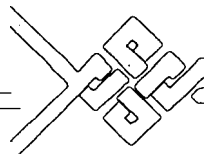
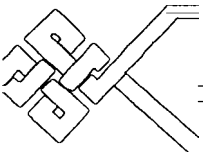




Discussion Paper No.14

**DROUGHT IN AFRICA:
POLICY ISSUES AND IMPLICATIONS
FOR DEVELOPMENT**

**ISLAMIC RESEARCH AND TRAINING INSTITUTE, IDB
JEDDAH, SAUDI ARABIA**



ISLAMIC RESEARCH AND TRAINING INSTITUTE (IRTI)

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**Mahamoud A. Gulaid
Research Division**

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No.14**

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In the name of Allah, the Most Merciful, Most Beneficent

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Foreword

As an international financial institution fostering the economic development and social progress of member countries of the Organization of the Islamic Conference (OIC) and Muslim communities in non-member countries, the Islamic Development Bank (IDB) is responsible, inter alia, for undertaking research and training primarily in the areas of Islamic economics, banking and finance and other related fields. In order to realize this goal, IDB established the Islamic Research and Training Institute (IRTI) in 1401H (1981). According to the statutes, IRTI's objectives are to undertake research for enabling the economic, financial and banking activities in Muslim countries to conform to *Shari'ah*, to extend training facilities for personnel engaged in development activities in the Bank's member countries and to disseminate information in the fields related to its activities.

This is the second paper in a series of two which were to be written on the general topic of *Drought in Africa*. The first was published by IRTI in 1993 with focus on analysis of major attributes of rural households in Sub-Sahara Africa. Data were collected through a collaboration effort between the African Center for Applied Research and Training in Social Development (ACARTSOD), which is located in Tripoli (Libya) and IRTI/IDB.

The objectives of this second paper is to define policy issues that have direct bearing on the development needs of contemporary rural Sub-sahara Africa. This takes into account the social and economic conditions of the rural households which was the focus of the preceding study. Part four of this study, in particular, emphasizes drought effects and its implications for development of the region. Policy issues are defined and some useful general recommendations have been identified that collate all the objectives earmarked by the study.

It is hoped that the publication of this paper will be useful not only to those who are actively involved in research in this very important area of economic and social policy, but also for who make and implement such policies in the member countries.

Dr. Omer Zuhair Hafiz
Officer-in-Charge, IRTI

I

INTRODUCTION

Africa is at crossroads. This time, Africa's economic and political problems are aggravated by an acute environmental condition that affects the entire continent without prejudice. Drought, in particular, is being experienced all throughout Africa from the east to the extreme west and, just recently, south and central regions of Africa which once seemed to be removed from this danger.

Sub-Saharan Africa has been living with drought for some time now. In East Africa, drought inflicted a serious damage to the economies in the region especially in the recent decade. Considering both the east and the west, we could safely argue that this phenomenon is felt across the continent uniformly. The intensity of the affliction and implications this might have on the precarious economic and social conditions in Africa could surely retard its development plans and achievements. This retrogression is more severe in some countries in Africa than the case is for others depending, of course, on the geographic location of the country in question, the intensity and duration of the drought and other factors in place at the time.

The central and south African regions have become the last victims of drought according to recent report by the Food and Agriculture Organization (FAO). These regions were among the most dependable sources of Africa's food needs. Zambia, Zimbabwe and South Africa provided a large proportion of the food import needs of the other regions in the past. This capability has been eroded by the drought. Zimbabwe and South Africa have just pleaded for an international assistance on an emergency basis. Kenya, to the north, was not spared from this imminent danger either. The situation here is aggravated by floods of refugees that have fled their war-weary countries in neighboring Somalia, Ethiopia and the Sudan.

On top of this, Africa is exposed to the international relations, the changing political circumstances more so today than it ever was in the past. Given contemporary political and economic transformations that are going on in Europe, most Africanists believe that Africa is likely to lose out in favor of others or that it would, at best, be assigned a secondary position in the allocation of development assistance. Even this would not be expected to come forth simply because Africa needs urgent help or decides to plead for humanitarian assistance. Africa will be compelled to show a very strong competitive spirit vis-a-vis Eastern Europe if it is to get any of the assistance it needs for its development. This dimension of the problem though outside the scope of this study, will always remain a critical factor in the analysis of Africa's survival potential both from economic as well as social, political and humanitarian perspectives.

In the framework of this complex background, it appears that there is a need to focus on Africa's economic and social policy issues and problems so that these can be scrutinized in order to redefine priorities based on the fundamental needs of the population. This process of defining priorities will have to take into consideration the changes that are now sweeping the horizons in Africa. The political and economic environment under which Africa must work should be subsumed in any attempt to formulate policies because this has become a reality that can not be ignored. Africa, on its part, should not attempt to be oblivious to these developments. Africa ought to know that as long as dependence on foreign aid remains a critical factor in its effort to feed its hungry population, it will not be able to achieve its goals.

Objective

The objective of this study is to define policy issues that focus on the development needs of contemporary rural Africa. The term "contemporary rural Africa" is used to stress those social, economic and developmental policy issues that need to be emphasized in the context of present-day Africa. Major critical factors determining development or lack of development in rural Africa will be analyzed. In particular, whether :

1. households in rural sub-Saharan Africa have strong attachment to land and the extent to which this is likely to be any different in the event of severe drought conditions;
2. there is such a preference, government-induced relocation policies might not succeed ?
3. drought conditions notwithstanding, animal husbandry is a dominant activity in Rural sub-Saharan Africa;
4. production of crops by households in rural Africa is a volatile economic undertaking;
5. markets, prices, magnitudes of crops sold, and transportation methods are very rudimentary;
6. household production activities in rural Africa is overwhelmingly geared to satisfaction of food requirements. Factor-product combinations, therefore, are wholly representative of the subsistence mode in place. Other economic activities do not appear to pose competitive pressure on the community's meager resources or implicitly, its allocation decisions in this respect. Priority remains overwhelmingly in favor of production of food crops. The consumption relation is, therefore, heavily dependent on a single commodity, i.e. cereals;
7. the magnitude of cereal foods purchased is often high because of frequent failure of harvests and dependence on primitive food production technology; and
8. rural credit facilities are often not available. Where these are available, households do not have easy access.

Scope of. the Study

Part two discusses methods adopted to derive policy issues. In here, sources of data, the questionnaires, sampling and field work are discussed.

Part three of the study emphasizes the resources and economic activities . of the drought-affected households. The structure and composition of resources in hand are examined. Wherever possible, comparisons between conditions in the pre- and post-drought periods are highlighted. Household migration, livestock and land ownership, areas cultivated, crops produced and total harvests of major food crops are compared for these two distinct periods. The composition of the food basket is examined with a view to identifying major items of preference for the household consumption. The origin of these foods are identified as to their sources. Prices received and paid by households are examined. This section of the study also examines the rural infrastructure and existing facilities in terms of buyers and sellers of goods and services.

Rural labor, credit facilities, roads and transportation means and methods at the disposal of the rural community in sub-Saharan Africa is also assessed.

In part four of the study, attempt is made to identify major policy issues that have bearing on the social and economic attributes of the rural household. Drought effects are analyzed and its implications for the development of the region explored. In the last few pages of the study, attempt is made to define a set of recommendations that are based on those critical policy issues emphasized in the text. This section of the study underscores policy issues and implications of drought on the development in Sub-Saharan Africa.

II

METHODOLOGY

SOURCE OF DATA

Data collected for the drought study epitomizes a juncture of cooperation between two international regional institutions. These institutions decided to define a goal under which they would address problems affecting their common constituent member countries and communities in Africa.

The African Center for Applied Research and Training in Social Development (ACARTSOD) located in Tripoli, Libya, cooperated with the Islamic Research and Training Institute (IRTI) of the Islamic Development Bank (IDB) in the implementation of this study. According to the Memorandum of Understanding (MOU) signed between two institutions in March 1989, ACARTSOD was to use its network of national research coordinators and institutions in Africa to administer the questionnaires designed for the drought study. Field work was then conducted in ten countries in sub-Saharan Africa under the supervision of ACARTSOD. The data for this study would be submitted to IRTI/IDB for processing. IRTI has not yet received some of the country data from sub-Saharan Africa, and time would still be required to process the complete data when this is submitted. Taking this into account, it was decided that individual studies should be carried out using the data already available. This particular study, therefore, concentrates on only four countries rather than the original ten anticipated by the joint project. When the entire data are available the scope of the study would be enlarged and the analysis based on earlier studies updated accordingly. In this study, therefore, data for only Ethiopia and Tanzania in the east, and Mauritania and Senegal in the extreme west of sub-Saharan Africa will be the focus of analysis.

Questionnaires, Sampling, Pretesting and Field Work

Data for the drought study were collected through questionnaires implemented in the Sahel countries and East Africa during 1990/91. The complete data cover field questionnaires administered in Senegal, Guinea, Mali, Mauritania, Burkina Faso, Niger, Chad, Sudan, Ethiopia and Tanzania.

Three hundred fifty questionnaires were administered in each of the countries listed above. In total, 3500 questionnaires were expected to be completed in the ten countries in the long run. However, due to problems in the field, data from only five countries could be collected and processed.¹

The structure of the questionnaire implemented is such that social and economic conditions prevailing in the environment of the household is emphasized. In particular, the following four major functional areas were identified, viz; (i) the social and demographic peculiarities and attributes of each of the responding household, (ii) literacy, health, housing and conditions of life as indicated by availability and/or disposal of certain amenities to the household, (iii) resources owned including economic activities pursued by the household, and (iv) incidence of out-migration as a result of drought.

The survey is carried out using a three-stage systematic simple random sampling. For this purpose, the study population, which consisted of households from drought stricken areas, was first identified based on the information collected from the local drought relief agencies in each of the countries studied. Two drought stricken areas were selected randomly from the list of areas identified.

From the two areas selected, two localities were, in turn, selected randomly based on the list compiled on these localities. This was perhaps the most logical venue in the choice of localities given the scattered

1. These are Ethiopia, Tanzania, Senegal, Niger and Mauritania.

nature of rural settlements in these countries. In order to maximize sampling efficiency, households in each of the areas selected in the sample was listed. Based on this list, a total of 350 households were randomly selected.

Most of the questions asked were expected to give numerical responses. This venue was chosen in order to avoid complications in the manner in which responses would have to be recorded by the interviewers and the data processing staff. Therefore, adoption of open-ended questions were minimized except in few cases where these were indispensable.

The design of the questionnaire follows the functional areas indicated in the preceding section. As in the case, in any such study, the hierarchy of presentation of the questionnaire is such that household peculiarities are first presented followed by social and demographic attributes of the household. Health and sanitation facilities and incidence of migration are examined. The economic performance of the household is also examined.

Resources owned by the household are scrutinized. Ownership of land, livestock and other properties are listed. Pre- and post-drought conditions are taken into account. Description of the resources' acumen at the disposal of the household cannot be considered complete unless the stock of skill acquired by the members of the household is taken into consideration. This will be appropriately examined in that context in forthcoming studies.

Availability of water for irrigation and domestic needs are examined before and after incidence of drought. Cultivation of crops, cropping patterns and other household activities by way of marketing and exposure to the outside world are examined. Availability of financial credits, sources, frequency of credit applications and receipts, and conditions therefor are also discussed in the context of household exposure to the outside world.

Finally, household heads were given opportunities to record what they, in their own views, perceived as critical factors that most likely defined the "effects and implications" of drought. In the same spirit, these respondents were also invited to indicate what they would do in the future if drought persisted. Their responses on what line of action they would recommend or like to see implemented as potential remedies for the prevailing problems as a result of drought were also recorded.

A draft questionnaire was pre-tested in Ethiopia during the first week of November 1989. Several questions were found to require adjustment in order to focus attention on the target stipulated. These and other detected errors were duly corrected. As a result of these exercises, the draft questionnaire was restructured to fit the real-world conditions (of the period 1990-91) in which they were to be implemented.

