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Women and Food Security in Kenya

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As farmers, traders, income earners, mothers, and family care-takers, women are a critical link in achieving food security. In these roles, women need better access to credit, labor-saving technologies, and agricultural and nutrition extension information, in addition to greater access to and control over income.

Women play a key role in producing and providing food for the family, managing and allocating household resources, and caring for children. Alleviating their time constraints is the single most important way to improve household food security—since it will allow women to take advantage of new resources and opportunities that may have direct links to their ability to assure household food security.

A combination of complementary interventions that address the multiplicity of women's household and market roles is likely to be most effective. These include:

- *Better access to agricultural and nutrition extension information.* Both the process of providing that information, and the information itself, should be adapted to the needs of women. More efforts should be made to select contact farmers from the population of women, particularly poor women; to channel communications to women; and to stress the need for a balance between cash and food crops, including kitchen gardens. Home economics/nutrition extension information should be integrated with the agricultural extension system because of the complementarity of the topics and their implications for food security.

- *Better access to technology.* Women's access to labor-saving technologies such as posho mills (for grinding maize and other

cereals) can save time and also provide income. Improving water supplies can provide substantial benefits in terms of time savings, and health and nutrition.

- *Better access to credit.* Joint title between husbands and wives or legally-recognized user rights could expand women's access to formal credit that requires land as collateral. Group lending schemes—some of which have a 95 percent repayment rate—are one means of sharing the risks and benefits of borrowing. Innovative credit schemes that combine informal and formal credit schemes, and broader dissemination of information about credit facilities, should also help.

- *Better access to and control over income.* Because of women's predominant role in providing food for the family, their access to and control over income is critical to their roles in assuring household food security. Women's income tends to be spent along more nutritionally advantageous lines.

If the employment possibilities and incomes of women are to improve on a continuous basis, short-term solutions based on the development and dissemination of new technologies must be complemented by longer-term policies to increase women's access to training, credit and other resources.

This paper is a product of the Women in Development Division, Population and Human Resources Department. Copies are available free from the World Bank, 1818 H Street NW, Washington DC 20433. Please contact Mila Villar, room S9-127, extension 33752 (41 pages with tables).

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**KENYA
WOMEN AND FOOD SECURITY**

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A. INTRODUCTION

The World Bank has defined food security as access by all people at all times to enough food for an active and healthy life. Ensuring food security entails meeting two conditions: that there are adequate food supplies available and that people have the ability to acquire food by means of their own production or by means of income. Food availability therefore does not refer solely to food self-sufficiency but is linked to incomes and purchasing power (World Bank, 1988a)

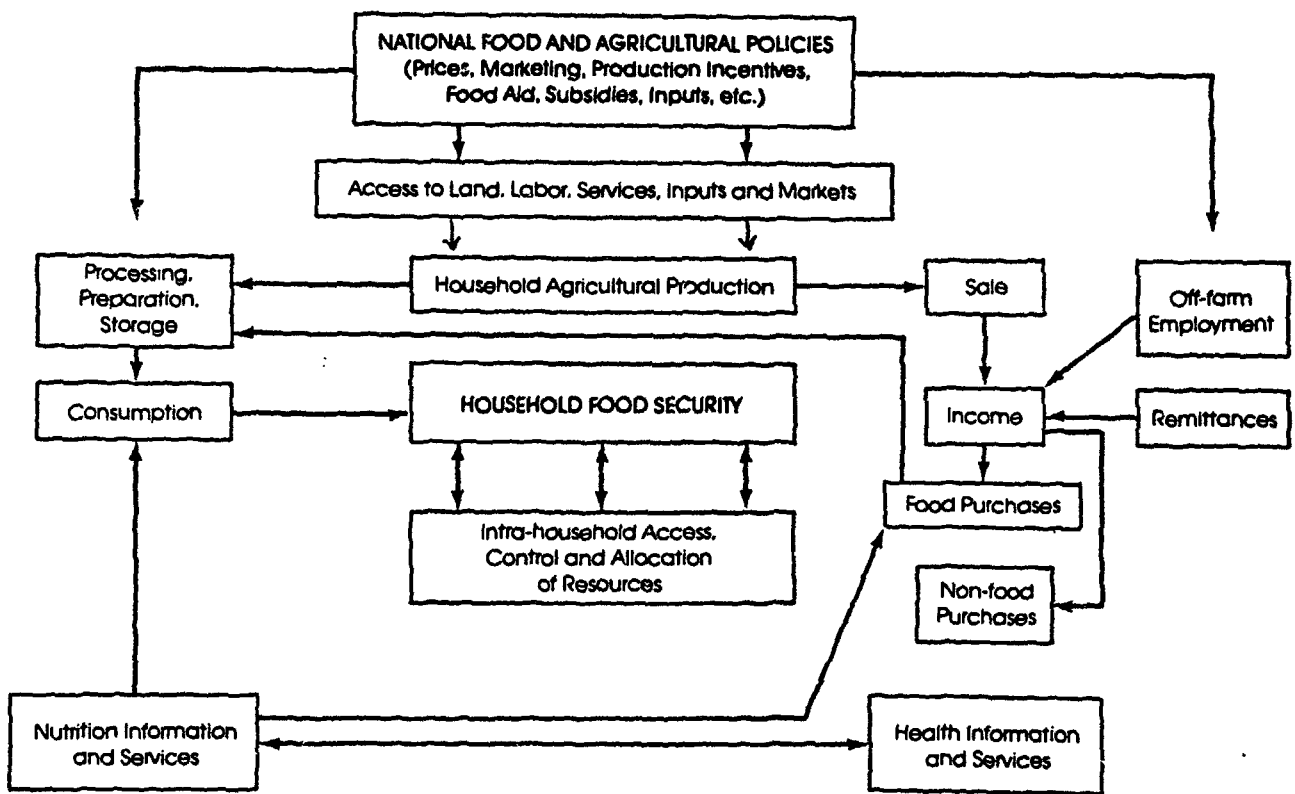
By its very nature, a food security strategy encompasses both supply and demand issues. It involves the production of food and therefore issues such as access to services and resources including extension, credit, inputs, land and labor; it involves the consumption of food, therefore issues such as health and nutrition, food preparation and storage, and access to income with which to purchase food. At the household level, the achievement of food security is greatly influenced by the allocation of and control over resources within the household. The achievement of an increased level of food security involves a complex web of social relationships and trade-offs among competing claims or needs for resources. The situation becomes all the more complex when regional, cultural and economic differences are taken into account. These differences imply a need to carefully assess the situation not only by country but by regions within countries.

In Africa, as in many other regions throughout the developing world, women play crucial roles in agriculture as producers and providers of food. As farmers, traders, income earners, mothers and family caretakers, women are a critical link in achieving food security. While strategies to encourage African agriculture must be multi-faceted and must address the varied facets of the farming system, in many countries, "the focus must be on the needs of women farmers for it is on them that the improvement of agriculture and food production will largely depend..." (GOK and UNICEF, 1988).

This paper explores that critical link in the Kenyan context by assessing some of the influences on household food security and by addressing specifically women's roles and constraints within that framework. The paper also seeks to identify intervention points at the policy and project level relevant to the goal of enhancing food security within the context of World Bank activities in Kenya.

The chart below highlights some factors that can (but do not necessarily) contribute to household food security. While not exhaustive, the framework shows the relationship between the various factors and the centrality of women's roles to household food security.

National-level food and agricultural policies will influence, to varying degrees, women's ability to contribute to household food security. Although the policies will not be discussed in detail, the paper will explore their implications for women's multi-faceted roles in the rural sector. Household agricultural production can take the form of food and/or cash crops and/or livestock. The relative emphasis will depend on a number of factors such as ecological zone, ethnic group, income, and access to resources. Domestically



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produced food (food that is generally processed, prepared, stored) can be consumed by the household or portions can be sold in the market place; cash crops can be sold. (Of course, there are crops that serve both functions, such as maize). Income derived from the sale of food or cash crops can be used for food purchases -- this may be an issue of timing: women may have to sell their food at harvest time when prices are low in order to pay school fees, then buy food later in the season when prices are higher. Other sources of income (remittances, off-farm employment, casual wage labor) can also be used to purchase food or to enhance domestic production.

Access to nutrition and health information and services, and nutritional and health status itself, may influence the extent to which families use income for food purchases and/or benefit from food consumed. The time available for undertaking the many tasks associated with food production and consumption will also influence household level food security, hence the importance of labor-saving technology at various points in the food cycle. Related to all of these factors, and critical to household food security, are intra-household dynamics. Knowledge pertaining to what happens within the household is critical to understanding how resources are acquired, controlled, allocated and used. Decisions concerning what and how much to plant, to sell, and to buy, in addition to knowledge about who earns income and how that income is used become key variables in the food security equation.

B. WOMEN'S ROLES IN THE RURAL SECTOR

The majority of Kenyan women -- 9 out of 10 -- live in rural areas. They play important and multi-faceted roles in the rural sector as smallholder farmers, income earners and family caretakers. More and more rural families are likely to be headed by women as men migrate to the cities in search of employment. As such, women's time commitments and responsibilities are increasing.

