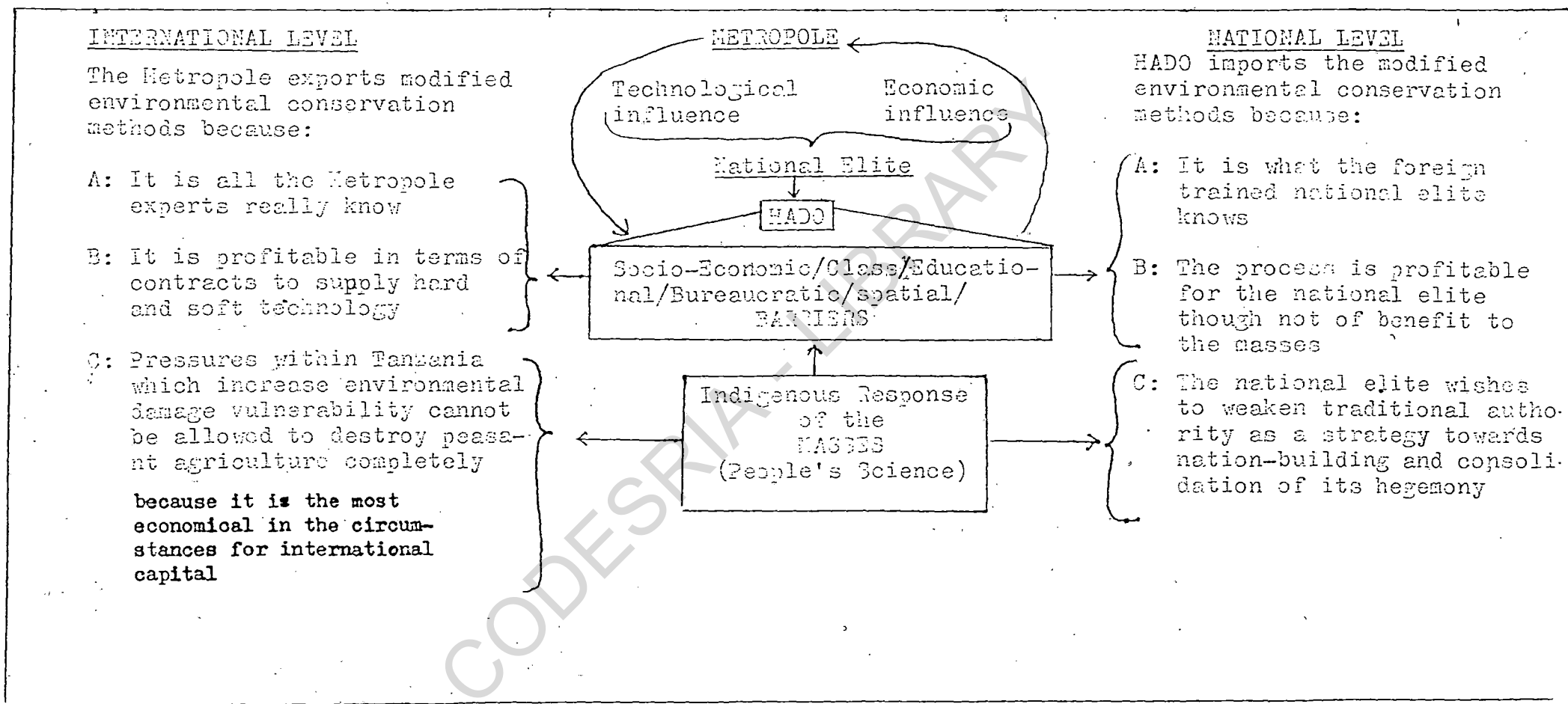
However, this rapproachment has not been very easy for the HADO administration. For while the KEA people's resistance has been taking place at only one

level (i.e. the community socio-cultural level) HADO's strategy has been operating at two levels, i.e. at the micro and the macro levels.

At the micro level HADO's strategy for environmental management can be characterized as purposive action that has been taking place to fulfil the interests of the organisation itself. HADO's action, in this respect, should be seen as action aimed at maintaining itself and working towards the realization of its own goals. Until very recently, for instance, the HADO leadership comprised mainly of foresters whose traditional training in forestry has never been man-oriented. (Kikula, pers. comm.). But at another level, these people have individual interests and professional expectations that have had to be promoted and fulfilled. These factors have alternately affected the attitudes and actions of the HADO administration.

At the macro level, however, the HADO administration has had to realize, through the organization, yet another set of goals which transcends the organization itself, but for which the organization becomes an instrument. These are the goals set out at the national and international or metropole levels in the form illustrated in Figure 5.2. As it can be seen from that figure there is a harmony of interests between the metropole and the national elite that forms a

Fig. 5.2: The HADO - Metropole Relationship.



comprador group. However, the interests of these two spheres are antagonistic to the indigenous responses to the economic and environmental problems of the KEA. A direct result of this situation is that HADO has been accountable to the professional bureaucrats in Dar es Salaam and to the national government at all levels for their development actions. It has also been accountable to SIDA (the international donor agency) for funds. But it has never been accountable to the KEA people for the processes it has unleashed by its interventions.

