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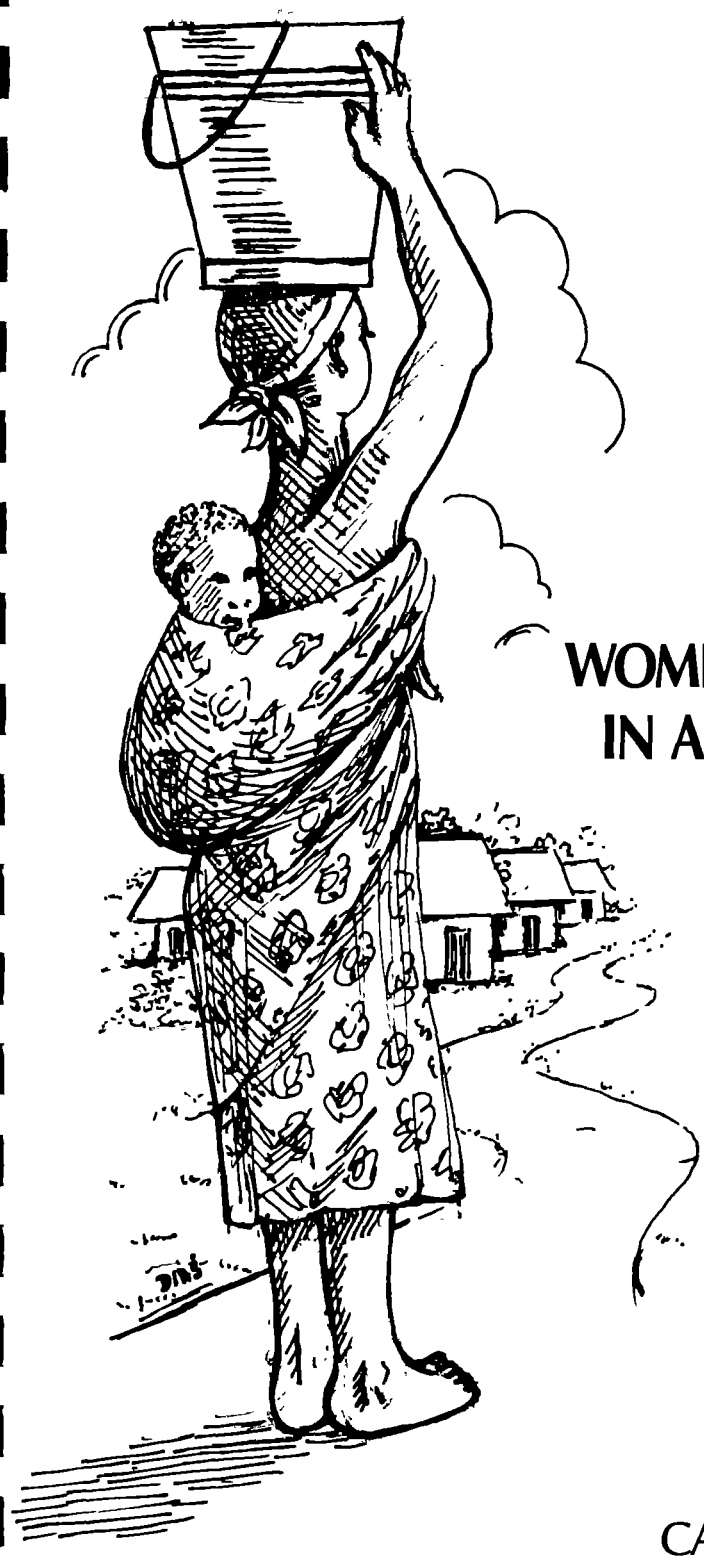

RESEARCH REPORT NO. 52

WOMEN, WATER AND DEVELOPMENT IN A PARE SETTLEMENT, TANZANIA

CAROLYN HANNAN-ANDERSSON

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November 1982

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ABSTRACT

A theoretical framework for discussion of women, water and development is given. Particular attention is paid to the present role of women, the expected benefits of improved water supply and the probability of such improvements acting as a catalyst for women's development in rural societies. This section is followed by a case study from a small rural settlement consisting of 42 households. The data presented includes information on water collection, water in the home, health aspects, improvements of the water supply in the priority of village needs and the women's opinion of the water supply situation in general. Special attention is given to the women's perception of the village problems and needs, including water supply. An attempt is made to place the burden of water collection in the context of the total work burden of women in rural areas. In conclusion the role of women in the general development of this particular settlement is analysed and it is concluded that the probable impact of improved water supplies would be negligable. The possible implications of this study for planning of improved water supplies in general are presented.

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PREFACE

This report was produced in the context of a project on the development of domestic water supplies in rural areas in Tanzania: "Domestic water supplies: a vital component in Tanzania's rural development. A consumer-orientated study of selected schemes in four regions." This project currently being carried out by Ingvar Andersson and Carolyn Hannan-Andersson, is financed by a research grant from SAREC, the Swedish Agency for Research Cooperation with Developing Countries (9.49/u-forsk) and involves research cooperation between the Institute of Resource Assessment (formerly BRALUP) in Dar es Salaam and the Department of Social and Economic Geography at the University of Lund.

Ingvar Andersson participated in the fieldwork which forms the basis for this report and was responsible for the maps, figures and illustration in the report. I am also grateful to him for constructive criticisms and suggestions throughout the preparation of the report and especially for help with the time-space analysis.

I wish to acknowledge the assistance of three very capable field assistants - Antonia Everest, Ruth Mvungi and Evetha Mcha. Their knowledge of the local language and their understanding of, and respect for, the women with whom we met did much to enable us to gain the information we did.

I am also grateful to Professor Adolofo Mascarenhas, of the Institute of Resource Assessment (formerly BRALUP), for the support given to the project and his constructive criticism of this report.

Finally, the report is dedicated to the 44 women of the village who opened their homes to us and willingly participated in the project, in the hope that it may make some small contribution to stimulating better planning for women in rural areas in Tanzania.

Carolyn Hannan-Andersson
Dar es Salaam.
November 1982

INTRODUCTION AND SUMMARY

In this study an attempt was made to combine theoretical and empirical approaches. Part 1 presents a conceptual framework for the study of women, water and development in rural societies. This section presents and discusses the more theoretical findings of other researchers. The themes of women and rural development (with special attention to women in Tanzania) and the development of water supplies in rural areas (again with special attention to the situation in Tanzania) are treated in some detail. Research priorities are also taken up. The section "Women, water and development" focuses specifically on the role of women, the expected benefits of improved supply for them, the catalytic impact of such improvements on women's development, the aspects of "choice" and "control" in the management of water for domestic use and the desirability or non-desirability of special strategies for women.

A case study of one small settlement in Pare is presented in Part 2. The section on methodology includes information on the research objectives, the choice of village for study and fieldwork methods. This is followed by information on the Pare environment and the rural settlement of Kisekibaha. The data collected on the various aspects of water collection and use, health aspects, attitudes and opinions of the water supply, the ranking of water supply in the priority of village needs and the burden of water collection in the daily life of the women, etc, are presented wherever possible in table form for clarity. Further discussion follows the presentation of statistics of each aspect of water supply taken up. An attempt is made to assess the possible impact of improved water supply on development in Kisekibaha and the implications of the study for planning rural water supplies.

The conclusion reached is that it is impossible to study domestic water supply in rural areas in isolation from the total development situation in each individual settlement. The burden of water collection must be placed in the context of the overall work burden of women in rural areas.

Given the general developmental picture in Kisekibaha, it is evident that improved water supply would have very little developmental impact, without other supportive inputs. Indeed, it is doubtful that even the benefits normally expected (at least in theory) from improved water supply, eg better health and increased productivity, could be attained. Certainly it

is unlikely that women would use more water since they do not perceive the need to do so. They would probably appreciate a decrease in their time and energy expenditure on water collection but it cannot be expected that there will be an increase in their participation in productive developmental activities in the village. The constraints on the full participation of women in rural development are many, for example, excessive work load, generally subordinate position, lack of education, restricted mobility and the low expectations of the women themselves. These problems are all inter-related and none can be tackled in isolation. All are related to the low position and status of women in rural societies. No real benefits from any developmental inputs, improved water supply included, can be expected unless some effort to improve the general position of women is made simultaneously. Such an improvement will be difficult since it appears that women generally have also a low assessment of their role and importance in rural societies. This, ironically, in spite of the fact that it is the labour inputs of the women which ensure the survival of the subsistence rural societies of today.

Even a cursory observation of the sanitary facilities and the personal hygiene patterns and habits at the village level, indicates clearly that providing clean water to rural settlements cannot, in isolation, produce any noticeable health benefits. Supplementary inputs in the form of sanitation facilities and health education which reaches the individual women in each household are essential. It is obvious that health education to date has had little real practical impact on hygiene at the village level. This would seem to imply some kind of communication problem and perhaps a revision of the form of health education is necessary.

It is also clear that the provision of an improved water supply will not automatically result in women's involvement in more economically productive activities. In the first place there may not always be opportunities for women to become involved in such activities. Secondly, and more importantly, because of women's excessive work burden, any time saved will be needed to carry out the duties which women have little time for at present, including such activities as cleaning the house and caring for children. Women may also simply need more time to rest in order to be able to better carry out the duties they have.

The implications of this study for the planning of rural water supplies in general are summarized below.

1. The problem of water supply in rural areas cannot be tackled in isolation from the total problems in each individual village. Thus knowledge of the conditions in the villages is necessary before any planning takes place.

2. Women must be recognized as key factors in the development of rural water supplies as they are those who will be responsible for the acceptance/non-acceptance, use/non-use, operation and maintenance of the improved supply.

3. The perceptions of women as to the water supply situation in general, possible improvements and the expected benefits of any improvements must be the focus of attention from the very start.

4. It is not advocated that there be special strategies for women, i.e. special water projects for women. Instead women should be involved in all aspects of improved water supply projects directed at the whole community, in determining priorities, planning, construction, operation maintenance and evaluation. Women's participation must involve more than the providing of "women-power" for construction activities.

5. The aspect of real communication with the villagers, and especially the women, at all stages in the development of improvements, is crucial for the success of the project. In particular efforts must be made to provide adequate education in the proper use of the supply and health aspects. These educative aspects must be an integral part of any water supply improvement and should not be left to others outside the project. Where possible existing structures and personnel should be utilized if it can be ensured that the correct information reaches each individual woman in each household and not just the village leaders.

6. An improvement of the general position and status of women in rural societies is a necessary prerequisite for the achievement of optimum benefits of any development project, including improved water supply. This cannot be achieved in a short space of time. However a concentration of efforts on reaching women in improving water supplies can be a step in the right direction.

PART A THE THEORETICAL BACKGROUND: WOMEN, WATER AND DEVELOPMENT

"Woman of Africa
Sweeper
Smearing floors and walls
with cow dung and black soil,
Cook, ayah, the baby on your back,
Washer of dishes,
Planting, weeding, harvesting
Store-keeper, builder,
Runner of errands,
Cart, lorry, donkey...
Woman of Africa
What are you not?" *(Okot p'Bitek)*

1. WOMEN IN RURAL DEVELOPMENT

1.1. A general overview

Most of the countries in Africa still face the challenge of developing their rural areas. Since it has been estimated that between 70 and 90 percent of African people will continue to live and work in these areas for several decades to come, rural development is obviously a priority area. (Pala,1976) Policy makers, planners and researchers perceive their task in evolving a set of related development programmes which aim to improve material and social conditions.

Rural development is, however, more than an economic or technological process. It is equally a social process that entails a rural transformation. (Mbithi, 1972). There is an increasing emphasis on "integrated rural development". "New technology, and efforts to increase per capita output and food production as well as improve rural infrastructure must be integrated into an on-going socio-cultural process." (Nelson, 1979). Only then can the expected benefits of rural development - an equitable distribution of income and reduction of regional inequalities and rural-urban migration, be achieved.

Concepts of rural development which have developed so far have failed to include the centrality of women's behaviour in predicting and explaining rural plenomena, and "planners have therefore not seen the need to understand the frameworks governing that behaviour in order to formulate and carry out policy more effectively." (Zeidenstein, 1979). This is obviously linked to the fact that politicians, planners and extension staff working in the field of rural development "depart from a perception of rural communities as lacking all forms of indigenous economic planning, organization of work, technology, etc." (Tobisson, 1980).

Little attention is given to the basic feature of traditional rural society through which people seek to fulfill their basic needs and improve their conditions,i.e. the family. An equally basic feature which is ignored is the fact that family responsibilities are usually divided along sex lines among adult males and females, and that " for members of each sex, responsibility to the family usually includes production or provision and

control or management of the resources needed to carry out their work." (Zeidenstein, 1979). To date development policies and strategies largely ignore the existing division of labour and the complementarity of the male and female members of the rural household. The dual role and responsibility of women as producers & reproducers is almost totally disregarded.

Nelson (1979) has pointed out that excluding women means underutilizing a high potential resource and that this can eventually have adverse effects on the economic growth rate. Research is necessary to "convince planners and administrators that the potential of women is at the moment largely untapped by rural development projects."

Lack of attention to women and their roles

Women have been viewed as passive or neutral factors in the socio-economic and technological transformations being implemented in rural areas. At worst women are even regarded as a negative factor in the process. Unfortunately it appears that the same paternalistic attitudes which tend to characterize attitudes of the educated towards peasants in general "prevail to an even greater degree in men's attitude towards women when it comes to progress and development goals which manifest the general belief that the section of the population which holds down development are the women." (Swantz, 1977).

Technological development has either largely ignored the areas of life which are women's work (e.g. water collection, fuel provision, food processing and food storage, etc) or has usurped important women's roles, such as craft production, without providing them with any alternative productive functions. (Nelson, 1979). In fact, as a direct result of the lack of research into and knowledge of women's situation in the rural areas, it could be said that women have, in many cases, been adversely affected by technological and sociological changes brought about by the development process. Women have, in most cases, certainly not benefitted from the education and training programmes which have brought new skills to men.

> *"It is true that development has not reached most of the people living in the rural areas of Africa. But where it is reaching, it tends to benefit men more than women... ... numerous studies show that the impact of modernization makes women's tasks increasingly burdensome and even less productive." (UN/ECA, 1974)*

The studies of rural women to date

Studies of the role of rural women are few and far between. However, since the invaluable study by Boserup (1970) the studies which are made are revealing that women, in fact, play no small part in rural development processes. Little research to date has actually focused specifically on village women, although some studies carried out mainly by women anthropologists have contributed greatly to our knowledge of the realities of village women, for example, Richards (1937), Kaberry (1952) and Colson (1958). More recent studies which also point out the enormous work burden and the unequal status of women in rural areas include Boserup (1970), and more specifically on Tanzania, Swantz (1977) and Tobisson (1980). These and other studies are making it increasingly clear that women bear a disproportionate share of the total work burden in relation to that of men. Appendix 1 reveals that in African countries women are responsible for 70% of food production, 90% of water collection, 100% of domestic duties as well as 70% of self-help activities in the community.

Documentation of women's productive labour input:

A number of sources clearly document the contention that African women have been the principal producers of food crops in their respective societies. A study by Baumann (1928) revealed that men's labour input consisted of the heavier work of clearing the land. It was confined to a short period whereas the work done by the women (planting, weeding, harvesting, etc) continued all year round. The findings of later scholars in different regions of Africa seem to corroborate Baumann's observations.[1.]

A number of writers on women's roles in African economies have indicated that the colonial economy adversely affected female autonomy and disrupted the traditional patterns of task allocation on the farms. In stressing cash crop farming over subsistence, Europeans introduced technology into what they defined as the male agricultural sector.

> *"Men subsequently monopolized the use of new equipment and modern methods while women continued with the traditional; male productivity and status increased while that of the female decreased...Colonial legal reforms led to the loss of women's right to land ownership and changed their roles from independent cultivators to their husband's assistants." (O'Barr, 1976).*

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1. See also for East Africa: Wagner,1939; Peristany, 1939; For Kenya: Wills: 1967. For Uganda: Edel, 1957; Driberg, 1931.

Boserup's analysis of the decrease in women's contribution to the economics of developing countries, plus the awareness that, prior to the introduction of modern economies and their technology women had a greater economic input, both "underscore the importance of women's economic role to her overall social status." (O'Barr, 1976).

Documentation of women's reproductive roles:

If women's productive contribution to agricultural work is highly underestimated, their reproductive responsibilities are completely neglected. Very little attention has been given by scholars, male or female, to the reproductive activities of village women.[1] Most of these activities, which are normally carried out within or in the vicinity of the home, appear as a residual category "non-work or leisure." (Tobisson, 1980).

In reality women's reproductive role is far from a simple one. It is related to a whole range of socio-economic activities. It is well documented that a great deal of women's time is taken up with child bearing and rearing, household provisioning and management (cooking, cleaning, washing clothes household repair and manufacture, fuel provision, water provision) and care of the old and sick. As well she may also be involved with livestock raising, artisan production and trade and income generation. (Zeidenstein,1979).

> *"Women's work is obviously extremely important to the maintenance of the family and the management of the farm, involving hard physical labour and long hours...Constraints imposed on women's productive labour by housework, childbearing and child-care have only recently become a concern of researchers." (Nelson, 1979).*

Not only has the female work contribution been largely underestimated (due to the fact that labour inputs in a household are often listed without any indication as to which are the responsibility of men and which of women), but as well, anthropologists and economists have consistently underrated the role of women as managers. (Firth, 1970 quoted in Nelson, 1979).

The problem of "work" and "non-work":

The fact that these very essential activities for the existence of the rural households can disappear in the category "non-work and leisure" is related to the problem with the concept of "work". Statisticians, planners and scholars have problems in defining and quantifying work. Work which is not formalised is not recorded by conventional tools. Thus women's

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1. For exceptions see: Henn, 1981; Mbilinyi, 1977; Tobisson,1980. Beneria, 1981.

work which is "bitty, disorganized, discontinuous and not rewarded in money or mentioned in employer records" has been ignored. (Nelson, 1979).

> *"It is the cash crops and conventionally "productive" activities that receive the bulk of attention. Women's roles in the informal productive sector and housework are ignored by these pundits of statistical data." (Nelson, 1979).*

An FAO report points out that most studies of public labour use inaccurate parameters to estimate female work participation and that the concept of economically inactive must be reconsidered when a closer look is taken at the work these "inactive" women actually do. (FAO, 1976 quoted Nelson, 1979)

As a result of the fact that the female contribution to the rural economy has been seriously underestimated, a myth of female dependency has grown up. (Germain, 1976). This has meant that women have been treated as dependents and peripheral to the development process.

Research on rural women: some special problems

Unfortunately the study of rural women labours under several handicaps that have created a research gap. One handicap that it shares with other areas of rural studies is the relative lack of attention paid to rural phenomena and"the consequent lag in the refinement of social sciences (which evolved in urban, industralised circumstances) to enable them to analyze rural social and economic behaviour." (Zeidenstein, 1979). In particular the inadequacy of the tools of research - the concepts, terminologies and methodologies - is specially frustrating in the rural context- and especially in attempts to analyze the situation of rural women.

For far too long research has been based solely on information gained exclusively from the males of the peoples studied. As a result "the picture that has emerged has to a large extent been the image which the men and the men alone have of their society." (Palme, 1963). Rohrlich-Leavitt et al (1975) points out that this is "further distorted by the andocentric theory and methodology. Slocum (1975) claims further that there is even a strong male bias in the questions asked and the interpretations given... not only in the ways the scanty data are interpreted, but in the very language used."

One of the biggest problems has been the fact that almost all the information available on women was collected from men by men. It has frequently come "from questions asked of men about their wives, daughters, and sisters,

rather than from the women themselves." (Reiter, 1975). The information was then presented as the reality of the group, rather than as that of part of the cultural whole.

> *"The research gap has been aggravated by the persistence, in the absence of more accurate data, of urban, normative, male perceptions of rural women, which conceals the relevance of rural development issues to women's roles and hamper the collection of necessary data through conventional systems." Zeidenstein, 1979).*

By describing rural women and their place in society, when they have been mentioned at all, with information furnished by the males of that society, women have been effectively denied the reality and validity of their self-perceptions and of their assesments of their roles and status. This explains the inadequacy of our understanding of rural society, as women have a "world-view specific to their roles in a given society; this view is very often different from men's." (Reidy, 1974). Indeed Ardner (1972) goes as far as to suggest that the very fact that women do have a very different view and model of society than that held by men, can explain why they and their roles and perceptions are glossed over or absent in descriptions of society. He maintains that "the models of society that women can provide are not of the kind acceptable at first sight to men or ethnographers..."

It is frequently argued that men in other cultures are more accessible for questioning. It is perhaps true that women are less easy to make contact with- at least for male researchers. However, another subtle, less obvious reason is probably the fact that "we think men control the significant information in other cultures, as we are taught to believe they do in ours." (Reiter, 1975). It is probably also true that men are found to be more "cooperative" and easier to understand for male researchers. At least they do not " giggle when young, snort when old, reject the question, laugh at the topic , and the like." (Ardner, 1972).

Certainly the greatest lack in descriptions of rural societies has been the voices of the women themselves expressing their own points of view and perceptions of themselves and their realities. This kind of information could greatly expand our knowledge and understanding of rural life.

Need to focus on rural women

There is an urgent need for an increase in studies which focus on rural women and their actual and potential roles in rural development. The nature of the responsibilities women bear in rural society necessitates that rural development policies and strategies recognize and support the resource needs of each sex (i.e. the genuine complementarity of the rural family and not just the male roles). Otherwise the intended benefits will not be achieved and unintended negative effects may result. The committment of women to rural development strategies cannot be won until full recognition of their roles is attained.

> *"If there was a recognition of women's coequal responsibility in the rural household and the consequences of that role for rural dynamics, information would be sought, incorporated in the knowledge base for rural planning, and operationalized in rural programs." (Zeidenstein, 1979).*

1.2. Women in Tanzania

There is often a tendency to lump women of one country, or even of the world, together as if their realities were completely similar. It is easy to make generalisations which, in fact, only apply to a small percentage of the female population being described. As is pointed out in Wallman (1976, quoted in Nelson, 1979) we must be aware of making "facile assumptions about women being a single category." This biological attribute is necessarily tempered by conditions of class, race, age, profession, wealth, kinship, etc. O'Barr also points out the need for anthropological relativism when dealing with women in developing countries.

> *"While there is a certain universality to the experience of being female, the variation in roles women play in other societies is much broader than western observers typically assume." (O'Barr, 1976.)*

It is no easy task to attempt an overview of the situation of women in Tanzania. There are approximately 130 different tribes with differing customs and traditions. Following the villagisation campaign in the 70s most people live in villages, but it is still difficult to make generalisations about the position of village women in Tanzania. (Eresund, 1977). There are also great variations between different parts of Tanzania and also between rural and urban areas. The impact of modernization and the changing socio-economic roles of women also add difficulties.