1. Overall time-use patterns

While data showing women's time-use patterns are limited, such data provide a glimpse into the myriad of activities women perform. Studies of developing countries worldwide find that women tend to have less leisure time than men, and provide the major time input to home activities in addition to their activities in production and in the market place. In many parts of the world, rural women's work responsibilities are actually increasing to encompass some of those traditionally performed by men, as men migrate to cities in search of more remunerative employment. Women generally find themselves in what has been described as "a closed system in which time or energy devoted to any new effort must be diverted from [their] other activities" (McGuire and Popkin, 1988).

In Kenya, growing land scarcity is becoming a significant factor in the household food security equation, yet women's labor remains a key constraint in many areas; women work long hours but often cannot achieve much productivity. Any strategy to improve household food security must deal with women's increasing

work burdens and time constraints, help improve women's labor productivity, and assess the potential trade-offs that women may face among their multiple activities. Women's attempts to reallocate their labor in the face of competing demands on their time can have serious nutritional implications and can hamper efforts to tackle problems related to their roles as farmers and caretakers of their children.

Available evidence from rural areas in Kenya points to women's significant time commitments. A ten community study undertaken in 1979 found that women spent 13 to 14 hours per day working. Respondents reported that, on average, tasks related to food preparation and nutrition took up one-third of the day, while water and fuelwood collection, farming, caring for animals and marketing took up the remainder. Water collection alone was estimated to take 2 to 4 hours per day (GOK and UNICEF, 1984). Demands on women's time have increased as more attention is paid to health and sanitation issues: "adequate sanitation, for example, requires water for washing children, cleaning dishes and laundering clothes, over and above the water required for animals" (ILO, 1986). Women's labor input also increases when drinking water requiring boiling.

Table 1
Women's Weekly Time Allocations
for Productive Activities

Activity	High potential areas		Low potential areas	
	% Women	Hrs/wk.	% Women	Hrs/wk.
Collecting firewood	90	5.25	81	6
Farming	90	12.25	62	13.5
Caring for animals	66	19.5	53	12
Marketing	44	6	53	10.75
Milking	35	5.75	50	8

Source: Krystall and Gomme, 1979. Cited in World Bank, 1989.

A recent study in Siaya District shows that women spend most of their time on food crop production rather than on childcare or home maintenance. According to this survey, women have primary responsibility for land clearing and preparation, planting, weeding and harvesting. Women also are the ones to fetch water and firewood with some limited help from their daughters. When asked to indicate the most important task to carry out first if there were time constraints, about 85 percent of the women said that they would carry out childcare and other household activities as a priority (Menya, 1988).

2. Women as smallholder farmers

a. Overview

Agriculture is the core of Kenya's economy, smallholders are the core of Kenya's agriculture, and women are the core of the country's smallholders. Agriculture remains the backbone of the Kenyan economy providing employment for 70 percent of the population, contributing about one-third of GDP and generating 50 to 60 percent of foreign exchange earnings (World Bank, 1986).

Smallholders are the core of Kenya's agricultural sector: they produce three-fourths of the country's total agricultural output and over half of marketed output. Smallholders produce a major proportion of the domestically produced foodstuffs and cash crops. For example, they produce 70 percent of maize (including 50 percent of marketed maize), most of the milk and meat, and nearly all rice and pulses. They also are responsible for 64 percent of coffee production, 50 percent of tea exports and all of the country's cotton and pyrethrum (World Bank, 1986). The smallholder sector, however, is heterogeneous. Within the sector, there are large differences in size of landholdings, resource endowments, cropping patterns (the relative emphasis of food and cash crops) and off-farm employment opportunities.

Maize is by far the most important food crop for smallholders throughout Kenya, produced in at least a third of the land area under a wide range of ecological conditions. Although the demand for maize is significantly higher in rural Kenya, on average, maize comprises 78 percent of the populations' cereal intake on average and more than 40 percent of total calorie consumption. Maize is particularly important for low income households. Home produced maize accounts for only two-thirds of smallholder consumption, with the remaining amount being purchased in the form of grain or flour (Maritim, 1985). Women's time constraints influence their purchases of maize flour. In Turkana, for example, women were found to economize on their domestic labor by selling their maize and purchasing maize flour (Dey, 1984).

The increasing shortage of arable land is becoming a critical issue for smallholders. Population pressure has led to the fragmentation of landholdings, rising numbers of landless and near-landless, and the movement of people from land-scarce areas to more marginal areas (Herz, 1974). Those unable to live off their land are seeking wage employment or other forms of off-farm employment (ILO, 1986). The Government of Kenya has stated that it requires 2.5 to 3.5 acres of high potential land to provide sustenance for a family using traditional farming techniques (Senga, 1981 cited in World Bank, 1989). But by the year 2000, it is estimated that there will be less than half an acre of high potential land per person (World Bank, 1989). Although estimates vary and seasonal variations matter, a growing number of smallholders are becoming unable to provide an adequate diet for their families (Wisner, 1986).

Women generally gain use rights over land use through their husbands. Title to land almost always goes to men who continue to allocate land informally to their wives. While women are legally permitted to buy land, very few actually do. The price of land, women's limited independent income and employment

possibilities make its purchase an option that few women can take advantage of (Feldman, 1982). Studies from diverse areas of the country show no more than 5 percent of women owning land (World Bank, 1989). In most cases, women's fields are small and scattered. An increasing number of women are landless or near-landless (accessible land is barely economically viable) (ILO, 1986). One study found that almost all women respondents had between 3 and 15 discrete, small parcels implying that excessive time may be required to simply get to the numerous and scattered parcels (Pala, 1978 cited in ILO, 1986). Fragmentation of land causes substantial inefficiency in production (Herz, 1974). Current land reform efforts may be eroding women's access even further since they emphasize "the structural points of allocation and inheritance of land at the expense of use rights..." (ILO, 1986). Land adjudication and registration measures are emphasizing private ownership (mainly for men) and no longer guaranteeing automatic rights of access to women on the basis of lineage (Feldman, 1982). This situation is of growing concern since it impinges directly on women in their roles as farmers and providers of food for the family.

b. Women's contribution to smallholder agriculture

Smallholder agricultural production is increasingly being undertaken by women. It is estimated that 96 percent of rural women work on the family farm; women provide three-fourths of the labor on smallholdings and actually manage about two-fifths of these smallholdings (World Bank, 1989). Although historically women tended to focus on food crops and men on cash crops, as a result of increasing male migration out of rural areas, women are now shouldering more of the responsibility for a wide variety of farm (crop and livestock) tasks while continuing to maintain responsibility for their traditional tasks (World Bank, 1989). Rural women are estimated to spend one-third of their working time in the fields (ILO, 1986).

A higher proportion of women than men are engaged in most phases of the production cycle on food as well as cash crops and livestock, in addition to their work in food preparation, childcare, gathering water and firewood, and in varied income-earning activities. Data show that in all provinces, women are engaged on a more regular basis than men in all farm activities. The distribution of labor for maize by type of activity shows that 87 percent of women work regularly in planting, weeding and harvesting as compared to 54 percent of men. In addition, over half the women are involved in marketing of the maize crop. Although the proportions of both women and men involved in cash crop cultivation is small, women work more regularly than men on coffee, tea, pyrethrum and cotton production (GOK and UNICEF, 1984). With respect to livestock, women work more regularly with poultry, milking cattle and grazing sheep and goats (ILO, 1986; World Bank, 1989).

Women are underrepresented in estate export agriculture reflecting higher entry barriers or less capacity to overcome barriers. A 1982 survey shows that men's labor accounted for 76 percent of the labor used on estate export crops compared to 24 percent of women's labor. Some of the export crops in question - tea, coffee, cocoa and rubber - have long gestation periods and substantial investment requirements which may inhibit women's participation (Collier, 1989).

Table 2
 Division of Labor by Gender among Smallholders
 (Percent of those above 15 years of age
 who work regularly on task)

	<u>Males</u>				<u>Females</u>			
	Plant	Weed	Harvest	Market	Plant	Weed	Harvest	Market
CROP								
Maize	54	55	54	24	87	87	89	52
Potatoes	8	8	8	4	13	13	14	7
Coffee	13	12	11	10	13	16	16	13
Tea	5	5	5	4	5	6	6	6
Pyrethrum	5	5	5	4	7	7	6	5
Cotton	6	6	6	5	8	8	8	5
LIVESTOCK								
	Work regularly				Work regularly			
Poultry care			3				9	
Stall feed livestock			8				12	
Graze cattle			25				24	
Milk cattle			12				37	
Graze sheep/goats			21				27	
Carry water			5				89	
Carry wood			5				89	
Prepare food			5				90	
Clean house			5				90	
Care for children			1				63	
Buy food			23				71	

Source: GOK Integrated Rural Surveys 1976-79 Basic Report, cited in GOK and UNICEF, 1984.

i. **Marketing.** Related to their role as farmers is women's involvement in marketing agricultural produce, particularly at the local level. As providers of food for the family, they participate in the market as both buyers and sellers. Women may sell varying amounts of their vegetables from their kitchen gardens, staple food crops from their main fields, as well as non-food crops. However, their access to and control over income derived from these sales may differ depending on the crop. Generally, women do control income derived from the sale of their surplus food crops.