In this respect, therefore, the KEA people's resistance against the HADO administration becomes, in fact, an expression of a bigger and longer struggle against external domination beginning at the village level and going all the way to the national and international levels.

5.2: Image Discrepancy and Social Change in the KEA

We saw in chapter Three and Four how the institutional structure of the Rangi society had undergone a major transformation. We saw how the balance of socio-political power had shifted from social groups within the indigenous Rangi community to, first of all, the two colonial administrations and then, later to the elite nationalists as backed by international capital. We saw also how the different types of agricultural production and social relations ushered in

by the HADO conservation intervention within the KEA had necessitated the giving up, by a large number of the people of the KEA an agro-pastoralist socio-cultural existance for a purely agriculturist one. To many poor agro-pastoralist households this has proved to be a difficult thing indeed to accomodate and have consequently reacted in the only logical way, i.e. by resisting the change.

According to Friedmann (1989) the village household economy participates in five spheres of potential action. These spheres are the household itself whose relations of power are heavily influenced by the access of adult household members to the outside world, the civil society which is the sphere of special relations, of kinships, friendships and reciprocities; of religious membership, et cetera, the state, which is not so much a sphere of potential action as of participation, the market, which is the principal source of the household's monetary income, and the political community.

As the political front of civil society, the political community is the sphere in which civil society attempts to convert itself into political power. The central institutions of the political community in democratic societies are the political parties independent of the state.

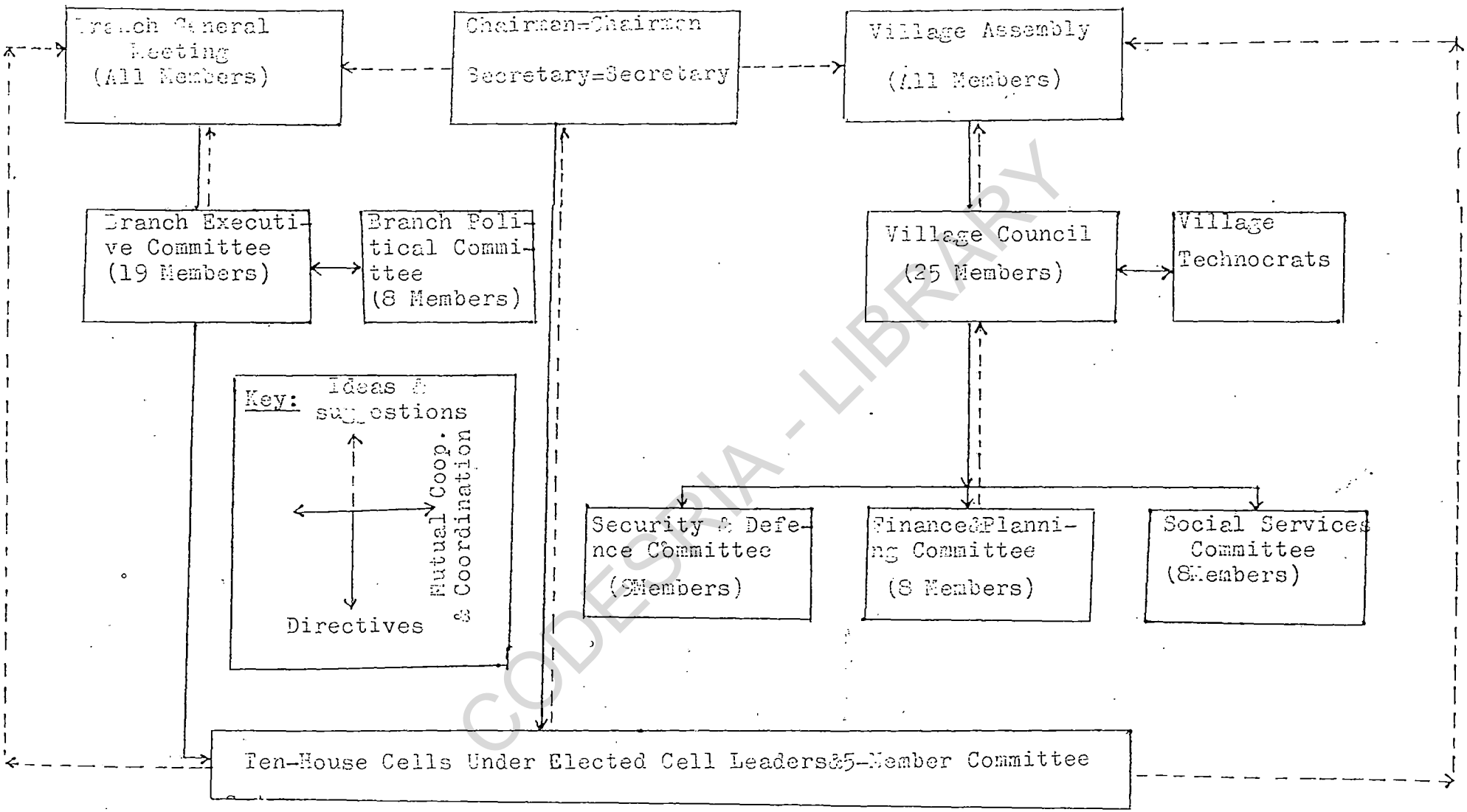
The most important sphere for the people of the KEA to organize themselves and realize their manifest interests vis-a-vis the HADO Project would, therefore, have been through the political community. Within the KEA, however, this sphere is defective. Figure 5.3 illustrates the prevailing village Party and Government structure within the KEA.