> *" The heterogenity of many tribal societies in Tanzania makes it impossible to generalise about women's traditional roles, let alone the new social and economic roles that are presently developing. " (Mbilinyi, 1972).*

Over 90% of the female population of Tanzania live in the rural areas, 46% of whom are over the age of 15. Adult women living in the rural areas constitute 25% of the total Tanzanian population. (Bryceson, 1980) Women form the main agricultural labour force. According to Egero & Henin (1973) 97.8% of economically active women were engaged in agriculture. A 1967 estimate gave 98% of the total agriculture in Tanzania as being carried out on small holdings. Thus women engaged in agriculture are members of farming households with relatively small areas to cultivate. These figures in themselves demonstrate women's central role in production in Tanzania. (Swantz, 1977).

As in many other subsistence units in developing countries, the women produce most of the food crops for survival and, in addition, often some for sale at the local market to produce cash income. The male population does help with food crops (at least in some areas) especially in the peak periods, but as elsewhere, there is a definite division of labour and responsibility. The men usually do the heaviest work which is not a continual burden. The women have the responsibility for the tasks of planting, weeding and harvesting. The men control the use of the land. In addition the men have the control and responsibility of the cash crops, although women make valuable inputs in terms of labour. Mbilinyi (1972) points out that the division of labour is changing in many areas due to the expansion of cash crops and the migration of men to urban areas. As a result women are "apt to assume many jobs once considered to be men's but few men will undertake chores considered women's work."

In addition to these productive activities, women have the usual reproductive roles and social and economic responsibilities. Women attempt to produce cash income for their families in whatever ways are available to them, eg through pottery, basketry, beer-brewing, etc. This is essential in today's Tanzania since the prices have escalated and goods which, a few years ago, were quite within the economic possibilities of the rural peasant are now priced out of reach. A blackmarket of essential goods is flourishing and the rural households are requiring more and more cash income to survive. In addition, the women labour with the increasing difficult of obtaining what they consider to be absolute basic items for the household - sugar, cooking fat, salt, soap,spirit for lighting and even kangas (the multi-purpose cloth used by Tanzanian women). Householding is no easy task in rural Tanzania given these conditions.

Families are normally large. The average birth rate is 47 per thousand.[1] This is partly due to the fact that, because of the high child mortality in the past, there was a need for many children. Children were traditionally spaced through abstinence while the mother was breast-feeding - often 2 years or more. Children are a valuable asset since they provide labour assistance especially for the women in, for example, collecting water and firewood, working on the shamba (field), grazing cattle, minding small children and generally helping around the house.[2]

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1. Figures based on 1978 census results.
2. See Mascarenhas (1977) for further discussion of the use of children in economic activities.

With regard to whether marriages in Tanzania are monogamous or polygamous, Mbilinyi (1972) makes an interesting point. She maintains that it is difficult to assess the proportion of either type since many of the marriages which are monogamous in the early years will become polyagmous in later years. She talks in terms of a "development cycle of a family". Usually a man remains with one wife during the early years of his marriage. "Only when he is economically able to provide for additional wives will he do so".

In the past women had few legal rights. In fact a wife was a "perpetual minor", legally dependent on husband, father or other male kinfolk". Mbilinyi, 1972). Since then there have been legislative attempts to protect a woman's rights as a citizen, a worker as well as a wife. The Marriage Contract Law (1971) attempts to regulate women's rights to property in cases of divorce and to establish a minimum age for marriage and the necessity of consent from both parties. In addition it states that the first wife has to give permission before a man can take another wife. An amendment in 1975 gave right to maternity leave to all women, regardless of marital status. While these legislative measures are a step in the right direction, there is some doubt as to whether they are actually followed in practice.

Unequal educational opportunities exist for women in Tanzania even today. The proportion of girls in the educational system drops with each successive level of education. (Swantz, 1977) The problem of primary school girls getting pregnant and being expelled with no chance of continuing their education is a great one. Some public debate has occured on this issue. The general opinion seems to be (gauged from newspaper articles and letters) that this is the fault of the girls themselves. The problem would appear to have increased in recent years and it certainly has implications for the proportion of girls continuing on to secondary school.

Mbilinyi(1972) points out that modernization has had mixed effects on women's situation in Tanzania. In the past ritual, family and community factors protected her interests and provided her with security. "She had economic autonomy within certain spheres, and social autonomy as well." However many of these factors are disappearing with modernization processes.

The modern economy has meant the increase in cash crop production and the migration of men to the urban centres. This has increased the work burden of rural women. Technical innovations have also had a tendency to increase women's work.

The fact that women bear a disproportionate share of the burdens in daily life in Tanzania has been acknowledged in the political sphere. President Nyerere noted in the Arusha Declaration in 1967:

> *"...in the villages the women work very hard. At times they work on Sundays and public holidays. Women who live in the village work harder than anyone else in Tanzania. But the men who live in the villages are on leave for half of their life." (Nyerere, 1967)*

That the inbalance has been recognized when formulating the socialist policies for the country is, however, not enough.

Some writers have suggested that one of the aims of the villagisation campaign was to reduce the women's workload by reducing time and labour spent on non-productive activities (such as carrying water), and offering better health, childcare and educational facilities.(Swantz,1977). However there is little evidence to date that the work load was noticeably decreased. There is even a possibility that it may have increased since in many cases women experienced a tremendous increase in the distance to their shambas and they were required to contribute labour on the communal shambas. In addition, in some villages the water supply and firewood situation was worsened. Under these circumstances little committment to villagisation could be expected of Tanzanian women.

Women in Tanzania have all political rights. But their participation in the political sphere is limited, largely because of the traditional attitudes to women, lack of education and perhaps more important, lack of time due to the enormous work burden. The Marriage Contract Law has not changed the paternal attitude of men towards women. When it comes to development and progress the general belief is that women are the section of society "which holds down development..." (Swantz, 1977)

Certainly the women in Tanzania are a vital factor in efforts for development. Without recognition of their actual and potential roles and determined efforts to encourage their increased participation in planning and implementation of development projects, little progress is possible.

2. THE DEVELOPMENT OF DOMESTIC WATER SUPPLIES IN RURAL AREAS

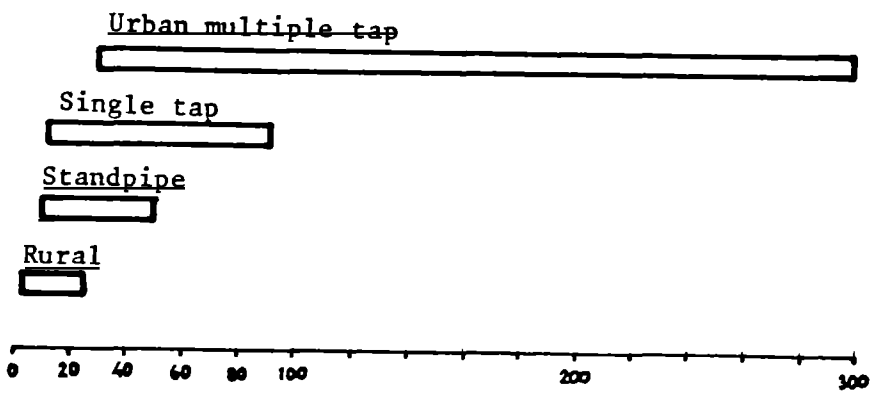
2.1. A general overview

It is universally accepted that an adequate supply of safe water for drinking , personal hygiene and other domestic purposes, and an adequate means of waste disposal are essential for public health and well-being. However over a third of the population of rural areas in developing countries is forced to rely on contaminated water for domestic use. (Williams, J.M.) A WHO survey carried out in 1970 revealed that 86% of the rural population were without "reasonable access to safe water" (WHO, 1973) "Reasonable access" is defined as meaning that "a disproportionate part of the day is not spent on water collection. "Safe water" includes "treated waters or untreated but uncontaminated waters such as from protected boreholes, springs or sanitary wells." This survey also indicated per capita consumption as low as 5 litres in some areas, which must be the minimum necessary to sustain life. Average daily consumption figures are given in appendix 2.

The volume of water used by the people of tropical countries is chiefly a function of income and material wealth, with only the highest income group having access to large amounts of safe water. (White, Anne, 1977).
In most low-income communities, both rural and urban, facilities for water range from no public service at all, through public standpipes to instances of adequate piped supply. The volume of water used is shown in figure 1.
For rural areas without tap connections or standpipes the daily mean consumption per person ranges from a little over 1 litre to about 25 litres. For settlements with standpipes the range is 10-50 litres per person; for households with a single tap from 15-90 litres; and for households with multiple taps from 30-300 litres. (White, Anne, 1977)

Figure 1.

Range of daily consumption per person in litres for major classes of water use.



(Source: White, Anne,1977)

The International Drinking Water and Sanitation Decade

The decade, initiated in 1981, has as its goal to improve the water and sanitation services of the population in the developing countries. The stated expectations of the decade are great. Falkenmark (1982) states that if the overall goal of safe drinking water and sanitation for all by 1990 could be achieved, it would have a tremendous effect on overall development.

> *"...it would by some estimates reduce infant mortality by half, it would revolutionize the role of women in rural areas throughout the world and it would have a dramatic impact on the economic status of the world's billion people who live in absolute poverty. Healthy people are productive people, and productivity is the key to economic development." (Falkenmark, 1982).'*

Most other estimates of the possible effects of the decade are markedly less optimistic - though probably more realistic given the formidable task of providing water for such large numbers of people. Obeng (1980) notes the the achievement of the goals is practically impossible in the time period given, but adds that it would be wrong not to take the decade seriously. She considers the decade will give imputus to increased attention to developing domestic water supplies around the world. In this context a word of caution is added from Cairncross et al (1980). Because of the decade many countries "will see investments in their rural water supplies doubling, or more than doubling, within a very few years and this dramatic expansion will often overlay a poorly planned and poorly executed existing programme." Evaluation is necessary before implementing new programmes since it is increasingly obvious that despite the efforts to date, the expected benefits have not always been achieved.

The expected benefits of improved water supply

Improved water supply and sanitation is expected to generate interrelated improvements in health, income and social welfare. This is anticipated to be possible if the water accessibility, reliability and quality is improved and if it is available in sufficient quantities. Table 1 shows the relationships between water supply improvements and potential benefits. An increase in productivity and the establishment and promotion of new activities are long-term benefits related to the immediate aims of reducing time and effort spent in fetching water and improving public health. In fact, although "such benefits are used to justify massive investment expenditures, in practice they are hard to identify and harder to measure." (Saunders and Warford, 1976).

Table 1.

Relationships between water supply improvements and potential benefits

Benefits	Accessibility	Quantity	Quality	Reliability
Time-saving	Saving on the water collection journey for each household	-	-	Saving during season when unreliable sources fail
Health improvement	Water piped into homes may increase quantity used (see next column) and reduce exposure to water-based disease	Potential improvement in hygiene is additional water is used	Precludes one avenue of faecal-oral disease transmission	May avoid seasonal use of more polluted sources of water
Labour	Labour released by time-saving, and indirectly by health improvement	Indirect through health improvement	Indirect through health improvement	Seasonal time-saving
Agricultural advance	Possible indirect benefit from labour release	Surplus or waste available for gardening	-	Seasonally significant in some cases
Economic diversity	A prerequisite, but not usually a major one	A prerequisite but not usually a major one	-	Permits permanent settlement

(Source: Feachem et al, 1978)

Health benefits:

The most commonly used justification for drinking water projects is that they will contribute to improved public health. Greater convenience is less frequently, or only secondarily, a stated objective. (Kaul and Mathiason, 1980)

A classification of infective diseases related to water was presented by White, Bradley and White (1972). The four categories of diseases - water-borne, water-washed, water-based and water-related - which include such dreaded diseases as typhoid, cholera, dysentry, schistosmiasis, malaria, sleeping sickness, infectious hepatitis and many others, indicate the absolute necessity of improved water supply. Table 2 presents the categories and preventive strategies.

Changes in water supply may affect the different groups of diseases in different ways. One group may depend on changes in water quality, another on water's availability and another on indirect effects of standing water. The incidence of disease also depends on local climate, geography, culture, and sanitary habits and facilities. (Saunders and Warford, 1976).

For maximum health benefits to be achieved it is necessary that only good quality water is consumed and that households use a greater quantity. One of the basic hypotheses upon which the planning of water supply schemes was based was that ease of access would lead automatically to increased consumption. However this is not the case. It would appear that the main difference that reasonable access makes to the household is in the saving of time and energy in collecting it. For the volume used and the patterns of use do not seem to change very radically unless water is available piped inside the house, with several taps. In that case the volume of water consumed increases considerably. (White, Ann, 1977).

In fact the quantity of water used by households is determined by many factors. White, Bradley and White (1972) identified 7 factors which affect the amounts of water drawn by individual households: size of family, income level, education, cultural heritage, character of water supply, cost of obtaining water as measured by energy or cash expenditure, and climate and terrain. In addition their studies indicate 5 other factors of special relevance for households without piped supply: settlement type, size of carrying vessel, the energy expended in drawing water, the use made of rainwater and the place where the clothes are washed. It is obvious that

Table 2.

Categories of infectious diseases related to water and preventative strategies

Category	Examples	Relationship to water	Preventative strategies
Water-borne	Cholera, typhoid, dysentery, infectious hepatitis	Water acts only as a passive vehicle for the infecting agent. These diseases also depend on poor sanitation.	Improve water quality and prevent use of other unimproved sources. Improve sanitation.
Water-washed	Skin and eye diseases - trachoma, scabies - and leprosy, yaws, bacillary dysentery and hookwarm.	Lack of water and poor personal hygiene create conditions favourable to their spread. The intenstional infections also depend on poor sanitation.	Improve water quantity and water accessibility and promote better hygiene. Improve sanitation.
Water-based	Schistisiniasis and guinea worm	A necessary part of the life-cycle of the infecting agent takes place in an aquatic animal. Some are affected by poor sanitation.	Decrease need for water contact. Control snail population and improve quality of water. Improve sanitation.
Water-related	Yellow fever, malaria, sleeping sickness	Infections are spread by insects that breed in water or bite near it. Unaffected by sanitation.	Improve surface water management, destroy breeding sites and decrease need to visit breeding sites.

(Source: White, Bradley and White, 1972 and Saunders and Warford, 1976)

no simple deductions can be made, especially when such aspects as traditional attitudes and water-use patterns are included.

Supply of clean water in the pipes does not guarantee the water consumed by the households is pure. The water at the source may be pure but through improper handling it may become contaminated on the way to the house or in the house. In addition, since a lot of water is used at the source itself for personal washing and washing of clothes it is possible that the water is contaminated here. In this manner all expected health benefits can be negated.

The hypothesized linkage between quality and quantity of water and disease rates have been the subject of theoretical discussion and empirical analysis in numerous studies. Most studies conclude that,"while the available empirical evidence seems to suggest a positive association between safe and convenient water supply and public health, it has not been possible to establish clear causal linkages between these two sets of variables." (Kaul and Mathison, 1980).

> *"It is clear that while improved drinking water is probably a necessary condition for the improvement of people's health, it is not a sufficient one...health is (also) affected by numerous environmental, social and cultural factors." (Saunders and Warford, 1976).*

Improved convenience

Another immediate aim is to reduce the tremendous burden, in terms of time and energy expenditure, of those collecting water. Obviously "ease of access" does improve convenience and lessen the burden. That is, of course, providing the households are actually motivated to use the improved source and that the source is reliable. Ease of access to a domestic point does not always mean water is available.[1]

Increased production and establishment of new activities

Improved water supply is expected to increase the productivity of households through reducing time and effort spent in fetching water and increasing output through improved health. This indirect result is difficult to quantify. No real evidence of a marked increase in productive activities has yet been produced. Similarly,the establishment of new activities is part of the expected "overall development" effects of improved water supply. These activities will, however, not be

1. For further discussion of this aspect see also section 3: Women and water.

established automatically when a water supply is installed. There is need for introduction and promotion of such activities. These aspects will be taken up for further discussion in section 3: Women and water.

Need for complementary inputs

It has become increasingly obvious that the benefits expected in terms of improved health, use of freed time for increased production and establishment of new activities will not be achieved if water alone is provided. Investment in other complementary sectors such as health and educational facilities, markets and roads are important if water is to act as a catalyst for further development. Rural water supply programmes should form an integral part of an integrated plan for rural development. None of the indicators mentioned can alone be said to be the "key element" in inducing development. Each sector complements the other. This is essential "if rural water supply is to serve anything more than the provision of a biological necessity (water for drinking)." (Ausi, 1979).

In particular health education programmes should form an integral part of water supply projects. The collection and handling of water in the household is integrally tied with culture and tradition. The provision of water of better quality and greater quantity cannot ensure improvements in health if patterns of health and hygiene, especially in handling water, which are conducive to the spread of disease, are not dealt with simultaneously through a health education programme.

The aspect of sanitation is also crucial. Improved water supply must be coupled with a programme to improve the sanitary conditions in the village. The International Drinking Water and Sanitation Decade does stress the aspect of sanitation, but as yet there has been little planning or evaluation of rural latrine programmes. Hopefully the near future will see an increase in coordinated rural water and rural latrine programmes since there is "considerable evidence that improvements in domestic water supplies should go hand in hand with improvements in excreta disposal if the health benefits from each investment are to be maximized." (Feachem et al, 1978)

Use, non-use or misuse of water supplied

For benefits to be obtained it is presumed that the water supply will actually be used by the households, and that it will be used in a manner intended by the planners. For this to be ensured there are 2 essential elements: popular acceptance of the scheme and education into its proper use.

If the majority of the population of a village does not actively support the installation of a water supply, the probability that the health and development goals of the system will be attained is greatly reduced. (Saunders and Warford, 1976). Even villages which are expected to have high priority for improved supply (because of obvious hazardous water supply situation) but which do not perceive the advantages of a piped supply "must receive considerable attention in the form of water supply promotion and education." (Saunders and Warford, 1976).

In addition, whether a drinking water project reflects and meets the perceived needs of the local population will depend on whose views and interests are made known to the project staff. (Kaul and Mathison, 1980).

In short, much of the success of improved water supplies depends on how much emphasis is given to the "human factors" - i.e. to the obtaining of knowledge of local conditions and needs. Appropriate technology and efficiency in implementation are not enough. This because in "bringing a rural water project to an area, we not only introduce new techniques, but also new concepts about the relation of water to health and disease, and new forms of organizing the community." (Whyte, 1976).

2.2. Rural water supplies in Tanzania

The programme for the development of domestic water supplies in Tanzania's rural areas should be seen as an integral part of the overall rural development policy which aims to stimulate the development of these areas, to improve living conditions and eliminate the inbalances existing between urban and rural areas, between different regions and thus between individuals.

Rural water supply is considered a basic social service and, correspondingly, investments in water supply development are considered social investments. (Warner, 1970). The First Five Year Plan of 1964-69 allocated almost 9% of the total anticipated central government investments to rural and urban water supply, with almost half of these expenditures budgeted for rural water supplies. (Warner 1969). This gives some indication of the fact that water supply is regarded as a key factor in development.

The Second Five Year Plan for 1969-74 gave the justification of investment in domestic water supplies in rural areas in terms of both social service and economic development.

> *"The provision of adequate water supplies to rural areas is of high priority on both economic and social grounds. Economically, water is not only a critically important input into the agriculture and livestock industries, but the provision of better domestic water supplies will both release much labour currently consumed in carrying water for other productive purposes and allow a more efficient pattern of settlement. The provision of better rural domestic water supplies is also a necessity for the achievement of a better quality of rural life, both in health and convenience, which can provide a counter-attraction to the convenience of urban living."*
> *(Second Five Year Plan, Government of Tanzania, 1969).*

In 1971 the Tanzanian government embarked on an ambitious programme to provide :

a) a source of clean, potable and dependable water within a reasonable distance of every village by 1981, as a free, basic service.
b) a piped water supply to the rural areas by 1991 so that all people have ease of access (i.e. a distance of 400 meters to a public domestic water point. (WHO/IBRD, 1977)

The first goal has merged with the second but even then the prospects for attainment within the deadline given are not good. According to statistics

available in 1970, approximately 10% of the rural population was provided with a water supply and the present figure is approximately 25% (1980). The rate of development has actually decreased in recent years. Despite the on-going efforts, the development of improved supplies has not been able match population growth. At present only 200,000 of the rural population is provided with water supplies annually, compared with the annual population increase of 360,000. (Andersson, Ingvar, 1980).

In addition, the situation is worsened by the increasing number of breakdowns of already completed schemes. The statistics which give 25% of the rural population as being supplied with water do not allow for the ever-increasing number who are without water due to breakdowns in existing schemes. A rough estimate, allowing for decreasing water availability, would be that less than 12% of the rural population have access to reliable sources of clean water today. There is a serious possibility that the percentage will actually decrease during the water decade.

In a recent seminar on water supply design, held at the University in Dar es Salaam, the Minister of Water and Energy stated that at least 1.6 million people in rural areas will have to be provided with clean water every year, beginning with next year (1983), if the government is to meet the "water for all" target by 1991.[1]

> *"The cost of providing water to all our people is very high and it is continuing to rise year by year...as a result our capacity to implement water programmes has been reduced."* [2]

The Minister further emphasized the use of appropriate plans and designs and "least-cost" technology such as shallow wells, gravity schemes, use of hydraulic rams, windmills and rain water catchment.[3] These alternative technology types must be investigated and applied wherever possible in Tanzania, since the constraints of chronic fuel shortages, spare parts shortages and transport problems make the use of large scale diesel-run schemes impossible in most parts of Tanzania.

The design criteria used by Maji (The Ministry for Water and Energy) for rural piped schemes is officially 30 litres per capita daily. However today there is some discussion as to whether, in fact, it would be more

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1. From the Opening Speech by the Minister for Water and Energy, Ndugu Al Noor Kassum, presented at the seminar on water supply design, Dar es Salaam, September 30-October 2nd 1982. (Daily News. October 1st 1982)
2. Ibid
3. Ibid

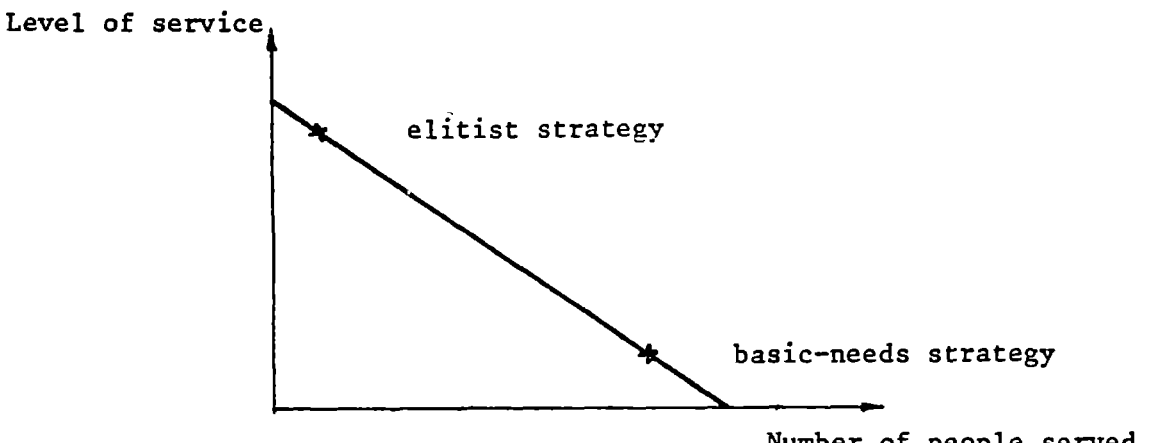
realistic to make the design criteria even lower- to 25 litres per capita daily.