Food crops are marketed through formal and informal channels. Officially, maize is marketed under the control of the National Cereals Produce Board (NCPB), but informal maize markets (small private traders) handle the bulk

of maize for smallholders. A recent assessment of maize marketing in Kenya concluded that the distribution system did not always operate effectively and that certain regions faced significant problems procuring an adequate supply of the cereal (World Bank, 1982; Maritim, 1985). While large and medium scale farmers sell almost all their maize through NCPB, only 20 to 30 percent of smallholders' maize is sold to NCPB (World Bank, 1983). Smallholders (generally women) tend to sell maize even though remaining amounts may not suffice to meet family food requirements. Their pressing need for cash at harvest time (coinciding with school fee payments), price uncertainty, and lack of on-farm storage facilities contribute to these decisions. Later in the season, these same smallholders may be forced back into the market to purchase additional maize, often at higher prices. Beans and other pulses, in addition to other minor crops, are marketed almost exclusively through informal channels.

Agricultural marketing cooperatives exist for the production, processing and marketing of the main cash crops and are estimated to handle 40 percent of the country's marketed commodities. Female membership in these cooperatives remains very low. Explanations include women's lack of title to land which is often required for membership, women's lack of regular income to pay monthly contributions, and their low educational attainment which limits their understanding of cooperative regulations and by-laws (ILO, 1986).

ii. Storage. Storage of food crops is critical to achieving food security on both a national and local level by easing price variations and assuring more stable supplies. In most of Sub-Saharan Africa, storage facilities are inadequate and ineffective. It is estimated that one-fourth of all food produced is lost due to spoilage, insects and rodents. In Kenya, farmers incur the highest level of losses due to the unsuitability of on-farm storage structures (Maritim, 1985).

Women play an important role in food storage and handling, and as such could benefit from improved methods and facilities. Improvements in traditional systems of storage and food handling could make a major contribution to food security in terms of stabilizing supplies and helping to maintain the nutritional value of stored and processed foods (Dey, 1984).

In Kenya, lack of sufficient on-farm storage hastens the sale of food at harvest time even if it means buying back food later in the season, often at higher prices. A recent review of storage policies in Kenya pointed out the some of the weaknesses in the system: 80 percent of producers did not have adequate storage facilities to store their maize and/or could not afford to store maize for more than two months. This resulted in a depletion of their food reserves and a limited ability to bridge the time gap between harvests (Maritim, 1985).

3. Women as Income Earners

a. Farm and off-farm income

In Kenya, smallholders depend on the market to a significant extent to satisfy their consumption requirements. Surveys have shown that rural

smallholder families on average purchase about 50 percent of their food, with higher proportions in households with less than two hectares (GOK and UNICEF, 1984). Since women have primary responsibility for these food purchases, their ability to earn (and control) income is an important corollary to their ability to contribute to household food security. Rural women's income is most often derived from household-based activities related to food and beverages, trade, weaving and traditional medicines. The sale of surplus agricultural produce from their individual plots usually constitutes their main source of income over which they have control. Other sources of income include petty trade (sale of charcoal, beer and vegetables), their labor on other farms or plantations, and remittances (World Bank, 1988b; Kabira and Njau, 1985; Riugu, 1985). Activities undertaken by women within women's groups are also seen as a means to supplement individual incomes. Men tend to control the income (and therefore the expenditures) from the sale of cash crops even in situations where women contribute substantial amounts of labor.

Table 3
Labor Allocation and Income Sources by Sector

	Males	Females
Export agriculture		
estates	76	24
smallholder	42	58
Food agriculture	37	63
Public sector	81	19
Import substitution	88	12
Non-tradable capital goods	96	4
Private sector wage employment	79	21

Source: cited in Collier, 1989

The livelihood of the smallholder family as a whole is derived from a combination of resources from the holding itself, from wage employment and from informal rural enterprises. There are in fact very few true subsistence farmers -- only one in five farmers retains 90 percent of what is produced on the farm. The vast majority of crop farmers are integrated into the monetized economy and the value of monetized agriculture exceeds that of subsistence production (Rogers, 1985). Slightly over half of smallholders market more than a third of their output (GOK and UNICEF, 1984).

One of the striking features of the smallholder sector is the amount and diversity of off-farm activity. For many smallholder families, off-farm earnings are an important factor in alleviating poverty. Few rural households can subsist without some form of off-farm income (ILO, 1986). Approximately one-third of smallholder family incomes, on average, are derived from off-farm sources, with an additional 10 percent coming from remittances. Lower-income smallholders, who comprise 40 percent of all smallholder families, are significantly more dependent on off-farm income for their survival (GOK and UNICEF, 1984). One study suggests that in the mid-1970s, 77 percent of family income of these lower income smallholders came from off-farm sources (Wisner, 1986). These smallholders have less access to services and resources as well as to training and educational opportunities. Households with little or no education have a greater dependence on unremunerative off-farm income derived from trading and casual labor (ILO, 1986). Middle-income smallholders have larger landholdings and are more dependent on agriculture for their livelihood.

Table 4
Relationship Between Sources of Off-Farm Income
and
Educational Attainment

	Educational attainment			
	None	1-4 yrs.	5-7 yrs.	8+ yrs.
Net off-farm income (Kshs)	1,494	1,884	3,610	5,570
Sources of off-farm income	-- in percent --			
Regular employment	23	22	51	79
Casual employment	15	14	6	6
Remittances	23	16	9	4
Gifts	4	5	2	1
Trade/crafts	30	35	27	5
Miscellaneous	9	8	4	5

Source: ILO, 1986 based on IRS 1, 1974-75

The relationship between off-farm activities and the farm is important. On the one hand, off-farm earnings tend to reflect marginal earning capacity from the holding. Members of a household (generally men) seek off-farm employment because income derived from the farm is not sufficient to support the

family. A study of Kikuyu families showed that in farming households with less than 2 acres of land, more men migrated to cities in search of remunerative employment (Feldman, 1982). Their earnings enable a household to maintain a certain level of income despite the small size and low productivity of the holding. On the other hand, income from off-farm sources can allow a household to adopt improved agricultural technologies and contribute to higher productivity on the farm (GOK and UNICEF, 1984). Related to this, it has also been demonstrated that the level of off-farm income influences both the ability and willingness of smallholders to take out loans for farm improvements (ILO, 1986).

The distinction between, and interdependence of, farm and off-farm activities is, to a large extent, a gender issue. It is estimated that 94 percent of working women above the age of 15 are exclusively employed on the holding compared to 70 percent of men (GOK and UNICEF, 1984). While this may underestimate the time women spend on other activities related to their agricultural work that are often done on a periodic or part-time basis such as their involvement in women's group activities, it does reflect the critical importance of women's labor to agricultural (and especially food) production, and to family income. It has been shown that 60 percent of farm-derived family income is produced by women (World Bank, 1989).

Women's ability to shoulder these on-farm responsibilities (and the fact that they have limited access to other types of employment) enables men to work off the farm. While women provide the bulk of on-farm labor, by and large, paid employment opportunities in the rural labor market and rural entrepreneurial activities remain male-dominated (Rogers, 1985). According to a recent study on employment and growth in Kenya, only 6 percent of working women above the age of 15 are employed for pay or profit, compared to 30 percent for men. While women overwhelmingly participate in work activities and put in longer aggregate hours than men, their access to wage employment is very limited (World Bank, 1988b). Households headed by unmarried women are in the most precarious position since, in general, they have much less access to off-farm income. Without husbands from whom married women heads of household are able to get remittance income, unmarried women can only receive income transfers from other family members who are likely to be engaged in farming activities and who have families of their own (ILO, 1986).

With landlessness or near-landlessness an increasing problem, however, women are being drawn into low paying casual agricultural labor or off-farm labor as an economic necessity. Most of the women employed as casual laborers are poor and landless (Monsted and Riunge, 1987). It is estimated that women comprise about one-third of these workers overall -- a much higher proportion than among regular workers (ILO, 1986; GOK and UNICEF, 1984). A recent survey of workers on a rural roads project showed that 80 percent of the laborers were single women with children who had no other means of supporting themselves (NORAD, 1988). Other evidence from tea plantations suggests that the majority of casual labor is also made up of destitute women with no access to land of their own (Conversation with Diane Rocheleau, 1988).

b. Remittances

High population growth rates, increasing pressure on the land and fragmentation of landholdings have contributed to the growing number of rural-urban migrants. These migrants (most of whom are male) leave the rural areas in search of more remunerative employment opportunities in urban areas. The effective result of these migration patterns is a growing number of female-headed or managed households who, to varying degrees, benefit from remittance income.