According to the Villages and Ujamaa Villages (Registration, Designation and Administration) Act of 1975 and as superceded by the Local Government (District Authorities) Act No 7. of 1982, each village within the KEA has a Village Assembly (VA) which is supposed to be the highest representative organ in the village. Under the above mentioned Acts the VA elects the Village Council (VC) or the village government. It also has the power to remove any or all the members of the VC. All members who have attained the apparent age of eighteen years and above and who are ordinarily resident in the village are automatically members of the village and hence of the VA.

The VC, on its part, consists of 23 elected members of the VA plus the village chairman and secretary.

Ordinarily, the VC within the KEA socio-political

Fig. 5.3: Village and Government Structure in the ASA, 1985.



environment operates under three standing committees, i.e. committees on Security and Defence, Finance and Planning and Social Services. There are, however, no sub-committees operating within these three committees. The VC is empowered to do all such acts and things as are necessary and/or expedient for the economic and social wellbeing of the village. It is also within its duty to plan and coordinate the work of the villagers engaged in the various socio-political activities.

Within each village there is usually also a Party Branch. The chairmen and the secretaries of the VC are also respectively the chairmen and secretaries of the Party Branches. The aim here seems to be to effectively facilitate the coordination of state and Party affairs and interests at the village level.

All Party members within the village form the Party Branch and do convene the branch General Meeting, which is the highest Party sitting at that level. The General Meeting has, among other things, the duty of electing the Branch chairman (after the candidate has been screened by the District Party Executive Committee), three members as representatives to the District Party Annual General Meeting, one member for the Regional Party Annual General Meeting, and ten members to form the Branch Executive Committee.

The Branch Executive Committee, on its part, comprises at least 22 members - being an aggregate of the ten members elected by the Branch General Meeting, the Branch chairman and the secretary, the three representatives to the District Annual General Meeting, two representatives from each of the existing mass organizations, and one district councillor. Generally, this Executive Committee has the responsibility of, among other things, directing and overseeing the building of Ujamaa in the area; of nominating the final list of members seeking to contest for the ten-cell and Branch Political Committee elections.

Finally, it forms the various Party sub-committees at the Branch level.

The smallest administrative unit at the village level is the ten-house cell which comprises all the cell residents - both Party members and non-members. These cells operate under a freely elected cell leader or balozi, and a five-member popularly elected committee.

The village socio-political organization described above would appear to have created an excellent and unique opportunity not only for people's participation in rural development programmes but also villages seem to have been endowed with institutions

that can facilitate self-government and socio-economic planning. But in reality this has not been the case. This study shows that this institutional framework has not been functioning as well as one would have expected under these circumstances. The study has in fact confirmed the findings by Kauzeni et al. (1988) that:

(a) There is a very low extent of popular participation in the socio-political life at the village level, especially so by women and youth who are so much affected by environmental degradation.

(b) Indepth interviews with village leaders clearly show that the crucial village leadership positions, especially the chairmanship and the secretaryship, are more often than not being occupied by individuals who, by nature of their political appointments, are more accountable to and allied with the interests of the state rather than the local political community.

(c) There is a virtual absence at the village level of the civic social organizations that could have otherwise provided an alternative channel for popular initiatives in the various sectors of the socio-political life. The well known institution of the Mweneisi, for example, has effectively been superceded and pushed underground.

(d) There are no formal institutions at the village level to make land use decisions and deal with matters of environmental conservation and/or management and that HADO would use or cooperate with if it wished to do so. Land and its control is operated on individual basis.

Let us consider for a while the significance that this type of government structure may have had for the people of the KEA as far as their relationship with HADO is concerned. As we saw in Chapter Three the traditional pattern of participation in the local political community among the Rangi was based on consensus. The powers of the Mweneisi were normally hardly absolute. Various forms of internal checks were used to control the abuse of power by the Mweneisi. In case the Mweneisi became unbearable one could always move out of the village and settle elsewhere.

With the coming of colonialism, however, all this changed. The introduction of the office of the akida or chief and the concentration of the powers on the hands of the office bearer removed the means of social control and actual participation in the local political community by the ordinary Rangi peasant. Henceforth the Rangi people could not depose the chief nor could they

easily move out of a village if they happened to differ with or simply disliked the chief.

It is interesting to note that this situation still exists today. The Village and Ujamaa Villages Act is not explicit enough on the subject of recall. Incumbents can only be removed through lengthy processes involving the upper echelons of the Party. The district leaders, in contrast, can on their own initiative suspend village leaders, regardless of their manner of election (Kaya, 1989:63).