Fieldwork

The field work for this study was administered under the supervision of the national research coordinators who were located in each of the countries listed. Coordination among these widely dispersed countries and project leaders was carried out by ACARTSOD. The fieldwork component of the study was completed between December 1989 and July 1991.

Definition of Variables/Attributes

Major social and demographic attributes of the households will be discussed. Age, sex, marital status, number of wives, births, the number of children in the household are identified as major social and demographic attributes. The total number of persons and the number of persons in the household who can read or write will be identified. Additional variables are defined in order to explore housing and sanitation facilities available to the household. In particular, whether households live in houses, the types of houses and whether these are owned or rented by the households are specified. The number of years households lived in the said premises will be identified. Facilities present for use of the household are important indicators of the sanitary conditions. Sources of

drinking water will be examined to explore the relationship this has on frequency and occurrences of diseases. Disease most frequently suffered by the household and health care facilities available will also be documented. A system of 25 attributes, in all, will be analyzed to explain the social and demographic peculiarities of the rural household in this preliminary study. In the end, policy issues are identified and their implications for development of sub-Saharan Africa examined.

III

RESOURCES AND ACTIVITIES OF DROUGHT AFFECTED HOUSEHOLDS

Drought in the Sahel peaked in 1973-74 and again in 1984-85. During periods prior to and after this span of time, drought spells had occurred intermittently in this region. These were harsh but not relatively so acute as those mentioned above. Environmental damage and severe famines were experienced across a number of countries bordering the great Sahara desert. The phenomena triggered some new developments in the social and economic conditions of the countries afflicted. The political realities in the Sahel also contributed to these changes. In particular, human populations in the path of the drought had to adjust themselves in order, to counteract the ramifications that these adjustments had brought forth.

Migration. of rural households out of regions affected, hence, became a reality that had to be understood and dealt with. This had become critical policy issues confronting many of these countries.

A. PRE- AND POST-DROUGHT HOUSEHOLD RESOURCE STRUCTURE

Results from the field exercise indicate that the majority of the households interviewed in Ethiopia did not migrate at all. Ninety two percent of these had remained at their locations irrespective of the frequency and/or intensity of drought experienced in that part of Africa. These households were sedentary for all practical purposes. In Tanzania, there is little evidence that households did migrate anytime before 1985. This situation had, however, changed during the period 1985-89 and household mobility began to take off thereafter. This migration was a significant one since it involved some 30 percent of the respondents interviewed. Majority of the Tanzanian. rural households interviewed, however, did not migrate even though they suffered difficult circumstances. Results from the sample in Tanzania suggest that the

degree of migration out of the regions affected is both small and also recent in origin relative to the situation in Mauritania. A strong sense of attachment to the land has been shown by these communities. This seems to support the view that household stability or sedentarization is strong in some parts of Africa.

In Senegal and Niger, similar conditions as those of Tanzania were observed. Only 27 and 21 percent of the households interviewed, respectively, indicated that they migrated during the period 1985-89. Migration of rural households prior to this period was low for most of these countries.

Tables 1 and 2 show responses to a series of questions posed to the rural households 'regarding migration and/or relocation. These are tallied in the form of frequency distributions and relative percentages for each given entry as well as for all countries combined. It can be observed that the periods of migration are fairly well distributed across a span of some twenty one years for which responses are available. There are distinct and independent peaks of intense out-migration for the sampled population in each of the period i.e. before 1970, 1971-80, 1981-84 and 1985-91. These responses correspond to the entries tabulated in the last column of Table 1 as "Before 1970", "Between 1971-80", "Between 1981-84", and "Between 1985-91", respectively.

The cumulative frequency of household heads who moved out of their localities' during these periods is 42% out of the total number of responding households equal to 1533 for these five countries. Within each household, there were some members who might have moved in order to establish their own identity independent of others and in their own accord. These were only 22 percent of the total who responded to this question. This information is given in Table 2' under the title "family members who moved". Where these households had moved to is not shown in ' this schematic representation. However, responses given by household heads suggest that these families had migrated to other regions and/or localities within the country. Incidence of migration to far away regions beyond the familiar locality' of the nucleus household is rarely encountered.

Table 1

Household Migration (1990/91)

Country	Household Migration															
	Ever Moved-HH/H						When HH/H Moved (years)							E Freq. by Country		
	Yes			No			1981-90		Between 1971-80		Before 1970		E Freq. by Country			
	Freq.	%	Freq.	%	Freq.	Cum. %	E Freq. by Country	Between 1985-91	Freq.	%	Between 1981-84	Freq.		%	Freq.	%
Ethiopia	7	2	322	98	94	329	7	2.0	-	-	-	-	-	-	2.0	7
Tanzania	102	29	248	71	100	350	15	16.0	12	3.4	17	4.9	12	3.4	27.7	56
Mauritania	340	97	9	3	100	349	86	28.6	62	20.7	138	45.	22	7	88	308
Senegal	93	27	139	41	68	232	34	9.9	16	4.7	17	5.0	20	5.8	25.4	87
Niger	101	37.0	172	63.0	100	273	57	20.9	17	6.2	16	5.9	7	2.6	35.5	97
E Freq. / All	643		890			1533	199		107		188		61			555

Cum. Freq. (%) do not add to 100 because of exclusion of nonresponses.

HH/H: denotes household head.

Table 2

Migration of Family Members and Contribution to Household Income (1990/91)

Country	Migration of Family Members					Contributions to Family Income (all respondents)					
	Yes		No			Yes		No			
	Freq..	%	Freq..	%	Cum. %	E Freq. by Country	Freq..	%	Freq.	%	E Freq. by Country
Ethiopia	40	11.4	272	77.7	89.1	312	2	0.6	69	19.7	71
Tanzania	36	10.3	309	88.3	98.6	345	14	4.0	335	95.7	349
Mauritania	163	46.6	185	52.9	99.5	348	85	24.3	264	75.4	349
Niger	27	9.9	244	89.4		271	20	7.3	252	92.3	272
Senegal	18	5.3	10	2.9	8.2	28	24	7.0	160	46.8	184
E Freq. / All	284		1020			1304	145		1080		1225

Cum. Freq. (%) do not add to 100 because of exclusion of nonresponses.

Reasons cited for out-migration, even though open-ended and wide, seem to revolve around the depressive conditions created by the drought. However, cases of explicit desire to relocate in order to redress or ameliorate the economic conditions of the household have equally been observed. In particular, responses as looking for work, joining other members of the family, and such reasons as "others" have been given by the respondents on many occasions. Most of the families who moved do not normally contribute income to the rest of household left behind. This may not be interpreted as an odd response if we take into account the fact that households, by nature, have higher expectations for a better income generating opportunities in the wake of out-migration. This is true only for the migrant's own household rather than distant relatives who were left behind. Household members who decided to move wanted to satisfy their own family needs before they could think of contributing to the welfare of those left behind. This, in part, explains the significance of the "no responses" listed under this question. An exception to this general observation is the case of Mauritania.

Household migration and mobility in Mauritania is unique in a number of ways as compared to those in Ethiopia, Tanzania, Senegal and Niger. This, in itself, deserves a special attention and is, therefore, given greater coverage below.

The uniqueness of responses recorded for Mauritania is in the sheer size and frequency of migration of the rural households. Table 1 indicates that 97 percent of the households interviewed migrated from their traditional settlements at least once during the period between 1960 and 1990. Out of the 340 respondents who had migrated, 22 (or nearly 7%) moved out during 1960-70. In the period 1971-80, 138 households (or 45%) migrated. (148 or 48%) migrated out from their established localities during the period 1981-90. This trend has in fact picked up beginning from the sixties with peaks recorded in the mid seventies and early eighties. Compared to the situation in Ethiopia, Tanzania, Senegal and Niger, this appears to be a significant development that warrants further analysis.

Migration in Mauritania reflects changes which might have occurred in a number of regions affected by drought and famine. These include Trarza from which a total of 113 households (33 %) migrated, the District of Nouckchott from which 43 households (13%) migrated Brakna from which 47 households (14%) relocated, Gorgol contributed 30 (or 9%) to this migration, and Assaba, Hadh El-Gharbi, Guidimakha, Inchiri, and Hodh El-Charky added on to the migration of the rural population from these regions. These ten regions together accounted for 324 (or 95%) of the total of 340 households who migrated (See Table 1).

Other regions in Mauritania did not contribute as much to the migration of the rural households in Mauritania. Only 16 households can be attributed to regions other than those that are outside the ten regions discussed above. The total number of households who migrated includes refugees and families who sought reprieve in Mauritania from neighboring states. Incidence of inter-country mobility of households has been recorded with respect to migrants from Guinea, Mali, Senegal, Niger and Benin. A total of ten such households were encountered and interviewed in the course of the fieldwork *for* this study.

Migration in Mauritania has a lot to do with the process of breaking up of the nucleus household which often includes families of offsprings and other close relatives. The incidence of such a break-up of the nucleus family or households is implicit in the responses given by the household heads. Approximately 47% of the respondent heads indicated that their family members had migrated out of the region or locality in which the nucleus family was established. This is an important finding in itself distinct from the responses given by households in the other six countries listed.

In Mauritania, unlike in Ethiopia, Tanzania and/or Senegal, family members tended to contribute to the income of their nucleus household. Nearly 25 per cent of the household heads suggested that contributed to the income of their nucleus households. The role of remittances or income contributions to the household, therefore, is significant in the case of migrants from Mauritania compared to those in other countries in the region.

Livestock Ownership Before and After Drought²

Livestock owned by the households before drought are recorded in Table 3. Majority of the households did not own any livestock prior to migration. For instance, in Mauritania, 43% of the households had livestock before the drought. In Ethiopia, Tanzania, Senegal and Niger, less than 10% of the households owned livestock before the drought. Frequency distributions of those who had livestock for each of these countries is given in the table. In all, only 14% out of the total number of households owned livestock before the drought.

Types of livestock owned by these households before the drought is also given in Table 3. The second column of this table shows whether these households owned cattle, sheep, goats or camels at the time. 144 or 64% of the households owned cattle in all the countries taken together. Of them '33%' owned sheep and goats, and only 3% of the households owned camels. These households correspond to 99% of those who responded affirmatively to ownership of livestock. This is given in column 1 of the same table.

The livestock ownership profile changed substantially after the drought. 74% of the households in Ethiopia owned livestock after the drought. This may be compared to the situation before the drought when only 1.1% of the households in Ethiopia owned livestock. This is a marked change in the resource position of the households. Similarly, in Tanzania, 62% of the respondents indicated that they owned livestock after the drought as compared to only 7% before the drought.

2. Occurrence of drought differed among countries studied. The exact periods of occurrence were not recorded independently in the questionnaire. However, 1989/90 is used implicitly as a reference point to indicate the extent of change or attrition in the resources owned. The term "before and after drought" should therefore be interpreted to refer to periods immediately before and after 1989.

Table 3
Livestock Ownership Before and After Drought (1990/91)

Country	Before Drought (1990/91)										After Drought (1990/91)						
	Owned Livestock					Type of Livestock					Owned Livestock Now						
	Yes		No		E Freq. by Country	Cattle		Sheep & Goats		Camels		Yes		No		E Freq. by Country	
Freq.	%	Freq.	%	Freq.		%	Freq.	%	Freq.	%	Freq.	%	Freq.	%			
Ethiopia	4	1.1	346	98.9	100	2	.6					258	73.7	92	26.3	100	.350
Tanzania	24	6.9	326	93.1	100	20	5.7	3	.9	1	.3	216	61.7	134	38.3	100	350
Mauritania	150	42.9	200	57.1	100	83	23.7	64	18.3	3	.9	101	28.9	249	71.1	100	350
Senegal	21	6.1	321	93.9	100	18	5.3	1	.3	2	.6	225	65.8	117	34.2	100	342
Niger	27	9.9	246	90.1	100	21	7.7	5	1.8	1	1.1	199	72.9	74	27.1	100	273
E Freq. / All	226		1439			144		73		7		999		666			1665

Cum. Freq. (%) do not add to 100 because of rounding off and exclusion of nonresponses.