For some households, remittances can be an important contribution to household income and, depending on the particular circumstances, can help the household achieve a higher level of food security. Most transfers of income are within nuclear families or between close families, with 42.4 percent being from husband to wife (Rogers, 1985). In Siaya District, a recent survey shows that for one-third of the women respondents, remittances were the household's major source of income (SIDA, 1988).

While remittance income can help relieve labor constraints faced by female-headed households by enabling them to hire labor, the potential unreliability of such income transfers and the absence of a resident male on the farm can create or exacerbate labor constraints for the household. This is directly related to the constraints faced by women-headed households.

4. Women as family caretakers

a. Overview

Women's roles as family caretakers as they relate to household food security center on the provision of food and the care of children. A woman's traditional obligations as a wife and mother were to care for her infants and young children, rear her daughters (fathers or other male elders had responsibility for boys' upbringing starting at age eight) and provide the family's food and basic necessities" (GOK and UNICEF, 1984). While these responsibilities remain, their scope and complexity have increased as a result of economic, social and cultural changes. In many cases, women now face demands that exceed their available time and income.

Women are the "gatekeepers to child welfare" (GOK and UNICEF, 1984). They have primary responsibility for the health and wellbeing of children. These responsibilities include providing a clean and safe environment, fetching water, and procuring health services. The tasks associated with childcare have increased since more children survive, births are closely spaced, and recommended childcare practices often require additional time and cash.

Women play a critical role as providers and preparers of food. They choose from among foods available in the market or those produced on the farm, and they allocate food to individual family members. Their role in food preparation makes them aware of the quality and uses of different foods. Women play an important role in distinguishing between varieties for characteristics such as taste, storage life, digestibility, and cooking time (Clark, 1985). All of these factors have implications for agricultural and nutrition research and

extension and are directly relevant to household food security.

The provision, processing and preparation of food continue to be time consuming and arduous. Limited attention has been paid to helping reduce the labor burden of these tasks. Time-use studies from various parts of Africa have found that women spend on average two to three hours per day preparing food for themselves and their families (McGuire and Popkin, 1988). During peak agricultural seasons, however, there is evidence that the reallocation of labor in favor of agricultural tasks has negative implications for food security: cooking practices can change (less time consuming and less nutritious meals are prepared), and intra-family distribution of food can be affected (less attention paid to supervising distribution of food between different family members) (GOK and UNICEF, 1984).

b. Secondary food crops and gathered food

Women's role in providing food for the family also encompasses their responsibilities for secondary food crops and wild or gathered foods. These foods have important nutritional benefits (as well as supplementing income) and are an integral part of a household's survival strategy. Secondary food crops (vegetables and minor grains) which are often the basis for sauces and condiments are commonly grown by women in small fields near the compound or intercropped with other food or cash crops. They are crucial sources of food and protein in the pre-harvest season when staple foods may be scarce or only available at high prices. Women often process these crops and sell them at local markets. It has also been found that kitchen garden crops show higher yields per hectare than field crops and are used by women to experiment with new seeds or technologies (OTA, 1984).

Women also have a dominant role in the collection and use of gathered foods such as nuts, berries and leaves. Women have knowledge of woody shrubs and herbaceous plants found in hedgerows, along roads, and in unoccupied bottomlands. These wild foods are important for a family's food security strategy since they are used as energy and nutrition supplements during the hungry season. They are of particular importance for landless or near-landless who cannot depend on producing their own food. The plants are often multipurpose, providing fuel, fibre, fodder and medicinal ingredients (Fortmann and Rocheleau, 1985). Women's participation in agroforestry activities such as the planting and care of trees also contributes to improving family diets and increasing income (Rocheleau, 1984).

In rural Kenya, kitchen gardens are an important part of a family's food security, both in terms of their direct contribution to family consumption and in terms of the income derived from their sale. In Kakamega, surveys show that even during the dry season, about half of all households had kitchen gardens (presumably this proportion would be considerably higher during the rainy season) growing five or more different kinds of plants for sauces and relishes (SIDA, 1987). Women also grow plants with medicinal uses in these gardens.

The importance of indigenous plants, often those grown in small amounts in women's kitchen gardens or gathered in the surrounding areas, should

be underscored. Many of these plants are naturally drought-resistant thus serving the family well in times of limited food supplies. In many areas, however, this traditional knowledge which depends on verbal transmission from mother to daughter, is being lost. The incorporation of this knowledge into nutrition extension could provide a means to safeguard it from extinction.

B. CRITICAL ISSUES

The assessment of women's roles in the rural sector in general and their contributions to household food security in particular, suggest a number of issues that deserve further attention.

1. Intra-household allocation of and control over resources

Intra-household dynamics, or the activities, responsibilities and incentive structure of different household members, as well as the decision-making and allocative patterns within a household, are critical to the issue of food security. Although there is some evidence that the traditional division of responsibilities and decision-making within the household may be blurring (Lemmens, 1987), the traditions persist.

Throughout Sub-Saharan Africa households are traditionally characterized by interdependent yet distinct roles and responsibilities for men and women (Burfisher and Horenstein, 1985; Dey, 1984; OTA, 1984). Within the farming household, men and women have varying but generally different labor responsibilities by crop and/or by task. These responsibilities will also be affected by stages in the life-cycle and by inherent dynamic processes. Men and women also have separate budgets derived from their different sources of income and expenditure responsibilities. These distinctions are important in the context of food security since women's labor is more likely to be used on food crops and women's income is more likely to be spent on household foodstuffs.

Differential incentives within the household derived from "assymetric rights and obligations", have important implications for productivity (Collier, 1989). In rural Africa, women have obligations to grow food crops for subsistence, to gather water and fuelwood, to cook and rear the children; men meet certain cash needs of the household and have responsibility for allocating land among family members. Women tend to put in longer hours than men but they are not always directly remunerated and do not always have control over the output. Research from Kenya comparing the effectiveness of weeding (a female task) on maize yields in male and female-headed households underscores the implications of the differential incentive structure. In female-headed households, weeding raised maize yields by 56 percent while in male-headed households, yields only increased by 15 percent (Collier, 1989). These findings suggest that gender-differentiated incentives exert a strong influence on output: where women controlled the crop and the income from that crop, they did have the incentive to provide the necessary labor input for weeding which resulted in significant increases in yields.

Decisions concerning the allocation of land between food and cash crops - of critical importance to food security -- are influenced by a variety of ecological, political, economic and social factors. Although empirical evidence is limited, the relative economic power of women and men within the household may be one of the determining factors of such land allocation issues (McGuire and Popkin, 1988). In Kenya, as more and more women are becoming de facto heads of household, their decision-making responsibilities are increasing. Evidence from various regions within the country suggests that women do make decisions on their own plots about what to grow, how much to market, what inputs to purchase, in addition to having substantial influence on their husbands' plots (World Bank, 1989).

Women do play a crucial role with regard to the allocation of food within the household. With regard to their own food intake, however, studies have shown that within households, women get less food than men in absolute terms as well as in terms of their own nutritional requirements (McGuire and Popkin, 1988).

In Kenya, women have a significantly more important role than men in food purchases. Women's access to and control over income is key in assuring household food security. There is substantial evidence to show that income earned and controlled by women tends to be allocated along nutritionally-advantageous lines. Some studies of families' access to and use of cash income indicate that when women control the income, it is more likely to be spent on food, while male-controlled income tends to be spent on non-food items (including housing and education) (Kennedy, 1988; Kennedy and Cogill, 1987; Dey, 1984; Purvis, 1985). Men tend to control income from cash crops and pay for lump-sum, infrequent expenses, or consumer and prestige items (Clark, 1985). To the extent that men own the land and are considered the primary growers of cash crops, they are generally seen as controlling income from those crops and as the sole decision-makers regarding those expenditures (Riugu, 1985).

In some cultural contexts, husbands may still lay claim to income earned by women. Women may use a number of strategies to protect their income including "concealing transactions or reducing profit from transactions or using women's groups to control resources by pulling them away from their husband's control" (Safilios, 1986).

Research undertaken in Southwestern Kenya supports more general findings about the importance of control over and sources of income in influencing household-level food security. These findings suggest that different sources of income have differentiated effects on household energy intake above and beyond the pure income effect. In the study area, data show that women have more responsibility for food expenditures and that income derived from women's work that is controlled by them is more likely to translate into higher caloric intake. In addition, women's income is more likely to be spent on nurturing activities that have an observable nutritional benefit. Income derived from sugar, the main cash crop in the area, is considered men's income and is spent largely on non-food items (Kennedy, 1988). Data from Southwestern Kenya shows that income from agricultural production (semisubsistence income) has a more positive effect on energy intake and household food security than other income. The researchers note that in addition to the issue of gender control over income "the real or perceived transaction costs of converting food crop income into cash

may make it more likely to have semisubsistence production contribute to household food security" (Kennedy, 1988).

The importance of intra-household allocation of resources and decision-making is highlighted in the case of women-headed households in South Nyanza. In the area under review, children from women-headed households had significantly better nutritional status than children in other households. This appears to reflect these women's greater role in decision-making particularly as it relates to food consumption and nutrition (Kennedy, 1988).