From a practical point of view, it is the central government which determines village life. It determines, through the various operations and legal acts, where villages and individual homesteads should be located; who should live in the village; and the nature of business activities that may be conducted. Moreover, the government regulates the types and amount of crops that should be grown. It also stipulates the acreages of each crop and the agricultural methods to be used (Kaya, op.cit.). The implication of this is that the peasants have virtually little formal control over their own social production. This partly explains why the Rangi opposition to the HADO activities has never been expressed on the political forum.

5.3: Conclusion

In general then the HADO Project seems to have just adopted and to have been working within a pre-existing top-down and centralized management approach of the Tanzanian political system; so much so that the resistance by the people of the KEA, as discused above, could as well be conceptualized as a struggle against this very management approach. It is a struggle for the reconstitution of a free political space in which local social power can be transformed into political power. The bid is for self empowerment that will eventually give the people of the KEA a chance to decide on what to do with their life and to choose the type of development strategy they prefer.

From an environmental viewpoint this would mean that the state and the Party would relax the grip they currently hold on the various operations at the village level and give the VC the capacities and autonomy to manage communal lands in a way that would be beneficial to all members of the village. This the state would do by offering to villages certificates of right of occupancy of village land that would enable them to establish rules and regulations within the existing political structure towards land use that would be agreeable to and well understood by all the villagers.

At the individual household level the VC should have the power to exert pressure and give sanctions to any household or individual villager who inconveniences other people by not conforming to the known and accepted principles of land husbandry.

The central government institutions, on the other hand, should be responsible for offering the following support systems. First and foremost, they should be innovative enough and disengage as much as possible from international capital interests. They then should try to understand the kinds of social situations and relationships they are dealing with so as to overcome the all too pervasive and misleading prejudices and patronizing attitudes towards the peasantry adopted from the developmentalist paradigm.

Secondly, the judicial system at all levels should be ready to act as arbitrators to the individuals and/or villages which feel aggrieved by the non-conformist behaviour of neighbours.

Thirdly, the educational and information system should be responsible for seeing that the appropriate land management practices are promoted through the use of school curricula and the mass media. At the more practical level, however, the HADO administration and

donor agencies should engage themselves in active promotion of the accepted practices and programmes by involving the villages and their various organizations in reciprocal or "If you do this, we'll do that" contracts (Splash, 4:3, 1988). These contracts have the advantage of forestering confidence, solidarity and dynamic involvement in and a sense of ownership of the conservation programmes among the concerned peasants. The essential elements here are awareness-creation organization and confidence-building for a 'bottom-up' development approach.

CHAPTER SIX

SUMMARY AND CONCLUSIONS

The HADO Project was apparently established in 1973 to rehabilitate degraded land resources in the KEA for the people of that area. The approach of the project to the problem was, as we have already seen, basically technical, involving the construction of contour bunds, construction of check dams, production and distribution of seedlings and tree planting. In October, 1979 the project successfully prohibited grazing within the KEA by using a 1968 by-law. The results of those efforts have been a denser vegetation, decreased sediment transports in the streams, the stabilization of sand rivers, narrowed and stabilized river courses, extended stream flows, and permanent yields of well water. Yet this technical achievement has not been well appreciated by a large majority of the poor peasants of the KEA Rangi. The objective of this dissertation has been to try and find a sociological explanation to the problem of why such a technically successful programme should have been met by such coldness and, at places, open hostility and opposition from the very people it was meant to benefit.

Using historical data (Chapters Two, Three and Four) we have seen, in this respect, that despite the

existence of a variety of farming systems, and hence their relevant man-land relationships, up to the turn of the 19th century almost all of these farming systems had evolved in a precise relationship with the environmental, social and technological conditions of the particular time and space. Examples were given of the pastoralist who was an authority on the feed values of different pastures at different seasons of the year for different age groups of his stock; and of the agriculturalist who, though using the simple hoe and fire for the clearing of land and pasture management, utilized his tools to the maximum and in a way that facilitated utmost conservation of the environment.

We also saw how even under the pressures of population growth these systems always managed to readjust themselves to the changes and redress the imbalance in a true ecological sense. Examples were cited from among the Kara of Lake Victoria, the Matengo of Mbinga, Southern Tanzania, the Iraqw of Mbulu, the Wafipa of Sumbawanga and the Rangi of Kondoa.

We further saw how in all these indigenous societies the proper use of land resources was regulated by ideologies based on custom, religous beliefs, and other codified local knowledge; so much so that up to mid-19th century there were little or no problems at all

of land degradation. It was also clearly shown how the outbreak of long distance trade caravans and other population movements in mid-19th century, the Great rinderpest Epidemic of the 1890s and the advent of European colonialism ended the era of purely localized impacts on each natural environment by human groups who had long been acclimatized to it and grown experienced in its limitations.

We saw also how the arbitrary decisions and actions of the subsequent colonial administrations began to play the ever-increasing and environmentally detrimental role of over-persuading or simply overriding the indigenous people to adopt the dubious agricultural practices and programmes which, left to themselves, they would never have adopted. We further saw how these practices and programmes had actually led to serious land degradation and soil erosion and the failed attempts by the colonial administrations to ameliorate their socio-ecological impacts.