In Mauritania, the number of households who owned livestock after the drought declined to 29% from 43% before the drought. This decline in the wealth status of the households is indicative of the drought effect and the extent of coverage in Mauritania. In Senegal, 66% of the households owned livestock after the drought as compared to only 6% before the drought. In Niger, 73% of the households owned livestock at the time of the field exercise, i.e., after the drought, compared to only 10% before the drought.

In all, 57% of the households owned livestock after the drought. Only 43 % did not own any after the drought. This condition compares well with the situation before on migration. Only 14% of the households owned livestock at the time. The majority (86%) did not own any before the drought.

One would expect that ownership of livestock by the households would normally decline as a result of drought. Only in Mauritania was this condition found to hold. For the other countries, households owned more livestock after the drought than they owned before the drought. This situation can be explained only if there exists some sort of social or cultural arrangements or a deliberate policy to replenish or compensate the losses incurred by households. This compensatory mechanism may be based on voluntary gifts from relatives who have not been affected by drought or it could be based on a deliberate policy on the part of the government. The latter, in reality, is a remote possibility on account of the limited welfare considerations of most of the African economies.

Replenishment possibilities through religious and/or community-based modes in rural Africa deserve further research. This is necessary in order to establish whether:

- a. replenishments are based on commitments on the part of the nucleus family to bail out their afflicted members;
- b. replenishments normally have religious undertones in which case one must bear the responsibility or duty to uphold them in the event of loss; and

c. replenishment is a collective response that is automatically triggered off whenever some rural households are adversely afflicted.

These issues need to be addressed' in order to understand the social, cultural, religious and economic complexities of the rural population.

Land Ownership Before and After Drought

Out of the 177 responding households, only 18% owned land before the drought. Less than one per cent owned land in Ethiopia before the drought.' In Tanzania, only 9% owned land before the drought. In Tanzania, only 9% owned land before the drought. Similarly in Senegal, only 6% of the households indicated that they had land before the drought. In Mauritania, some 30 percent of those households who responded had land before the drought. In the latter case, incidence of migration is relatively large. Comparisons between pre- and post-drought status of households in Mauritania can provide some useful insights in the overall condition.'

The post-drought land ownership profile reveals an interesting scenario. Nearly all the households in Ethiopia, Tanzania, Senegal and Niger owned land. 79% of the households (out of the total of 1614

3. The low figures for Ethiopia are due to the fact that there were a very few responses to this question. Only 8 households responded to this part of the question. However, we could argue that the majority of these households did not migrate in the first place. So, the question whether one has or does not have land or, for that matter, livestock before or after migration, does not seem to be relevant to begin with. A large proportion of the households responding to this query made no difference whether they migrated or not. These responses should instead be interpreted in terms of whether they owned land before or after the drought had stricken.

4. Note that we talk about pre- and post-migration as if this condition is uniformly applicable across all segments of the household population interviewed in these countries. Even though this may be true for the majority of the households, migration, nevertheless, is most significant phenomenon only in some countries than it is for others. This is one explanation of the responses given in footnotes 3 and 4. We use the expression "before and after migration" interchangeably with "pre- and post-drought" to denote that period in which migration actually took place.

responding to this question) answered in the affirmative. Households in Mauritania however had a large proportion within them (nearly 61%) who did not own land after drought. This is yet another distinct finding in itself. Only 13% of the households did not own land among the total of 1614 households interviewed. Details of frequency distributions for land ownership is given in Table 4.

The implication of these ownership profiles of household for food production and other economic activities that revolve around the use of land is discussed below.

B. POST-DROUGHT CEREAL FOOD PRODUCTION

This section assumes that the resource mix (i.e., land, livestock and labor) which was discussed in the preceding section are put to use and deployed subject to prevailing conditions. This assumption would then build a bridge between resources owned by the households and activities centered around them. This linkage is vital if we are to analyze the economic performance of the rural household under conditions of drought. In this section, land cultivated, areas under crops, types of food crops produced, and the total harvest of these food crops will be discussed. The goal is to find out the extent in which resources at the disposal of the household are used to produce required food items and how best these are utilized.

Nearly 1144 households (or 70% out of the total of 1609) were cultivating their land at the time of the interview. On a country basis, 94% of these were doing so in Ethiopia, 77% in Tanzania, 79% in Senegal and nearly 80% in Niger. In Mauritania, only 16% of the households were cultivating their land at the time of the interview.

Conversely, only 29% of the total number of households were not cultivating their land at the time. Mauritanian households not cultivating their land at the time of the interview was as high as 84%. In Ethiopia, Tanzania, Senegal and Niger, 3%, 21%, 10% and 187% of the households, respectively, were not tilling their land.

Asked whether respondents cultivated their land last year, i.e., the year before the interview was administered, responses recorded suggest that there is some consistency in so far as the households carried on similar activities during each cropping season. That is, households normally repeated cultivation of their land just as they are doing it now. 64% of the households out of a total of 1570 who responded answered in the affirmative. Only 36% for one reason or the other, did not cultivate their land last year.⁵

Those households who cultivated their land last year, planted cereals in most of the countries listed. 95% of the Ethiopian households planted cereals last year as compared to 61 % in Tanzania, 63% in Senegal and 65% in Niger. Only 12% of the households in Mauritania planted cereals in the land they cultivated last year. These responses suggest that the cultivation of cereals is important in all the countries. Table 5 shows frequency distribution of land cultivated and the extent of which cereal production in sub-Saharan Africa's rural households is predominant.⁶

Cereal production by households in the sub-Saharan Africa is an important cultural practice. This is important because cereal foods form a major component of the rural population's energy requirement. This section of the study focuses on cereal production and traces out the activities pursued by the households in generating this crop.

5. This means that 875 respondents in Mauritania did not cultivate their land last year. Necessarily, a situation such as this contributes significantly to the overwhelming negative response that is attributed to the aggregate sample. Note also that only 1.4% of the households in Ethiopia did not cultivate their land last year. Similarly, 31% in Tanzania, 28% in Niger, and 19% in Senegal.

6. There is a strong correspondence/correlation between responses recorded for those who cultivated their land last year and those who cultivated cereals. This, however, can be true only if cereal crops are predominant among the basket of household output or production possibilities. We shall come back to this shortly.

Table 4
Land Ownership Before and After Drought (1990/91)

Country	Before Drought (BD) (1990/91)			E Freq.		After Drought (AD) (1990/91)			Cum. %	E Freq. by Country
	Owned		Land	by Country		Owns		Land		
	Yes		No			Yes		No		
	Freq.	%	Freq.	%	Freq.	%	Freq.	%		
Ethiopia	2	.6	6	1.7	8	338	96.6	2	.6	340
Tanzania	33	9.4	316	90.3	349	296	84.6	53	15.1	349
Mauritania	105	30.0	244	69.7	349	133	38.0	215	61.4	348
Senegal	22	6.4	179	52.3	201	270	78.9	35	10.2	305
Niger	51	18.7	221	81.0	272	236	86.4	36	13.2	272
E Freq. / All	213	18.0	966	82.0	1179	1273	79.0	341	21.0	1614

Cum. Freq. (%) do not add to 100 because of rounding off and exclusion of nonresponses.

Table 5

Land Cultivation and Crop and Culture (1990/91)

Country	Cultivate Land/Now (1990/91)			Cum. %			E Freq. by Country			Cultivated Land/Less (1988/89)			Year			E Freq. by Country			1988/89	
	Yes		No	Cum. %			E Freq. by Country		Cum. %		Yes		No		Cum. %		E Freq. by Country		Cereals	
	Freq.	%*	Freq.	%			Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Ethiopia	330	94.3	11	3.1	97.4	341	95.4	334	96.9	5	1.4	339	96.9	334	95.4	339	334	95.4		
Tanzania	271	77.4	74	21.1	98.5	345	68.3	239	99.1	108	30.9	347	99.1	214	61.1	347	214	61.1		
Mauritania	55	15.7	294	84.0	99.7	349	12.9	45	99.8	304	86.9	349	99.8	43	12.3	349	43	12.3		
Senegal	270	78.9	35	10.2	89.1	305	69.0	236	88.3	66	19.3	302	88.3	214	62.6	302	214	62.6		
Niger	218	79.9	51	18.7		269	71.4	195		77	28.2	272		177	64.8	272	177	64.8		
E Freq./All	1144		465			1609		1010		560		1570		982		1570	982			

Cum. Freq. (%) do not add to 100 because of exclusion of nonresponses.

* Percentages (%) are calculated on the basis of sample size by country, i.e. 350 for Ethiopia, Tanzania, Mauritania and Senegal. And 273 for Niger.

The scale of resources at the disposal of the household in terms of land and labor, the commitments of these into cereal production, quantities harvested and prices or remunerations received through the marketing process will be discussed. The nature and scale of production of cereals will be emphasized in order to be able to assess the capability of drought-affected rural households whose major goal is to satisfy, at least inasmuch as is possible, their overall food requirement.

Areas Cultivated - Cereals

The frequency distribution of households who cultivated cereals on various sizes of land are given in Table 9.⁷ Looking at this table, we may point out that 88% of the households in Mauritania did not produce cereals at the time (i.e. 1990). The number of respondents who did not cultivate cereals is also significant in Tanzania and also in Senegal. A quarter of the households in each of these countries did not commit any land to crop production.

As the size of land cultivated increased from 0.1 to 1.0 hectares, the frequency distribution of utilization of this size of land increased. For instance, 17% of the households in Ethiopia produced cereals from this size of land as compared to 28% in Senegal, 39% in Tanzania and 49% in Niger.

In Ethiopia, nearly 61 % of the households produced cereals from an area between 1.1 to 1.5 hectares. Only 6% did so in Tanzania and Senegal. Larger patches of land in the range of 1.6 to 9.0 hectares were also common in these countries but more so in Senegal and Niger than in Ethiopia and Tanzania. In other words, 87% of the households in Ethiopia and 60%, 11%, 59% and 65% in Tanzania, Mauritania, Senegal and Niger, respectively, produced cereals from land of sizes ranging from 0.1 to 9 hectares. Cereals crops were not produced in any of these countries on areas greater than 10 hectares in size. This is an important

7. Figures given in this study refer to those of the production season coinciding with or nearest to the period of the field survey, which was undertaken in 1990.

observation in so far as food production possibilities and issues thereof are concerned.

Yields and Total Cereal Harvests

Yields per unit of land cultivated in cereals in these countries are, by any standard, very low. The frequency of zero yields were very high even when sizeable patches of land were cultivated. Therefore, the majority of the households interviewed did not report any output of crops because, for one reason or the other, there were no harvests recorded⁸. For instance, 56% of the households in Ethiopia reported zero output of cereals per unit of land cultivated. In Mauritania, 99% indicated a similar outcome. In Senegal, 83% of the respondents reported no harvests from areas planted.

Yields from each hectare planted appears to be significant in Tanzania. Between one to 100 kilograms of cereals were harvested from each hectare planted. 55 % of the households here reported to have received this yield. Only 14% of the households in Ethiopia indicated that they had this level of yields recorded per hectare.

Yields between 101 to 200 kilograms per hectare of land planted in cereals were common only in Ethiopia and Tanzania. Higher yields in the range of 201 to 400 kilograms per hectare were rarely encountered, except in Ethiopia. 11% of the households had reported this in Ethiopia. Yields greater than 400 kilograms per hectare were realized only in Tanzania and Senegal.'

8. There are multitude of causes for this sort of situation to happen. Some of these will be discussed as bottlenecks confronting HH's production possibilities.

9. 11% of the households in Tanzania reported yields per hectare greater than 400 kilograms. Only 8% of the households in Senegal reported similar yields per hectare.