Evidence from the Mwea rice irrigation scheme in Eastern Kenya also shows the important links between decisions about labor allocations, control over income, and nutrition. In this scheme, nutritional problems were said to be exacerbated because women controlled very little of the rice income and had little time and ability to pursue their own income-generating activities or grow sufficient foodstuffs for family consumption (Wisner, 1986).

2. The impact of cash cropping on nutrition

In Kenya, as in many other countries, the government has been seeking the appropriate balance between non-food (cash) production for generating foreign exchange and food production for domestic consumption. The relative emphasis of non-food crops over food crops in certain regions of the country is tied in part to the assumption that income generated from their sale will be used to meet the nutritional needs of the household. The potential competition between food and non-food crops in terms of land and labor, and the relationship between the cultivation and sale of crops, and household food security, however, deserve careful examination on a case by case basis. Research on this issue suggests that a number of different factors and conditions influence whether, and to what extent, increases in income translate into better family nutrition. Both the overall level of income, and the distributional consequences of the control over and use of that income need to be considered.

A number of studies suggest that in certain areas of the country, serious competition exists between food and non-food crops in terms of their labor and land allocations, resulting in declining food output (SIDA, 1987). In Kakamega District, a significant proportion of land is allocated to non-food crops with low returns creating an imbalance between food production and population growth. A study in the Mumias Sugar Zone points to the fact that the introduction of sugar led to a 50 percent decrease in maize production and a 30 percent decrease in livestock, in addition to a decrease in soil fertility (Lemmens, 1987). A possible explanation for the decrease in food production is that women, who have traditionally had primary responsibility for food crops, have shifted their labor increasingly to sugar cane production. In addition, control over income becomes a key factor.

"[The women] also mentioned malnutrition as a problem in their community, saying that a child had died of malnutrition in their village the day before. Finally they pointed out that drunkenness of their husbands was at the core of their problems and that they often faced disagreement with them on the allocation of land and

labor between food crops and sugar cane. All of the members had sugar cane on their family holdings because the Mumias Sugar Factory enticed the families in the area with inputs and services, including bush clearing, seeds and fertilizer. The farmers contribute only land and labor. The women complained that family involvement in sugar cane production was hurting more than it was helping. They pointed out that, although the family as a whole contributed labor on the sugar plots, the money earnings were controlled by the husband. They expressed a great preference for food crops, like maize and sorghum, saying that these the family could consume directly, some of which the housewife could sell in small installments to meet the day-to-day needs of the family" (Muzaale and Leonard, 1982, quoted in UNICEF, 1984).

The analysis of the Mumias scheme, while not able to make a firm connection between sugar growing and malnutrition, states nonetheless "that in an area with malnutrition problems, the reallocation of land from food to cash crops will not improve the nutritional situation" (emphasis added) (Lemmens, 1987).

Other studies in Kakamega District also suggest that farmers are not leaving sufficient land for food crops. Income derived from cash crops is not sufficient for necessary food purchases and/or is spent on non-food items. While the Ministry of Agriculture is undertaking a campaign to encourage farmers to grow food crops alongside cash crops, it is not yet clear what impact this will have on farmers' planting decisions.

A study in Eastern Province showed that the prevalence of stunting among children was significantly higher among coffee-growing households than among those producing the traditional drought-resistant millet/sorghum crop mixes. Although intra-household income and control and expenditure patterns were not analyzed in this study, it is possible that the increased prevalence of stunting among coffee-growing households was in part associated with women's increased labor input on coffee to the detriment of food crops and/or their loss of control over income and therefore over food purchases (Cornell, 1982).

One of the few studies showing the positive effects of cash cropping on nutrition was conducted in Taita. The study, which compared nutritional status in four communities, found that children in households where adult males were providing the bulk of income from the sale of cash crops were better off than children from other more subsistence-oriented communities. An interesting corollary finding was that children of landless laborers working on sisal estates were also better-off nutritionally than the children from subsistence farming households. This result appeared to be related to the fact that minimum wage rates for estate workers were well enforced by the Government as well as to the fact that food prices were quite low due to market inefficiencies (Fleuret and Fleuret, 1983).

Except for laborers who did not own land, however, all other farmers continued to grow staple food crops for home consumption in addition to income-producing crops. While the overall findings point to positive effects of cash

cropping on nutrition, the researchers caution that full dependence on the market for consumption needs would be a risky proposition. They note that a mixed array of activities, including cash cropping, wage labor, and a good deal of subsistence food production are likely to yield the best nutritional results (Fleuret and Fleuret, 1983).

Research undertaken in Southwestern Kenya on the impact of the commercialization of agriculture on incomes and nutrition points to the complexities of the issue. Although the farmers in the out-grower sugar scheme had significantly higher incomes than non-sugar farmers or new entrants to the scheme, household caloric intake of this higher income-earning group had risen only slightly since the sugar scheme had started. More importantly, perhaps, the benefits of high energy intakes at the aggregate household level were not shared proportionately among different household members -- there was almost no difference in childrens' caloric intake or in any of the three anthropometric indicators across the different groups (Kennedy, 1988).

Gender-differentiated income was not specifically identified as a determining factor in the nutritional status of children in Taita. In this case, the higher amount of off-farm income (presumably earned by males, although the information given is not conclusive), had a positive effect on nutritional status. The study examined the effect of off-farm employment (both rural and urban) on nutritional status using the height for weight indicator. In the community where cash cropping was the major contributor to household income, it was found that households with the best-nourished children devoted 40 percent of their time to off-farm activities, while households with the worst nourished children devoted only 15 percent of their time to these activities (Fleuret and Fleuret, 1983).

These results differ from those found in the study of farming households in Southwestern Kenya. In this region, it was found that non-farm income had a significant and negative impact on household caloric intake. Women lacked control over income which was an important contributing factor (Kennedy, 1988).

This study does not show negative nutritional effects as a result of sugar cane cash cropping, although, as noted earlier, the increased income did not translate into improved nutrition. In this case, since women (in male-headed households) did not control the income from the sugar, the result may have been higher expenditures on non-food items. The limited participation of women in sugar production may also have had an influence on the extent to which food crops continued to be cultivated (by women) and that nutritional status was not adversely affected by the sugar cane emphasis in the area (Kennedy, 1988).

As in Taita, sugar farmers in South Nyanza continued to grow food crops. Even though these farmers decreased the area devoted to food crops in order to grow sugar, the absolute area planted to food crops was virtually identical between the sugar and non-sugar farming households. Sugar farmers had more land, and more of their land was put into production (Kennedy, 1988).

3. Access to services and resources

a. Agricultural extension

Agricultural extension systems are meant to link agricultural research and farmers. By providing information on technologies, production methods, types of crops, and cultivation requirements and by motivating farmers and helping them overcome their constraints, agricultural extension is aimed at improving agricultural productivity and raising output.

The present system of agricultural extension in Kenya, under the direction of the Ministry of Agriculture, was initiated in 1983. The reorganization of the system in that year came about because its impact prior to that time was extremely limited and the program was targeted primarily to male farmers (World Bank, 1989). Extension workers tended to work mainly with male farmers because they were perceived as being the decision-makers and because women's other time commitments precluded their participation in training activities (World Bank, 1983). Some of the criticisms of the agricultural extension system stressed that the advice did not meet the needs of farmers and often required higher inputs of labor (Potash, 1985; Ackello-Agutuu, 1987). A study of smallholder farmers in Western Kenya found a "persistent and pervasive bias in the delivery of agricultural services [to women farm managers]" (Staudt, 1976 cited in ILO, 1986). The present Training and Visit system (T&V) is said to have been "designed and implemented with the deliberate intention of reaching women farmers" (World Bank, 1989).

Under the T&V system, some 3,500 frontline extension agents serve approximately 2.6 million farm families in Kenya's High Potential Districts (World Bank, 1988c). These frontline agents are linked to staff at the Divisional, District and Provincial levels. The frontline agents visit selected contact farmers and women's groups according to a fixed fortnightly schedule. Follower farmers are also supposed to attend these meetings and facilitate dissemination of messages to the community. Subject matter specialists train frontline agents once each fortnight and provide appropriate messages for dissemination.

According to an assessment by the Ministry of Agriculture, women contact farmers (those farmers specifically selected by extension staff to be the main contacts with frontline agents and to serve as a model to so-called "follower farmers") constitute less than 10 percent of all contact farmers. While problems remain with contact farmer selection, it has been found that increasing numbers of women serve as de facto contact farmers because their husbands are not present on the farm on a full-time basis. It is estimated that more than two-thirds of the farmers actually met by agents -- contact farmers, wives of contact farmers, women's groups -- are women (Ministry of Agriculture, 1986).

In surveys conducted in Meru and Muranga, it was found that male extension agents could work effectively with women on a one-to-one basis. This is particularly true of younger agents who often prefer to work with women farmers. In Meru, information gathered from the surveys suggests that about

two-thirds of the agents considered women farmers more likely to adopt their advice (World Bank, 1989). In both Meru and Muranga, the majority of agents reported that three-fourths of the farmers they see on a regular basis are women contact farmers or wives of male contact farmers. In addition, extension agents are increasingly working with women's groups as a composite contact farmer (World Bank, 1989).