With the coming of independence and the establishment of the HADO Project one should have expected then that at last the people of the KEA, in particular, and Dodoma region, in general, would have warmed up and accepted the Project as their own. Contrary to these expectations the project appeared not to have been adequately appreciated and accepted by the

people of the KEA.

While one could have understood the hostility with which these people and their counterparts elsewhere had greeted the colonial soil conservation programmes one may fail to understand the KEA people's attitude towards the HADO Project. The possible answer to this riddle was seen to lie in the conceptualization of the term Image Discrepancy.

Consequently, the theses for this dissertation have been presented through three basic propositions: first of all, we have postulated that institutionalized environmental management is first and foremost a social process. It determines and is reciprocally determined by the relevant coarse of social life. This relationship is supposed to be continuous unless there is an external interference in the concerned ecosystem.

To prove this assertion an analysis of historical data was undertaken. We saw in this respect how the indigenous societies in the country had developed well balanced and user-friendly ecosystems, and how these ecosystems were later on destabilized by external interference. We saw in this context how the coming of colonialism had destabilized such self-sustained farming systems as those of the Kara, the Iraqw, the Matengo and

the Fipa of Sumbawanga. More specifically we saw how the coming of the caravan trade, the outbreak of the great rinderpest epidemic and the coming of colonialism had destabilized the hitherto well balanced Kondoa Irangi ecosystem and left it in ruins.

The second proposition which essentially derives from the first one discussed above was more specific to the study problem. It posited that the main cause of HADO's failure to make the KEA people voluntarily come to grips with the deteriorating condition of their environment was the fact that the indigenous local level institutions that had traditionally performed the coordinating and regulating functions in environmental resource use had historically been undermined and superceded by supralocal socio-political institutions and interests that were not necessarily promoting prudent environmental resource use.

To prove this proposition both historical and empirical data were used. In Chapter Three and Five it was argued that the coming of Islam had changed the old matrilineal principle of property relations into a patrilineal one thus also changing the nature of institutional set up at the local level. On the other hand, it was also argued that the coming of German and

British colonialism and later the advent of independence had gradually eroded the powers of these changed indigenous institutions.

We described how institutions like the Mweneisi and their salient ideological components - like the indigenous and environmentally related customs and beliefs - had thus lost most of their religo-political relevance. We illustrated, for example, how the establishment of the akidas, the jumbes, the village chairmen and secretaries, ward secretaries, et cetera, under the German, British and post colonial regimes, respectively, had eventually emasculated the traditional institutions and introduced instead a top-down management strategy that utilized supralocal institutions with interests that were often at variance with sustained land use at the village level. We, therefore, finally came to the conclusion that it was this institutional vacuum at the local level which was at the background of the study problem.

The third proposition was a derivation of the second one described above. It postulated that the top-down approach brought to the socio-political scene of Tanzania, in general, and of Kondoa District, in particular, by the various political regimes had also facilitated the use of a top-down approach by the various soil conservation programmes - including that of

HADO. In conjuction with this it was also postulated that this top-down approach had made the superceded local-level institutions to operate in the underground, focusing their attention on resisting the conservation programmes rather than on evaluating and appreciating the programme's advantages.

Historical data were used to test the validity of this proposition. In Chapter Three, Four and Five we demonstrated, for instance, how the Tanzanian socio-political scene had developed to be a top-down affair. It was further illustrated why this was so under colonialism, and also how the approach was effectively adopted by the post-colonial state by suppressing all indigenous local-level institutions. It was argued, therefore, that since the various soil conservation programmes, including HADO, were essentially government programmes they had all along adopted the same top-down approach in their operations.

At another level, however, we also saw that the superceded indigenous local-level organizations had not entirely been suppressed by these supralocal institutions. We argued that in the Rangi society these institutions had merely been driven underground and were in fact providing the base for the KEA people's resistance against the HADO administration. Image

discrepancy as derived from material discrepancy was thus suggested to be a major analytical concept in the understanding of the KEA environmental management conflict.

An attempt at an extension of the explanation for the study problem was also made. It was postulated in this respect that the existence of many solutions or options to the problem of land degradation and soil erosion other than the adoption of effective conservation techniques within the KEA had further aggravated the above mentioned conflict and facilitated continued profligate land use.

Using sample survey data an attempt was made to test the validity of this proposition. In the process we evaluated data on the household economic activities, land ownership and land use. Migration patterns were also analysed. Our expectations, in this respect, were that the data would throw in relief a situation whereby economic activities other than agriculturally based ones would be predominant. For the proposition to hold water we also expected that landlessness and outmigration in search of land, business, paid employment, et cetera, would be characteristic features within the KEA.

However, crop cultivation and other agriculturally based occupations were found to be

dominant not only in the KEA but also in all the other two sample clusters. Non-agricultural occupations like business and salaried employment were found to engage a proportionately negligible percent of the KEA population. The data on migration, on the other hand, showed that generally there was very little population movement in the whole of the KEA. As for those who had out-migrated their movements were characterized by short distances, normally to periphery and outside HADO clusters. Their going was as much a result of a perceived land shortage as a continuous territorial expansion typical of the Rangi.