A whole new dimension was added to the problem of rural water supply with the concentration of people in villages, after the villagisation campaign of the early 70s. (Bantje, 1978a) Firstly the promise of an improved water supply was often used as an incentive for resettlement. The construction of improved water supply thus became a political necessity. Secondly, the resettlement resulted in large population concentrations and the construction of larger schemes was necessitated. Thirdly, the health hazards were increased because of the larger concentration of population, and thus the provision of adequate supplies became a matter of some urgency.

In the Tanzanian situation priority is given to basic service - water for all. This is in keeping with the total development strategy outlined in the Arusha Declaration in 1967. Even with the resettlement of most Tanzanians in villages, the costs of supply restrict alternatives beyond the basic service. As is pointed out by Lømoy (1980) it is a question of equality. "There is a trade-off between the quality of service that is provided and the number of people that it is possible to serve.(See figure 2.) The only possibility for opening up a higher level of service is to charge householders who wish private connections. This is the case in many areas in Tanzania at present. However this could lead to inequality based on the ability to pay, both within villages and between villages. In which case such a practice would not be in keeping with the socialist policies in Tanzania.

Figure 2.

Strategy for domestic water supply: the level of service/equality dilemma



(Adapted from Lømoy,1980)

In a country the size of Tanzania with such a wide range of physical conditions, the domestic water supply situation also varies greatly. To give some indication of this variation the per capita consumption in different areas within the country are presented in table 3. The data is taken from other studies carried out in Tanzania. [1].

Table 3.

Data on per capita consumption in different areas of Tanzania

Source	Area	Per capita consumption	Range
Warner (1969)	Morogoro	13.2	
Warner (1969)	Kilimanjaro	8.9	8.4 - 10.8
Warner (1969)	Pare	4.3	3.6 - 5.2
Ferster (1970)	Nzega	12.6	3.5 - 20
Bantje (1978)	Mbezi Village (Coast)	11.4	4 - 33
Ståhl et al (1980)	Iringa	9.5	
Lømoy (1980?)	Kigoma	15.0	
Arhem (1981)	Ngorongoro	3.0 - 4.0	
Kauzeni (1981)	Kigoma	13.1	
Kauzeni (1981)	Rukwa	10.2	

The technological options in the Tanzanian context are also varied. These are illustrated in Appendix 3. In some areas gravity schemes are possible (eg. Kilimanjaro region); in others shallow wells have been introduced (eg Shinyanga region) ; and in other regions such as Singida windmills are being used. There is, however, no region where only one type of technology is suitable for the whole region, given the diversity of conditions within regions. This diversity calls for flexibility in planning since no one solution can be applied to all situations.

There are 20 regions within Tanzania. Water Master Plans have been (or are being) worked out for each region by different donor groups. These master plans contain much valuable information on all aspects of water development, not least on socio-economic and cultural factors. The knowledge base provided by these studies should be utilized as fully as possible.

1. The data as presented here without information on household size, the type of water supply and the season in which the data was collected cannot give complete information but will suffice to give an indication of the variation.

3. WOMEN, WATER AND DEVELOPMENT

Water collecting is part of the daily domestic burden of women in the countries of the third world. It is impossible to study the development of domestic water supplies without including women in the studies. But to date there are very few studies with special emphasis on women.[1] It should be obvious that this is a serious lack. It is tied up with the attitudes discussed in the first section. In addition it is linked to the general tendency within the water sector, to plan from above on a large scale, with little consideration (if any) to prevailing local conditions, needs or priorities. In this context it is not surprising that women have not been considered target groups for study.

That the need to improve the domestic water situation is related to improving the general living conditions of women in the third world should be obvious. At the recent Mid-Decade Conference on Women held in Copenhagen, a strong resolution was passed endorsing the water decade and calling on member states to participate to the fullest extent.

3.1. The role of women at present

Falkenmark (1982) has stated that if the overall goal "water for all by 1991" of the water decade is achieved "it would revolutionize the role of women in rural areas throughout the world..." What then is the role women play at present?

Women's responsibility and burden

Women and children (mostly girls) have traditionally carried the water for domestic use in third world countries. If men are involved in carrying water it is almost always for commercial purposes - to sell, for watering cash crops, beer-brewing or similar purposes. In addition, whereas women almost universally carry water on their heads, this is seldom the case with men. They use yokes or bikes or wheelbarrows. It seems that carrying water is given the low status that most domestic chores and "women's work" is assigned. Thus men generally will not carry water for domestic use unless they are absolutely forced to do so. The chart presented in appendix 2 indicates women collect 90% of domestic water in African countries.

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1. For exceptions see: Elmendorf, 1980; United Nations, 1977; Shapiro, 1980; Whiting and Krystall, undated; Jørgensen, 1980

A time and energy consuming activity

There is considerable difference in rural areas of developing countries in availability of safe water. Depending on season, location and terrain, water carriers in many parts of the world have to spend more than an hour each day, or even up to 4 hours or more. Furthermore, depending again on terrain, location and season, the distance between dwellings and a usable source of water is generally (at least in East Africa) less than a mile. (White, Bradley and White, 1972) However, examples have been cited from East Africa where women walk more than 1 mile and even 2 miles. (Warner, 1969).

It has been calculated that it takes up to 12% of daytime caloric needs of most women in non-dry areas. In dryer or more mountainous areas the energy spent on collecting water and carrying firewood may take up to 25% or more of the daytime calorie consumption. (Cleave, 1974) Furthermore it is estimated that the breast-feeding, water-carrying mother has to use the main part of her energy for these basic tasks. (Isely, 1980 quoted in Falkenmark 1982).

Table 4, presented at the UN Water Conference in 1977 shows that time spent in collecting water is a function of the distance of the source from the consumer, and also how it affects the total daily working time of water carriers. However the estimated % of average daily working time spent in collecting water is questionable. Six hours would hardly be 100% of the average daily working time of rural women in Africa!

Table 4.

Time spent on water collection in Africa

Distance between water source and consumer (miles)	Time spent in collecting water (hours)	% of average daily working time spent in collecting water
0.25	0.166	2.8
0.50	0.333	5.5
1.00	0.667	11.1
2.00	1.333	22.2
3.00	2.000	33.3
4.00	2.667	44.4
5.00	3.333	55.5
6.00	4.000	66.6
7.00	4.667	77.7
8.00	5.333	88.8
9.00	6,000	100.0

(Source: UN, 1977)

The role of children

The inputs of children in water collection should not be overlooked. In some parts of the world children carry a great proportion of the water needed for domestic use. However, even where the children carry all or most of the water, the provision of water for the household remains the responsibility of the woman. She must ensure that someone collects from the source and carries to the home even if she is relieved of the actual activity. These household "management" aspects are part of the woman's total burden.

3.2. The expected benefits of improved water supply for women

Reduce women's work burden

This is one of the immediate benefits anticipated and one which would appear fairly clear-cut - that bringing water closer would mean less hardship in collecting water. However it need not necessarily be so. It has been shown by a study in Kenya that women may receive less assistance from other family members when water is made more accessible. (Cited in Jørgenson, 1980). Women may have to make more trips to collect water themselves and thus may experience no lessening of the burden nor any increase in time for pursuing other activities.

However in most cases where a reliable supply of water is brought closer to the households, it can be presumed that women will experience a lessening of their burdens - not only in reducing time and energy costs but also in reducing the inconvenience of household tasks such as washing clothes, utensils and children and other general cleaning tasks. Moore (1974) has pointed out that the "shortage of water interacts with the non-availability, for economic reasons, of nappies and changes of clothing to make child-care messy as well as time-consuming."

Free time for other more "productive" activities

The freeing of time for other activities, preferably "productive" activities, is often stated as a logical result of "ease of access".

> *"With water nearby, the women might spend the newly available hours working in agriculture learning new methods of agriculture and food processing, or studying nutrition, childcare or literacy, or participating in self-help*

activities, which improve production and raise community levels of living. They may spend some of the time saved in creative leisure and cultural activities." (Jørgensen, 1980).

A simple equation is proposed: a potable water supply system makes obtaining of water needed for drinking, washing, preparing food, etc more convenient = more time freed to be spent on other more "productive" activities = increased production and increased income = increased development.

The reality is, however, not so simple. That women's time freed from water collection will (or can) be channelled into other more conventionally productive activities has yet to be proven. It is not certain that the so-called "spare time" will be used in agriculture or studying nutrition, child-care, literacy, or any of the various activities usually mentioned. It is probably more likely that the time made available will be needed for the multitude of domestic chores, including elementary child-care, which women have so little time for at present.

Studies which have been carried out to date have investigated what women anticipate they would use the freed time for. To my knowledge no study has been made of what freed time (if any) is actually used for when an improved water supply is introduced. In a study of women in 9 villages in Tanzania less than half of the women indicated they would use time freed for agricultural activities. The rest of the women mentioned other activities ranging from domestic chores to leisure. (Warner, 1969). Another study of women in Ghana gave the following result. Of an anticipated saving of 12 hours a week the women indicated that 6.8 hours (57%) of the time would be spent on directly productive work; 4.2 hours (35%) on housework; and 0.9 hours (8%) on leisure. (Dalton & Parker, 1973). Finally, a study of the expected use of time saved in Ethopia revealed that in some areas there was no expectation of freed time. And where there was an anticipated time saving it was expected that the time would be used mainly for more housework or more cotton production. (Kebede,1978). While these studies are interesting and informative, particularly with regard to women's own perceptions of what they need more time for, there is a need for more studies of what the freed time is actually used for in cases where improved water supply has been installed.

With regard to agricultural activities, the utilization of any free time produced would be influenced by the aspect of seasonality. The availability of opportunities for engaging in more measureably productive activities is also an important factor. And personal and cultural factors also play a role in determining the inclination of individuals to engage in such work. (Saunders and Warford, 1976).

Saunders and Warford also point out that, to the extent that women spend a portion of their newly acquired freed time on domestic chores, there will generally be no directly measurable short-run economic benefits. Relieving children of water collection might, however, allow them to attend school more regularly and to take better advantage of existing investments in educational facilities, which may give economic benefits in the long-run.

Domestic activities are usually classified as "non-work" or "non-productive" activities which are not economically valuable to the household. Researchers stress that the women should be encouraged to make use of their freed time for "productive" activities, i.e. productive in the conventional economic sense. This leads us to a discussion of what is "productive" and "non-productive".

All the non-farming and domestic tasks carried out by rural women, such as child-minding, cooking, cleaning, water and firewood collection, are very necessary to maintain the very physical existence of the household. Other activities such as visiting the sick, paying social visits to the neighbours, etc are also necessary for the social welfare of the family - to ensure its social integration into the community. These latter activities are perhaps more rightly called "non-work" but they are certainly not non-productive unless "productive" means only valuable in monetary terms. The use made of time is certainly productive and of value to the household.

In her discussion of women in the Tanzanian context, Henn (1981) has pointed out very clearly the value of women's reproductive roles- even in conventionally "productive" terms. She claims that the peasant woman actually participates in three different modes of production: domestic subsistence production, petty commodity production for national and international markets, and capitalist production. The value the peasant woman creates in carrying out in carrying out the daily domestic chores

is consumed by her children, her husband and herself. Henn suggests that "to the extent the woman is regularly providing the bulk of these services for all the dependents and male labourers in the family she is performing surplus labour for her husband. Furthermore, to the extent that she is supporting or "producing" future wage workers the peasant woman is performing surplus-labour for the capitalist class as well."

Beneria maintains that domestic labour in predominately agricultural societies contains a higher degree of production - as exemplified by the fact that all stages of food transformation are often carried out within the household. In addition women's work around the house includes many subsistence activities, including water collection, which require long hours of work.

> *"The burden of subsistence in this case falls on these types of activities, together with agricultural work in which women's participation is also high. In this case, agriculture and household-related tasks are highly integrated in time and space, and productive and reproductive activities highly intertwined." (Beneria, 1981).*

Like Henn (1981), Beneria further criticizes the conventional definitions of economic activity and labour force concepts and suggests that "use-value production should be viewed as part of the economic realm and that labour engaged in it should be accounted for as "active labour". She presents a concept of economic activity relating to human welfare rather than to economic growth and accumulation, which would appear much more appropriate in agricultural societies than conventional concepts.

The contribution made by women in carrying out domestic chores should not be underestimated. I would contend that any freed time used to carry out such activities constitutes a valuable input in the rural household, even if no direct monetary benefits are obtained.

> *"It must not be forgotten that domestic labour is absolutely essential to overall peasant welfare; indeed if it were not performed by someone the rural population could not survive." (Henn, 1981)*

Improved public health

The health aspect of improved water supplies is a vital one for rural women since health problems affect them in many special ways. As mothers and caretakers the health of the members of their families is primarily their responsibility. In addition they are the ones who must use and be in constant contact with contaminated water for various household purposes, including washing, preparing food and bathing children. (Jørgensen,1980)

The women are also often the agents of contamination of domestic water since much of the contamination probably takes place on the way to, or in the home, through improper handling of the water.

In poor families women provide first-line, and often the only health care. Much depends on their ability to recognize and deal with health problems before they become acute. Women have also to be willing to use the health services (including health education programmes) and to be able to afford the time to do so. Women are also responsible for inculcating good habits of hygiene and sanitation.

As was pointed out in section 2.1, the health benefits of improved water supplies will not be achieved automatically the system is installed. There is need for a complementary sanitation and health education programme. Obviously the women are a vital group to reach.

The relationship of health to water supplies needs to be stressed as community involvement and action depends mainly on people's perception of the multiple causes of health problems.

> *"Due to the high degree of emotional involvement concerning health and death, the effects of health education programmes in combating waterborne disease can be maximized when health educators gear the initial emotional involvement of the community around health issues, especially of women, to a a more rational perception of structural causes such as water supply, conservation and nutrition." (Jørgensen, 1980)*

Rural women need basic knowledge about causes of illness and requirements for the maintenance of health. When women are , for example, aware of the link between high infant mortality rates and the lack of safe water supply, they are motivated to become more involved in action-oriented programmes.

Advice on better health practices are meaningless if supportive measures are not taken. For example, it is obvious that women do not boil drinking water, even when they are well aware of the dangers for their families' health, in areas where they have difficulties in obtaining water and/or firewood. If they have difficulties in obtaining water they often maintain they are too tired to boil water or that their children are too thirsty to wait for boiled water to cool. If firewood is a problem the women do not boil the water because they cannot afford the extra time required to collect more firewood. In this context exhorting people to use purer water or to use more water is ineffective.

Similarly advice on better health and hygiene practices is wasted unless women are assured of the resources for following such advice, and will not be prevented from doing so by their husbands. (World Bank, 1979)

The achievement of the health benefits of improved water supply is also dependent on the proper use of the water supply. Promotion and education is essential. And again it must be assured that the women as priority targets for such promotion and education efforts are reached. Since women are the ones collecting and handling water they are the ones who must understand why only the improved source should be used, or how the source should be used and kept clean.

If the women are given the information they require and are supported in their efforts the health benefits may be great.

> *"Some sanitation problems and sources of contamination (water impurities, improper waste disposal, poor drainage and improper food storage) are partially beyond their control, but women can be assisted and educated to minimize their adverse effects." (World Bank, 1979).*

3.3. Improved water supply as a catalyst for women's development

It has often been pointed out that improved water supply may have a positive effect on the development process in all the various sectors of village economy and society. However in fact the most that can be definitely stated is that although water by itself is unlikely to have a significant development effect, "its absence will prevent, or at least greatly hinder development". (World Bank, 1979).

Integrated rural development efforts are required which simultaneously tackle the other local problems. Otherwise no dramatic impact on the lifestyle of the people can be expected. The water development programme, in isolation from other supportive economic measures, can only be regarded as "a development input which would be of minor consequence to the basic structure of the lives of the people." (Kebede, 1978).

With regard to the development of women, it has been pointed out earlier that it is often expected that improved water supplies will lead to participation in other "productive" activities and that this will have a catalytic impact on women's development.

> *"Time and energy will become available for other activities, and women, freed from major preoccupations, will have more time to think - more opportunity to widen mental horizons* (sic) *and perhaps to see more clearly the need for further improvements. Thus, it is likely that any initial approach which makes a significant impact on reducing the workload can have a catalytic effect, generating an acceptance of further improvements." (McDowell and Hazzard, 1976).*

However it is clear that inputs in the water supply sector alone will have little positive effect on the position of women in rural society. On the other hand, it may well have detrimental effects, as will be pointed out in the following section. For any catalytic effects there must be other inputs and a concerted effort to improve the general position of women in rural societies.

Women's generally subordinate position in rural societies (which was pointed out in section 1) is a result of many interrelated factors, only one of which is the heavy daily work burden. Relieving the women of some of this burden (for example through improving water supplies) is certainly beneficial but the effects on the overall status and position of women is limited without accompanying structural changes.

There must be a change in attitudes towards women's role in rural society. Recognition must be given to the decisive inputs which women can (and do) make in developmental processes. Only then will the necessity of involving women in the planning and implementation of such processes be realized. Only then will development of all sectors, including that of women themselves, be possible in rural areas.

This change in attitude is necessary at all levels, from the national to the individual household level. It is necessary on the ideological as well as practical planning levels. Within the water supply sector itself it requires radical changes in the planning processes. The current tendency to plan from above, with little attention given to local conditions, will not produce development. As is pointed out by Tobisson (1980) "the widespread ignorance among government officers about the conditions prevailing in rural communities ...is remarkable". In this context it is easy to understand how women " as a decisive force in development work due to the wealth of knowledge and experience they possess from the various sectors of rural life" have been overlooked.

3.4. Negative aspects of improved water supply for women?

In rural society, the natural water points, such as springs or river banks, have often been traditionally a focus of social interaction and communication, particularly for the women. The introduction of improved supplies may have repercussions on the existing patterns of communal activities and social exchange.

> *" The provision of more convenient water sources will, no doubt, have the positive effect of freeing women from the time-consuming and tiring drudgery of carrying water over long distances. However, at the same time, it could also mean that women lose the opportunity to congregate, a form of non-material activity which they may, for various reasons, enjoy and consider important and valuable."* *(Kaul and Mathison, 1980)*

In addition, it must be remembered that the bringing of a water supply to a rural community may fundamentally alter the existing division of labour between men and women. The impact on women's position and status could be as devastating as the advent of colonialism and the introduction of cash crops in Africa. Care must therefore be taken to ensure that the elimination of women's function as water carrier does not lead to a deterioration in her status but is compensated for by activities of similar value and prestige and , if possible higher productivity." (Kaul and Mathison, 1980).

In short, water supply projects should be designed so as not only to lessen the burden of women but also "to modernize women's role in rural water supply, preserving the importance of their contribution while reducing hardships." (UN,1977)

3.5. Women and the aspects of "choice" and "control"

In order to be able to plan more effective strategies for improving rural water supplies it is necessary to look at the aspects of "choice" and "control" with regard to the water supply situation.

Women and the "management" of water

The management aspects of domestic water supply for women include such aspects as assessing the amount of water required by the household and ensuring its collection at appropriate times. Another important aspect is the making of judgements and choices concerning water for domestic

use. It is all too easy to assume that women simply choose whichever source is closest. However there is considerable evidence that a woman, in selecting her source, chooses what she considers the best quality for her family. It is obvious that a judgement regarding water is made.

> *"A user's criteria may be more likely to include taste, temperature, odour and appearance rather than considerations of bacteriological quality, but they are nonetheless real for her." (White, Anne, 1977).*

Certainly costs in terms of distance walked, cash payments or time spent in waiting in a queue are important factors in the choice of a source. However cost does not seem to determine the amount of water carried home. There is no entirely satisfactory explanation as to why one women will struggle home with 40 kilos of water on her head while another is content with much less. (White, Anne, 1977).

Another aspect which plays a role in determining choices made with regard to which source is used and whether personal washing and washing of clothes is done at home or at the source,is that of privacy. Perhaps the desire for privacy (and the existence of personal conflicts within the community, etc) play a greater role than is imagined. If so, such aspects should have implications for the planning of improved water supplies so that some element of choice is left the women.

Women and control of the water supply situation

One of the problems in understanding decisions concerning water is that, although some of them are made by the woman, they are often constrained by the husband's independent action. While it is true that in almost all parts of the world it is the women who do the carrying, it is equally true that it is the men who make most of the decisions for the family This means that while the woman may have control over some aspects of the water supply situation she does not have control over them all, and certainly not over the most fundamental - where the house will be placed in relation to water sources. This decision is made by the man and rarely is it with regard to how long a walk it is to the water source. (White, Anne, 1977).

Women usually have little control over cash income in the family. Thus, she may be restricted from buying water or investing in guttering for rainwater catchment. (White, Anne, 1977). Wheelbarrows and bikes which are usually utilized by men for carrying water are probably usually outside their means.

The actual amount of water carried to the home is also often determined by the bathing habits of the men. If the men desire to bath at home every day this may mean an extra trip to collect around 20 liters for this purpose.

The women in a community may very well feel dissatisfaction with the water supply situation, but seldom in developing countries have the women any direct voice in community affairs. They may be able to influence indirectly through their husbands, if their support can be mustered, otherwise the women are unlikely to make their priorities felt. (White, Anne, 1977).

Women and technology

Tobisson (1980) has pointed out that it appears to be "almost a universal phenomen that most of the tasks assigned to women in rural communities are expected to be carried out to satsifaction more or less as a matter of course." It is therefore not surprising that technological innovations have, to date, done little to alleviate women's burdens. In some cases the opposite has been the result- introduction of new technology has increased women's work load.[1] In the main technological innovations have been exclusively for the area of cash crop cultivation- the domain of the men. Even in areas where the choice of technology has had implications for women, the choices and considerations of this aspect have generally been kept from them. All decisions are made by the men who never actually have to carry out the work - in this case never collect water for domestic use. If men had this responsibility one could be sure there would have been all-out efforts to introduce the use of wheelbarrows, bikes, donkeys etc long ago!

Women and the planning process

To date there is little evidence that women have been at all involved in the planning of rural water supplies. This should, of course be related to the fact that the rural communities as a whole have been left out of the planning process. However one can be fairly certain that, even where attempts have been made to involve the community, the women have been left out of the actual planning process but their involvement in self-help construction is guaranteed.

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1. For example, an increase in weeding tasks follows the introduction of tractors, since it is then possible to cultivate larger areas.