Because women's groups are a traditional and prevalent form of organization in rural Kenya, they have been able to serve as effective channels of communication in the extension system. Under the T&V system, extension agents are directed to work with at least one women's group. By working with women's groups, agents can increase their time on task and reduce their travel time. It has been suggested that these efforts could enable extension agents to meet a much greater number of farmers at a lower total cost (World Bank, 1989). While some surveys report agents experiencing problems reaching and working with women's groups -- reasons given include absenteeism and poor attendance on the part of the women, and lack of organizational skills to handle demonstrations in the absence of an agent (Ministry of Agriculture, 1986) -- other evidence points to positive effects from this interaction. Findings from Meru and Muranga suggest that contact between agents and women's groups is quite successful: in more than half the women's groups, three-fourths of the members reported attending sessions regularly (World Bank, 1989). Other information from Busia, Baringo and Taita-Tavate confirms the effectiveness of women's groups as channels of agricultural information (Muzaale and Leonard, 1982).

The effectiveness and relevance of the agricultural extension message itself, for farmers in general and women farmers in particular, needs to be carefully assessed in light of some of the problems cited by male extension agents. Broader issues related to the existence of relevant research and the links between the agricultural research system and the extension system will also have an impact on women's access to extension.

b. Home Economics Extension

Women's knowledge of nutrition issues and their access to nutrition education also influences their ability to ensure household food security. In Kenya, home economics is the responsibility of the Home Economics Branch within the Directorate of Agriculture in the Ministry of Agriculture. In its headquarters and field work, the Branch focuses on three main areas: nutrition and food utilization; home management; and population education. As such, home economics extension has been integrated into the overall T&V system of extension since the 1983 reorganization, with staff at the District, Provincial, Locational and sub-Locational levels. Because of the shortage of home economic agents (all female) a decision was made for all agents, including agricultural extension agents (mostly male) to deliver nutrition information. Messages on both agricultural production and home economics were meant to be discussed at the monthly workshops for extension staff. This strategy was expected to allow more farmers to receive the appropriate information.

Table 5
Field Home Economics Personnel - 1988

<u>Type</u>	<u>Number</u>
Junior Technical Agent	197
Technical Agent	580
Technical Officer	204

Source: Home Economics Branch, Ministry of Agriculture.

In a 1986 evaluation of the extension system as a whole, more than half the respondents (frontline extension staff) felt that coverage of home economics topics was inadequate in the training sessions. Only a third of the respondents felt that these subjects were relevant (Ministry of Agriculture, 1986). Recent discussions with Home Economics Branch headquarter staff confirm dissatisfaction with how the system is working. According to some staff, their integration with the T&V system came late and was not effective. Problems cited included lack of time in monthly and fortnightly workshops for adequate attention to home economic topics; the inability of male agents to handle food preparation and home management topics; and at the agent level, limited time to impart critical nutrition and food utilization information. As a result of these perceived problems, a decision was made to separate home economics from agricultural extension. Although home economics extension would operate within a similar T&V structure, it would be a distinct and parallel extension system. Home economics information would only be delivered by home economics agents.

While many agree that there are weaknesses in the system, there is some question as to how best to address these weaknesses. Separating the home economics extension from agricultural extension may in fact lead to more marginalization of the former. The messages might be less relevant if they are divorced from agricultural production messages, and as discussed earlier, the geographical coverage of home economics agents is quite limited. In addition, the costs of setting up a parallel extension system need to be considered.

While male agents may be less able to impart information related to food preparation and childcare, there is strong evidence to suggest that they have little trouble interacting with women on production and nutrition issues. For example, in an effort to reach more women with both agricultural and nutrition information in Taita-Taveta, training in nutrition was provided to male agricultural extension agents since the District had too few women home economics agents to undertake this initiative. Observers concluded that male agents were as effective as their female counterparts in working with women in groups (Muzaale and Leonard, 1982).

c. Appropriate technology

The development, dissemination and adoption of new and appropriate technologies can help alleviate women's time constraints if these technologies are responsive to women's needs and constraints in both agricultural and non-agricultural activities. In Kenya, as in many other countries, the availability of technologies to relieve some of women's time-consuming agricultural tasks such as weeding, transplanting and harvesting continue to be lacking. The development of these and other technologies will be critical in increasing women's productivity generally, and their contribution to household food security in particular.

An agricultural processing technology that has gained acceptance and is fairly widespread throughout the country is the posho (grinding) mill. These mills are seen as an opportunity to earn income and save (women's) time, although questions remain about their economic viability and financial profitability. They are operated by entrepreneurs, traders and women's groups and used primarily by women.

As a community-based technology or service, posho mills can make an important contribution in releasing women's time. In many areas of the country, women may still spend a significant amount of time travelling to and from the mill, thereby reducing the time that women have available for more productive activities. As mills become more easily accessible, women spend less time travelling long distances to have their maize ground (in Kenya, hand grinding of maize is quite uncommon). Other benefits of such mills are learning how to operate and manage a mill, pride in being able to serve the community, improved opportunities to earn income and access to labor-saving technology. In addition, the existence of a mill can generate spin-off effects such as helping form a market, or serving as meeting place where women might be more easily accessible to extension agents (conversation with Mr. Msimang, CARE International).

The actual income-earning potential of posho mills, particularly in group settings, is not yet clear. Although the high initial costs of acquiring the mills (around Ksh 100,000) are often supported by outside agencies, operating costs such as diesel, rent, and labor are generally borne by the members of the women's group. The mill requires, for example, a plot or house that is owned or leased by the group (Monsted and Riunge, 1987). The size of the mill (the appropriate size is said to be between 8 to 12 horsepower, but they can be up to 26 horsepower) and the existence of competing mills in the same catchment area will all influence its eventual profitability. The extent to which the mill generates revenue to individuals within the groups also depends on the size of the group and the extent to which they operate the mill themselves rather than employing others (often men) to operate it.

Efforts to improve rural water supplies can be a major time saver for women in addition to providing them and their families with important health and nutrition benefits. Few areas are currently served by safe water supplies from point sources or by piped water supplies. An estimated nine out of ten

people in rural Kenya still depend on natural sources of water such as streams and springs for their household water needs. Rural women as the primary users and managers of household water supplies continue to obtain their water from unprotected sources often at great distances from their villages (World Bank, 1989).

Table 6
Water Supplies

Distance from source	Average time per trip	Average time per day	Amount per hour spent finding
Short	.75 hr.	3.5 hrs.	25 litres
Short-middle	1.0 hr.	3.0 hrs.	23 litres
Middle	1.25 hrs.	4.0 hrs.	19 litres
Middle-long	1.75 hrs.	4.5 hrs.	16 litres
Long	2.75 hrs.	5.25 hrs.	9.5 litres

Source: Krystall and Gomme, 1979 cited in PHRWD, 1988.

Programs for the supply of water to rural areas include construction and maintenance of new supplies, the rehabilitation of existing schemes, and self-help water supply systems (GOK and UNICEF, 1988). When women are trained in the maintenance of water supply systems, the efficiency of water projects is enhanced. More accessible water supplies can also be provided through water conservation or harvesting which involves the accumulation of water in catchment systems. Roof catchment systems appear to be a feasible technology for village level operation and maintenance. Women have traditionally been involved in the mabati movement to purchase tin roofs that allow rainwater to be collected and stored. Studies from Kenya have shown that with the time saved from water collection and money earned from selling some of the water, women were able to increase their production of vegetables and chickens for sale (Tinker, 1979).

In areas where water has become more easily accessible, women have been found to use the extra time to make additional trips to the water source reflecting the emphasis women place on water for family wellbeing. Women may also use the time saved for childcare, food preparation, community activities and income-generation activities therefore enhancing their ability to assure household food security (World Bank, 1989). The income-generating activities may be possible due to women's increased time and/or directly a result of more accessible water as in the case of women having small irrigated plots for cash crops and vegetables near newly installed standpipes (World Bank, 1989).

d. Credit

Women's lack of access to credit influences their ability to assure household food security. Women smallholders are constrained from undertaking

innovations as a result of their limited funds. Data from several areas in Kenya show that over half the women reported lack of cash as the main reason why they could not purchase fertilizer and improved seeds (World Bank, 1989). Women's ability to undertake viable economic activities is also hampered by lack of credit.

In Kenya, women's access to credit is quite limited, particularly from formal sources of credit such as banks, specialized crop programs and other financial institutions. It is estimated that rural women borrowers represent no more than 10 percent of all loanees (World Bank, 1989). Although there are no laws prohibiting women from borrowing from formal institutions, few women have had access to these sources of credit. The Agricultural Finance Corporation (AFC) is a major source of lending to the agricultural sector. These credit facilities have been available primarily to large and medium scale farmers who are considered to be less risky and therefore to entail lower administrative costs on the part of the financial institution. The AFC also requires title deed or other forms of collateral, a resource that few rural women have (African Development and Economic Consultants, Ltd., 1986; World Bank, 1989).