Table 6
Area Cultivated in Hectares - Cereals (1990/91 Crop Year)

Area Cultivated (Hectares)	Ethiopia		Tanzania		Mauritania		Senegal		Niger	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
HH not cultivating cereals	47	13.4	139	39.7	309	88.3	139	40.6	96	35.2
0.1 - 1.0	60	17.1	136	38.9	8	2.3	95	27.8	112	41.0
1.1 - 1.5	214	61.1	20	5.7	-	-	20	5.8	-	-
1.6 - 9.0	29	8.3	55	15.7	29	8.3	85	24.9	.65	23.8
10 - 25	-	-	-	-	2	0.6	3	0.9	-	-
30.0 - 150.0	-	-	-	-	2	0.6	-	-	-	-
E Freq./All	350	100	350	100.	350	100	342	100	273	100

Freq. (%) do not add to 100 because of rounding off and omission of nonresponses.

These situations have significant implications on the scope of cereal harvest realized by the households. This is shown in Table 7 which gives the magnitude of cereals harvested from areas cultivated by households in each of the five countries studied.

The frequency distribution of no harvest are large in all the five countries. These are 52%, 54%, 98%, 67% and 46% for Ethiopia, Tanzania, Mauritania, Senegal and Niger respectively. Food production shortfalls are real world problem in these countries and the region as a whole.

Total cereal harvests ranging from 1 to 100 kilograms are reported by 44% of the respondents in Ethiopia. 36% of the households in Tanzania reported harvests ranging from 120 to 450 kilograms. This same was also reported by 26% of the households in Senegal and 39% in Niger. It appears, therefore, that households hardly realized harvests greater than 120-450 kgs. This level of achievement seems to be an exclusive attribute only of Tanzania, Senegal and Niger. In these three countries, total harvests were fairly distributed within the ranges 120 to 250 kgs., 300 to 450 kgs. and 474 to 650 kgs.

Incidence of harvests of cereals beyond 650 kgs. is not common in any of these countries. Essentially, therefore, households in sub-Saharan countries produce little food from the land they alleviate. These households may for all practical purposes be referred to as subsistent producers.

Production of Other Food Crops

Livestock production is a dominant occupation in the region. Cultivation of crops, in comparison, is a secondary operation. Conditions in the Sahel and the savannas of east and central Africa render crop production a risky enterprise. Cereal foods are produced subject to prevailing weather and other logistical and/or technological limitations. Little is practiced in the way of crop rotation and shifting of land. This again is due, in part, to absence of crop options to rotate between. Only few households indicated rotation between crops. When crops were

rotated, this was made among different types of cereals, e.g. between maize and sorghum or such other varieties within these species. Cultivation of beans and other legumes were of little significance to the households. This monoculture has several drawbacks. Degradation of land in the absence of any mechanism to replenish exhausted nutrients remains to be a common problem encountered in this area. Nutrients could have been replenished by intercropping or shifting land between crops and in so doing provide the land those essential nutrients it needed.

Options to supplement animal protein with plant sources, which could likely be produced simultaneously or independently with other major crops, is also absent. If this was not the case, then we would have to assume that rural households procure their dietary nutritional requirements through purchases from the market. The importance such linkages with the market, possibly through the household's consumption behavior, the role of sellers of goods and services in the market, etc. are discussed elsewhere in this study. These issues are of major concern at least from policy perspective.

Receipts from Crops Sold

Only 219 households sold food in the market. This is equivalent of only 16% of the total of 1392 households in four countries responding to this question. In other words, only 16% of the total number of households interviewed responded to this particular question. Taking this into consideration, results thus derived are considered to be tentative at best. Appendix 1 shows these figures in details. Frequency distributions given in Appendix 1 refer to receipts from sale of cereals and other crops sold in the market by the households in local currency denominations.

Table 7

Total Cereal Harvest in Kgs. (1990/91 Crop Year)

Total Harvest (Kgs)	Ethiopia		Tanzania		Mauritania		Senegal		Niger	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
0	183	52.3	189	54.0	343	98.0	229	67.0	126	46.2
1 - 65	88	25.1	2	0.6	-	-	-	-	3	1.1
70 - 100	64	18.3	5	1.4	2	0.6	5	1.5	-	-
120 - 250	14	4.0	69	19.7	5	1.4	47	13.7	46	16.9
300 - 450	1	0.3	58	16.6	-	-	43	12.6	60	22.1
475 - 650	-	-	22	6.3	-	-	14	4.1	28	10.3
700-850	-	-	5	1.4	-	-	4	1.1	10	3.6
E Freq./All	350	100	350	100	350	100	342	100	273	100

Freq. (%) do not add to 100 because of rounding off **and** omission of nonresponses.

C. FOOD CONSUMPTION ATTRIBUTES**Types of Predominant Food Items**

The production function of the rural household appears to be very simple. Its consumption relations, however, is not as simple as its production relations.

It was indicated in the preceding section that rural households produced cereals in addition to a number of other food crops or combinations thereof. Households are well endowed with animal resources and could therefore be expected to resort to this huge protein potential in order to supplement their supply of carbohydrates and other nutrients intakes which are provided via cereal food consumption.

This simple subsistence production function can be compared with the relatively more complicated consumption behavior implicit in the purchasing activities of the rural household. The gap between production and consumption is vivid in the basket of food products sought and consumed by the household. Households purchase cereal foods, pulses

Table 8
Food Consumption of Households by Types

Country	Buy		Foods		Type of Foods Bought by H/H					
	Freq.	%	Freq.	No	Cereals		Pulses		Others	
Ethiopia	287	82.0	53	15.0	282	80.6	3	.9	49	14.0
Tanzania	236	67.4	109	31.1	141	40.3	45	12.9	14	4.0
Mauritania	107	30.6	242	69.1	105	30.3	1	.3	-	-
Senegal	207	60.5	130	38.0	139	40.6	28	8.2	11	3.2
Niger	145	53.1	124	45.4	77	28.2	24	9.5	10	3.7
E Freq./All	982		658		744		103		84	

N.B. Freq. (%) do not add to 100 because of exclusion of nonresponses. Data refer to a behavioral attribute (i.e. tastes and preferences). We would, therefore, expect this to implicitly reflect a protracted period of time rather than a single period of time.

and a number of other food products which they do not produce domestically from their land. The linkage they have with the outside market serves to fill the food gap that exists in order 'to satisfy the consumption requirements. This interface between' production-consumption will be shown to be part of the rural household real-world Table 8 conditions. This may be an important policy issue if the quality of life of the household is to be enhanced via schemes that would improve their overall food production capabilities.

Table 8 presents information about the household's food consumption. 60% of the total number of households bought food from the markets. Only 40% were self-sufficient or did not have links with the market for food. On a country basis, 82% of the households in Ethiopia, 67% in Tanzania, 60% in Senegal and 53% in Niger bought food from their respective markets. In Mauritania, the number of households who purchased food in the market, appeared to be small. Only 30% of the households purchased food from the market.

Types of food items purchased by households in these countries are listed in Table No.8. Of the total who purchased food, 982 households, or 95%, bought different combinations of food items. This included cereals, pulses and others. This group includes those who opted to buy each of the above food items. For instance, 80% of the respondents bought cereals, 12% bought pulses, and 9% purchased a mix of food items.

On a country basis, 80% of the respondents in Ethiopia purchased cereal foods from the market. But less than 1 percent purchased pulses and 14% bought other food items. In Tanzania, 40% bought cereals, 13 % bought pulses and only 4% bought other types of foods. In Mauritania, 30% of the households bought cereals. None was reported to have purchased pulses or other types of food items from the market. Since only 30% of the respondents in Mauritania was reported to have purchased food items from the market, those who purchased cereals represent the entire exposure of the households to the market for foods. In Senegal, 40% of the households purchased cereals from market. 8% bought pulses and only 3% purchased other food items. In Niger, 28% of the

respondents purchased cereals. Nearly 10% purchased pulses, and only 4% bought other food items.

In summary, 40% of the households did not buy food at all. This condition was peculiar to households in Mauritania relative to those in other countries. Those who transacted in the market appeared to go there to purchase cereal foods to supplement these with pulses and other household requirements as needed. The consumption function of the household, therefore, suggests a more sophisticated mix of products which is not taken into account in the production relation. The latter, as we already indicated, is essentially based on cereal food production which is augmented with a strong animal-based protein output. Table 9 indicates the magnitude of food purchase orders made by household in each of these countries.

Quantities of Food Purchased

95% of the households indicated that they bought cereals, pulses or other food items. Of these, 80% bought cereals, 11% bought pulses and merely 9% bought other types of food. (See Table 8). These responses may further be desegregated into general types of foods and respective quantities purchased. Table 9 identifies this disaggregation by types and quantities (Kgs.) of foods commonly purchased by the households for each of the countries listed.

Cereals

744 households indicated the composition of foods they purchased. Out of this, 51% purchased between 1 to 100 kgs. of cereals. Nearly 10% bought between 101 to 200 kgs. of cereals. 12% bought between 201 to 400 kgs., and 15 % purchased quantities of cereals greater than 400 kgs. If these purchases are ranked according to magnitudes, this would suggest that the largest frequency would occur with those households who bought one quintal (100 kgs.) of cereals. This finding supports an earlier statement that households supplemented shortfalls in cereal production by resorting to purchases in the market. The frequency of occurrence of this tendency, i.e., to bridge any food gaps in the

consumption relations, is implicit in the relative distribution of the number of households responding to this question. Those who bought in excess of 100 kgs. of cereals were only 37%.¹⁰

Pulses

Of the total number of households who bought pulses/legumes from the market, 72% purchased between 1 to 100 kgs. of legumes. Only 3% bought between 101 to 200 kgs. This also suggests that most of the households relied on the market in order to meet their protein requirements. The implication here is that households do not produce sufficient quantities of foods which provide proteins. If that is the case, then one could argue that there is a dependence on the market as a last resort to provide this essential nutrient. This dependence is greater in some countries than the case is for others.

"Other Food Items"

Among the total of 84 households who bought "other food items", 44% purchased between 1 to 100 kgs. 11% bought between 101 to 200 kgs and 5% bought between 210 to 400 kgs. Only 5% purchased quantities greater than 400 kgs of other food items. These responses account for the 64% of the total number of households who bought "other food items" from the market. Table 9 shows the frequency distributions of households who purchased "other food items".

Cost Configuration of Food Items Purchased

Total cost of food items (i.e. cereals, pulses and others) purchased by the household is given in Appendix 2. This table lists a number of relevant price ranges within which purchases of food made could be

10. This last figure does not include nonresponses and rounding off which together account for 12% of the sample size.

11. The expression "other food items" includes all non-cereal non-pulse food items purchased by the households. These normally include sugar, tea, spices, etc.

Table 9

**Quantities of Food Purchased by H/Hs (kgs)
(1990/91) Crop Year**

Country	Quantities of Foods Bought by H/H - (kgs)																	
	Cereals/Kgs.						Pulses/Kgs.						Others/Kgs.					
	1-100		101-200		201-400		1-100		101-200		> 400		1-100		101-200		201-400	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Ethiopia	127	36.3	53	15.1	48	13.7	44	12.6	2	66.7	1	33.3	28	57.1	8	16.3	4	8.2
Tanzania	127	80.1	4	2.8	6	4.3	4	2.8	44	97.8	1	2.2	-	-	-	-	-	-
Mauritania	42	40.0	3	2.9	2	1.9	57	54.3	1	100	-	-	-	-	-	-	-	-
Senegal	80	57.5	13	9.4	23	16.5	-	16.5	27	96.4	1	3.6	9	81.8	-	1	9.1	-
Niger	3	3.9	-	-	8	10.4	8	10.4	-	-	-	-	-	-	-	-	-	-
E Freq./All	379		73		87		113		74		3		37		9		4	4

Freq. (%) do not add to 100 because of exclusion of nonresponses.

placed for each country. The figures denote local currencies for each quantity/range of food items indicated. For instance, total purchases of cereals by the households in Ethiopia is listed under the range of 1 to 100 Birrs. This is what the household had paid to buy all the cereal foods it was willing and able to pay for in the market at the time. Costs incurred by households in other countries are also indicated in a similar way. Therefore, figures given in this table are indicative of the total cost of quantities purchased by type of food. The ranges given begin from 1 to 100, then go up to 400 and above. Frequency distributions are given for each range of prices or cost configurations implied in each item of food purchased.