Henry (1978) has pointed out that one of the most glaring weaknesses in the programme for developing rural water supplies to date has been "that women have not been encouraged to participate in the dialogue." Åhman and Rosenhall (1978) are in agreement and state that the women who carry all the water for the households have less to say than the pump attendant, who is always a man, and who has probably never carried water in his life.

> *"The prime target for the whole exercise is in the worst of cases characterized as excluded from adequate information, frustrated and lacking possibilities of participating and influencing decisions concerning the water supply system to be built and is later on a victim of unreliable provision of water." (Åhman and Rosenhall, 1978).*

In view of the crucial role women play with regard to water, and taking into account the fact that they are often not expected to participate in public activities such as village assemblies (and indeed have very little time to do so), it would appear that "special efforts are required to to ensure that women's voices are heard when ascertaining village needs and priorities." (Kaul and Mathiason, 1980).

However it is clear that the full involvement of women in decision making in water supply will be difficult as long as they do not have decision making rights in all developmental activities.

Efforts must also be made to involve women actively in the construction and maintenance of new water schemes and indeed in the evaluation of improved water supplies. This implies ensuring women's equal access to "labour cooperatives, trade unions, technical training in construction, conservation and maintenance of water supply systems." (UN, 1977) However it must be stressed again that without changes in the overall position of women in rural societies, all this will have little success. The appointing of women as maintenance officers is not enough as is testified by the comments of a Tanzanian woman maintenance officer. The problems she reported experiencing ranged from the fact that no man listened to her and that she was really only expected to keep the area around the source clean, to the fact that because of her position men presumed she was a "free" woman and made improper suggestions.[1].

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1. Information obtained in conversation between the maintenance officer and Ingvar Andersson, January 1982.

Lack of real involvement of women may lead to negative results, for example "a rejection of the project by the women and hence the non-use of the water source provided." (Kaul and Mathiason, 1980)

3.6. Special strategies for women?

Jørgensen (1980) has pointed out that real progress in the development of rural water supplies is "first expected when, in the planning process, women are properly recognized as an essential target group of rural population." While this is certainly true, I am also inclined to agree with Tobisson (1980) that this should not imply special projects and strategies for women. "Greater concern about women... in development planning ought not to be reflected primarily in projects specifically targeted at them. The complexity of their situation would render such an approach rather ineffective." Little can be achieved this way since women lack the authority to influence decision making and the allocation of resources. In addition, I would suggest that, given the present subordinate position of women, such a strategy could alienate women in the community.

An understanding of the realities of village life includes " the nature of the relationships of power between men and women." (Nelson, 1981). This is important since men may have the ability to prevent any activity which they suspect may undermine their authority over their women. Women's abilities, productivity and autonomy must be promoted in ways which do not threaten men overtly. "Women's lives cannot be changed in a vacuum and men must be brought along with the processes of transformation." (Nelson, 1981).

If special projects are targeted for women it is obvious that there is a need for consultation with both men and women in the village concerned. Nelson(1981) has pointed out that while no simple formula exists for deciding on a structure for projects for rural women, several factors must be taken into consideration whatever structure is decided on. "Village men must be first convinced of its importance. It must respect local ideals of women's proper role in society." Given the image of women's proper role and position which exists in many rural societies, these would appear to be serious constraints on the success of targeting special projects for women.

The most effective strategy must be ensuring the full participation of women in all aspects of improving water supply for all the community.

4. RESEARCH PRIORITIES

Given the tremendous amount of research carried out in the field of water development and the interesting and relevant findings made, one is surprised that the impact has not been greater. Indeed if one reads many of the reports from the early 70s, one has the feeling that the answers to many of the problems and bottlenecks were known then. The work of White, Bradley and White (1972) especially should have revolutionized the whole area of the development of domestic water supplies. The publication of their book "Drawers of water: domestic water use in East Africa" made an excellent contribution, "showing that it was both necessary and possible to rethink many of the basic assumptions about rural water supplies and to achieve new understandings of ways in which it might best be promoted." (Feachem et al, 1978).

Of course progress has been made and the problem is complex, but there are rather obvious indications of a serious lack of dissemination and practical application of the research carried out to date.

At the beginning of the water decade there is a need for an evaluation of the situation today and a reappraisal of strategies and technologies- old and new. Obeng (1980) calls for a stop to the restating of old data and stresses the need for a fresh approach and purposeful action.

Many recent studies point to the failure of water supply programmes to date - the increasing breakdowns and non-functioning of supplies already installed. Unfortunately little attempt has been made to go out into the villages to discover why. This is obviously a priority area for research in the near future.

In recent years much stress has been put on the importance of community participation (at least in research reports and innumerable seminars and workshops). There is little evidence of any practical application of this principle. Continued research and pilot projects in this area are vital. The application of community participation, in the full sense of the meaning, could revolutionize the development of domestic water supplies in rural areas. It would involve not only participation in construction through self-help (the conventional meaning of community participation) but full participation in planning, implementation,

operation, maintenance and evaluation. It would also involve the full participation of the community in any complementary programmes initiated simultaneously. In addition, and most importantly, it would involve the full participation of women as independent individuals with equal status with men. This could "revolutionize the role of women" by changing the sexual inequality and existing social stratification (along sexual lines) in the villages. If this complete form of community participation is achieved then the development of domestic water supplies in rural areas could provide the imputus necessary for further development - not because of the simple fact of providing water, but through the concientization of the rural population through real involvement (and real choices) in their own development.

The prerequisites for community participation in the fullest sense are very comprehensive and perhaps daunting, which may explain the slow progress in implementation. In order to involve the communities there must be an intricate knowledge of local conditions - social and cultural as well as physical and economic. Thus it is time-consuming. It is probably more costly because of the increased time factor. It must be flexible because of the variation of local conditions, priorities, needs, etc. And it would probably also require the "re-education" of much of the personnel involved in the development of domestic water supplies, since the consumer, not the "expert" is the central figure, and the water supply projects will thus revolve around what the villagers want and are capable of and not what the "experts" have planned in the capital and implement, whether the villagers want it or not.[1].

The most basic need is then information on village conditions. Without more knowledge of traditional attitudes and beliefs related to water and water-use patterns and behaviour, it will be impossible to achieve the possible benefits of improved water supplies, no matter how technically perfect they are or how well they function. In short, what is necessary is more contact with the villagers themselves.

Robert Chambers recommends an approach which combines the holism of the villagers with the technical insights of the outsiders. To gain this holistic approach "the entire rural environment, including its micro-

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1. For further discussion of community participation in the water sector see: Whyte, 1973; Whyte and Burton, 1977; and Andersson and Hannan-Andersson, 1981; White, Alister, 1981)

environments" must be considered potentially relevant.

> *"Rural people know what their life is like and what they do. They know when water is available from what sources. They know how they transport it, how they repair their receptacles, how they manage their irrigation, and how they use water domestically. They know the problems they experience and where it hurts. The housewife in her hut or the farmer in his field may lack the specialized technical knowledge but their non-disciplinary under-view is more balanced in the range of its insights than the disciplinary overview of the visiting scientist."*
> *(Chambers, 1978).*

The first step is to "learn how to learn from rural people". The second step is to study and understand their daily life and needs and to identify problems and opportunities. The third step is, with them, to develop ways of overcoming problems and exploiting opportunities. (Chambers, 1978)

With regard to practical areas requiring this research approach one of the most urgent needs is for evaluation of existing supplies which do not work to ascertain what the prohibitive factors are in preventing full utilization of the scheme. In addition communities which have adequate water supplies (improved piped supplies or traditional) should be studied in order to try to obtain answers to one of the most basic questions - what factors control the per capita consumption (apart from distance to the source). And villages without adequate supplies can be studied to obtain information on the problem of water in relation to overall village problems and the perceived needs of the villagers themselves.

PART B THE CASE STUDY:

WOMEN, WATER AND DEVELOPMENT IN A PARE SETTLEMENT

"What faith is it that makes us hope that the provision of rural water supplies...will convert poor, deprived, sick women into poor, deprived, healthy women."

(Feachem, 1977 - paraphrased)

1. METHODOLOGY

1.1. The research objectives

The objective of this case-study was to make an in-depth study of women in relation to water collection and use in one rural settlement. An attempt was made to relate the problem of water to the overall conditions and problems at the household and village levels, in order to come to a better understanding of the relationship women-water-development.

In addition, a preliminary survey of the village in February 1981 indicated that the water consumption was low, given the availability of a reliable water supply. It was decided that a special study of the women in this village should be undertaken to attempt to ascertain why so little water was used.

A further, indirect, objective was to obtain more information on relevant aspects to incorporate in future studies in other areas.

1.2. Choice of village for study [1].

Kisekibaha village was chosen for study for several reasons.

1. The village is small and thus all households could be visited and in future fieldwork periods they can be revisited. The possibility to study all households in a community was felt to be unique.

2. The village did not have a piped water supply and there was no likelihood that they would receive one in the near future. Thus we were looking at more traditional conditions.

3. Perhaps most importantly, the water supply is plentiful, which means it was valuable to study water use patterns and behaviour. Water availability is obviously only one factor in determining the differences in consumption between households in the same area. It is important to learn other factors and their relevent importance. Optimum water supply conditions afford a good possibility to study these other factors. In difficult supply conditions the main constraints on consumption are time and distance. In such a situation it is difficult to identify other factors.

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1. While technically speaking Kisekibaha is not a village as defined in the 1978 census, in this paper the term "village" is used to mean a small rural settlement.

4. There was no other source available to the households, except for a small man-made furrow which was only used by a handful of households during a short period of the year. The use of rainwater was minimal. Thus it was easier to observe the collection of water and to control the information given.

5. While the water has not been tested, it can with certainty be said to be of poor quality. This gave a good opportunity for studying health aspects - attitudes to water quality, preventative measures taken, perceived relationships between water and disease, etc.

6. A final interesting point with regard to choice of village is the fact that the water supply in Kisekibaha fulfills the criteria for adequate water supply in Tanzania today- i.e. with regard to accessibility and reliability (but not quality). In this context it was very interesting to study water use patterns and behaviour.

1.3. Fieldwork methods

The approach used in the fieldwork in Kisekibaha village can be called "small-scale" since the village is small and all the households[1]. were visited. The advantage of this approach is that it allows greater detail and perhaps also greater reliability in data collection, as well as the opportunity to place the material "in its societal context by incorporating more anthropological, participation observation and community-study methods." (Sajogyo et al, 1979).

The method used to obtain information was to observe and listen to the women themselves. No structured questionnaire was prepared. Naturally some questions had to be asked to stimulate discussion. A check-list of "areas of interest" was worked out prior to the fieldwork and during each visit to the individual households we checked that we had received information on each of these aspects.

The discussions were mostly carried out in Kipare (the local language) since this is the language most easily used by women and the language used for matters of importance or emotional significance. This necessitated the use of field assistants for interpreting.

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1. Four households were not visited because the women were not available for discussions due to sickness and other problems.

Kisekibaha village was visited several times - for 6 weeks in February/ March 1981 and for 2 week periods in April and May 1982. Further work was carried out in 10 day periods in July/August and October 1982 by the field assistant alone.

Information was gathered in the following ways:

1. discussion with women in the individual households
2. discussions with the women in the maendeleo (development) group
3. observation of the water supply source, of household use of water and of village life in general
4. recording the daily activities of women

1. Discussions with women in the individual households

All the households it was possible to visit (38 of 42 households) were included in the survey. 9 of the households were visited a second time. Social visits were also made to some of the households without any discussion of water. Six younger women without households of their own were also included in the study. Thus discussions were held with a total of 44 women in the settlement.

2. Discussions with women in the maendeleo group

These visits were used to introduce the project to the women and to obtain permission to visit them individually in their homes. In addition, valuable information was obtained in general discussions of the village water supply situation and other village needs. The women were very open and verbose in this group. It was obvious that they stimulated each other and it was sometimes surprising to see how reticent they were in their own homes, especially if the men were present.

3. Observation of the water supply source, household use of water and village life in general

The water supply source was observed on numerous occasions. In addition, full-day observation was carried out for 10 days. The water collection for each family was recorded with information on who collected, how much, in what receptacle, at what time. It was also recorded if the receptacle was rinsed, if washing was done at the source or if animals were watered and if the women stopped to talk.

4. Recording the daily activities of women

In order to be able to attempt to place the burden of water collection in the context of the overall work burden, an attempt was made to assess the participation of the women in both the productive and reproductive spheres. One method used was to ask the women in the individual household discussions for a detailed account of yesterday's activities - as this information was still relatively fresh and could be recalled. In addition women were asked which tasks they considered the most burdensome and which activities they enjoyed doing.

As well as asking the individual women what they did yesterday hour by hour, an attempt was made to get the women to compile a diary of their activities on one day a week. This was done through the maendeleo group. This proved rather difficult since most cannot read or write and little information was obtained.

In order to obtain some information on the division of labour within the households a record of the activities of all members of one family was kept for one week in May 1982, for 2 days in August 1982 and for one week in October 1982. This provided some interesting information on the division of labour and the time spent on various activities. It also exemplified the importance of the aspects of seasonality and space (distance) in the activities of the households in rural areas.

1.4. Difficulties and limitations

The question of reliability

Reliability is not always guaranteed, even with the "small-scale" approach. "As in all research, the reality we are looking for (events, attributes, attitudes, or relationships) is not always directly accessible, but (as the term "data" implies) is "given" to us, never perfectly, by the respondent." (Sajogyo et al, 1979).

Obviously it is difficult to test the reliability of the data. Wherever possible observation was used as a control. Incorrect information can always be given through misunderstanding or, perhaps more likely, incorrect interpretations can be made of the information given.

Difficulties in obtaining all the relevant information

At times it was learnt, when analysing the data, that more information was necessary to fully understand the situation in the households or in the village as a whole. This problem is cyclic - by not understanding the situation we do not know which information must be obtained, which means we do not obtain all the necessary information and thus we still do not understand the situation.

Difficulties in obtaining accurate measurement of quantity/time

It was difficult to obtain accurate information on the amount of water collected per day. In the early stages of the fieldwork the women were asked in general terms. It later became obvious that it was more satisfactory to ask about a specific day's water collection, eg yesterday's, as this is information which is still at hand and does not require generalisations. In addition observation at the source helped to check the accuracy of the information. Second visits also provided a check.

It is also difficult to define a "normal" day for a household as there are many tasks which are not performed daily but only once or twice a week. The aspect of seasonality is another factor which certainly plays an important role but which is not satisfactorily investigated in relation to women's work.

In attempts to ascertain the time spent on different activities by women on a daily basis, it became obvious that women tended to omit mentioning such chores as preparing food, tending to children, and sometimes even collecting water! It seemed as if they themselves had the attitude that these activities were not "real" work and thus not worth mentioning. In which case this attitude must be something the women have learnt as part of their socialisation as children.

2. THE RESEARCH AREA

2.1. The Pare Environment

The name "Pare" is applied to the range of mountains found in the north of Tanzania, between the Usambara Mountains and Kilimanjaro. (See map in Appendix 4.) It is also commonly used as the name for the land occupied by these ranges and the people inhabiting it.[1.]

On the western side the mountains rise abruptly from about 600 m above sea level. On these rocky formation little indication of human settlement is seen. Steep, winding roads lead up to the villages on top of the range. On the eastern side the slopes are more gradual and here villages can be observed along the slopes.

The Pare range is broken by valleys to form three distinct divisions: South Pare, Middle Pare and North Pare. (Kimambo, 1969) (See map on next page. The whole Pare range is drained by two systems, the Ruvu (Pangani) and the Mkomazi.

In considering the Pare environment, it is also possible to distinguish three different regions. (Kimambo, 1969) First, there are the arid plains on both sides of the range. Most of the land is either flat or consists of gently undulating surfaces with an altitude between 600 and 900 m above sea level. Because of the low rainfall and high evaporation this region tends to have saline soil. In most cases the rainfall of this area can only support a scanty vegetation and consequently it has desert or semi-desert conditions. This area is suitable for grazing, the only problem being the unreliable rainfall. In the more swampy areas it is possible to cultivate rice.

The second region is that of the foothills and escarpments which rise from about 900 - 1200 m above sea level. The soil here is non-saline and relatively fertile. Where rainfall is adequate, this zone is the most productive of the Pare area. It is also cultivated by many of those who live on the plateaux. Where rainfall is low, because of the rainshadow, irrigation is utilized.

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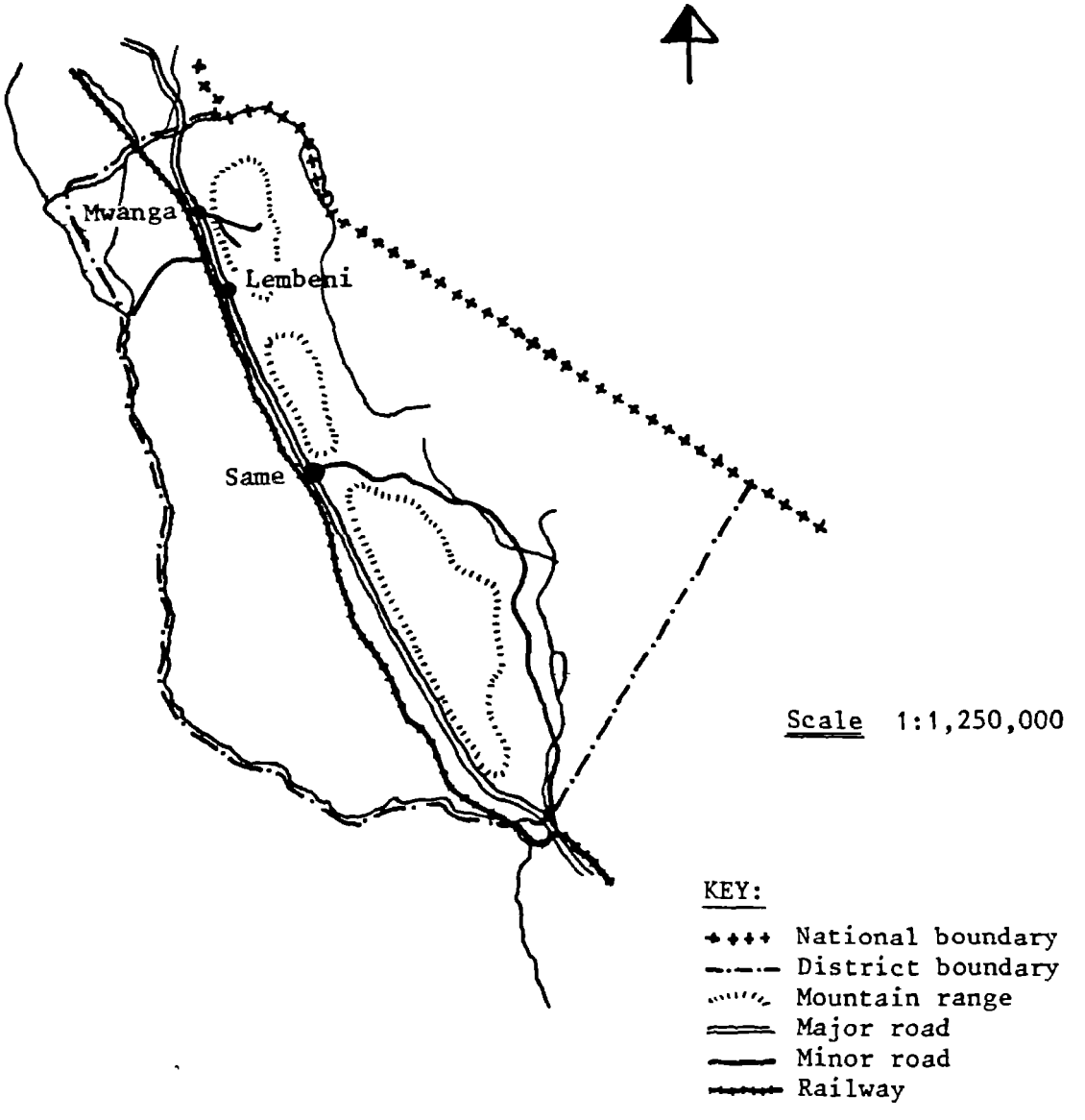
1. Strictly speaking, in Kiswahili "Kipare" refers to the language, "Mpare" to one inhabitant, "Wapare" to more than one inhabitant and "Upare" to the area.

The third region is that of the broken plateaux at the top of the range. Most of these are between 1200 and 1800 m above sea level. Where they exceed this altitude - and some rise up to 2400 m - they are forested. Water supplies are more adequate in this area. The rainfall is heavy, averaging well over 800 mm per annum. Over half of the Pare population is to be found in this plateau region. (Kimambo, 1969). This means that population and livestock pressures are much greater than in the other two regions.

The rainfall is mainly concentrated to a few months of the year - November-December and April-May.

Map 1.

The Pare area.



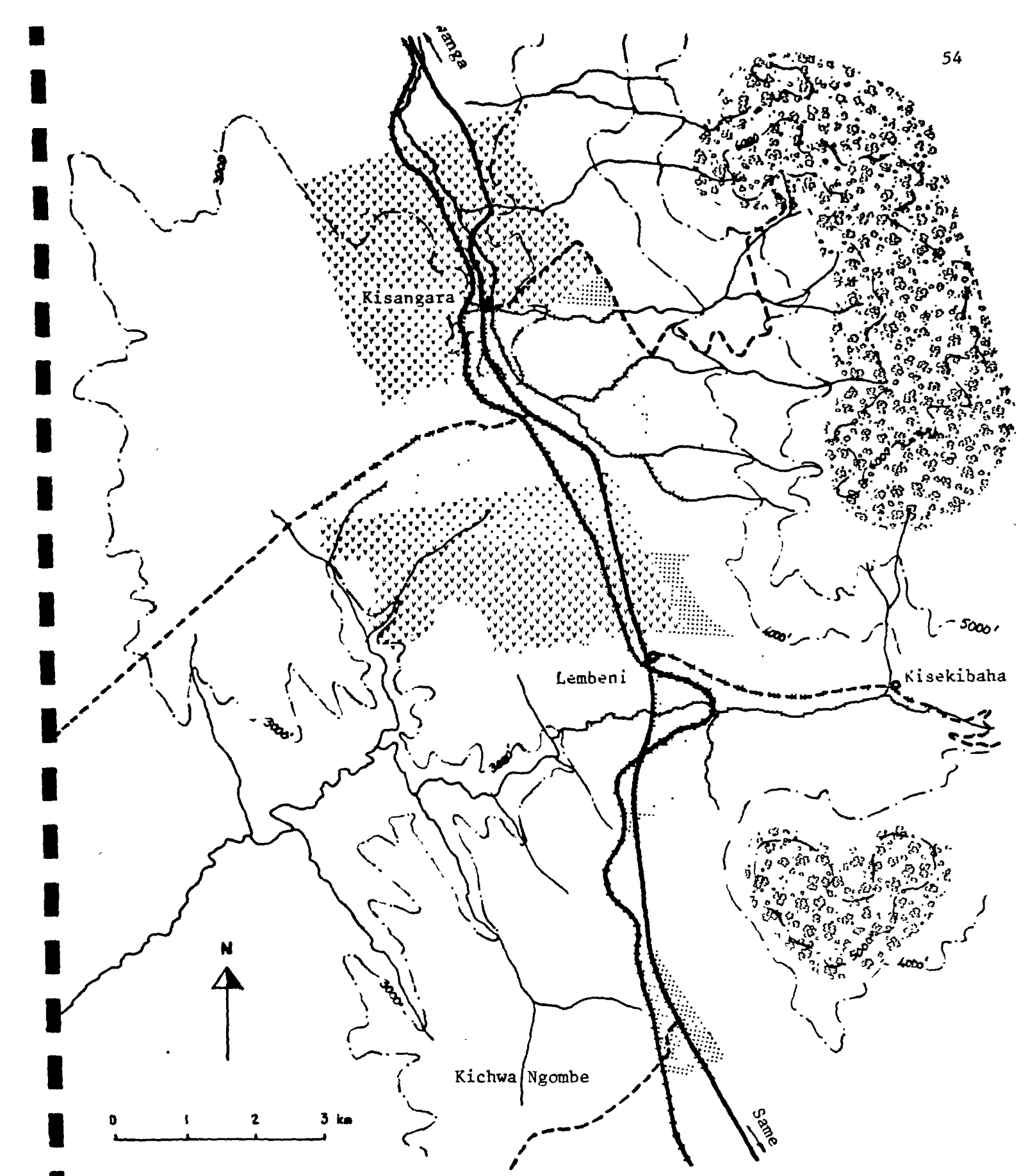
2.2. Lembeni Ward in Mwanga District

Mwanga District is a topographically diverse area of Kilimanjaro region. The central part of the district consists of part of the North Pare Mountains. The district's peripheries are made up of the arid plains which surround the mountain. As in other parts of Pare, the rainfall is unevenly distributed. It is sparse on the plains and on the western slopes which are in the rainshadow. Several streams drain the interior into the Pangani river. Only a few of these streams are permanent when reaching the plains. In the sixties a dam was constructed across the Pangani, thus creating a huge resevoir, Nyumba ya Mungu Dam. The rainfall is mainly concentrated to a few months of the year, November-December and April-May.