Other formal sources of credit such as the Cooperative Bank of Kenya and specialized crop programs run by the National Irrigation Board or the Kenya Tea Development Authority also offer little scope for women borrowers (World Bank, 1989). Some women may receive credit indirectly through their husbands. This was the case under the Cooperative Production Credit Scheme where, although credit was given in men's names, over 60 percent of the savings accounts were joint accounts for husbands and wives (Safilios, 1986). Other studies have shown that male farmers would allow their wives to seek credit if family property was not used as collateral, in effect eliminating women's ability to get credit through formal channels for whom this is generally a requirement (World Bank, 1989). Formal credit institutions often have other requirements including application, accounting and reporting procedures that also deter the majority of women borrowers who may not have experience with such procedures. Women's lag in education and literacy compounds their difficulties in dealing with formal financial institutions.

A fairly recent development for improving women's access to credit is the establishment of the Kenya Women Finance Trust, a non-profit organization aimed at providing technical assistance, training and loans to women entrepreneurs and groups. At present, the emphasis is primarily on lending to women in urban areas.

Most rural women get their credit from informal sources such as money lenders, suppliers, friends, relatives and women's groups funds. Although there are definite advantages for women of informal credit sources such as the lack of collateral requirements and the ease of transaction, there are also significant drawbacks. Money lenders charge high rates of interest, and these funds in general may be limited to only certain endeavors and/or be limited by the lender's own financial capacity (African Development and Economic Consultants, Ltd., 1986; World Bank, 1989).

4. Women-headed households

Due to the prevailing patterns of male out-migration, in large part a result of population pressure and land fragmentation, there is a large and growing number of female-headed households throughout Kenya. These households play an important role in the agricultural system and may face particular constraints in assuring food security for their families.

According to data from the 1979 census, 33 percent of all rural smallholder households were headed by women with the highest percentages in Nyanza, Eastern, Western and Central Provinces. Data from Kakamega and Machakos Districts show that even these high percentages do not fully represent the extent of de facto women-headed households. Surveys in these areas report that 55 and 47 percent respectively of the farms were in fact managed by women (World Bank, 1989).

Female-headed households fall in the poorest category of households country-wide. Findings from the Integrated Rural Surveys showed significant differences between these households and their male counterparts: the mean annual income in male-headed households was 19 percent greater than in female-headed households (ILO, 1986). Overall, women-headed households have fewer productive assets: they have less land, depend more on farming but are less involved with cash crops and cattle. Cash crops often require more labor input and a higher degree of management; similarly, improved cattle require more time spent on regular visits to veterinary officers (ILO, 1986). Female-headed households also have limited access to off-farm income-earning opportunities; this is particularly true for households headed by unmarried women since they tend to be older with lower educational attainments (ILO, 1986). As a result, these households have significantly less income than their male-headed counterparts (GOK and UNICEF, 1984).

Table 7
Percentage of Households Headed by Women by Province

	Coast	Eastern	Central	Rift	Nyanza	Western	National
1976-79	12.2	22.9	31.1	21.1	32.6	32.8	27.3
1979	23	37	36	29	36	36	33
1984a	44.4	51.3	58.4	43.1	43.8	54.8	n.a.
1984b	29.0	35.7	33.5	25.0	34.2	36.4	n.a.

a: never married, married in past, married with husband absent

b: married, husband away, married in past

Source: GOK Integrated Rural Surveys, 1976-79; 1979 Census; KCPS, 1984 (excluding North East Province). Cited in World Bank, 1989.

Women-headed households are not a homogeneous group and there are varied definitions of what actually constitutes such a household. Most vulnerable are smallholder households headed by women without husbands. Their income is about half that of the income of male-headed households. These women face an education and employment disadvantage since they have less access to "income, credit and technical support, the necessary conditions for adoption of innovations, improved technologies, higher yields and adequate livelihood" (GOK and UNICEF, 1984). Since the majority of these women are older, they are unlikely to remarry and gain access to these resources through marriage (GOK and UNICEF, 1984).

Table 8
Percentage Distribution of Productive Assets
of Male and Female Headed Smallholdings

Productive Assets/ Status	Married Men	Married Women	Unmarried Women
Cash Crops			
Coffee	21	15	13
Tea	9	7	4
Pyrethrum	8	9	6
Cotton	10	6	9
Cattle			
Improved	74	87	84
Unimproved	57	61	66
Monthly Off-farm Income			
No off-farm income	19	22	29
Less than KS 300	55	56	64
Btw. KS 300 - 600	20	6	5
More than KS 700	6	6	2
Size of Holding			
Less than 1 ha.	45	61	64
Btw. 1 - 1.9 ha.	20	20	15
More than 2 ha.	28	14	17
Education of Head			
None	55	60	90
Stds. 1-4	18	17	8
Stds. 5-8	23	19	2
Forms 1-2	2	3	0
Forms 3+	2	1	0

Source: Barnes and Werner, 1982 based on IRS Labor Module 1978/79.
Cited in ILO, 1986.

Married women whose husbands are absent have the highest income among women-headed households -- about two-thirds the income of their counterparts in male-headed households (World Bank, 1989). They often receive cash transfers in the form of remittances from their absent husbands. These women tend to be younger than those who head households with no husbands and therefore may have a greater chance of seeing an increase in income (GOK and UNICEF, 1984). Even so, the remittances may not be sufficient to compensate for the household's weak position with regard to labor availability.

Research on the implications of type of household for nutritional wellbeing shows the complexities of the issue and the importance of differentiating by type of women-headed household. On the one hand, children in women-headed households may be more at risk since the household is poorer and mothers have less time to devote to food preparation and health care (GOK and UNICEF, 1984). Data from a 1977 child nutrition survey, for example, revealed that the worst nourished children came from households headed by unmarried females (ILO, 1976).

On the other hand, the 1977 data also show that the best nourished children came from households headed by married women who received income transfers from absent husbands (ILO, 1986). More recent information from Southwestern Kenya comparing preschoolers among sugar and non-sugar farming households, also found that children in women-headed households had significantly better nutritional status than children from other households. This result appeared to be linked to the fact that these women had a greater role in decision-making and placed more emphasis on nurturing activities (Kennedy, 1988).

5. Women's groups

Women's groups are a ubiquitous and dynamic part of Kenya's rural sector. The Ministry of Culture and Social Services has 25,000 registered women's groups and there are many more still throughout the country that are not registered. Originally formed as mutual assistance groups or traditional savings societies, often with social welfare goals, many of these groups have evolved into productive and economic entities engaged in a variety of community development, agricultural development and income-generating activities. As such, these groups have become popular targets for assistance from almost all donors:

"The massive organization of Kenyan women into women's groups, has been taken as a sign of progress, and the groups have been regarded as the perfect instrument for the implementation of female-directed development assistance. Hence, a major part of aid resources targetted towards women has been channelled through women's groups" (Vintage Management Enterprises, n.d. cited in Monsted and Riunge, 1987).

As studies began to document the heterogeneity and multi-purpose nature of women's groups, questions of the financial and support requirements of different groups as well as their capacity to effectively absorb assistance began to emerge. Distinctions were made between different types of women's groups: 1) groups that require only limited monetary contributions from members and that

primarily involved in mutual assistance activities with little or no experience with income-generation projects; 2) groups that require substantial member contributions and that have more experience in undertaking economic activities; and groups organized at the initiative of Government officials for a specific purpose (i.e. extension activities) (Monsted and Riunge, 1987).

Field studies of women's groups in different parts of the country point to their differences in access to resources such as land and education, and to the fact that different groups are generally accessible to different types of women (World Bank, 1989; Muzaale and Leonard, 1985). A more recent assessment of women's groups benefitting from the Rural Development Fund, however, points to the fact that the majority of the poorest women are not well represented in women's groups involved in income-generation activities (Monsted and Riunge, 1987). In addition, estimates from the Women's Bureau point to the fact that three quarters of the women in women's groups registered with the Women's Bureau came from East and Central Provinces (Feldman, 1982). Studies from different parts of the country suggest that the poorest families, landless laborers and single women are under-represented in women's groups in large part because of the required demands of time and money (Feldman, 1982). In reviewing the composition of groups over time, it was found that women operating at the margin are unlikely to be able to make the investment in the group over the long-term. In groups studied in parts of Taveta Division, the poorer members of the groups left as the famine (of 1981) took hold, probably because they could no longer afford the necessary financial and time commitments (Muzaale and Leonard, 1985).

With the caveats about membership and geographical concentration, women's groups can nonetheless play an important role in the context of household food security since they offer the opportunity for women to pool labor resources, to undertake soil conservation activities, to grow or produce more food, to earn income that could be spent on foodstuffs and to serve as channels of communication for agricultural and nutritional extension information.