In summary then we came to the general conclusion that the failure of HADO to make the Rangi voluntarily come to grips with environmental degradation was not because the Rangi were ignorant, apathetic or simply negligent. On the contrary, this study has argued that HADO had failed to sell its soil conservation strategy to the KEA Rangi because the Project had no local political base. The indigenous local level institutions that had traditionally performed the coordinating and regulating functions in environmental resource use had been undermined and effectively superceded by supra-local, top-down and bureaucratic socio-political institutions whose international capital interests are at variance with prudent environmental resource use. HADO itself is, in fact, a reflection of these

interests (cf. Coulson, 1979).

But at the same time the local-level institutions thus superceded have not entirely been suppressed. Key informants within the KEA confirm that they are still surviving underground and are operating as bases of local resistance against the HADO administration which is perceived as a representative of alien interests and rule. In terms of social groups institutions like the Mweneisi, socio-cultural rites of passage, etc., are articulating the interests of a threatened traditional elite within the KEA. At a more general level the reaction of these institutions can be construed as a reaction against statism in its various dimensions. It is a reaction against centralism and in favour of a decentralized and multiplex social structure (cf. Coulson, op.cit.). This seems to explain why, for example, the resistance has been sustained for so long despite the apparent benefits brought about by the Project in the KEA.

Inspite of maintaining and fostering the KEA people's resistance against imposed social change and development, these indigenous institutions, nevertheless, no longer maintain the degree of command that they once enjoyed. In the Lechaptoisian conceptualization they are essentially de-developed (Kjekshus, 1977:91). They have lost most of their

original religo-political power, principles and rationality of maintaining order and cohesion in the Rangi society. As a result they cannot secure the conditions for the society's reproduction outside of the new village institutional set-up. As such though their major known principles can be adapted to suppliment the new village level institutions they cannot easily be revived to play their original roles again.

Having said that one would undoubtedly wish to predict what would be the future outcome of this conflict within the KEA environment. This demands that we equip ourselves with a knowledge of how the antagonists' cultures are integrated; how the different customs, beliefs and perceptions are related to each other on either side of the contestants' perspectives. Consequently, we also have to know how we can finally conceptualize social change.

We saw in Chapter One that, according to Dahrendorf, in any social system relations of social interdependence are always unequal. Some people have a greater capacity to shape the actions and behaviour of others (i.e. the carriers of positive dominance roles) than these others have to shape theirs (i.e. the carriers of negative dominance roles). We also discussed the social dynamics of such systems, and conceptualized a form of social change that is possible under those circumstances. We said that social change

in this respect would entail a modification of the prevailing pattern of interactions as determined by changes in the structure of social relations through changes in the dominance relations. In terms of action social change would involve a re-interpretation of the prevailing pattern of interactions and the structure of authority. At the general level, however, we noted that social change could be both for the better or for the worse; it could mean development or retrogression depending on the conditions of conflict and the conditions of structural change. In this study, therefore, our capacity to predict what may happen given the current land use conflicts within the KEA seems to rest upon a proper conceptualization of the term image discrepancy (Chapter Five).

In our discussion of this concept and its application to the situation in the KEA we noted that when the image discrepancy between the two antagonists had been at its lowest level the interests of the two social actors had tended to coalesce and become non-antagonistic. We gave examples of the youth and pure agriculturalists among the Rangi who had hailed the destocking of the KEA as a progressive decision; because it had created more land for their agricultural activities. We also gave the example of the agro-pastoralists who had successfully made an adaptation to

a life without livestock.

On the other hand, we saw also how the HADO administration had responded to these adaptations. We said that they had been forced to rethink about their approach to the problem of soil erosion in the KEA. We said they had started thinking about the adoption of an interdisciplinary approach and of being farmland oriented in their conservation activities.

The general lesson we learn from this experience, therefore, is that any social change requires some form of both unlearning and new learning from both the innovator and the object of innovation. The future of the conflict within the KEA may thus depend on how soon the HADO administration will unlearn its approach to the problem at hand and adopt the KEA people's point of view.

The problem of such an adaptation by HADO, however, is that the situation of dominance and conflict as pertains to the KEA is rife with a bigotry that may prove difficult to overcome in the short run. Taking their cue from the ruling elite in Dar es Salaam and from international capital at the metropole, the HADO administration have deep down in their hearts been believing that the people of the KEA are basically ignorant, apathetic, and some times even just plain

lazy. They have believed that these people lack the very basic environmental awareness; hence they have to be taught and shown the right way of managing the environment.

As it might have already been noticed, this belief has been based on an inherent distrust of anything peasant characteristic of believers in the "religion" of developmentalism /modernism (Fuglesang, 1984). The process of unlearning on the part of HADO would thus entail a relative disengagement from commitment to international capital interests and concentration on a strict reassessment of the relevance of this to the KEA situation.

Equally, the potentialities of the social structures and relationships that currently exist within the KEA-especially as far as environmental sustainability is concerned - should be reassessed so as to help overcome the prejudices and attitudes resultant of the misconceived developmentalist distrust mentioned above. Using the committee for finance and planning, for example, the VC could be sensitized on the extent and implications of the soil erosion problem to the KEA environment. After which they could be helped to act in an attempt to solve the problem using the villagers' initiatives. The establishment of an effective land use

planning subcommittee under the Finance and Planning Committee would go a long way to provide a useful base for all conservation programmes for a village.