Nearly 37% of the respondents in Ethiopia bought cereals for a cost ranging from 1 to 100 Bins. None of the respondents in Tanzania purchased cereals at this cost. In Mauritania 41 % of the respondents paid costs within this range for cereals purchased. In Senegal, 73% of the responding households indicated that this was the relevant range for prices paid and costs incurred for cereal. 48% of the respondents in Tanzania indicated that they paid costs between 101 to 200 Shillings. Very few households in these two countries purchased food for costs ranging between 201 to 400. However, costs in the range above 400 were significant for 51%, 54% and 20% of the respondents in Tanzania, Mauritania and Senegal respectively. Since the same currency denomination is used in the francophone West African countries (i.e. the CFA Franc), cost configurations and ranges observed for Senegal would be applicable for Niger as well. The implication of these cost profiles is that a large number of households incurred expenditures on food at the lowest scale of the ranges suggested.

In Appendix 2, the purchases made by the respondents are given. 771 households made purchases of food. This is the number of households who responded to this particular question. This is equivalent of 55% of the total number of respondents in the sample for the four countries (132). Of these, 33% suggested that the effective range within which expenditures fell was between 1 to 100 expressed in their local currencies. 18% suggested that their expenditures ranged between 101 and 200. Those who paid within the expenditure ranging between 201 and

400 were only 7% of the total who responded. Nearly 25% indicated that their effective range of expenditure on food was greater than 400 units of their own currency.

Cereals

744 households indicated the composition of foods they purchased. Out of this, 51% purchased between 1 to 100 kgs. of cereals. Nearly 10% bought between 101 to 200 kgs. of cereals. 12% bought between 201 to 400 kgs., and 15% purchased quantities of cereals greater than 400 kgs. If these purchases are ranked according to magnitudes, this would suggest that the largest frequency would occur with those households who bought one quintal (100 kgs.) of cereals. This finding supports an earlier statement that households supplemented shortfalls in cereal production by resorting to purchases in the market. The frequency of occurrence of this tendency, i.e., to bridge any food gaps in the consumption relations, is implicit in the relative distribution of the number of households responding to this question. Those who bought in excess of 100 kgs of cereals were only 37%.¹²

The currencies, as already indicated, are given in local denominations. Currency units are not readily convertible among themselves or with respect to other commonly used currencies. It was possible, it would have facilitated a comparative analysis between different cost configurations incurred in different denominations.¹³ An exception is the CFA Franc which is used in francophone West Africa including, in this case, Senegal and Niger. The ranges stipulated in these individual country cost configurations made country comparisons a futile exercise since these do not reflect the actual costs incurred by each

12. This last figure does not include nonresponses and rounding off which together account for 12% of the sample size.

13. Birrs for Ethiopia, Shillings for Tanzania, Ouguiya for Mauritania, and CFA Francs for Senegal and Niger. 1 US Dollar is equivalent of 2.05 Ethiopian Birrs, 296.5 Tanzanian Shillings, 84.9 Mauritanian Ouguiya, and 275.71 CFA Francs.(See Africa Research Bulletin, April 1992, for these conversions).

household. All of these bottlenecks preclude the possibility of building up of an inter-household or inter-country comparison of food purchases and expenditure outlays.

D. RURAL INFRASTRUCTURE AND FACILITIES

.Facilities available to rural households by way of social and economic infrastructures are generally lacking. In sub-Saharan Africa, these facilities are particularly chronic taking into account the vast expanse of land separating settlements and also the dispersion of localities and/or communities in these countries. We will only concentrate on those specific infrastructural and other facilities that have a direct bearing on the economic activities and resources within reach of the rural community. We shall therefore target our discussion on the nature of markets in which households sell and buy goods and services. In particular, buyers and sellers of the basket of goods and services relevant to households, means of transportation of the disposal of the household credit needs, whether is available when required conditions thereof, and whether conditions stipulated are satisfactory.

Crop Sales by Types

Of the total sample of 1665 households (for all the five countries), 18% confirmed selling food crops in the market. 81% did not sell crops at all. Together, this accounts for 99% of the total sample. Only 21 households did not respond.

Of those who confirmed having sold food crops in the market, 63 % sold cereal foods. Only 25% sold other types of food crops in the market. Nearly 12% of the households did not respond to this question. Frequency distributions of households who sell food items in the market, and selling types of crops sold are given in Table 10.¹⁴

14. Figures (in this and other preceding tables) do not add to 100. This is because we deliberately opt not to mention the nonresponses and also the fact that these figures are rounded off to the nearest whole number.

Table 10
Sale of Crops by Type
 (1990/91 Crop Year)

Country	Market/Sell Crops				Types of Crops Sold H/H			
	Yes		No		Cereals		Others	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Ethiopia	14	4.0	324	92.6	8	2.3	-	-
Tanzania	108	30.9	239	68.3	59	16.9	39	11.1
Mauritania	8	2.3	342	97.7	7	2.0	-	-
Senegal	117	34.2	222	64.9	85	24.9	24	7.0
Niger	48	17.6	222	81.3	28	10.3	10	3.7
Freq./All	295	17.7	1349	81.0	187	63.4	73	24.7

Freq. (%) do not add to 100 because of exclusion of nonresponses.

Table 11 concentrates on those households who sold food crops in the market. Emphasis here is on a segment of the sub-sample as a whole. Figures given in Table 11, therefore, underscore the 295 households who had affirmatively responded to the question whether they sold food items in the market any time during the post-drought period.¹⁵

227 households responded out of the 295 who sold crops. This corresponds to 77% of those who sold in the market. Only 23 % of the households did not respond to this particular question. 72% sold cereal food crops as compared to only 25 % who sold other food commodities in the market.

One could also take the analysis a step further by looking at these responses in terms of those who sold cereals in the market. That is, out of 187 households (in all the five countries) 141 households (or 75%) sold quantities between 1 to 100 kilograms of cereals in the market. Only 9% sold between 101 to 200 kgs. As the quantities sold in the market become larger, i.e. is increased to 201 to 400 kgs., the number of households become smaller. Only 2% of the households sold quantities greater than 400 kgs. of cereals in the market. Table 11 shows the

15. In essence, this is a continuation of the query discussed in the preceding Table (i.e., Table 11), especially insofar as further information regarding quantities of food sold by these households is imperative.

frequency distributions of households in terms of quantities of cereals and other crops sold for each of the five countries.

Market for Food Crops

A total of 942 households sold their crops in the market. Outlets comprising the market include, among others, merchants, government agencies, other buyers and combinations thereof. 57% of the sample from all the five countries equal to 1665 households sold crops. There were 723 households (or 43%) who did not respond to this question. Table 12 shows the frequency distributions of households in terms of types of outlets utilized to disposed of crops.

Summation of countries (i.e., sum of rows) suggests that 416 households (or 44%) sold their crops to merchants or middlemen. 277 households (or 29%) sold to government agencies (or parastatals as they are commonly referred) which were represented in these localities or villages. 210 others (or 22%) sold their crops to a combination outlets, and only 39 households (or 4%) sold to other non-specified outlets.

On a country basis, a large number of households in Ethiopia (78%) sold their crops to middlemen or village merchants. Other buyers listed for Ethiopia accounted for slightly over 3% for all outlets. A total of 285 households had responded to this question. There were 65 nonresponses. In Tanzania, 115 households (or 33%) sold their crops to a combination of outlets. Those in Tanzania who sold to merchants and/or government agencies were significantly smaller than in Ethiopia. 14% of the households sold to merchants, while 12% sold to government agencies. Less than 1% sold to other outlets. In Senegal and Niger, unlike the case in Ethiopia and in Tanzania, government agencies are major buyers of rural crops. 38% of the households in Senegal sold their crops to the government. In Niger, 37% of the households opted to sell

Table 11

Quantities of Food Crops Sold by H/H
(1990/91 Crop Year)

Country	Quantities of Food Crops Sold (in kgs) by H/H														
	Cereals/Kgs.							Others/Kgs.							
	1-100		101-200		201-400		> 400	1-100		101-200		201-400		>400	
Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Ethiopia	8	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanzania	56	94.9	-	-	3	5.1	-	37	94.9	-	-	1	2.6	1	2.6
Mauritania					-	-	2	6	-	-	-	-	-	-	-
Senegal	72	84.7	12	14.1	1	1.2	-	-	-	-	-	-	-	24	100
Niger	5	17.8	5	17.8											
Freq./All	141		17		4		2		37			1		25	

req. (%) do not add to 100) because of exclusion of nonresponses.

Table 12
Crop Buyers - (1990/91 Crop Year)

Buyer/Country	Ethiopia		Tanzania		Mauritania		Senegal		Niger	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Merchants	274	78.3	49	14.0	37	10.6	28	8.2	28	10.3
Government Agency	3	.9	41	11.7	1	.3	131	38.3	101	37.0
Others	8	2.3	3	.9	2	.6	13	3.8	13	4.8
Combination of outlets	-	-	115	32.9	-	-	47	13.8	48	17.6
E of Freq. (column) response by all countries	285		208		40		219		190	

Freq. (%) do not add to 100 because of rounding off and exclusion of nonresponses.

their produce at government outlets. Households selling to "other" outlets on through a combination of outlets are more significant in Senegal and Niger than the case is in either Ethiopia or Tanzania.¹⁶

Responses from Mauritania are different from those of other countries in the sample. Only 40 households responded to this question. 310 households did not respond. This situation is indicative of the absence of crop production to begin with. Where there was a notable evidence of crop selling activity, households in Mauritania seemed to take the option of selling to the village merchants. This is indicated by the small number of households (only 37) who had responded to this effect. Otherwise, very little information can be derived from the data compiled from households in Mauritania in this regard.

Marketing outlets available to the households for sale of crops seem to revolve around three major modes, viz., sales to village merchants or middlemen, sales to government agencies or the parastatals, and the rise of a combination of number of outlets, depending on the nature and circumstance prevailing at the time of sale of produce.

Methods of Crop Transportation

Different modes of transportation of crops from the field to the market are used in these rural areas. The question posed in this connection was meant to explain what these modes of transportation were and how did these correspond with others commonly in use.¹⁷ Multiple

16. Nonresponses for Ethiopia, Tanzania, Senegal and Niger were 65, 142, 123, and 83 households respectively.

17. While the transportation mode deployed may refer to both the selling and buying activities, one would normally expect the former to be dominant in the context of sub-Saharan Africa. This is due to the fact that the quantities of food items sold often, under normal circumstances, exceed those that are purchased. This assumption is justifiable only if we take into consideration those peculiar conditions prevailing in drought-affected areas of sub-Saharan Africa. The reverse scenario such that purchases and/or procurement from the market (defined as an institution or a place of transaction including those meant for emergency relief or, for that matter, governmental

options were presented to the respondents in order for them to identify which one was applicable. These options included, among others, lorries, animals, self, etc.

A total of 774 households (or 47%) responded to this question. A large number of the households equal to 891 (or 53%) did not, however, respond. Frequency distributions shown in Table 13 for those responding households suggest that 53% (or 410 households) used the animal mode¹⁸ as means of transporting crops to the market. 32% (or 247 households) carried their crops themselves in order to deliver them to the market. Only 9% (or 72 households) used motor vehicles (in this case lorries) to transport crops to the market. Less than 6% . (or 45 households) suggested other modes which they did not specifically qualify.

On a country basis, the animal mode as means of transportation appears to be dominant in Ethiopia, Senegal and Niger. 32%, 37% and 49% of the households in these countries had respectively indicated this to be the case. Transportation by self, meaning individuals often carried food crops themselves, is common both in Ethiopia and Tanzania. Resorting to automobiles or lorries is perhaps a novelty. This is relatively uncommon in all the countries in the study. Frequency distribution for this particular option is not at all representative. One can not rely upon this as a useful activity to deduce meaningful conclusions.