The majority of the population lives in the highland zone where there is strong land pressure. The typical habitation pattern here is dispersed homesteads. On the plains people live in a narrow belt close to the Moshi-Tanga road. Here they tend to live in villages. The settlement on the plain is of recent date, less than 50 years.

The people living around Nyumba ya Mungu dam live mainly by fishing. Apart from these people who are recent immigrants to the area, the Wapare, who are mainly agriculturalists, are the dominant group. Most homesteads also keep a few cattle, goats and hens. The staple crop in the highlands is bananas, but beans and coffee are also grown. The most important crop on the plains is maize. Some of the fields here are owned and cultivated by people living in the highland zone. The use of tractor for cultivation is widespread. A number of Wapare living on the plain also keep big herds of cattle and goats. Large sisal estates are also found on the plain, west of the mountain, though their economic impact in the area had decreased in recent years.

Lembeni Ward is situated in the central part of Mwanga District. The population population, according to the latest census (1978) was 13,688. The ward consists of 7 villages. The administrative centre is Lembeni village where one finds the Village Council. Kisekibaha settlement is part of Lembeni village. (See Map 2 on following page).



KEY:

- Forest
- Sisal estate
- Cultivated land
- Railway
- Major road
- Minor road
- Stream
- Contours

Map 2

LEMBENI AREA

2.3. Kisekibaha: the village environment

Kisekibaha village is located at the foot of the mountains, close to a small mountain stream and a much-used footpath leading up to the highlands. To reach the village one turns off the main road from Same to Moshi at Lembeni. From Lembeni it is about 20 minutes by car or 45 minutes to one hour by foot to the village. The dirt road continues through Kisekibaha up the mountain to Kilomeni. In the wet season this road is virtually impassable.

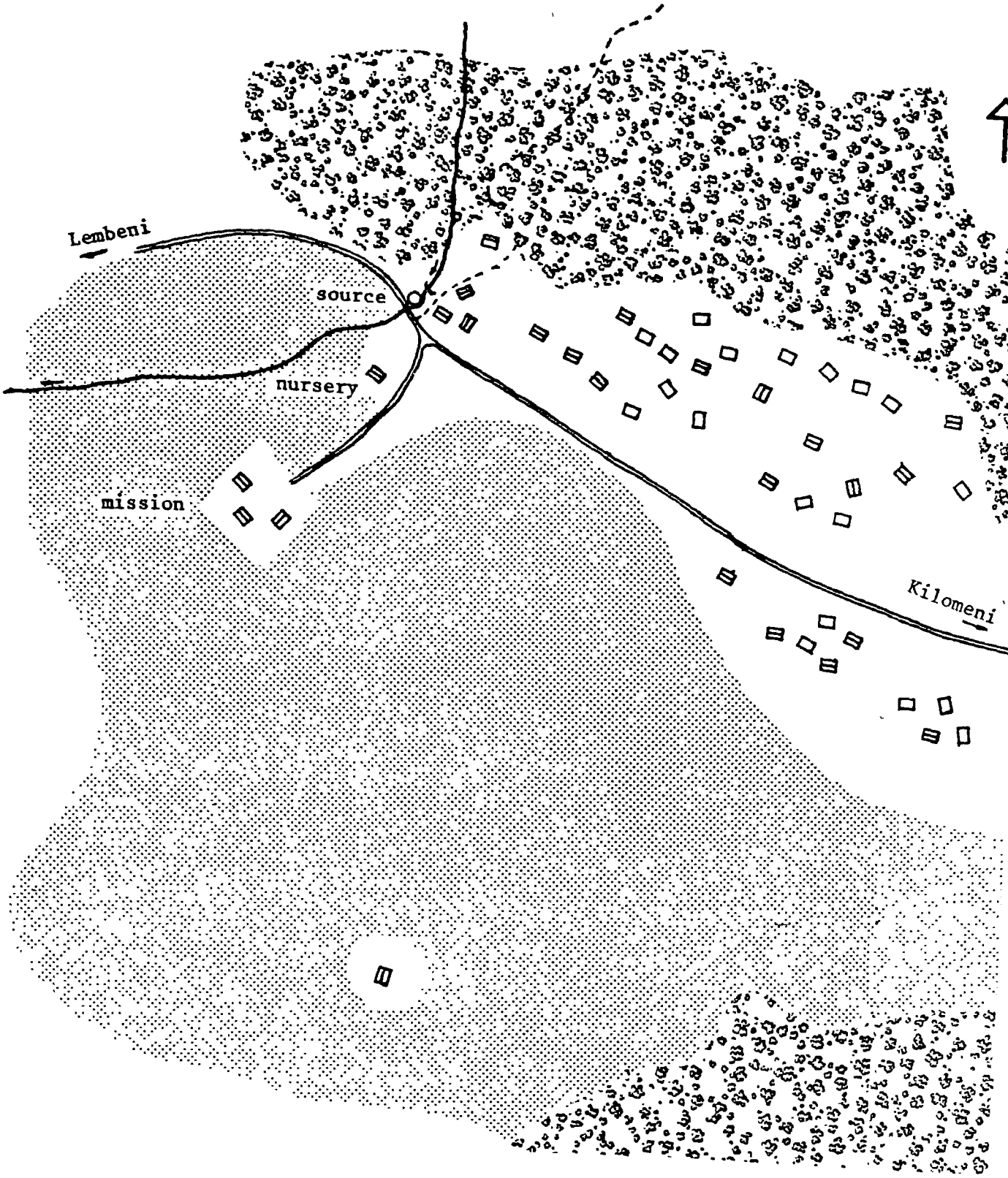
The village is small, consisting of 42 households in an area of .25 km^2. It is surrounded by mountains on three sides. The vegetation is green, with boabab trees and different flowering bushes scattered through the village. In the wet season the area is luxuriantly green and the houses can hardly be seen for the bushes and undergrowth. However during the dry season the vegetation dries off considerably. The houses are scattered and small footpaths wind from one house to another. The village is situated on a slight incline, with the houses at the top being located some 100m above the lowest. As can been seen on map 3 (see following page) most houses are situated above the road with a smaller grouping (including one boma) to the right below the road and one household considerably further away. There has been some pressure on this family to move closer to the others but they have resisted because of the advantage of proximity to feed for their cattle. One of the wives has, however, on her own initiative, moved to the village proper to be closer to the water source.

Political organization

The village has 3 10-house cells, which is the political unit at the village level. A Balozi is elected to lead each of the 10-house cells. As well the villagers have elected "chairmen" for the women's maendeleo group, the school committee and the cooperative shop committee.

Population

The total population in Kisekibaha (calculated on the information received on the numbers of members in each household) is 300. The percentages of males, females and children under 15 are given in table 5.



KEY

- Forest
- Cultivated land
- Road
- Path
- Stream
- Corrugated iron roof
- Thatched roof

Map 3

KISEKIBAHA VILLAGE

Scale ~ 1:10,000

Table 5.

Percentage of males, females and children under 15

	Males	Females	Children <15
% of population	18%	28%	54%

Of the children under 15 years, 34% are under 5 years and there are 7 infants (under 12 months) in the village.

All the villagers are Wapare with the exception of two women, one of whom is a Mkahe and the other a Msambaa. Table 6 shows the background of the males and females in the village.

Table 6

Background of the villagers

	% coming from Kisekibaha	% coming from outside
females	42%	58%
males	90%	10%

Religion

55% of the villagers are christians and 45% muslims. However the village also has several local waganga (traditional doctors) and people from all religions consult them and take part in traditional ceremonies held to pray for rain, ward off bad spirits or offer sacrifice to the ancestors.

Economic welfare

In general the village could be characterized as "traditional" in the sense that few changes have been made on the traditional pattern of living. A mission located nearby seems to have had little impact in village life, even after 10 years of interaction. Innovations which have been introduced, such as nursery school and cooperative shop, as yet seem to have had little noticeable effect.

The people are generally poor. The economy is based on agriculture but most villagers (74%) also keep a number of cows, goats and hens. Two tractors owned by one of the villagers are used (where they can be afforded) to plough the fields. The land close to the stream is ideal for sugarcane, tomatoes and onions which are sold at the local markets. Almost all households (92%) are engaged in extracting sugarcane juice which is sold in Lembeni for pombe (local beer). Few of the males in the village are full-time wage-earners. See table 7.

Table 7.

Wage employment of male heads of households.

	FULL-TIME EMPLOYMENT			PART-TIME EMPLOYMENT		
	Living in village	Living away	TOTAL	In and around village	Away	TOTAL
% of male heads of households	5%	13%	18%	27%	5%	32%

The standard of housing is poor. The houses are of pole frames with mud walls. 63 % of the houses have bati (corrugated iron) roofs, the remainder having thatched roofs of grass. 26% of the houses are new and 8% have been recently repaired. However in general the houses are in very poor condition. Even when the villagers are willing and able to afford to repair and replace thatched roof with bati, they are hindered by the non-availability of the required materials.

Observation of the goods available in the village shops gives a good index of what goods are available on a fairly regular basis, and thus of the general standard of living. However account must be taken of the fact that most villagers also shop in Lembeni if the good they require are not available in the village shop.

Table 8.

Items available in the village shop.

Items available on a regular basis	Items which are sometimes available	Items which seldom available.
salt	matches	sugar
biscuits	chloroquine	soap
bowls		cooking oil
spoons		cloth
cups		
tea		
asprin		
oil for skin		
oil for hair		
skin powder		

A survey of the most common luxury goods available in rural Tanzania gives an indication of the level of welfare in the village. 42% of all households had a bicycle; 47% had a radio and 63% had bati (corrugated iron roofing). 24% of households had all three items.

Considering the non-availability of spare parts for bicycles, the fact that 70% of bicycles are in good working order is surprising. However they do not seem to be used very frequently.

One villager also owns a pick-up car which he used to run a bus-service to markets in other villages in North Pare. The car was based in Same and he employed a driver. However because of lack of spare parts the car has been stationary for 2 years.

A cooperative shop has recently been opened (1981). The village did have a private shop but it was closed after problems in getting the licence renewed. A committee has been formed to take the responsibility for managing the affairs of the shop. A local woman is employed to serve in the shop on a part-time basis. Despite chronic shortages of goods and transportation problems, the shop has managed to survive nearly 12 months.

Health facilities

The village has a first-aid post at the nearby mission compound. Minor illnesses such as colds, coughs and small wounds are treated there. More serious cases are taken to the mission-run dispensary at Lembeni, or transported to Same hospital. The car from the mission is sometimes used to transport serious cases (often at night) to the dispensary or the hospital. Otherwise the villagers walk one hour to the dispensary, and if need be, take the bus to Same from there.

The dispensary is staffed by a medical assistant and a trained nurse/midwife. Women from Kisekibaha walk to Lembeni to give birth. Only more difficult cases are sent on to Same.

The villagers also consult the traditional doctors, waganga, for various illnesses. There are also women in the village who assist with deliveries if need be.

Educational facilities

The village has a nursary school (one of 3 in the ward) established with assistance from the mission. Approximately 30 children, with ages ranging from 6 months to 7-8 years attend the school daily. The teacher is from the mission and a local girl (primary school leaver) is employed as an assistant. A project currently underway is the replacement of the old school building (an old mission building) with a new, larger building constructed with self-help and some financial assistance arranged through the mission. A committee has been formed to organize this project. Work is underway to dig foundations and make mud bricks.

The children of primary school age attend school in Lembeni. To date 5 children from Kisekibaha have completed secondary school - 4 boys (2 from the same family) and 1 girl. At present 2 of the boys work in Dar es Salaam, one in Mbeya and another in Usangi (Pare). The girl is currently unemployed. There are no children from the village attending secondary school at present.

A maendeleo (development) group for women meets at the mission under the supervision of one of the lay-women there. This group has been meeting for over 10 years. The women meet twice a week, except in the busy periods of the year when they cannot spare the time from work in the shamba. The women are taught reading, writing, sewing (using pedal machines), knitting, basketry and pottery making. As well they receive information on health, hygiene, nutrition and child-care. Approximately 43% attend this group regularly. Only 22% have never attended this group.

2.4. The general position of women in Kisekibaha

The position of women in Kisekibaha is similar to that described for women in general in Tanzania in section 2.1. However the women in Kisekibaha were not affected by the villagisation campaigns of the early 70s.

The women in Kisekibaha are the mainstay of the food crop production in the village. The work is heavy and time-consuming and they receive little help from the men. The women are responsible for preparing the fields. planting, weeding, harvesting and carrying the crops home. They also endeavour to produce some cash income - through selling tomatoes, onions or brewing beer - in order to be able to purchase basic necessities, especially for their children, eg clothes, shoes, soap.

In addition the women have the responsibility for the practical day-to-day running of the household and for child-care. They have generally less formal education than the men and are less involved in political matters. No women holds any position in the village- except for the chairman of the women's development group.

Where the male heads of households have moved to bigger centres for employment, the women have taken over full responsibility for the household. No woman has wage employment- except for one who very occasionally works as a labourer for other villagers in peak agricultural periods.

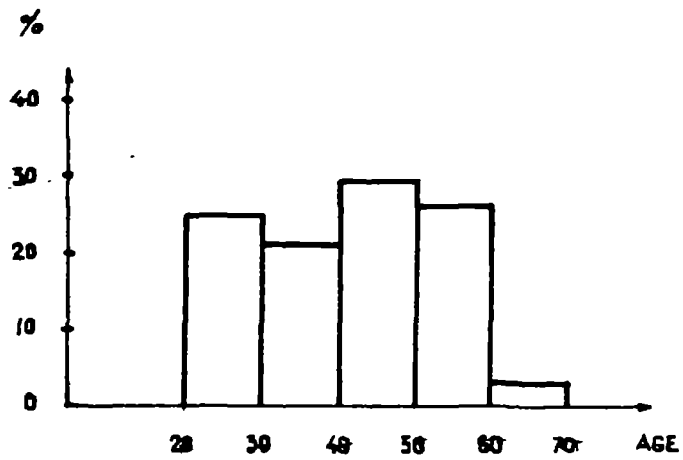
Additional information is given below on age structure, marital status, family size and spatial mobility.

Age structure

Of the 38 female heads of households[1]. included in this case study, 42% were under 40 years of age. The distribution is illustrated in figure 3. As well as these 38 women,61% of households had other adult women (>15) These were daughters, sister, mothers, sister/daughter/mother in laws.

Figure 3

Age structure of women in case study



Marital status

Of the 38 women in the case study only 1 had never married. Five of the marriages were polygamous. In three of these marriages the 2 women shared a home, although it seemed as if they collected water and firewood separately and counted themselves as separate households. In the other two marriages the women had separate houses.

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1. In using the term "female heads of households" I do not mean that there is no male head in the household (in which case I use the term "all women households") but that the women mentioned are those with the main responsibility for a household.

One of the marriages had ended in divorce and 2 women had separated from their husbands. In addition 3 women were widows. When these women are combined with those whose husbands are working away from the village, it can be estimated that 29% of households are "all-women households". This meaning that the women have the main responsibility for the household since there is no male head permanently at home. See table 9.

Table 9

All-women households in case study.

	Never married	Divorced/ separated	Widowed	Husband working away	TOTAL
% of women	2%	8%	8%	11%	29%

Unmarried mothers

As mentioned earlier in section 1.2, the problem of primary school pupils becoming pregnant is a great one in Tanzania. The girls are immediately expelled and given no chance to complete their education. In some areas of Tanzania their chances for getting married are decreased, and perhaps even non-existent. Certainly in Kisekibaha it was evident that once a girl had one child out of marriage she inevitably had one or two more. And this certainly did not improve her chance of marrying. There were 12 unmarried mothers living with their parents in the village and they had a total of 17 children under the age of 7 years. Of these 12 women, 4 (33%) have more than one child, one woman having 3. It is also interesting to note that of the households which have unmarried women in child-bearing age (>14 years), 53% have unmarried mothers. In addition 11% of the households have 2 unmarried mothers.

In Kisekibaha one could perhaps link the occurance of unmarried mothers with the brewing of pombe which necessitates a trip to the beer halls in Lembeni nearly every night in some periods of the year. The sugarcane juice is taken by the women and young girls, many of whom do not return to the village until 10pm or later.

Family size

In the 38 households in the case study, a total of 254 children had been born. 13 % had died while still children. An average birth rate (number of children born per woman) from the total number of women and children - 6.7. However, given the fact that 42% of the women were under 40 years and thus still in their child-bearing years, it is perhaps more informative to calculate the average rate per women over 40 - 8.3.

Education

38% of the women had had no formal education at all. In this case it is interesting to look at the percentage of women under 35 years who have no education, since general primary education is a relatively recent development in Tanzania. 5% of women under 35 had no education. The distribution of formal education is presented in table 10.

As mentioned earlier, 43% of the women attend maendeleo activities at present. Only 22% of the women stated they had never attended.

Table 10

Distribution of formal education among women in case study.

	No primary school education	Completed standard 4	Completed whole primary education standard 7
% of women	38%	43%	8%

Spatial mobility

Women in Kisekibaha have restricted mobility in relation to that of men. Three spheres of mobility can be discerned- the domestic sphere, the local sphere and the non-local sphere. The domestic sphere consists of the household and village; the local sphere of the ward, and the non-local sphere of the areas outside the ward, within the district, region

and nation. The more movement away from the domestic sphere the more social interaction and more exchange of information. Men receive more stimulation in this form than women in Kisekibaha as in most other parts of Tanzania, because of better job opportunities and political activities. Women are mainly confined to the domestic and local spheres.

The activities women usually carry out within the local sphere include marketing, grinding, shopping, visiting clinic or dispensary, attending religious services, visiting friends or relatives. Many of the fields the women cultivate are also within this sphere.

Within the district the women are involved with marketing, visiting friends and relatives, visiting the hospital. More and more fields are being started in this sphere, which means that women are travelling further from the village to cultivate.

At the regional and national levels there is little movement of women. In almost 100% of cases where women reported they had visited places outside the district it was for visiting relatives or seeking medical assistance. Only 16% had ever visited Dar es Salaam. 16% had visited places outside Kilimanjaro region. 56% had visited Moshi, the biggest town in the region. However no women travelled regularly outside the district. 76% of women had travelled within the district (outside Lembeni Ward) though this was not on a very regular basis- the main reason being to market tomatoes or onions during a short period of the year. Visiting relatives was not done more than about once a year.

2.5. The water supply situation in Kisekibaha

Kisekibaha village was actually established because of the reliable water supply. The oldest supply in the area is that which supplies water to Lembeni railway station. It was originally built to supply water for filling the steam engines. Provision was also made for the domestic supplies for the railway staff in Lembeni. A weir and an open tank on the ground were constructed at Lembeni River at the foot of the mountain. The water not needed for the railway was allowed to overflow the weir through a pipe. This proved to be a very reliable source and people began to settle in the immediate vicinity, at what became Kisekibaha village.

The water was originally of very good quality as the intake was fenced in and no people lived on the slopes. Today, however, the fence is broken, goats and sheep drink in the stream above the weir, and more and more people have their shambas close to the stream. As a result the water is polluted.

The source is situated at the entrance to the village.(See illustration 1). The road passes over the stream below the weir. Water flows continuously from the overflow pipe. As a result there is a pool of water around the pipe. Water for household use is collected straight from the pipe. Cattle, sheep and goats come to drink in the pool. People are forced to walk through this water to get to the pipe. As well they usually stand in the water while washing clothes near the pipe. Clothes are washed and rinsed in the pool. For personal bathing people collect water from the pipe and take it to the bush below the weir.

In considering the water supply situation in Kisekibaha it is important to note, as mentioned briefly earlier, that this water source meets the requirements of the Tanzanian policy at present, with regard to access and reliability. Most of the households live within 400 m of the source and there is an adequate supply all year round. (The quality is, however, probably not up to standard). In this context the low quantity of water consumed is interesting.