The establishment of trust between the political elite and the rural people at the national level, and the HADO administration and the KEA people at the village level, seems to us then to be the fundamental factor in the process of lowering of the image discrepancy to a level whereby the material and economic interests of the two social actors will coalesce and become more or less harmonious.

This change of approach to social problems will, nonetheless, require a lot of political will on the part of the ruling elite at the national level, and on the part of the HADO administration at the village level. We saw in Chapter Five that the power relations that exist within the KEA villages are unequal; that they are top down and patron-client oriented. We saw, for example, how the Party and the central government determine village life through various rules and regulations, and how by the nature of their appointments crucial village leaders at the village level are more accountable to and allied with the interests of the national elites rather than the local people.

All of these need to be rectified before any genuine empowerment of the people of the KEA can take place. Villagers should be given the chance to freely elect leaders who will be accountable to them and their interests rather than those of the centre. Moreover, they should be allowed to practice the right to initiate, plan and implement village development projects - especially so with environmental conservation projects. The state and other exotic organizations like HADO should only be sensitizing the people on issues which are beyond the people's comprehension and/or awareness. When need arises they should also advice and help them in the process of planning, implementation and evaluation of these projects. However, the final responsibility for general grassroot development should rest on the shoulders of the people of the KEA themselves.

As stated before, this will be a tricky road to travel for the elites given the nature of their interests and those of their financers at the metropole. But if we believe that the choice of a development strategy and the participation in its implementation are a people's right then the establishment of trust between the people and the innovators should be of paramount importance.

Thus as we argued in Chapter Five above, the VCs should be trusted to deal with all matters pertaining to the village - including the economy and the mainteinance of the environment. In which case they should also be given the autonomy and the capacity to carry out these responsibilities effectively and honourably.

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APPENDIX I: THE HOUSEHOLD QUESTIONNAIRE

1.0 INTRODUCTION:

1.1. Village.....

1.2. Ward.....

1.3. Name of Interviewee.....

1.4. Age: .....

1.5. Sex 1. Male
2. Female

1.6. Relationship to Head of Household:

1. Head of Household
2. Husband
3. Wife
4. Brother
5. Sister
6. Son
7. Daughter
8. Grandchild
9. others (Name).....

2.0. INFORMATION ABOUT THE HEAD OF THE HOUSEHOLD:

2.1. Name: .....

2.2. Age: .....

2.3. Sex 1. Male
2. Female

2.4. Educational Qualification:

1. No formal education
2. Std 1-4
3. Std 5-8
4. Std 9-12
5. Std 13-14
6. Adult Education

2.5. Marital Status:

1. Not married (Answer Q. 2.9)
2. Married (Answer Qs. 2.6 - 2.8)
3. Divorced (Answer Qs. 2.6-2.8)
4. Widow (Answer Qs. 2.6-2.8)
5. Seperated (Answer Qs. 2.6-2.8)

2.6. Age of head of household at first marriage

2.7. How many times has the head of household been married? .....

2.8. Type of dowry paid

1. Livestock (Type and Number).....)
2. Cash (Amount) .....)
3. Livestock and cash (Number.....Amount.....
4. No dowry paid

2.9. How many wives or husbands does the head of household currently have? .....

2.10. How many children does he/she have?

2.11. Religion of head of household:
1. Islam
2. Christian (Denomination.....)
3. Other religions (Mention.....)

2.12. Ethnic origin of the head of household.....

3.0. SIZE OF THE HOUSEHOLD AND POPULATION DISTRIBUTION

3.1. How many people currently live in the household?

3.2. What are their names, sex, age and relation to the head of the household?:

Name	Sex	Age	Relation to head of household*
1.	M/F	.....	.....
2.	M/F	.....	.....
3.	M/F	.....	.....
4.	M/F	.....	.....
5.	M/F	.....	.....
6.	M/F	.....	.....
7.	M/F	.....	.....
8.	M/F	.....	.....
9.	M/F	.....	.....
10.	M/F	.....	.....
11.	M/F	.....	.....
12.	M/F	.....	.....
13.	M/F	.....	.....
14.	M/F	.....	.....
15.	M/F	.....	.....
Total			

Note* Relation to head of household:

1. Head of household
2. Husband
3. Wife
4. Brother
5. Sister
6. Son
7. Daughter
8. Grandchild
9. other (Name:.....)

4.0. ECONOMIC ACTIVITIES OF THE HOUSEHOLD:

4.1. What are the major economic activities of this household?

1. Crop production (Answer Qs. 4.2-4.18)
2. Livestock keeping (Answer Qs. 4.19-4.31)
3. Agro-pastoralism (Answer Qs. 4.2-4.31)
4. Wage employment (Type.....)
5. Agricultural labourer .....)
6. Business (Type.....)
7. others (Name:.....)

For Crop Producers:

4.2. Type of crops grown:

1. Maize
2. Sorghum/millet
3. Fingermillet
4. Cassava
5. Beanse
6. Groundnuts
7. Sunflowers
8. Sweet potatoes
9. Bananas
10. Other crops (Mention them.....)