Table 13 also gives transportation costs incurred by the households based on modes used. Since only lorries or other such transport modes justify incurrence of costs on the part of the household, what is indicated in this table, perhaps, refer more on this particular phenomenon than others. It should be pointed out that only 32 households responded to this

assistance) often exceeds or is greater than individual sales made by households appears to be dominant during drought periods. Considering drought as a permanent feature in sub-Saharan Africa, one could accept the latter scenario as a justifiable option.

18. By animal mode is meant a means of transportation that is based on use of horses, mules, donkeys, camels or any other such beasts of burden.

question. This meager response reflects the position of those who opted for automobile transportation as a means of moving crops to the market. Other options discussed have little bearing on this response. Only in long distances, as the case is perhaps in Mauritania, would the automobile transportation be justified as a realistic alternative.¹⁹ Otherwise, cost configurations for different methods of transportation of the sort just discussed would appear to be unrepresentative if not meaningless in this particular juncture.

Rural Credit Needs, Availabilities and Conditions

In this section, we will discuss rural household credit needs required to finance some of the activities and/or operations undertaken. Attempt will be made to find out whether credit sought was available and households had access to these facilities. Sources for financing rural enterprises, or more appropriately activities, however, are very limited. Attempt will also be made to find out conditions expected to be fulfilled by households in order for them to qualify for these loans.

Rural households were inquired about whether they needed credit for some of their economic activities.²⁰ 1638 households responded to this question. Of these, 71 % indicated that the need never arose in the past for them to seek credit, therefore, never sought any in the first place. Only 27% indicated that they needed credit facilities for some-of the activities they had undertaken in the past. 98% of the households responded to this particular question while only 2% did not respond.

19. Options denoted as animal or self transportation (or other such methods) do not imply direct en route costs which could be attributed to the process of delivering the crops to the market by the household. Where road networks exist, these are often primitive or dilapidated because of lack of maintenance. Such preclude use of motorized vehicles. Households normally resort to other means of transportation whenever distance and/or other such factor warrants.

20. Activities in question here include, among others, purchase of seeds, implements, milch cows, or any other such important input that would enable households to produce crops or animal products for domestic consumption or for sale.

Table 13

Crop Transportation - Methods and Costs - (1990/91 Crop Year)

Country	Method of Transport						Costs'									
	Lorries		Animals'		Self		Others		1-100		101-200		201-1000		> 1000	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Ethiopia	2	.6	112	32.0	80	22.9	23	6.6	-	-	-	-	-	-	-	-
Tanzania	32	9.1	4	1.1	159	45.4	-	-	-	-	-	-	1	.3	-	-
Mauritania	35	10.0	3	.9	1	.3	-	-	-	-	-	-	-	-	-	-
Senegal	2	.6	158	37.2	4	1.2	12	3.5	9	2.6	3	.9	2	.6	-	-
Niger	-	-	133	48.9	3	1.1	10	3.7	7	2.6	6	2.2	4	1.5	-	-
E Freq./All	72		410		247		45		16		9		7			

1. Animals include donkeys, horses, mules, camels, etc.
2. Costs are in local currencies.
3. Freq. (%) do not add to 100 because of rounding off and exclusion of nonresponses.

On a country basis, households from only Tanzania, Senegal and to a lesser extent Niger expressed the desire to get credit facilities. 50% of the households in Tanzania felt that there was need for credit. 30% of the households in Senegal and 27% in Niger also suggested that they needed credit in order for them to finance some of their activities. Very little desire was expressed by the households in either Ethiopia or Mauritania in this regard. Table 14 shows frequency distributions of households based on need for credit.

On the availability of credit in rural Africa in general and in these countries in particular, it can be argued that it is reasonable to expect that those who need credit normally are the Ones who know that such is available in the first place. These individuals would normally have an idea about what is required to get credit. It is these potential users, therefore, that are in a position to respond to the question of whether credit is available when needed, which sources are likely to provide these and whether conditions underlying procurement are satisfactory or not. Household responses to these questions are tallied in columns 2 to 4 of Table 14.

180 households out of 1665 (or 11%) indicated that credits were available when they needed them. 1462 households (or 89%) suggested that credits were not available when they needed. Taking this response rate into consideration, one can argue that rural credits were not available to the majority of the households when they needed them.²¹ This situation is shown by the low frequency distributions of household recorded for this particular response. Frequencies lowest in Niger (6%) and Senegal (7%). In the case of Mauritania, Tanzania and Ethiopia, frequencies were 14%, 13%, and 12% respectively.

Regarding sources of credit responses are recorded under five distinct entries in Table 14. These are the government, commercial banks, village merchants, neighbors and "others".

21. Implicit in this statement is the argument that only those who need credit/loans most likely know from where to get it. This reasoning should be carried throughout the discussion of this subject in this section.

180 households responded regarding sources of credit. This is equivalent of only 11% of the total sample. The majority equal to 89% did not respond because they could not, for one reason or the other, find the question pertinent. Results suggest the presence of strong correlation between need and availability on the one hand and the ability on the part of those who seek loans to identify potential sources of credit when needed on the other. This correspondence refers to frequencies recorded for those who had expressed a need for credit, who knew that credit was available and could, therefore, identify those facilities to whom these questions may be addressed to.²²

A total of 58 households in these countries indicated the village merchants as their sources of credit. 57 households suggested that their neighbors were the source of credit. Incidence of conventional commercial banks as a source of rural credit lags far behind. Table 14 Only 45 households resorted to the banks to get credit. Credit facilities provided by the governments or affiliated institutions, in rural Africa, are negligible or not common at all.

Even though responses to these questions may be low, the role of traditional sources of finance provided through village merchants/middlemen and neighbors, in the context of rural Africa, should not be underestimated.

Asked about conditions of credit, only 79 households (or 9%) in the total sample suggested that the conditions under which credit was given was reasonable. 803 households (or 91%), however, were of the view that the conditions of credit were not at all satisfactory.²³ Reasons for dissatisfaction included severe controls, possibilities of confiscation of harvest in the event of delay of repayment, and overall fear of foreclosure.

22. 11% of the households indicated that credits were available. 11% of the households also could identify sources of credit in their rural environment. This implicit correlation, in my opinion, is not the result of coincidence.

23. 882 households responded to this question. This is equivalent to 53% of the sample. 47% did not respond.

Table 14
Rural Credit Need, Availability and Conditions - 1990/91

Country	Need Credit/Loan				Availability				Sources of Credit/Loan										Conditions for Credit/Loan			
	Yes		No		Yes		No		Comm. Banks	Village Merchants	Neighbor		Others		Yes		No					
	Freq.	%	Freq.	%	Freq.	%	Freq.	%			Freq.	%	Freq.	%	Freq.	%	Freq.	%				
Ethiopia	31	8.9	309	88.3	42	120	84.6	2	.6	1	.3	2	.6	21	6.0	16	4.6	31	8.9	117	33.5	
Tanzania	176	50.3	170	48.6	47	13.4	300	85.7	-	21	6.0	7	2.0	17	4.9	-	-	27	7.7	160	45.7	
Mauritania	64	18.3	286	81.7	50	14.3	300	85.7	1	.3	6	1.7	39	11.1	2	.6	2	-	-	350	100	
Senegal	104	30.4	233	68.1	25	7.3	314	91.8	-	12	3.5	5	1.5	10	2.9	-	-	13	3.8	85	24.9	
Niger	74	27.1	191	70.0	16	252	92.3	-	-	5	1.8	5	1.8	7	2.6	-	-	9	3.3	91	33.3	
E.Freq./All	449		1189		180	1462		3		45		58		57		18		79		803		

Freq. (%) do not add to 100 because of rounding off and exclusion of nonresponses.

IV

DROUGHT EFFECTS - POLICY ISSUES AND IMPLICATIONS FOR DEVELOPMENT

A. HOUSEHOLD ATTRIBUTES AND PECULIARITIES

Any attempt to sketch the profile of the household head in rural sub-Saharan Africa must include the fundamental social, economic and cultural milieu and environment under which this hierarchy subsumes. Taking these factors into consideration,²⁴ at least in the context of sub-Saharan Africa, one is likely to find out that the household head is a male member of the family who is, on the average, 43 years old, is married and is most likely unable to read and/or write even in his own native language. This is one unique attribute that distinguishes our household head from others in Africa.

The likelihood of a female member of the family being the head of the household though plausible, yet the occurrence of this is wrought with several impediments. The social and cultural environment, in some places, does not warrant this possibility to take its own course. The sheer size of the male candidates for the post of head of household, taking into account cultural influences and other ramifications, renders the choice between male and female to sway in favor of the male. Where the female counterpart takes the responsibility of the head of the household, one must realize that this responsibility imposes and adds further responsibilities on the female. This compounds the responsibility assigned to female members. After all, they bear the difficult job of managing the meager resources of the household, meeting the food and other requirements of the family and, above all, building a better life for each and every member of the household. If change is desired, policy

24. Implicit in this set of factors is the data used in our analysis. It should be borne in mind that neither IRTI nor ACARTSOD were directly involved in data collection even though the latter was for the supervision of fieldwork. Discrepancies are bound to exist within the data that could not be resolved. These should be taken into consideration at all times.

should emphasize to reshape the decision-making role of women in the household hierarchy, particularly, so that women can contribute to the development and the welfare of the rural household. This is another important issue that needs to be focussed on in future studies.

The rural household, as a social and economic entity, has several unique attributes of its own. In the context of sub-Saharan Africa, one is likely to encounter that this entity has, on the average, at least eight persons as members of the household. This is a large family by any standard. This number is increased, on the average, by two births per household per year. The average number of children per household is most likely in the vicinity of five. The cumulative child population in the sample relative to the total number of persons is therefore likely to be, on the average 59% of the total number of persons in the household. Out of this total child population, only 24% (i.e., 2 children per household) are likely to go to school regularly. The remainder, neither have the opportunity nor the blessing of the families to get education. The number of persons in the household who can read and/or write is, on the average, 3 out of the total household population of 8 persons. These results not only define new dimensions in the reality of educational opportunities but these can be used to define specific strategies for rural household education. The high level of illiteracy is due to lack of facilities and opportunities for rural households to get educated.

Rural households are likely to live in straw or mud houses. The number of years households live in these houses is, on the average, equal to 10. These facilities would most probably have no sanitary disposal means for wastes nor would they have running water nor other facilities that are common in relatively more advanced settlements. These are likely to have pit latrines located within the premises or at a reasonable distance from the main dwelling. Drinking water would be harvested from the underground water resources. Wells, therefore, are by far, the most common sources of drinking water for these households.

Malaria is the most prevalent disease among household members. This is complicated by the preference of household for traditional medicine as opposed to modern means of combating ill-health. This

tendency is ubiquitous among household members across sub-Saharan Africa. In areas where water is available during most part of the year, water-borne diseases, such as bilharzia, etc. are common. Pressure as a result of economic, social and environmental degradation and the difficult conditions under which the household works, tends to aggravate the already precarious health standard. This perhaps explains why acute and protracted headaches are listed as one of the major diseases suffered by households.

Table 15
Household Attributes²⁵

#	Statistic	Ethiopia	Tanzania	Mauritania	Senegal	Average for all countries
1.	Average age/household head (years)	40	42	44	45	43
2.	Average number of wives per household head	1	1	1	1	1
3.	Average number of births per household per year during last 5 years	2	1	1	3	2
4.	Average number of children per household	7	3	5	5	5
5.	Average number of children per household going to school	1	1	2	2	2
6.	Average number of persons per household	9	6	7	8	8
7.	Average number of person in the household who can read and write	1	3	3	4	3
8.	Average number of years H/H lived in the area/region/location	37	22	8	17	21
9.	Average number of years H/H lived in the house	7	13		14	11 ²⁶

25. Figures are corrected to the nearest whole number and refer to the period 1990/91 (see: Gulaid, 1992, p.49).

26. This figure denotes the average for the three reporting countries.

Even though the majority of the households lived in primitive housing arrangements, there were a number of households who built up modern housing structures than the straw-mud houses. These particular households were more stationary than those living in straw or mud houses. This was true even in the event of protracted droughts in their localities.²⁷

The implication of such stable premises is that households become influenced by the real estate property, its ownership and the size of investments sunk in these properties. These rural residents are not likely to migrate out of their settlements unless the drought is so bad that it affects the very social, economic and health conditions of the household. This attitude enhances the period of residence in a particular locality. In such cases rural households are likely to be immobile, which might make it possible for governments and other institutions to target their economic development programs directly onto these households. This is an important and fundamental policy issue if sub-Saharan rural households are to be defined as potential recipients of development assistance.²⁸

Summarizing these peculiarities, this study finds that rural households are large. This is so because the number of children (i.e. the child population) as a proportion of the total number of persons in the household, in itself, is large. Birth rates are high. All of these factors contribute to the fact that the number of persons in the household would tend to be large.