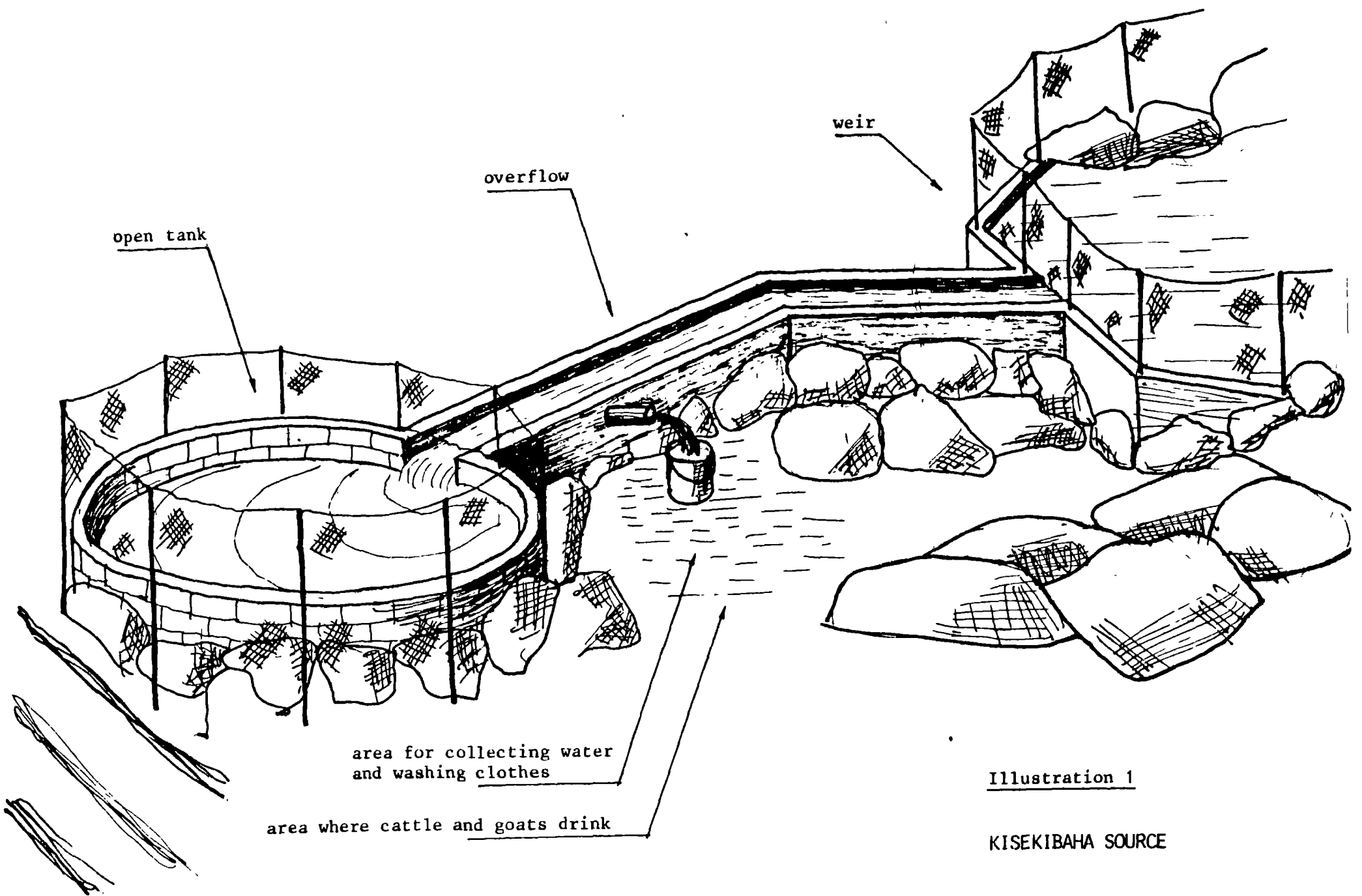


Illustration 1

KISEKIBAHA SOURCE

3. THE DATA: WOMEN AND WATER IN KISEKIBAHA

3.1. Water collection

Almost all (77%) households use the source at the entrance to the village exclusively. In the rainy season a man-made furrow leading from the main stream is used by about 18% of households. This source is only used for approximately 3 months of the year. Two of the households also use the mission water supply as this is closer than the main source. Only 65% of households with bati roofs collect rainwater on a regular basis. Several houses had constructed special water-catches and the water was collected in drums. Other families collected rainwater in whatever containers they had available when there was a heavy fall of rain. However most of the water consumed in Kisekibaha is collected at the source marked on map 3.

Distance to the source

All households, with the exception of one are within a 15 minute walking distance of the source. The household which is further away collects its water at the mission as this saves some time. The households can be divided into 3 groups - those within 0-5 minutes from the source; those within 6-10 minutes, and those within 11-15 minutes. Distance was only given as a problem by those within the third group, although most women in the second group mentioned that they would find it more convenient to have water closer.

It is interesting to relate these groupings to per capita consumption in an attempt to ascertain if, in fact, proximity to the water source does actually mean higher consumption. The average consumption in the three groups is indicated on Table 11. The results of this comparison reveals that consumption is not higher for those within the 0-5 minutes distance than for those within the 11-15 minutes distance. If distance is not the crucial factor in determining consumption what is? The answer to this question would appear to be one of the most crucial for understanding water use patterns and learning how water consumption can be increased.

Table 11

Per capita consumption related to distance to the source.

		% of households within this grouping	Average per capita consumption
Area 1	0-5 mins	31%	11.2
Area 2	6-10 mins	45%	11.8
Area 3	11-15 mins	24%	10.8

Water collection

In Kisekibaha as in most other areas in the third world, men are seldom involved in carrying water. Only one man was said to occasionally carry water for domestic use. He carried 8 litres in a calabash (as opposed to 18 litres carried by women and girls from the age of 10-12 years).Otherwise men only carry water when there are no women to carry it for them- if they are not married or the wife is sick. However this situation would be unusual since most households have several women/girls who carry water.

In several households the female heads did not carry water at all - in one case where the woman was an invalid and in other cases where there were enough young women/girls to carry it all. Women with young families have to carry all the water themselves unless they have female relatives living with them. Table 12 illustrates the water collection activities of the female heads of households included in this study.

Table 12

Water collection activities of female heads of households.

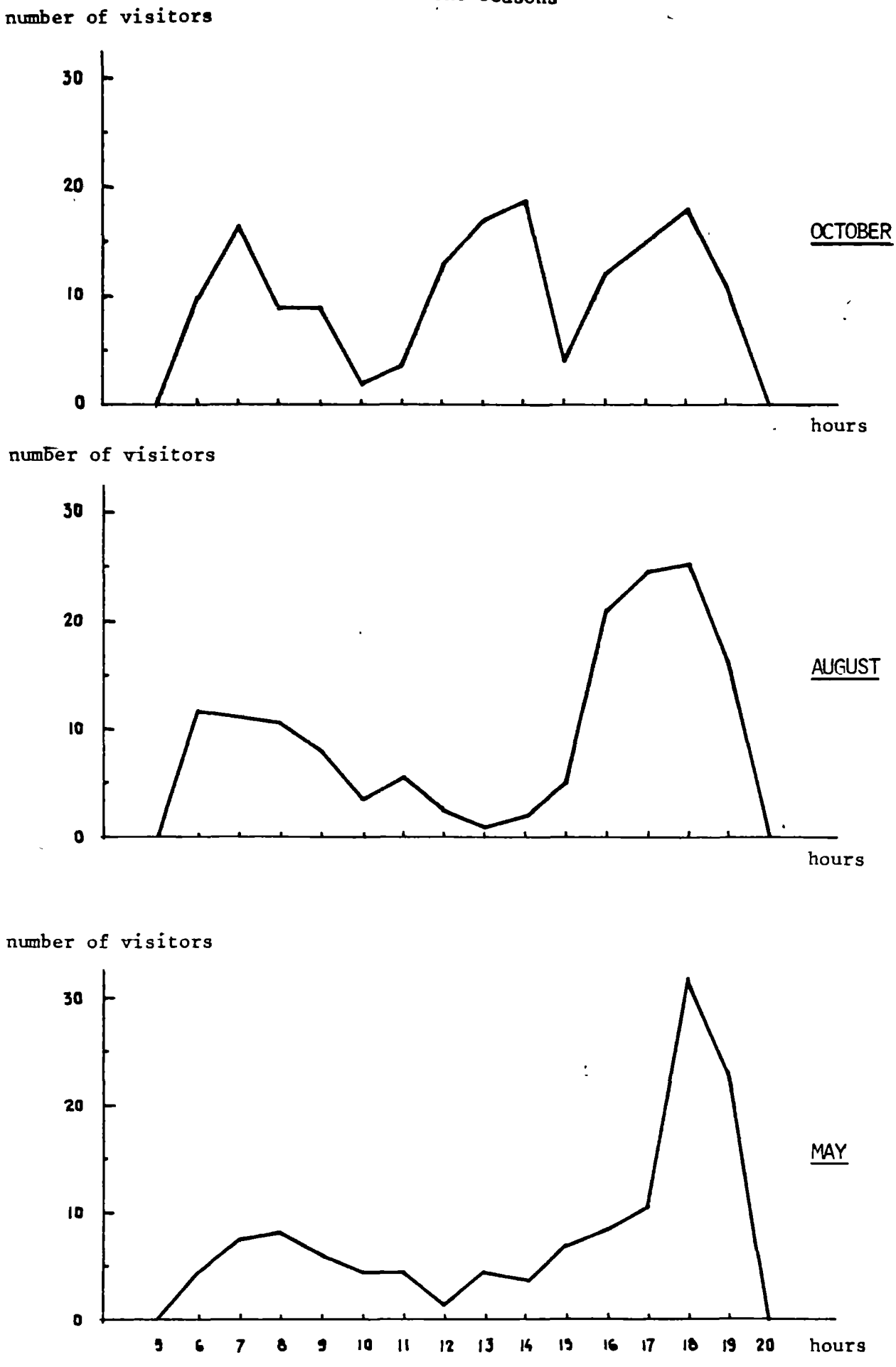
	Carries no water at all	Carries all herself	Carries herself with help from children/others	Receives help from boys <15 years
% of female heads of households	13%	29%	58%	26%

Young boys, up to the age of 14-15 years, are willing to help carry water for domestic use. However they appeared to carry much less than girls of the same age or younger.

Observation at the source carried out in three different months, May, August and October, revealed variations in the patterns of water collection which can be related to the seasonality of agricultural activities. In May and August there were two distinct peaks - one early morning at around 7am and one in the evening between 5-7pm. During these two months the women are often away all day at the shamba, weeding in May and harvesting in August. In October, which is agriculturally a less intensive period, the women were able to collect water as they needed it. There was an additional peak in this month at around 1-2 pm. (See figure 4).

Figure 4.

Number of visitors to the source during 24 hour periods in 3 different seasons



This observation at the source in three different months also appeared to reveal a tendancy for consumption to decrease in the busy periods in the shamba.

It is also obvious that in Kisekibaha, where distance is not a problem, the daily activities are less determined by the collection of water than in other areas. Water is collected when it is needed or when it can be fitted in with other activities.

Water is mainly carried in plastic buckets. It was calculated that women usually carry around 18 liters in such a bucket. Other containers used were debes (18 l), iron buckets (14 l), sufuria (cooking pot) (5 l), calabash (8 l) and gallon tins (4 l).

From observation of water carriers visiting the source over a 6 day period, it was possible to determine the frequency of participation of different household members in water collection. The results of this observation are presented in table 13. In addition it was calculated that daughters (>8 years) carried home approximately 50% of all water while boys (9-15 years) carried home less than 5% of the total volume.

Table 13

Participation in water collection.

	Women Themselves	Daughters >8 years	Sons >9 years	Other female relatives
% of visits to source during 6-day period	28%	50%	12%	10%

3.2. Consumption pattern

This is one of the most difficult aspects to assess. The women were asked to approximate how many plastics[1] they would collect in a day. When it became clear that this was not always easy, they were also asked to recall how many plastics they had collected the day before. In addition observation at the source in different periods provided a check on the accuracy of the measure. The observation revealed that it is almost impossible to assess

1. "Plastics" refers to plastic buckets which was the most commonly used vessel.

the amount collected on a "normal" day. Few households regularly collected the amount they had indicated as normal. Some collected more one day and less the next. However comparison of the results from the approximation, the information on yesterday's collection and observation at the source gives us a fairly accurate estimate of per capita consumption for the households. Table 14 compares the results of these different measures.

Table 14

Average daily per capita consumption (PCC)[1].

	Based on women's approximation	Based on recall (yesterday's collection)	Based on observation at the source
Per capita consumption in litres	11.5	12.7	10.4

The per capita consumption measure used in this analysis is that based on the observation at the source. The range was from 5.6 - 20 litres per day.

As with all PCC (per capita consumption) calculation reservation must be made for the fact that a large amount of water is not carried home but is used at the source. In Kisekibaha almost all washing was done at the source and personal washing was also sometimes done there. The fact that some activities are not done on a daily basis (for example washing of clothes, and in some cases, personal bathing) also adds difficulties in calculating PCC. The aspect of seasonality also complicates the issue since personal washing is mostly done at home in the wet season while in the dry many people go to the source. In addition there were some indications of a decrease in the amount of water carried home in the busy agricultural season. If this is correct it emphasises the impact of the work burden on domestic water use.

Table 15 presents the percentage distribution of the daily PCC. It indicates that 16% of households in Kisekibaha use less than 8 litres per day, which is a high figure given the proximity to water.

1. Based on amount of water collected daily and number of household members.

Table 15

Distribution of daily per capita consumption.

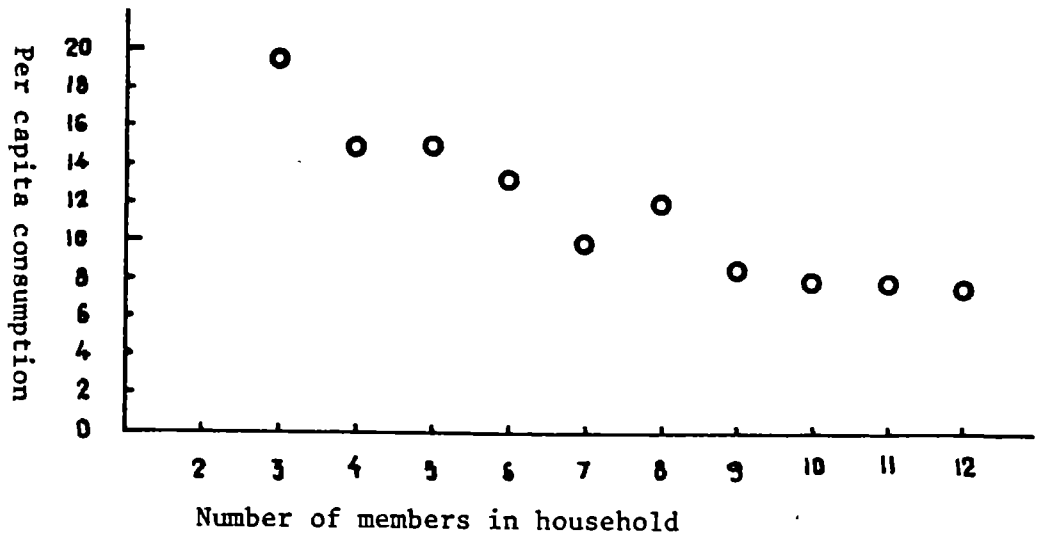
Volume (litres) consumed	Percentage of households
<6	6%
7-8	10%
9-10	33%
11-12	16%
13-15	13%
16-20	22%

In figure 5 the average daily PCC is plotted against household size. This indicates that the highest consumption is found in households with few members. Conversely big households consumed less water. A similar pattern has been reported by other researchers in Tanzania, eg Ståhl (1978?), Bantje (1978) and Lomøy (1980). These and other writers talk of "economies of scale" in domestic water use. Large households need less water per person for such activities as cooking, cleaning, washing clothes. Ståhl further maintains that if the amount of water collected is more or less fixed - determined by the time available - "the most important variable in determining per capita consumption will obviously be the number of members in the household". Large households have more members to share this fixed amount.

In Kisekibaha the idea that the amount of water it is possible for a women to collect is governed by the amount of time she can allocate to water collection would certainly seem to account for the apparent seasonal variation in the amount of water collected. In peak agricultural periods the women have little time over for water collection.

Figure 5

Household size and per capita consumption.



An attempt was made to relate the number of household members willing and able to carry water with the average daily per capita consumption. Young families were often small households (< 6 members) and in many cases the women had to carry all the water themselves. They received no help from their children since they were too young. It could have been expected that their water consumption would be low. However this was not always the case. Some of these women carried home as much water as households with many "water-carriers" and this water was shared by few household members which resulted in a high PCC. Conversely, in households with many potential "water-carriers" it could have been expected that these households would carry home much more water. Again there was no such definite trend. Even in households with as many as 6 potential "water-carriers" there were instances of very low consumption. It was evident that most households carry home relatively similar quantities of water (regardless of household size) and this water is shared by varying numbers of household members, which accounts for the variations in consumtion.

3.3. Water in the home

Drinking water

Drinking water is stored in covered clay pots in almost all households (95%). These pots are cleaned regularly (from every day to twice a week) to remove silt and also because the water begins to smell if left too long.

Only one household boiled drinking water. Another women stated that she always boiled drinking water for small children. Yet another said she sometimes did boil the water if she wasn't too tired. 13% of the women said they had boiled water during the cholera outbreak in the area and would do so again if there was another outbreak. Thus it can be estimated that 21% of households in Kisekibaha have boiled drinking water occasionally.

The reasons given by the women for not boiling drinking water are listed in the following table.

Table 16

Reasons for not boiling water.

Reason given	% of households
No need to boil	27%
No time	27%
Not enough containers	21%
Never done it before	18%
Too tired	7%

The statement " I have never boiled water before" was given by 18% as the reason why they did not boil water and was accepted as such. Those why gave "no need" as the reason were among those who considered the water at the source to be of good quality. The response "not enough containers in which to boil water is interesting as it raises a very practical problem related to the general standard of living. The response "not enough time" was related to the work burden of the women (as was the response "too tired")

but it also indicated another practical problem. The women stated that the members of the household were often too thirsty to wait for the boiled water to cool down. In addition 5% of the women mentioned that boiled water tasted bad because of the smoke, though this was not given as a specific reason for not boiling water.

All the women were aware of the fact that it was better for health to boil the drinking water. They had learnt it from various sources - school, maendeleo, adult education programmes, radio. The fact that so few actually boil the drinking water indicates that this type of "education" is not enough. Either the women do not really understand the link between water and disease or they consider the problems caused by water of poor quality not great enough to warrant extra work in boiling water. In addition, it is obvious that, given the present workload women bear, it is unreasonable to expect them to find time to boil water. Without changes in the overall situation of women there can be little change in the situation with regard to boiling water for drinking.

Uses of water

Most women estimated that they used most water for cooking. It was estimated that cooking required an average of 24.7 litres daily. This is almost 1½ plastics. All households ate three times a day. For breakfast most families ate thin porridge (maize) or tea; thick maize porridge or beans were eaten at noon; in the evening a similar meal of thick maize porridge or beans was eaten. Meat was consumed very irregularly. Some families occasionally ate rice and bananas but in the main the diet wasn't varied, except when the women were breast-feeding. In which case they tried to eat finger-millet porridge and to drink milk.

It was impossible to calculate the amount of water used for washing of utensils. However all households washed up after every meal and it appeared that clean water was used each time.

Similarly little is known about the uses of water for general cleaning. Water is sometimes used to clean the latrines. Water was needed to repair the mud walls of the houses but this was not done very often.

3.4. Health aspects: disease, sanitation and hygiene.

Water and disease

The women were asked to mention the most common diseases of small children. Table 17 lists the main health problems in order of ranking.

Table 17

Most common diseases of small children.

Disease	% of women indicating this disease as the main health problem
Fever (not malaria)	38%
Respiratory problems (Coughs/colds/pneumonia)	35%
Diarrhoea	15%
Malaria	12%

Diarrhoea

When diarrhoea was not mentioned specifically by the women, it was taken up as a special point. 34% of those who had not mentioned it stated that it was not a special problem. There are probably great individual differences with the occurance of diarrhoea as it must also be related to the general standard of welfare and standard of hygiene which may different considerably from household to household in the same community. The discussions on diarrhoea revealed that many of the women knew how to treat it in the home with simple oral-rehydration programmes, (water with sugar and salt)[1]. Serious cases were taken to the dispensary, and in some cases referred to Same hospital. The normal excretion pattern for small children was said to be 1-2 times a day. 4-6 times a day and up to hourly was considered to be diarrhoea.

The women gave many possible causes for diarrhoea: teething, mother's milk, eating unripe food (particularly maize), eating food cooked without oil, worms, change in diet, polluted water, diseases in the stomach. Some women maintained that there were no special causes - everyone got it sometimes

1. Since sugar and salt are items which are often not available this knowledge does not always help in practice.

for no special reasons. Several women stated that when they received health care (for diarrhoea or other sicknesses) they were often not told what the sickness was or what it was caused by. This is an example of a serious lack of preventative measures since one of the best ways of improving health is to inform people about diseases and their relation to patterns of living.

In order to check the information received on the main health problems in the village, the local dispensary at Lembeni was visited. Since this dispensary serves many other villages the statistics available are not specifically for Kisekibaha. The main health problems in the area according to the dispensary statistics are presented in table 18.

Table 18

Main diseases according to Lembeni dispensary statistics (May 1982)

Disease and ranking of occurance	Number of cases treated in a 12 month period	Percent of all treatment given in a 12 month period
	1337	23.9
Malaria	1244	22.2
Wounds and injuries	537	9.6
Worms	337	6.0
Skin diseases	307	5.5
Urinary diseases	289	5.2
Digestive system	269	4.8
Dysentry	252	4.5
	247	4.9
Eye diseases	191	3.4

In addition the women were asked which diseases they knew were related to water. Only 10% could not mention any disease. 51% could name 1 disease and 39% 2 or more. The diseases mentioned and the % of women mentioning them are presented in table 19.

Table 19

Diseases related to water.

Disease	% of women mentioning this disease
Bilharziasis	50%
Cholera	47%
Malaria	13%
Diarrhoea	13%
Skin/eye diseases	5%
Worms	5%

Sanitation

In this area of Tanzania people have been using latrines for several generations, after campaigns by the colonial authorities many years before. The response of the women indicated that all households used latrines. Three households were constructing new latrines and were, for the time being, using those of their neighbours. Thus in theory the sanitation conditions appeared good. However closer investigation revealed that in fact 13 households did not have a latrine of their own but were sharing latrines belonging to other households. In fact 19 households were sharing 6 latrines. As many as 5 households were using the same latrine. In all these cases those sharing the latrines were related. Out of 42 households in the village, only 26 had their own latrine (although three more were constructing them). All women stated that they used the latrines all the time, even at night. There was no way to verify this. The latrines themselves were generally in poor condition. They were of pole frames with mud walls and thatched roofs. However very often the roofs were leaking and the walls in need of repair. The holes were of varying depths. 8 of the latrines were new (built within the last 2 years) and were in good condition and an additional 7 could be said to be well kept. The latrines are swept and ashes put in and around to remove the smell. Some women also put salt in to keep the flies away. Further research in this area should concentrate on attempting to discover if the latrines are actually used by all household members at all times.

Children do not begin to use the latrine themselves until they are around 4-5 years, because of the fear that they will fall in. Until they are about the age of 2 they excrete outside the toilet and the faeces is collected and put in the latrine. At around 2 years the toilet training begins. The children are then taken to the latrine and assisted there, often by older children.

Small children are cleaned with water after they have excreted. Pieces of cloth or paper are also used. Only 3% of households stated that adults usually washed hands after using the latrine. None of the households had water inside or just outside the latrines for this purpose.

Waste water from the household, i.e. from washing children, clothes, utensils and other cleaning purposes, is thrown out into the compound surrounding the house. Only 3% of households used one special place for waste water.