4.3. For your three major crops what acreages were put under them and what was the amount harvested in the last season?

Type of Crop eneo	Area cultivated (Acres)	Amount Harvested
1. Maize	.....	.....
2. Sorhgum/millet	.....	.....
3. Fingermillet	.....	.....
4. Cassava	.....	.....
5. Beans	.....	.....
6. Groundnuts	.....	.....
7. Sunflowers	.....	.....
8. Sweet potatoes	.....	.....
9. Bananas	.....	.....
10. others	.....	.....

4.4. Were you growing the same crops even before the establishment of HADO fifteen years ago (1973)?

1. Yes (Go to Q. 4.7)
2. No (Answer Q. 4.5)

4.5. If no what type of crops were you growing before the establishment of HADO in 1973?

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....
7. .....
8. .....
9. .....
10. .....

4.6. What reasons made you change the types of crops grown?

1. .....
2. .....
3. .....

4.7. How much arable land do you own (acres)?

4.8. How many farms do you have?

4.9. What is the size of each of these farms?

1. Farm 1 (acres).....
2. Farm 2 (acres).....
3. Farm 3 (acres).....
4. Farm 4 (acres).....
5. Farm 5 (acres).....

4.10. Does the available land satisfy your household needs?

1. Yes (move to Q. 4.12)
2. No (Answer Q. 4.11)

4.11. If the available land is not enough how do you fill the deficit?

1. .....
2. .....
3. .....

4.12. Which type of agricultural implements do you use for cultivation?

1. Hand hoe
2. Ox-plough
3. Tractor
4. others (specify.....)

4.13. Which are the major problems hindering agricultural development in this area?

1. .....
2. .....
3. .....

4.14. How do you solve these problems?

1. .....
2. .....
3. .....

For Livestock Keepers:

4.15. How many of the following livestock do you own?

1. Cattle No .....
2. Goats No .....
3. Sheep No .....
4. Donkeys No .....
5. Pigs No .....
6. Others No .....

4.16. Where do you keep your livestock?

1. Within the village (Answer Qs. 4.12 - 4.23)
2. Outside the village (move to Qs. 4.24)

4.17. If you are keeping your livestock in this village, what is the pasture status?

1. Pastures are plenty (move to Qs. 4.24)
2. Pastures are just enough (move to Qs. 4.24)
3. Pastures and not enough (Answer Qs. 4.22)

4.18. If the pastures are not enough, which do you think are the causal factors of this situation?

1. .....
2. .....
3. .....

4.19. How do you feed your livestock during the scarcity periods?

1. .....
2. .....
3. .....

4.20. If you are keeping your livestock outside the village where are they?

1. Village.....
2. Ward.....
3. District.....

4.21. Why did you send your livestock to that village?

1. .....
2. .....
3. .....

4.22. Which are the major problems affecting the livestock sector in this village?

1. .....
2. .....
3. .....

4.23. How do you solve these problmes?

1. .....
2. .....
3. .....

5.0. MIGRATION:

5.1. Where was the head of the household born?

1. Village.....
2. Ward .....
3. District .....

5.2. Where was he/she living in 1973 when the HADO Project was started?

1. Village .....
2. Ward .....
3. District .....

5.3. Where was he/she living in 1979 when the livestock were removed from the HADO areas?

1. Village .....
2. Ward .....
3. District .....

5.4. If you were not born in this village when did you start living here?

5.5. What reasons made you come to this village?

1. .....
2. .....
3. .....

5.6. Do you intend to migrate out of this village in future?

1. Yes (Answer Qs. 5.7)
2. No (move to Qs. 5.8

5.7. If Yes, what reasons will make you move out of this village?

1. .....
2. .....
3. .....

5.8. If No, why do you prefer staying in this village?

1. .....
2. .....
3. .....

5.9. Are there any members of your household who have out-migrated since 1979?

1. Yes (Answer Qs. 5.10)
2. No (move to Qs. 5.12)

5.10. If Yes, why did they move out of this village?

1. .....
2. .....
3. .....

5.11. Where did they go?

1. Village .....
2. Ward .....
3. District.....

5.12. Are there any members of your household who have migrated in to this village?

1. Yes (Answer Qs. 5.13)
2. No (move to Qs. 6.1)

5.13. If Yes, why did they move to this place?

1. .....
2. .....
3. .....

5.14. Where did they come from?

1. Village.....
2. Ward .....
3. District .....

6.0. SUMMARY QUESTIONS:

6.1. Which are the major problems facing this village?

1. .....
2. .....
3. .....

6.2. How do you attempt to solve these problems?

1. .....
2. .....
3. .....

6.3. What measures do you suggest that can solve these problems?

1. .....
2. .....
3. .....

APPENDIX II

LIST OF KEY INFORMATIONS

1.	Mzee Mohamed Abdi	- Kondoa Town
2.	Mzee Damas Nyirembe	- Iyoli Village
3.	Mzee Abdallah Kimolo	- Tandala Village
4.	Mr. R.I. Hamisi	- Kolo Village
5.	Dr. Sitna Mohamed	- Dalai Village