27. Evidence in support of this argument is shown by the figures listed in row of Table 4.A. This lists the number of years households had lived in the present area/region or location. By area/region/location is meant administrative boundaries defined by the authority which often is specific and well demarcated. This response is different from the query posed regarding the number of years households had lived in a particular house or residence, which is reflected in the figures given in row 9 of Table 4.A. Note that the mean for the number of years households had lived in the area/region/location is 21 for the three countries.

28. The topic of migration/mobility of rural households will be dealt with in a forthcoming study in the framework of the drought theme.

Educational facilities are lacking or non-existent, therefore incidence of high level of illiteracy is prevalent among the households in rural sub-Saharan Africa.

Health and sanitation facilities in the rural sub-Saharan Africa are poor by any yardstick. This situation was examined by appraising facilities present in the dwellings of the rural households, sources of drinking water, number of persons in the household suffering and types of diseases encountered. All these suggest that the health and sanitation standards of the rural household has a lot to be desired.

The effect drought has on the social demographic attributes of the rural households is explicit in many cases. Implicitly, however, this can affect the overall welfare of the household in a number of other ways. Demographic properties are subject to environmental changes such that matrimonies, for instance, coincide with periods of plenty or affluence. During years of hardship, families suffer in proportion to the degree of adversity in place. The degree of suffering, in turn, depends on the severity of drought and its intensity. Drought, it should be noted, affects the habitat adversely, the lives, properties, and subsequently, the socio-economic structures of the rural community in sub-Saharan Africa. It is necessary therefore, that the health, housing, educational and other attributes of the rural community be supported during these hard times.

B. POLICY ISSUES

Social and Demographic Issues

In the preceding text, a number of ideas were discussed, viz: (a) that the number of persons in the rural households are large, (b) that educational facilities are lacking; therefore incidence of illiteracy in sub-Saharan African countries is high, (c) that sanitation facilities are non-existent or are at best primitive resulting thus in a very poor standard of rural household health, (d) that droughts have seriously affected the habitat and (e) that this adversely affects the economic life of the rural household in sub-Saharan Africa.

A number of specific policy issues can be identified from these results. In order to enhance the sanitary condition of the household, one must assess the present sources and quality of drinking water to begin with. Considering the quality and standard of potable water now consumed one can find out that there is considerable room for improvement. Treatment facilities at central locations for rural settlements need to be developed. This would reduce on the need to resort to traditional methods of harvesting drinking water from sources such as stagnant ponds, open and shallow man-made reservoirs, slow moving rivers, etc. These alternatives must complement, wherever possible, the familiar bore holes which criss-cross rural landscape in sub-Saharan Africa. The possibility of centrally located community source of potable water may also serve to correct the environmental damage inflicted by concentrating both man and mammals into small focal points. They are known to prompt the demise of the habitat around the boreholes in sub-Saharan Africa.

Programs of this kind may not be conceived as megaprojects that require large capital. These do not require mobilization of a large number of multinational donor groups as the case has been in many historical antecedents in Africa. Rather, these should be small, simple and efficient projects that are within the means of the population. They should also be tangible given the limits of modern-day technology now available. Technology, needless to say, has come a long way in miniaturizing the traditional unwieldy machines and support systems offered to Africa in the past.

Methods of disposal of physical waste and management of domestic refuse need to be upgraded in the context of the rural household. Pit latrines, for instance, though quite effective and functional for the purposes and conditions reminiscent of these localities, are outmoded. These do not satisfy the needs of the contemporary household in this day and age. If these primitive facilities are not properly and regularly maintained, their services are likely to run out just as fast as they are utilized. They are likely to adversely contribute to the ill-health of the household instead of alleviating it. Raising the level of awareness of the rural community through hand-on methods and other educational

encounters would most likely do a lot of good by way of enhancing the level of preparedness of the rural household.

Combating malaria and other parasitic diseases commonly encountered in rural Africa south of the Sahara has a lot to do with how water and hygienic conditions in the neighborhood of the household are managed. Methods of controlling these diseases by resorting to, say, modern preventative and/or curative means should be upgraded. Relevant public health sector facilities should be relocated inland into sub-Saharan Africa (instead of these being confined to major cities) in order to target those who need the services. If this targeting is not instituted, the likelihood is that households would revert to the old and traditional methods of dealing with these problems at the expense of contemporary practices. This would tend to weaken the potential of introducing a combined approach such that traditional and modern methods of control and curative systems can be consolidated to ameliorate the conditions of the public. If this is adopted, rural households would be able to benefit from the easy access and still use, wherever necessary, the traditional venues which are still coveted. This option may be introduced as a component of a comprehensive support scheme that is meant to upgrade the system now in place.

Housing is a critical area of policy for both the individual rural household as well as the public sector. Results from this study show that the structure and type of houses predominant in rural sub-Saharan Africa need re-appraisal if the quality of life of this segment of the population is to be improved. Straw/mud houses, as the case may be, are often problematic in and of themselves. These do not auger well with the sanitary, health and outward looking ideals of contemporary Africa. Those who live in these types of housing are likely to entertain the feeling that they are indefinitely locked up behind flimsy and undependable structures that could not withstand the slightest Harmatans or, for that matter, any other such dry spell of heat wave that might blow from the desert. A feeling of despair and destitution is common among the households.

This syndrome is symptomatic of the plight of the rural population in sub-Saharan Africa. Unless a better and practical housing strategy is devised, this despotic syndrome is not likely to fade away. Cheaper, sturdier and durable housing structures that are suitable to the habitat of sub-Saharan Africa need to be developed. Methods of financing housing in the context of sub-Saharan Africa should then be explored. Instruments for financing these programs/projects need to be tailor-made according to specific needs of the recipients. Here is where Islamic methods and instruments of financing housing could play a useful role.²⁹

Rural literacy programs and opportunities for education in sub-Saharan Africa need to be updated and in most cases completely revamped. This study shows that more than a half of the household heads interviewed could not read or write even in their own native languages. Children who go to school out of the total child population in these countries represent only 25 percent. Those enrolled in schools represent only 17 percent of the total number of individuals in the households.

Causes of this low level of literacy and school enrolment are not only due to lack of educational infrastructure and logistical support per se, but also because of the priorities of the household and the order of perceived urgencies. Little value is attached to committing a child to an endeavor that is likely to take such a long period of time to bear fruits for the family. Long-term commitment to education is something the rural households can not afford. The opportunity cost, therefore, of committing a child, or for that matter any member of the family including the head of the household, to this sort of pursuit, is very high.

Assuming that this is the case, then policy issue is one of designing an educational strategy that would reduce the gestation period required to produce a well-rounded and functionally literate household members. Educating the rural population should then take the shortest period of time possible. The training provided would, under these

29. The recommendations of the Proceedings of the Seminar held on "Financing Housing in Islamic Perspective" may, perhaps, be critically assessed in order to develop practical instruments that are suitable to the realities of sub-Saharan Africa.

circumstances, be able to guarantee acquisition of sufficient capability and acumen for the individual to use this fecundity in the best interest of self and his or her family.

Alternatively, the strategy of education and curricula adopted for the urban population may be introduced and applied to the rural setting. However, the goal in this instance would be to emphasize the transformation needed for the rural household to undergo change in order that it may adjust or synchronize itself to the objectives specified by such a strategy.³⁰ This adjustment or transformation process has proven to be very difficult to mitigate even if it is assumed that the rural community is a willing partner in this path-breaking exercise.

The role of women in the rural household has always been a critical factor in the context of the rural community development in sub-Saharan Africa. This role is accentuated by the responsibility entrusted on women as household heads. Since there are a significant number of households in rural Africa where women take up this added responsibility this matter needs to be studied at close range.

It is generally recognized that women in Africa hold the key to the household food security, hence the crucial function of fending against hunger and poverty or vice versa. Policy issues subsumed hereunder are often the mandate of many international development institutions including, in this particular case, the Islamic Development Bank (IDB) which had co-sponsored this study. This and other development-oriented agencies should focus towards those specific activities and/or functions which are entrusted to women members of the household. Child care, health and sanitation, education, food security-enhancing programs, and domestic crafts, to mention only a few, are potential areas that could be

30. Education in Africa has always been biased in favor of expectations of the urban segment of the population. The goals and objectives of contemporary educational strategies are designed in such a way that these cause a large segment of the educated rural population to move to cities in search of work. The rural sector offers them no comparable reward for their education. This also serves as a deterrent to committing children in the schools beyond a certain, perhaps ad hoc, level of training beyond which parents feel would force their children to leave the household.

financially supported. Development of programs that address the financing need of these options and segments of the population is critical. Such is likely to determine the success or failure of rural development schemes undertaken in sub-Saharan Africa.

These rural household attributes discussed should not be seen in isolation. These attributes form the premises of a more complex set of interlocking activities and factors which together constitute the profile of the rural sector and subsequently the global character of the country which they subsume.

ISSUES ON RESOURCES AND ECONOMIC ACTIVITIES

Migration and Relocation of Rural Households

Households in the region have strong attachment to land. Sedentarization is preferred to mobility unless the situation is so critical that households have to relocate elsewhere at their own free will or have to be uprooted as the case was in Ethiopia in early eighties and in Tanzania a bit earlier. Much of these uprooting of the drought-affected population were government-led operations. And much of these propositions were based on foreign assistance under what may be referred to as Antonov Packages.³¹ In Tanzania, the concept of Ujama Vijijini, though in the making for a long time, fizzled out immediately soon after the departure of its progenitor i.e., President Julius Nyereri.

Experience from these unsuccessful exercises later revealed that thousands of people died of malaria. Those who were used to dry savanna conditions could not adopt to the water-borne malaise associated

31. Moving a large number of people required the intervention of a superpower, notably the USSR at the time. The Russian Antonovs were exemplary in the case of Somalia's 1972 famine in which a hundred and forty thousand rural households were transported to what President Siyad Barre referred to as Greener Pastures. Accordingly, Kurtin warey, Dumuma, Sablale, etc. were established in the inter-riverain areas of Southern Somalia. At its height, these famine refugee centers housed 250,000 people all of whom were brought from locations in Central Somalia. This project failed because the concept did not take into account the will of the people and adaptations expected of them to adjust to the new habitat.

with the humid tropical conditions. Others would not fare well in the new environment simply because they could not put themselves to bear the fact that abundance of water could be so hazardous to their health. Preventative strategies to fend off water-borne diseases and provide fundamental sanitary facilities were not conceived as essential prerequisites that were endogenous to the package of incentives offered to households in favor of the relocation policy.

The re-settlement program of President Mengistu Haile Marriam, post the 1984-85 drought for instance, accentuated the conditions of the drought-affected households who were moved out of Wallo, Tigre and other northwestern regions of Ethiopia. The world did not like the idea because the will of the people was not entertained and therefore the idea was, for all practical purposes, coercive and repugnant. to begin with. This too was doomed before it had seen the light of the day.

Similar government-induced relocation policies in other parts of Africa did not fare well either. These did not take into account the genuine wish of the people. Coercion, in most cases, was rife and government's role was imposing and dictatorial. The premises of the idea of relocation in and of itself was ill-conceived, fundamentally fallacious, and its implementation inopportune.