While it has been pointed out that the area of sanitation/toilet habits/toilet training is a vital one, it is not an easy research area. It is a rather sensitive area. It is not easy or good to rush into a village and try to extract information of such a delicate nature. It was obvious that our field assistants (who were from the area and obviously knew the feelings attached to such things) found it hard to ask questions in this subject area. For this reason we did not push these discussions, especially on first visits.

Hygiene

In 1981 when the first visit was made to the village, many people were using a "bath" which had been constructed in the bush at the stream - below the source. However, one year later, at the time of our second visit, this bath area had been washed away by heavy rains. It then appeared that more people were washing at home. Those who washed at the source were using the area of bush below the source.

As is the case with most aspects of domestic water supply, it was also difficult to obtain an accurate understanding of the normal pattern of personal hygiene. The aspect of seasonality was evident. In many cases where people wash themselves depends on which season it is. For example it was quite common in Kisekibaha to take water home to heat during the coldest months. Many women wash at the source in the dry season and at home in the wet. It is

also necessary to differentiate between the different members of the households. Small children were always washed at home. 75% of men always washed themselves at home, regardless of the season. The remaining 25% washed at home when it was cold. A comparison of the personal bathing habits of men and women in made in table 20.

Table 20

Personal washing habits of men and women.

	Always wash at home	Never wash at home	Sometimes wash at home (in the cold season)
% of women	29%	5%	66%
% of men	75%	-	25%

Washing clothes

Almost 100% of households normally washed clothes at the source. Some usually washed children's clothes at home. Few had special days for washing, though when specific days were mentioned it was usually at the weekends. Though women appeared to do most of the washing, this was one activity which could, if need be, be done by men. Older children were also involved with this activity. The frequency of washing clothes varied greatly from household to household - from every second day to every second week.

The scarcity of soap in Tanzania was brought up by the women as one of their big problems. It appears that the whole pattern of washing clothes may be changing as a result of this shortage. Without soap the women feel they cannot get their clothes clean. Thus they tend to wear their clothes longer (which has obvious negative implications for the standard of hygiene) or they must wash them at home in hot water, which involves an increase in the work burden for the women. All women stated they were washing less frequently when there was no soap, and it appeared months could go by without soap being available. One women stated that she was now using pawpaw leaves and leaves of other plants to remove dirt and stains from clothes. She was even trying to dye clothes which were very dirty, using natural dyes in vegetation.

To gain an estimate of how much extra water was used when washing was done at home, the women were asked how many extra buckets they would need to carry home. The response varied from 1 - 3 plastics (18-54 litres).when all washing was done at home and 1 plastic for children's clothes. Of course this is only a rough estimate since it would depend on how long since the last wash was done.

3.5. General opinion of the water supply situation

In giving their opinions of the water supply situation at present, a great percentage appeared to be relatively satisfied. 63% indicated that they regarded the water quality as good. Those who complained about the quality often made a distinction between what they called dirty (muddy) and polluted(i.e. contaminated through contact with people or animals - having "wadudu" - the term for insects and other smallcreatures, in this case also referring to bacteria). 29% considered the water was polluted and 18% mentioned that it was dirty.

The taste was considered good (in comparison 5% considered boiled water had a bad taste and one women considered rainwater had the best taste of all). The supply was considered reliable, although in the dry season and when there had been very heavy rain the flow was slow and some queueing could result.

Suggested improvement

In general it could be said that the women were relatively satisfied with the water supply situation at present. They did not feel the health hazards were too great. However it was obvious that they felt a piped supply would involve immediate improvements, and they felt that this was more or less their right.

68% indicated that they wanted a piped supply to bring the water closer to the households. 27% of these also wanted a covered tank at the intake to eliminate the pollution from people and animals and to ensure that the water did not dry up. Only 29% said that no improvement was necessary (all of whom had expressed satisfaction with the supply in general). In addition, two women suggested that the households could also boil the water to bring about an improvement. One women suggested that the source of pollution, the people and animals up at the intake, should be moved away.

Thus the majority of households preferred strategy 4 on the following table. This strategy, a piped water supply, involves inputs from outside. Strategies involving only local resources were not considered worthwhile.

Table 21

Strategies for improving water supply.

	Individual activities	Communal activities
Local resources	1. Boiling of unsafe water	2. Spring protection
External resources	4. Iron roof and drum for rainwater collection	4. Tap water

(Source: Lomøy, 1980)

It was evident that there was a general tendency to believe that piped supply in itself will improve the water supply - i.e. that piped water is clean and pure regardless of source.

3.6. Water in the priority of village needs

Water is only one of the basic needs of rural households. It cannot be seen in isolation but must be treated in the context of the total needs. Otherwise one has no real understanding of the interrelation of different activities and of the factors which control the allocation of the scarce resources of time and energy in fulfilling these basic needs. It is not possible to assess and compare activities by simply looking at the time spent on them. The householders have a definate ranking of needs and the factors at work in determining the priority given to different needs is not always easily observable for the outside observer. It is important to attempt to learn the ranking of water in the priority of needs before any attempt is made to implement improvements.

When asked about the main problems in the village, very few women mentioned water supply at all. Only 3% gave it as the main problem. The inefficient system for distribution of goods was perceived as the major problem facing the villagers. The women complained they were unable to obtain the basic necessities for their families - soap, sugar, cooking oil, salt, spirit for

lighting, etc. The problem of distribution was related to the flourishing blackmarket in essential goods, and the lack of good leadership. It also effectively removed any incentives to work harder to produce more cash income. since the items the villagers want to buy are not available. The other needs mentioned included better health care closer and are listed in table 22.

Table 22

Village problems and order of ranking.

Problem	% of women mentioning this problem
Distribution of goods	63%
Dispensary	16%
Transport	9%
Water supply	3%
No grinding machine	3%
Too much self-reliance work	3%
Unable to mention any specific problem	3%

3.7. Water collection in the context of the total work burden

It is impossible to gain a complete understanding of the burden of water collection if it is not placed in the context of the overall work burden of women in rural areas. The collection of water is only part of the whole burden - even though in some areas it may comprise a large part. The activity of water collection is interrelated with the other activities which make up the daily pattern of living for rural women. It cannot be looked at in isolation.

In the context of Kisekibaha village it is evident that water collection is not the greatest burden. This was pointed out clearly by the women's own ranking of burdens which placed water collection after agriculture, firewood and extraction of sugarcane juice.

Agriculture

50% of households had more than one shamba, in some cases even 3-4. In addition, 50% had shambas which were about 2 hours away from their homes. This means the women are obliged to spend up to 4 hours of their daylight working hours in going to and from the shamba. It also entails an excessive amount of energy spent solely on travelling. In the busy periods, notably weeding and harvesting, the women must go every day for some weeks. The transportation of the crops, which is also the women's responsibility, presents a big problem when the shambas are so far away. In the case of Kisekibaha the women have to carry the crops home for storage, and then each week part of it is carried back to Lembeni for grinding. All of these factors have a great impact on womens ability to work, especially since they are seldom well-nourished. The aspect of seasonality is very pronounced with regard to agricultural activities since they follow the pattern of rainfall. There are peaks for land preparation and planting, weeding, and harvesting. Crops are cultivated twice a year.

Firewood collection

In Kisekibaha women collected firewood in the surrounding hills. This activity also displays distinct seasonality. In most families there was little or no collection in the wet season, as they were busy in the fields. Most firewood was collected when there was little agricultural activity. A store was built up for the wet. Some families went up to 5 days a week (every weekday) during the dry season. The normal trip to collect firewood took about 3 hours. Women and children did all the collecting. Every opportunity was taken to combine this activity with others. It was quite common that women came back from the shamba with firewood on their heads.

Domestic activities

As elsewhere, women in Kisekibaha are responsible for the domestic activities-cleaning, cooking, washing, child-minding, etc. In these activities quite a lot of help is received from children, especially girls. While the performance of such activities is time-consuming, it seemed as if women often did not consider then worth discussing in the context of the work burden they carry. Women carry out these tasks without much thought as to the demand they make on their time and energy and of their importance

for the welfare of the household. If women themselves have this attitude (through socialization), one can hardly expect that men and field-officers will have a different one. As is pointed out by Tobisson it is common that this kind of work remains "invisible" as long as it is carried out satisfactorily and without complaints. (1980).

Self-reliance activities

In addition to the farming and non-farming tasks for their own households, women (and men) are required to spend two days working on communal projects. In busy agricultural periods this is quite a burden on the women. They are required to participate in the building of schools, dispensaries, etc.

Grazing animals

Interestingly enough, quite a few women were regularly involved with tending animals - feeding, milking and taking them for feeding. Approximately 13% had the main responsibility for the animals. They were assisted by the children, especially boys.

Water collection as a burden for women

The collection of water was not mentioned as the most burdensome task by many of the women (only 5%). This is not surprising given the proximity to the source. The majority of the women considered agriculture was their heaviest burden, followed by firewood collection and housework. All the activities mentioned as burdens, and the order of ranking are presented in table 23.

Table 23

Women's greatest work burdens and order of ranking.

Activity	% of women mentioning this activity
Agriculture	50%
Firewood	16%
Housework (including cooking)	16%
Sugarcane juice preparation	10%
Water collection	5%
Child-minding	3%

It is interesting to note that the fact that agriculture is considered a great burden does not necessarily imply that women do not enjoy the work. 30% gave agriculture as the task they enjoyed most, of these 36% had stated that agriculture was their biggest burden. No women mentioned water collection as their favourite task. All activities women reported enjoyed doing are listed in table 24, with order of ranking.

Table 24

Activities women enjoy doing.

Activity	% of women mentioning this activity
Agriculture	30%
Housework (including cooking)	27%
Handicraft/sewing	18%
Child-care	5%
Maendeleo activities	3%
Milking	3%
Firewood	3%
Selling crops	3%
Making sugarcane juice	3%
Unable to mention any specific activity	5%

The attitudes to the activities which comprise the daily routines of rural women are of interest in attempts to assess the areas which are considered priority areas for improvement. Women in the rural areas want to be relieved of much of the work which they find heavy and time consuming and they may well also wish to be relieved of those which they find boring and tiresome to perform. Water collection in Kisekibaha could probably be included in the latter category since, while women do not experience the constraints of great distance experienced in other parts of Tanzania, water collection is still one activity which must be performed several times daily and which is considered of low status by men and women alike. And the productivity of water collection is less easily observed, in comparison with that of agriculture.

The pattern of daily activities

To gain a picture of the average daily routine of the women in the village, each woman was asked to recount her activities of the day before. These questions were asked in May and August 1982. The responses gave evidence to the importance of seasonality. The response in August was nearly 100% harvesting from 7-8am until 3-4pm. In May the response indicated that the women were spending long hours on the shamba weeding and watching for animals which could destroy the plants- monkeys and wild pigs.

In addition, the compilation of a diary in one family over a period of time gave interesting information on the division of labour within the family and the main activities carried out in different seasons. The family is comprised of 13 persons - the women, her husband, 4 daughters aged 25,23,16, 12 and 3 sons aged 14,10, 6. The children of two unmarried daughters were also included in the household - a boy (7), girl (5), boy (1½) and girl (1½).

The younger children (<7) were not actively involved in the household work, except in the form of looking after each other and keeping the animals out of the house, etc. All other household members were actively involved in the activities. The husband was occasionally away in Dar es Salaam or other towns on business (he bought pili pili for resale in Dar es Salaam). Otherwise it did appear that he assisted with agricultural activities.

The information obtained through this diary is presented on the following page in time-graphs. (Figure 6). The impact of distance on time available is clearly seen in these graphs. In addition the seasonality aspect is illustrated since one graph is from May and one from August which are the weeding and harvesting seasons respectively. The third graph is from October when the main task is preparation of fields, sowing and weeding in the short-rains shamba.

Using the information in the graphs the activities of the family can be analysed and comparisons made between the different months.[1] However, it should be kept in mind that each time-graph only illustrates one 24 hour period from each of the three months. Given the difficulties in determining a "normal" day in rural households generalisations should be made with caution.

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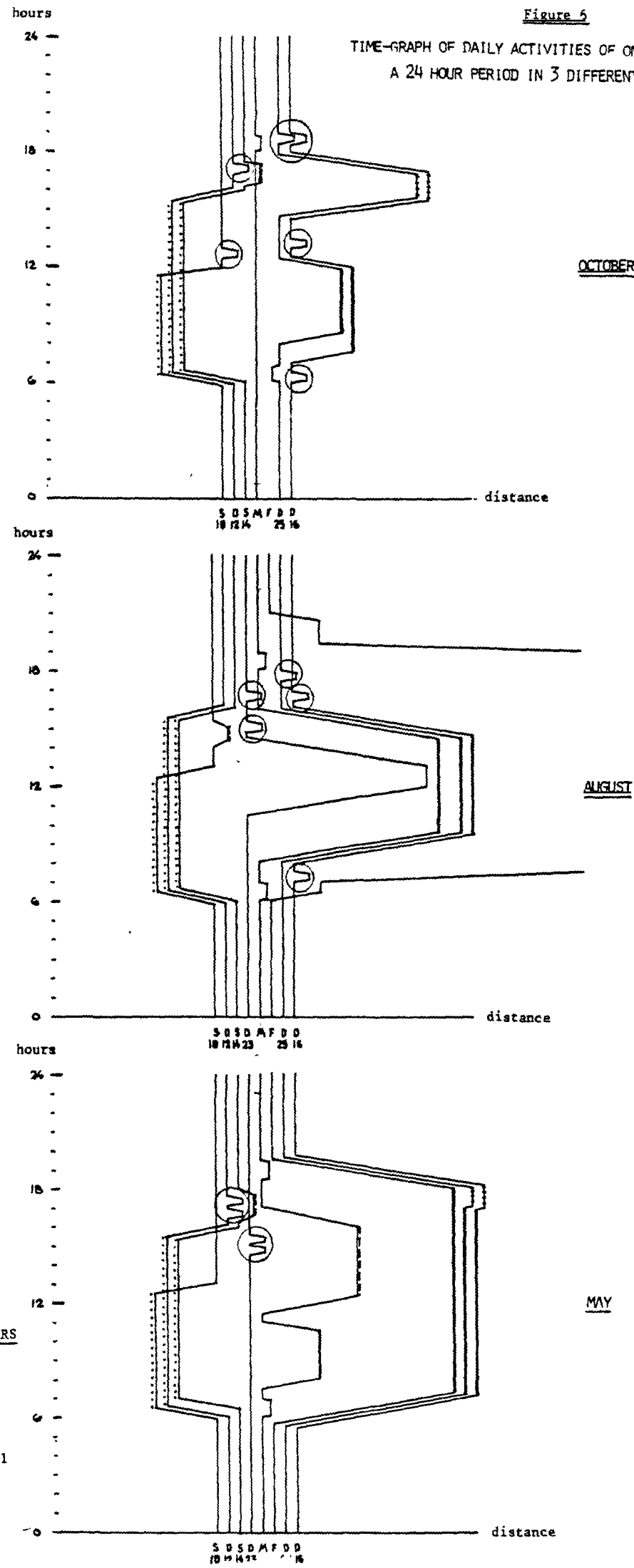
1. In the following analysis the woman is referred to as M (mother), the h husband as F (father), the daughters as D25, D23, D16 , D12 (indicating their age) and the sons as S14, S10 and S6.

Figure 6

TIME-GRAPH OF DAILY ACTIVITIES OF ONE FAMILY DURING A 24 HOUR PERIOD IN 3 DIFFERENT SEASONS



Water collection:

May: Water was collected in the early afternoon and late afternoon. A total of 4 plastics (72 litres) was collected, giving a PCC of 5.5 litres. Only 2 household members, D23 and D12, were involved in collection.

August: Water was collected in the morning and the late afternoon/evening. A total of 5 plastics was collected (90 litres) which gave a PCC of 6.9 litres. 3 household members were involved, D16, D23 and D25.

October: Water was collected early morning, at midday and in the late afternoon. A total of 6 plastics was collected (108 litres), giving a PCC of 8.3 litres. 4 persons were involved, D25, D16, D12 and S10.

It is interesting to note the difference in PCC in the different seasons, with a range from 5.5 to 8.3 litres. In May when the family is busy weeding in both the far and nearby shambas, all available time and energy is needed for this work. Only D23 who was left at home to take care of the housework (cooking, cleaning and caring for small children) and D12 who returned from school at 4pm were able to collect water. The others returned late and were probably too tired to collect water even if this was necessary. In August when they were harvesting at the far shamba most household members were involved with that and only 3 found time to collect water. In October, which is a less intensive period agriculturally, more water could be collected and the burden was shared by more household members.

With regard to the pattern of water collection it appears that it is only in October when the household members are normally closer to home that water is collected in the middle of the day. They are then able to collect water when they need it. This would appear to support the findings of the source observation presented in figure 4 (page 70).

It is very obvious that water collection is influenced by agricultural seasons - with regard to times of collection, number of household members involved and the actual amount of water collected and consumed.

Agricultural activities:

This is the activity which appears to dominate all others and which is the most labour intensive and time and energy consuming. In May (weeding) as many household members as possible were utilized. F, D16 and D25 went to the far shamba at 5am and were not back until 8pm. Travelling to this shamba takes approximately 2 hours, which leaves an effective working time of about 9 hours. M went to the nearby shamba for 4 hours. Her agricultural work was then interrupted by the fact that she was required to graze cattle.

In August (harvest) D25 and D16 and M went to the far shamba at 8am and returned at 4pm. D23 took food to them in the middle of the day. In October (short-rains agriculture) no work was done on the far shamba. D25 and D16 went to the nearby shamba for several hours.

Firewood collection:

During the peak agricultural periods, May and August, no special trips were made to collect firewood. In May D25 and D16 spent approximately 1 hour collecting firewood after weeding at the far shamba. In August when they were harvesting the far shamba it was not possible to carry firewood home and no firewood at all was collected. In the less intensive period (October) D25 and D16 made special trips to the forest to collect firewood (from 2.30-6pm). A store is built up for the peak agricultural periods when they have no time to collect every day. Thus firewood collection is also affected by the agricultural seasons.

Grazing cattle and milking:

Some families operate a system of cooperation in looking after cattle. 3-4 families combine their cattle and take turns (3-4 days at a time) at taking them to graze. This family was involved with such a system which explains why there were no grazing activities reported for the middle of the day in August or October. In May M spent 4 hours grazing the cattle. It appeared that women in this area often take responsibility for the cattle. They do some grazing and have the main responsibility for milking. M milked twice a day- at 6am and 6pm. However when she was ill (October) she was assisted by D25. S10 looks after the cattle each afternoon on his return from school. He is often assisted by the smaller boys of 6 and 7 (though this is not illustrated in the time-graph).

School attendance:

This activity took up most of the time of S14, D12 and S10. However they were utilized in after-school hours for collecting water, grazing cattle and minding younger children. On some days in peak agricultural periods they are kept away from school for agricultural activities,and on other occasions the they are free from school because of shortage of teachers. In which case they are expected to help with agriculture.

Housework- cooking, cleaning, child-care:

Unfortunately these time-graphs do not clearly illustrate this sphere of activity. It is evident which household members are at the house but not which duties they are performing. In this particular family there were sufficient members to allow for one adult to remain at home all day to carry out domestic duties. In May and August D23 remained at home and in October M was sick so she remained in the house.

Personal washing and washing of clothes:

There was no washing of clothes reported on these days. Similarly personal washing is not illustrated as it is often done at home and domestic activities are not differentiated on these graphs. In addition it is probable that when working on the far shamba they wash themselves on the way home at pools if there has been rain or in Lembeni.

Other activities:

These could include such things as travel (for business or visiting relatives), leisure and sickness. In May there was no travelling. In August F was away on business in Same. In October F was again absent on business in Arusha (for a period of one week). M was sick in October and remained at home, although she did perform some domestic duties with the help of the younger children. Time utilized for resting or leisure is not illustrated on this graph.

Further analysis of women's work burdens in a "time-space" perspective should prove informative, since such analysis clearly illustrates movements and restrictions on the performance of daily activities by the time available. Time and energy spent in movements to and from shamba, water source, forest,etc is also made clear.

Division of labour within rural households

In the context of the work burden of rural women it is necessary to give some attention to the division of labour within the household. While investigation of this aspect was not a specific aim of this case study, it was apparent that women bear a disproportionate share of the work burden in relation to that of the men. This fact has also been documented for many other areas.[1] (See Appendix 5 for some statistics at the global level.) Shapiro (1980) has also taken up this aspect with respect to women and water in Geita

1. See Tobisson, 1980.

District in Tanzania. His data revealed that there was a markant difference in labour inputs between women and men. This is illustrated in a table in Appendix 6. A major portion of women's non-farming time (39%) was devoted to activities necessary for the physical maintenance of the household - for example, water collection, firewood, processing and cooking food, cleaning. On the other hand men only devoted 3.6% of their non-farming time to such tasks. Conversely, activities which are not essential for the physical maintenance of the household, such as leisure, drinking, illness, mourning, account for a larger portion of men's time (44%) than of women's (30.1%). The result was similar for visiting away from home - 22.6% for men and 15.7% for women. A more detailed study of these aspects in Kisekibaha would probably reveal very similar results.

More research into this aspect is essential for an understanding of the role of women in the rural areas. Especially because of the paradox in many third world countries that while the local economy in the rural areas only survives thanks to the participation of women (while the men are underemployed), "the official statistics show low labour force participation for women and high participation for men respectively." (Beneria, 1981).

Beneria makes another interesting point with regard to the division of labour. That is that the assumption that the household is the most basic unit of analysis is inappropriate. She maintains that the household cannot be presumed to be "a harmonious unit of consumption and production/reproduction" because of the conflicting nature of relations generated by these functions. Thus it is important to "distinguish between the household as a collective unit and the individual members that are part of it". This is because of the complexity of relations in regard to household hierarchies by sex and age and of the division of labour even among members of the same sex." (Beneria, 1981).

The aspect of seasonality

The impact of seasonality on all farming and non-farming tasks cannot be over-emphasized. As pointed out by Shapiro (1980), non-farming tasks display an "inverse seasonality, probably reflecting an accomodation to farming seasonality although other factors may be at work." The performance of all other duties in a subsistence household is affected by the amount of time and energy left over after the performance of agricultural activities.

Even domestic activities are affected since in peak agricultural periods women have little time to spend on cleaning and washing clothes. It is probable that household members are less particular about personal hygiene in these periods and that even small children are less well cared for. Water collection displays distinct seasonality, following the pattern of rainfall. The times water is collected, the numbers of household members involved and the actual amounts of water collected and consumed appear to be affected.

4. WOMEN AND DEVELOPMENT IN KISEKIBAHA

The conceptual framework as presented in Part A showed clearly the potential role of women in rural development. The fact that women are often not actively involved in development efforts must be understood in terms of the marginal position they normally hold in rural societies. It is necessary to identify and assess the constraints operating to prevent their full participation in order to be able to rectify this situation and allow women to make their full contribution.

4.1. Constraints to full participation in development

Women's excessive work load is an obvious constraint, well illustrated in Kisekibaha. Women have little time over to engage in "developmental" activities. They contribute more than their share to the communal self-reliance activities organized within the ward. However this has little spin-off effect since it is merely utilizion of free labour. The women have little say in the planning or implementation of the projects they work on.

Lack of education is another restraining factor. Women have often less education then men. As pointed out earlier there is not equal educational opportunity. The fact that special emphasis is placed on women's maendeleo groups (even if perhaps there is an underlying implication that women are the ones holding back development) is a positive factor since the women get the opportunity to learn new skills and to develop traditional ones.

Women's generally subordinate position in rural society means that it is not expected that they will participate actively in community decision making and planning. This attitude is probably also internalized by the women in the socialisation process.

Women have restricted mobility, in relation to that of men. This is also related to their heavy work load. As a result women are not exposed to innovations and changes as frequently as men. Women usually only travel to surrounding villages for market, shopping, religious ceremonies, etc. Few visit other larger centres, and it is usually always for visiting relatives. "Business" trips which are part of the men's world are outside the realm of the women.

The expectations of women are also an interesting aspect in this context. When asked if the general conditions of life were improving or getting easier most women (95%) felt the opposite was true. The general opinion was that even the most basic necessities were more difficult to obtain and were priced out of their reach. In addition they did not feel satisfied with the leadership as they felt the problems of distribution and blackmarket were not being tackled, implying perhaps that those in leading position were actually benefitting from the current situation. In general they did not expect any improvement in their life situation. Some women asked why they should work harder (as they were often exhorted to do) to earn more money when they cannot buy the things they need, no matter how much money they have. Another woman (stnd. 7 leaver) commented that when she grew up she had decided that her children would have a better life than she had had. However, although she has this goal in mind and works hard, she is depressed by the fact that her children have exactly the same problems she had as a child, for example, little food, lack of clothes, shoes, etc. She experienced the situation as a hopeless struggle with little returns. However most of the women when asked if their children would have a better life considered conditions would be better for their children, mainly because of better educational opportunities (and hopefully job opportunities) and better health care. It is obvious that the aspect of expectations is vital since it is useless to exhort more effort from people who have no expectations of a return from their efforts.

4.2. Positive imputus to development

In Kisekibaha the women do make significant inputs to development. With regard to cash income the women would appear to produce the greater part. Only 18% of households had men with full-time employment. Some of the men(32%) had occasional work as labourers, tractor driver, carpenter, etc. Almost all women (92%) were engaged in producing sugarcane juice. 13% gave sugarcane juice as their only regular means of income. Many of the women grew tomatoes and onions to sell at the local markets for abour two months of the year. One of the women also worked as labourer occasionally. 45% stated that they sometimes has surplus food crops to sell. The women make significant labour inputs for the production of cash crops, even if the men do help, so the production of cash income through this activity can be attributed to the women. Women were even actively involved in caring for the animals in many families. In 13% of households with cattle women had the main responsibility, even though they were helped by the children. Thus the inputs by the women to the economy of the households are by no means small in relation to that of the men.

In addition, in the interest shown in maendeleo activities and the knowledge gained there, the women are able to add to the knowledge base of the household. They are able to introduce, if their husbands and economies permit, new ideas about food and nutrition, child care, etc, including habits such as better hygiene and boiling drinking water. To date there is little evidence of large scale implementation of these new ideas. However the women are accumulating a store of knowledge which is essential for the welfare of their families. If the general position of women were improved, hopefully there would be an increase in implementation.

The women are also actively involved in the self-help activities in the ward, even if they are largely restricted to supplying labour for construction.

4.3. The developmental picture in Kisekibaha to date

The settlement in Kisekibaha has received many inputs which are lacking in other villages. Yet one can see little evidence of the impact. The factors hindering the effectivity of these inputs are not known.

For example, the village has a nursery school, which in the Tanzanian context is rather unusual. Even in Dar es Salaam there are very few nursery schools given the number of working mothers who need assistance with child-minding. As mentioned earlier, the ward boasts 3 such schools. The school in Kisekibaha is well run, staffed by a woman who has attended a 2 year course in child care. Most of the women who have small children take advantage of this facility. They are required to pay a small fee. The children attend between 8am and 12 midday. It must involve a lessening of the burden for their mothers to know they are well cared for while they are busy with shamba work and other activities. In addition the children receive a meal of porridge while at school. This was introduced by the mission as it was felt the children were not well nourished, and in this manner it was ensured that they received at least one good meal a day.

The maendeleo group has been in existence for over 10 years and the group leader is well trained and dedicated. The attendance varies according to season but as pointed out earlier some 43% attend regularly at present and only 22% have never attended. The women have the use of pedal machines and they can obtain second hand clothes through the mission which they make into children's clothes. They are encouraged to bring their clothes for repair. They also make clay pots and baskets for sale.

In spite of these inputs, and the newly established cooperative shop, the general impression gained is that the village is very traditional and very poor. The houses are in bad condition and it appears there is little real effort made to maintain them. The children are poorly dressed, and according to accounts from the mission and others who have been involved with this village over a longer period of time, they are not well cared for - often left hungry and alone to run around the village until quite late at night. This was, of course, difficult to verify in the short period we were in the village. It was also maintained that drunkenness was a great problem, also with the women themselves, and was the direct cause of the problems regarding the children.

What we were able to verify during our period in the village was that, in spite of ease of access and reliability of the source, there was little indication of adequate water supply stimulating development. Women's role was similar to that in other parts of Tanzania; similar health problems were experienced; the time the women save because of the proximity of water is probably used to produce sugarcane juice, the developmental effects of which are questionable, as will be discussed in the following section, 5.1.

In spite of the education received through maendeleo, radio, adult education programmes on the diseases related to water and the need to boil water, this is not being done in Kisekibaha.

It is obvious that the constraints mentioned earlier all play a role in determining the limited impact of developmental inputs. The question raised here is what else is required in Kisekibaha, in addition to the inputs already received, to stimulate the real involvement of the people, and in particular the women, in their own development.

4.4. The importance of women's own perceptions

Probably one of the most crucial elements in stimulating development is learning the women's own perceptions of their problems and needs and of their possible inputs in alleviating them.

Only village women really know the village women's world. As pointed out earlier, it is the women's "non-specialized underview" (Chambers, 1978) which is required to gain an understanding of the realities of village life. All too often researchers/planners/administrators presume to know more about

village life than those actually living it. The view "from the inside in" is quite different from the view " from the outside in" (McKeich, 1977). The ranking given to problems by the women in the village is probably very different from that of the so-called "objective" observer from outside.

It is also true that the view "from the inside out" is crucial, especially for determining strategies for overcoming problems. It has been clearly stated by Wallman (1977) that an essential part of any process of change and development is the perceptions people have of it and the effect it has on their lives. Thus if induced change or "improvements", for example to water supply create a "larger or different set of options or choices in a particular setting for particular categories of people" conflicts may result and these conflicts must be resolved by defining meaning and value for the new alternatives. (Wallman, 1977). This obviously has implications for the acceptance of innovations and inputs. Males and females, having differing levels of involvement in and in some cases even differing access to the new options, may place different meaning and value to the alternatives. A situation of increasing tension and conflict could result. (Nelson, 1981).

In the process of conscientization more is needed than a perception of the needs and problems in the village. Even where the women have a good idea of the problems there is no real conscientization until there is also an awareness of their role in the process of change and the inputs they themselves can and must make. Before this level of conscientization is achieved little real change can be expected.

4.5. How to involve women in development?

As with the question of community participation in general, there has been much theorising on the necessity for increased participation of women in development but few practical recommendations made as to how to achieve this, and even less actual implementation. The "women in development" theme is well documented, as any bibliography on women's studies will give evidence of. It is by now very clear that women's full participation is both desirable and necessary. As is clearly pointed out by Nelson (1981) excluding women "results in a serious loss of efficiency and productivity, to say nothing of simple human justice." However the crucial question "How to involve women in development" remains unanswered.

Unfortunately this study has few practical suggestions to make. Hopefully the contribution it can make is to shed some light on the realities of daily life for women in rural areas. Such information is necessary since the difficulties experienced in involving women is related to the subordinate position of women in rural societies. Thus a starting point for involving women must be to acquire more knowledge about women in rural areas. More empirical research should be focused on women. Too little is known about their work burdens, the division of labour, their real participation in the various spheres of rural life, the impact of ideology on their daily life, the relationships they maintain, and above all the male-female power relationships, and the perceptions of the women of their lives, relationships and roles.

Without an improvement in the overall position and status of women, and an alleviation of their work burden women will not participate fully. This requires substantial ideological and practical changes in rural societies and will not be achieved in a short space of time. What can be done in the short-term is to ensure that women are reached on all developmental fronts and involved to the greatest degree allowed by the existing constraints. The present trend of running development projects by and for men must be halted or women will continue to be marginal to the development process and at times to be even disadvantaged by it. (Nelson, 1981).

5. CONCLUSIONS

5.1. The possible impact of improved water supply in Kisekibaha

In the context of Kisekibaha village it seems evident that the improvement of the water supply by the installation of a piped supply and standpoints will have little developmental effect in the village.

For any real health benefits the women would have to be given a better understanding of the link water-disease and of the necessity to boil water. For a start, one would have to do away with the belief that piped water in itself, regardless of source, is clean and pure. It would also be necessary to encourage the use of more water and this would entail finding ways to educate the women in the necessity of this- which is probably even more difficult than imparting information on the necessity to boil water. As long as the constraints of the work burden on women are not relieved, it is unlikely that the women will be able to afford the time to collect more water or to boil water for drinking.

Obviously one of the biggest constraints to achieving health benefits is the fact that women use very little water even when the water is so close. It is very difficult to ascertain what factors control this quantity. In Kisekibaha it is easy to rule out the time-distance factor.

The principle of "economies of scale" in domestic water use can help explain the variations in consumption between households. However no variable has been found which can account for the overall low consumption in Kisekibaha. This presents a special problem because of the proximity to a reliable source of water.

In considering improvements to the present water supply many women mentioned a piped water supply. However the women saw the benefits of such an improvement as having cleaner water even closer than before. The advantage of being able to use more water daily was not perceived automatically. Obviously at the base of the problem is the fact that the women do not perceive the need to use more water. The amount of water they collect and use daily is the minimum they require to carry out their daily activities. They will not collect more than they believe they need. If they can carry out their chores with a small amount to their own satisfaction, why should they collect more?

This aspect must be tied to the socialization process. In many areas water is a scarce resource and one which women must spend energy on before they are able to utilize it. It would be interesting to learn more on the amount of water it is considered "good" to use. Waste of water in areas of water scarcity is obviously disapproved of. Perhaps the rationalization of the use of water is a "good" habit which is inculcated in the socialization process. In which case, it will certainly not be easy to counteract in a short space of time.

With regard to the benefit of saving time, improved supply in Kisekibaha would not bring great benefits since most households are relatively close to the source. Even if a great amount of time were to be saved the time would be needed for other domestic tasks which the women do not manage to perform well now. In so far as the extra time would be utilized for the performance of domestic activities which are generally disregarded as of little importance and value, there can be little improvement expected in the general status of women following improved water supply. A change of attitude would be necessary with regard to the value of domestic labour. Given the slow progress on this aspect in Europe, one could hardly expect a different situation to evolve in third world countries.

In addition, with regard to the benefit of involving women in more "productive" activities , there are few such activities the women could engage in in Kisekibaha. They could of course grow more tomatoes or onions for sale at the local markets but this is a very seasonal activity, and since they sell in the peak period the returns are not great. The one activity in which the women could engage in the whole year would be the preparation of sugarcane juice for pombe making. While this would give them some increase in cash income the developmental effects of this activity can be questioned. Firstly, it is doubtful if the increase in income would actually mean a bettering of the economic position of the households. The women earn money selling sugarcane juice and the men go to the bars in Lembeni and buy pombe. Thus the men are buying back the produce of the women at a greater price, using the money the women have earned. If more money is earned it is very likely that it will be consumed on more pombe drinking and not on purchasing goods needed by the women and children. In addition, increased pombe drinking has obvious negative effects on the welfare of the household. In some households both men and

women drink pombe in Lembeni, the women often when they take the juice to sell. In serious cases of drunkeness the children are neglected and production is affected since the work capacity of both the men and women is lowered considerably. Food shortages and malnutrition are results as well as mistreatment of women and children.

5.2. The implications for improving domestic water supplies in rural areas

On the basis of the data on women, water and development in Kisekibaha, an attempt is made to ascertain the implications for planning improvements to domestic water supplies in rural areas.

1. The often stated fact is restated here in emphasis: improvement of water supplies in isolation will produce little positive benefits in improving health or increasing production in the villages. There is a need for integrated rural development efforts. The implications here are for the overall rural development planning at the national level. This overall planning is outside the control of the planners/implementators of rural water supplies. An understanding that the easing of the other work burdens is essential before there will be any noticeable effects from improved water supplies, unfortunately does not give the water supply staff the means of alleviating these other burdens.

2. The perceptions of the women in the village to be supplied must be the focus of attention. Every effort must be made to reach and involve women in establishing the priorities of village problems and ways of overcoming them. Unless development planners and implementators consider equally the roles, views and values of both women and men, their policies, plans and projects, in the water sector will only serve to increase the inequalities already existing between the genders. (Nelson, 1981).

3. The full involvement of women in all aspects of water supply projects must be ensured - in planning, implementation, management operation, maintenance and evaluation. Simply employing their scarce resources of energy and time in self-help construction will not stimulate their involvement nor promote development. Integrating women into the efforts to improve water supply, as with all development efforts, required first "integrating them into all levels of policy making (both as framers and as focuses of policy decisions). It

means sensitising those in charge of the organization and management of development projects to the need to hire women project staff, to involve village women in community participation exercises, as well as to consider the short- and long-term effects of any technical or economic inputs on women's lives." (Nelson, 1981).

4. Improvement in the general position and status of women in rural societies is a necessary prerequisite to the achieving of optimum benefits from any development project, including improved water supplies. This involves both relieving women of some of the work load they bear and just as importantly, educating both men and women on the actual and potential roles women play in rural development. The economic significance of women's productive and reproductive roles must be recognized. Women's work is essential for the functioning of rural society. "Society as well as women themselves must recognize this function in order to avoid succumbing to the view that it is of secondary importance, a basic source of women's subordination." (Beneria, 1981).

5. The recognition of women as key factors in the development of rural water supplies - being those responsible for the acceptance/non-acceptance, use/non-use, maintenance and operation of water supplies. They must be involved in the planning and implementation and, in addition, they must be the targets for intensive education into the proper use of the scheme and for complementary inputs such as health education. All too often women have been by-passed and the expected benefits have not been achieved. Ensuring the integration of women ensures the maximum benefits for all sectors of the society - women, men and children.

The implications for improvement of domestic water supplies can be summarized as follows: As long as women remain marginal to all development processes and "more underfed, undereducated and over worked than men... a neglected and underutilized minority " (Nelson, 1981), few of the commonly anticipated effects and benefits will be attained from improved water supplies in rural areas.

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APPENDIX 1.

Division of labour in developing countries in Africa.

Responsibility	Proportion of Participation Women
A. PRODUCTION/SUPPLY/DISTRIBUTION	
1. Food production	0.70
2. Domestic food storage	0.50
3. Food processing	1.00
4. Animal husbandry	0.50
5. Marketing	0.60
6. Brewing	0.90
7. Water supply	0.90
8. Fuel supply	0.80
B. HOUSEHOLD	
1. Bearing, rearing & initial education of children	1.00
2. Cooking for husband, children, elders	1.00
3. Cleaning, washing, etc	1.00
4. Housebuilding	0.30
5. House repair	0.50
C. COMMUNITY	
Self-help projects	0.70

(Source: UN/ECA, 1974)

APPENDIX 2

Average daily per capita consumption in litres for rural areas in in developing countries. [1]

WHO region	Litres per capita per day	
	Minimum	Maximum
Africa	15	35
Southeast Africa	30	70
Western Pacific	30	95
Eastern Mediterranean	40	85
Algeria, Morocco, Turkey	20	65
Latin America and Caribbean	70	190
World average for developing countries	35	90

Source: WHO, 1973

1. The value of such aggregated data is very limited. In fact individual country data in this survey showed minimum consumption as low as 5 litres per day. However in the context of this general overview it serves to give some indication of the dimensions of the problem at the global level.

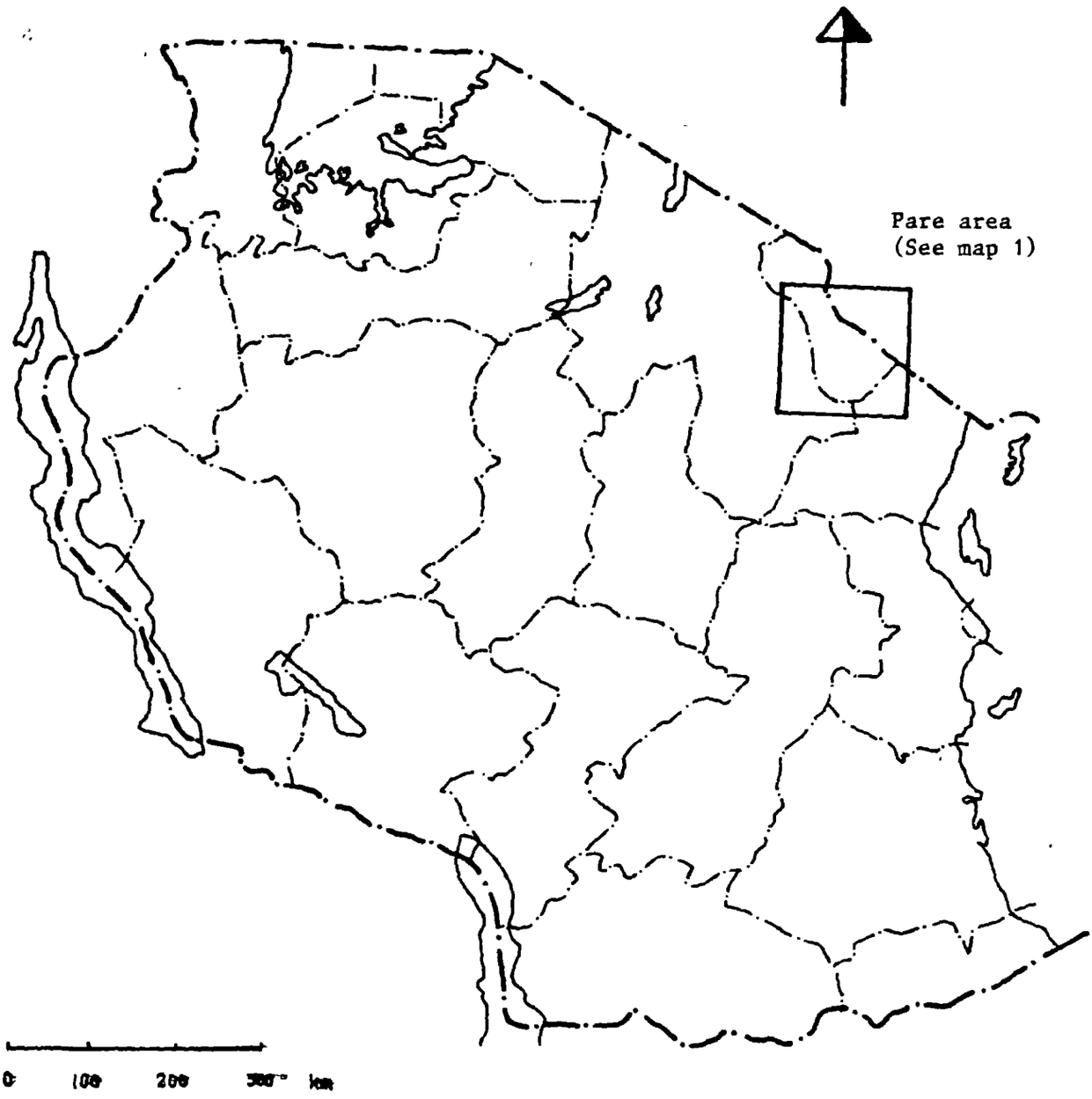
Technology mix on national and regional level in Tanzania

TYPE OF WATER SUPPLY	PERCENTAGE OF POPULATION SERVED (1976)				
	Mainland	Kilimanjaro Region	Shinyanga Region	Mwanza Region	Singida Region
Surface gravity	28	96	2	3	0
Surface pumped	41	0	25	64	4
Borehole pumped	22	4	12	21	95
Shallow wells and medium wells with handpumps	9	0	62	12	1

Source: WHO/IBRD, 1977

APPENDIX 4

TANZANIA ADMINISTRATIVE AREAS 1982



APPENDIX 5

The division of labour between women and men
(at the global level)

ACTIVITY	% of total labour in hours	
	WOMEN	MEN
Cuts down the forest; states out the fields	5	95
Turns the soil	30	70
Plants the seeds and cuttings	50	50
Hoes and weeds	70	30
Harvests	60	40
Transports crops home from the fields	80	20
Stores the crops	80	20
Processes the food crops	90	10
Markets the excess (including transport)	60	40
Trims the tree crops	10	90
Carries water and fuel	90	10
Cares for domestic animals and cleans stables	50	50
Hunts	10	90
Feeds/cares for young, men and aged	95	5

Source: UNECA, 1975

Sexual division of labour - hours per person per day and % of all non-farming time [1].
(Geita District, Tanzania)

ACTIVITY	FEMALES 19-60 yrs		MALES 19-60 yrs		AVERAGE OF ALL HOUSEHOLD MEMBERS over 7 years	
	hours	%	hours	%	hours	%
Fetch water	0.6	7.0	0.03	0.4	0.31	3.8
Fetch firewood	0.41	4.8	0.06	0.8	0.23	2.8
Process cassava	0.65	7.6	0.05	0.6	0.33	4.1
Prepare meals	1.15	13.5	0.05	0.7	0.50	6.2
Cleaning dishes, clothes, house	0.54	6.3	0.08	1.1	0.30	3.7
Tending fire bathing, other miscellaneous	0.41	4.8	0.41	5.6	0.42	5.2
Build and repair house	0.01	0.1	0.36	4.9	0.14	1.7
Visit away from area	1.34	15.7	1.65	22.6	1.52	18.7
Drink local beer	0.06	0.7	0.34	4.7	0.14	1.7
Sick at home	0.66	7.7	0.53	7.3	0.63	7.8
Mourning and other death related	0.28	3.3	0.38	5.2	0.24	3.0
Resting, eating, playing games, dancing, strolling, reading, other leisure	1.57	18.4	2.02	27.7	1.96	24.2
A. Sum of all the above activities	7.68	89.8	5.96	81.6	6.72	82.9
B. Sum of all non-farming activities	8.54	100.0	7.30	100.0	8.12	100.0

Source: Shapiro, 1980.

1. The average household had 1.54 women, 1.45 men and 4.9 individuals over 7 years