Taking these historical antecedents into account, policy issue should focus on the wish of the rural household. This wish or desire is built on the attachment to land. Policy makers must attempt to recapitulate the experience of relocation of masses in Africa. In the future, attempts to define policy objectives should begin with the expression of the willingness of the community to make choices. This choice should be given to people to impart on the process of relocation or whether to stay irrespective of the consequences. This might be achieved through a democratic expression of the choice of the people. They should however be adequately informed and psychologically prepared to meet the challenges implicit in the relocation process. Early warning systems should be installed to forecast impending disasters such that drought could be forecast ahead of time and appropriate measures taken. Only then would people be able to live with the idea and prepare

themselves to accept the consequences having made the decision to relocate themselves at their own free will.

Presence of some semblance of economic infrastructure and a viable package of incentives are necessary conditions for this relocation process to succeed. Where these are available, they are likely to speed up progress and facilitate transition. These conditions should therefore be seen as important ingredients of the comprehensive package of tools to be deployed for this purpose. Access to land, appropriate land tenure policies and the option to practice established social and cultural norms peculiar to these communities can serve as additional incentives for the household to accept relocation. These and many other factors determine the success or failure of any attempt to restructure the rural economy especially with a view to enhancing the rural food, fibre and services production capabilities of the indigenous rural population.

Restructuring the rural economy with a view to enhancing the production capabilities is a policy issue that did not get the attention it deserves in sub-Saharan Africa. The following section identifies critical constituents of this vital policy perspective in so far as economic resources and opportunities at the disposal of the rural household are concerned.

Land

The effect of drought can be diagnosed in almost every aspect of the rural household's environment including among others their social structure and their economic activities. Where drought conditions are severe, land becomes unable to support cultivation, livestock is whipped out and the social structure, which is often dependent on the habitat itself, begins to crack at its foundation. The fear of demise of the fundamental institutional framework which nurtures the very existence of the rural - household becomes rampant.

To avoid the breakdown of the institution of family in rural Africa, it is imperative that the package of incentives offered to facilitate relocation include promises of private land ownership and, whenever

feasible, livestock replenishment. Acceptance of the idea to re-locate would then be favorable and tenable to the household. Otherwise, the strong psychological attachment to land, drought effects notwithstanding, would remain difficult to reverse. This proposition is a vital component of the overall package of incentives that is required by policies to relocate rural households in sub-Saharan Africa.

Such an incentive package should incorporate practical *modus operandi* that would specify methods and means of implementing the new ideas for appraising the rural capability and its potential to produce food. Relevant issues should include areas cultivated, harvest potentials, marketing and prices, credit, and above all social and economic infrastructural services which are acquired in order to facilitate the transformation needed. These must be conceived in such a way that they are harmonious with or are at least complementary to the social, economic and political realities in place in the rural sector in Africa.

In these countries, ownership of land is highly correlated with cultivation of cereal foods. Size notwithstanding, there is a great potential for improvement of yields from the small patches of land that are now being cultivated. This is a critical policy issue, that governments in sub-Saharan Africa must heed. Policy instruments should be designed that would take into account the premise that even though land is scarce, those who have access should be encouraged to produce higher yields. Introduction of suitable varieties of seeds compatible to the agronomic conditions need to be found. Better cultural practices need to be introduced to the households. Irrigation (where there is permanent water) need to be upgraded and fertilizers, insecticides and other relevant inputs furnished. All these ingredients should be provided within the package earmarked and designed for the small land owner/cultivator. Economics of scale has no room in the real-world agriculture of the peasantry in sub-Saharan Africa. This is true if the objective of survival is assigned a higher priority rating over the mainstream economic goal of market orientation and establishment of commercial agriculture. This policy perspective needs to be understood in the context of the famine-prone environment of sub-Saharan Africa. To avoid demise of the institution of family in sub-Saharan Africa, one would find this reasoning

justifiable and then accept the package of incentives ideas as a necessary and sufficient condition for the transformation needed.

Cultivation and Crop Production

Incidence of not cultivating any land by the household is superfluous in all the countries studied. This, in itself, needs to be examined at close range. Were responses given indicative of drought conditions such that these did not allow households to cultivate land, or were there other forbidding factors that forced the households to abandon the practice altogether? An appropriate response to these questions may help policy makers to understand the complex decision-making issues that households have to wrangle with. Government agencies can help households solve some of these nagging problems.

Where land was cultivated, the study showed that most of the households in these countries cultivated parcels of land that were too small (1.0 to 1.5 hectares) to be economically viable. Larger patches of land greater than 1.5 hectares were cultivated by only a small number of households. This suggests that land is a serious bottleneck that often stifles the potential for the rural households to feed themselves.³² Yields per unit of land cultivated were low. Output of cereals were, therefore, often negligible. Limitations such as these were real and should be seen to constitute the crux of the social and economic dilemma of the population in the rural sub-Saharan African countries. Consumption of cereals are high among the households. Purchases from the market were often made to bridge the gap in consumption requirements.

Livestock Production

Since animal husbandry, as an economic activity, is dominant over cultivation and production of crops, policy ought to be in the direction of improving husbandry techniques and in finding drought resistant species

32. There is a strong correlation between land cultivation and cereal production since most of the cultivating households produced cereals from these patches or land cultivated (see pages 24-29 of the text).

that are more suitable to the environment. Introduction of exotic livestock breeds is not a substitute for sub-Saharan Africa's tested breeds. Improvement of local breeds via modern techniques and the education of rural household on modern practices of animal husbandry can go a long way to transform the productivity of the traditional herdsman. Such a perspective must seek the consent of the traditional views and methods of animal husbandry that are currently in place. This should serve as the basis for a long-range objective of transforming the system that is now in operation.

Markets, Prices and Credit

Means of transportation at the disposal of the household are primitive. There are no all-weather roads. This precludes development of a dependable system of moving goods and services to and from remote locations in sub-Saharan Africa. Instead, crops produced, when there are surpluses, are transported by animals or by the members of the household themselves. The small size of produce that is marketable at any given time justifies the means at the disposal of the household. The factor of distance, however, remains a bottleneck in its own right. The possibility of the household being discouraged by the sheer effort of having to carry the produce to the distant markets, in itself is a dampening factor on exposures to markets. This needs to be heeded.

Credit facilities so that households can meet their production and/or consumption requirements do not exist. Some rural households, contrary to the popular view that these do not need credit, have expressed the desire to utilize these facilities if these are provided to them through the market. Those who need credit often know how to get it. But the majority of the households neither appreciate the opportunities salient to this mechanism nor wish to spend extra efforts to seek these out. Those who want credit, however, are often confronted with conditions that are often forbidding. This is contrary to the spirit of development since procurement is rendered next to impossible.

END NOTES AND REFERENCES

1. Countries discussed in this study include Ethiopia, Tanzania, Mauritania, Senegal and Niger. Revision of this study will be carried out as soon as data from other countries (i.e., Guinea, Mali and Sudan) is available.
2. Average number of years households lived in the area/region/locality was 8 years for Mauritania as opposed to 37 years for Ethiopia, 22 years for Tanzania and 17 years for Senegal. (See Gulaid, 1992, p.38).
3. These results are in conformity with those given in response to number of years the household lived in the present residence. Nearly 58% of the households in Mauritania indicated that they had lived in the present house for a period between 1 to 10 years. Only 275 lived longer than 11-20 years and still a smaller proportion (5%) lived longer than 21-30 years in that location. Hence nascency of the period of migration.

Appendix 1

Receipts (in Local Currencies) from Crops Sold by Household - 1990.

Country	Cereals										Others									
	Sales in local currencies/ranges										Sales in local currencies/ranges									
	< 100		100-500		501-1,000		1001-5,000		> 5,000		< 100		100-500		501-1,000		1001-5,000		> 5,000	
Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
Ethiopia	8	100																		
Tanzania	-	-	20	34	1	1.7	23	39	3	23	59	1	3	-	-	8	21	7	18	
Mauritania	2	1	1		-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-
Senegal	-	-	65	77	-	-	12	14	16	58.3	-	-	14	58	-	4	17	6	24	
E Freq./All	10		86		1		37		15		30		15		-	12		13		

- Local currencies refer to Birrs in Ethiopia, Shillings in Tanzania, Ouguiya in Mauritania, and CFA Francs in Senegal and Niger. Frequencies do not add to 100 because of rounding off and exclusion of nonrespondes.

- E of Frequencies for all countries excludes Niger.

- The frequency distributions given in this and other tables do not add to 100 because of rounding off and exclusion of nonrespondes. This is very important because the figures given here refer to those households who had responded to this question. The totals for sample responses do not include figures for Niger.

Appendix 2

Costs (in local currencies)* of Foods Purchased by H/H - 1990

Country	Cereals										Pulses										Others									
	Costs per kilogram in local currencies/ranges										Costs per kilogram in local currencies/ranges										Costs per kilogram in local currencies/ranges									
	1-100		101-200		201-400		>400		1-		101-200		101-200		1-201-400		>400		1-		101-200		101-200		201-400		>			
Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%			
Ethiopia	129	37	60	17	49	14	33	9	2	67																				
Tanzania	-	-	68	48	1	72	51	37	82	1	2	2	4	5	11															
Mauritania	43	41	3	3	2	57	54	-	-	-	-	-	-	1	100															
Senegal	81	73	9	7	1	28	20	23	82	1	4	2	7	2	7	2	7	9	82	2	18									
E Freq./All	253		140		53		190		62		2		5		8		8	42		5		10				1				

Local currencies refer to Birrs in Ethiopia, Shillings in Tanzania, Ouguiya in Mauritania, and CFA Francs in Senegal.

1 US\$ = 275.71 CFA Franc = 2.05 Birrs = 296.5 Tanz. Shillings = 84.9 Ouguiya.

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ISLAMIC DEVELOPMENT BANK (IDB)

Establishment of the Bank

The Islamic Development Bank is an international financial institution established in pursuance of the Declaration of Intent by a Conference of Finance Ministers of Muslim countries held in Jeddah in Dhul Oa'da 1393H (December 1973). The Inaugural Meeting of the Board of Governors took place in Rajab 1395H (July 1975) and the Bank formally opened on 15 Shawwal 1 395H (20 October 1975).

Purpose

The purpose of the Bank is to foster the economic development and social progress of member countries and Muslim communities individually as well as jointly in accordance with the principles of *Shari'ah*.

Functions

The functions of the Bank are to participate in equity capital and grant loans for productive projects and enterprises besides providing financial assistance to member countries in other forms of economic and social development. The Bank is also required to establish and operate special funds for specific purposes including a fund for assistance to Muslim communities in non-member countries, in addition to setting up trust funds.

The Bank is authorized to accept deposits and to raise funds in any other manner. It is also charged with the responsibility of assisting in the promotion of foreign trade, especially in capital goods among member countries, providing technical assistance to member countries, extending training facilities for personnel engaged in development activities and undertaking research for enabling the economic, financial and banking activities in Muslim countries to conform to the *Shari'ah*.

Membership

The present membership of the Bank consists of 47 countries. The basic condition for membership is that the prospective member country should be a member of the Organization of the Islamic Conference and be willing to accept such terms and conditions *as* may be decided upon by the Board of Governors.

Capital

The authorized capital of the Bank is six billion Islamic Dinars. The value of the Islamic Dinar, which *is a* unit of account in the Bank, is equivalent to one Special Drawing Right (SDR) of the International Monetary Fund. The subscribed capital of the Bank is 3,654.78 million Islamic Dinars payable in freely convertible currency acceptable to the Bank.

Head Office

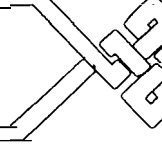
The Bank's head office is located in Jeddah in the Kingdom of Saudi Arabia and the Bank is authorized to establish agencies or branch offices elsewhere.

Financial Year

The Bank's financial year is the Lunar Hijra year.

Language

The official language of the Bank is Arabic, but English and French are additionally used as working languages.



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