The pooling of labor among group members, i.e. women's access to reciprocal labor, is seen as part of a broader mutual assistance strategy. In addition, these efforts may enable women to adopt agricultural innovations requiring more labor, and to undertake farming tasks in a timely manner. Research has shown that women farmers in one area of the country were able to adopt hybrid maize because of their participation in women's groups that allowed them to pool their labor and undertake planting activities in a timely manner (Clark, 1985).

Women's self-help groups have traditionally performed soil conservation activities on a rotating basis on their farm plots. These efforts to terrace land have had an impact on the seasonal flow of water in streams and on reducing siltation of dams (Carloni and Horenstein, 1985). The groups' involvement in agricultural activities can provide additional food through their access to training on better production and storage techniques although output is generally low (Monsted and Riunge, 1987). Bee-keeping and honey harvesting activities, although of questionable economic viability, can contribute to family nutrition to the extent that honey is mainly used among the members for their children's consumption. Livestock projects, including dairy cattle, goat and sheep rearing, also offer nutritional benefits to women and their families.

The income earning potential of group activities deserves careful scrutiny. Agricultural activities undertaken by women's groups for income-generation purposes often suffer from marketing problems as well as from lack of skills, equipment and capital. Projects that involve the small-scale cultivation of known crops are likely to be the most successful since they can be carried out with no, or limited, outside assistance. Non-agricultural activities aimed at generating income also have not met with uniform success due to a lack of consideration for market conditions or organizational requirements (Feldman, 1982).

Overall, many income-generating activities undertaken by women's groups (with donor support) have not shown themselves to be economically viable but rather appear to be more income-consuming than income-generating (ILO, 1986). Factors that contribute to the limited success of projects from an income-generation perspective include a lack of organizational and administrative capacity, an ineffective support structure and lack of training, a lack of market feasibility studies and identification of market outlets, and an underestimation of costs and labor input required (the latter generally on a voluntary basis).

As pointed out however, the existence of such problems and the lack of income generated from an activity does not necessarily imply a project's failure. If the activity helps the group members' subsistence and/or provides mutual labor assistance, this can be considered positive in terms of overall socio-economic benefits (Monsted and Riunge, 1987).

Posho mill projects have often been undertaken by women's groups as income-generation activities. From a strictly income-earning perspective, there are a number of questions about the viability of such operations and potential problem areas need to be carefully explored. But these mills also have been shown to have other benefits. The site of a women's group posho mill operation, for example, can be a good location for women to hear other information provided by extension agents.

Women's groups can be an effective channel of communication. As mentioned above, the extension system is already working through women's groups with some signs of success in terms of the overall number of women farmers reached and the adoption of extension messages (World Bank, 1989). Because of Kenya's tradition of group self-help efforts, it has been relatively easy for agents to identify and work with women's groups in rural areas. Extension agents prefer to work with women's groups as a composite contact farmer, and this approach offers a cost-effective way of reaching a relatively large number of farmers (World Bank, 1989). Male agents appear to be able to work effectively with women's groups and to address most issues (childcare and food preparation being the exceptions) (Muzaale and Leonard, 1985).

D. ENHANCING FOOD SECURITY: RECOMMENDATIONS

"Women's key roles as producers and providers of food for the family, and their responsibility for managing household resources and ensuring the wellbeing of children, need more support on several fronts. These included reorientation of agricultural policies and programs to increase women's economic productivity; alleviation of the burden imposed on women by their traditional role in providing food, fuel and water for the household; increased participation of women in decision-making and management of development activities; and more attention to women's special needs in health, social services and education, as well as their contribution to promoting the health and wellbeing of children" (UNICEF, 1985)

Women are key to improving food security. They are already intimately involved in the many production and consumption related activities that together contribute to household food security. But much needs to be done to assure their access to and control over resources, to alleviate the constraints they face, and to enhance their roles as the main producers and providers of food for the family. Policy and project interventions must seek to open up the "closed system in which time and energy devoted to any new effort must be diverted from women's other activities" (McGuire and Popkin, 1988).

Alleviating women's time constraints is the single most important area for attention since it will allow women to take advantage of new resources and opportunities that may have direct links to their ability to assure household food security. Allowing women time to rest or to invest in themselves can also improve their nutritional and health status. Some interventions can target the time issue directly. For example, appropriate technology can decrease the amount of time required to perform a certain task. Other interventions can help women increase their output in a given amount of time, thereby freeing them for other activities. It is likely that a combination of complementary interventions that address the multiplicity of women's household and market roles will be most effective. All of these imply increasing women's productivity by facilitating their access to productive services, resources and opportunities.

1. Improving access to agricultural and nutrition extension information

Women's roles as farmers and as providers of food for the family can be enhanced by seeking ways to improve their access to information. This involves both the process of reaching women with information and the content of the information itself. The extension system has a critical and potentially powerful role in this regard.

The extension system in Kenya already shows promise in terms of its outreach to women farmers. Women contact farmers, wives of male contact farmers

-- The selection of contact farmers should be based on farming capacity and responsibility, thereby paving the way for more women to be selected as contact farmers.

-- Contact farmers should include more farmers from among the poor, particularly poor women.

-- Agents should continue to seek out and work with women's groups since they effectively operate as a composite contact farmer. However, efforts should be made to hold some group meetings on the farms of poorer women.

Other ways to increase women's access to information must be also be used in order to achieve the greatest impact. Agricultural and nutritional information can be extended using alternative channels of communication:

-- Traditional community structures of communication such as local "barazas" can be used as fora for extension agents, although efforts will need to be made to ensure that women are included in these meetings. The location of a posho mill operation could be a logical place to meet with women since they gather there for grinding maize.

-- Stronger links should be forged between the Ministries of Agriculture and Education in order to broaden the knowledge base. An impact can also be made through children by imparting agricultural information to them in the formal educational system.

-- Agricultural information should also be provided in pamphlets and leaflets and by radio.

-- Existing groups should be strengthened so as to be more able to undertake productive activities.

Bridging the gap between process and substance is the issue of how to deal with nutrition/home economics information in the context of the whole extension system. Originally envisaged to be an integral part of the T&V system, efforts are now being made to separate out home economics extension from agricultural extension. Although there is understandable dissatisfaction with how home economics has been handled within the T&V system, the potential for marginalization appears even greater if a separate system is indeed established and implemented. In addition, the costs of setting up a parallel system could pose problems for already strained budgets. Issues such as the time spent on home economics subjects in the fortnightly meetings, the relevance of particular home economics messages, lack of proper training and transportation and infrastructure should be dealt with in an integrated manner.

The content of the extension system, i.e. the actual information that is extended to farmers, can greatly influence women's ability to assure household

The content of the extension system, i.e. the actual information that is extended to farmers, can greatly influence women's ability to assure household level food security. This, in turn, is directly linked to the priorities and capabilities of the research system. The research agenda should be expanded to include more information on the farming system as a whole and on men's and women's complementary or conflicting roles as well as their constraints within this system. Topics to be covered might include the following: how adoption rates differ for men and women and among different socioeconomic groups; which incentives are appropriate for different groups; how can messages best deal with labor and land constraints; and how improved access to resources affects productivity among different groups and individuals. Technical packages relevant to women farmers and to both agricultural and nutritional issues must also receive priority in research and extension. These include attention to fruits and vegetables, as well as to drought-resistant crops such as millet and sorghum (World Bank, 1989).

The debate on the relative merits of and emphasis on food and non-food crops is complex, yet it is critical to Kenya's food security strategy. The extension system can help clarify the issues and ensure that the needs and constraints of women both in their role as farmers and as providers of food for the family are adequately addressed:

- The extension message should address both production and consumption issues, i.e. basic nutrition information can and should be provided by all agents, not just by home economics agents. Even if agents are providing information on cash crops, they should also address food and nutrition issues. Women should also be assisted in agroforestry activities since they have a direct link with food security and environmental issues.

- To the extent that farming households are relying on cash crops and not generating enough income to purchase staple foods, agents should stress the need for a balance between cash and food crops (particularly in the cash crop growing areas), and for diversification of crops. Companies promoting cash crops (particularly under a contractual basis) should require farm families to keep a certain portion of their land under food crop cultivation.

- The importance of kitchen gardens for domestic consumption as well as for sale should also be emphasized, along with the production and use of traditional, indigenous crops, many of which are drought-resistant. The cultivation of medicinal plants should also be encouraged. Women's knowledge in these areas should be tapped.

Although not dealt with in this paper, the critical links between

nutrition and health must also be addressed within the context of the extension system.

2. Improving access to technology

Alleviating women's time constraints could have a significant positive impact on household food security. By making women's basic needs more accessible and by relieving them of arduous and time consuming tasks such as water and firewood collecting, labor saving technology could allow women more time on activities that are directly related to food security in addition to providing them more "leisure" time.

Such technologies must take into account women's priorities and constraints. They should not be too costly and should be accompanied by the necessary training for operation and maintenance. Posho mills (for grinding maize and other cereals) have proven to be an important time-saving service for rural women. Having access to such a mill within a reasonable distance from the home can release women's time and energy expenditures for more productive activities.

The extent to which posho mills provide income to individual women within a woman's group operating a mill depends on a number of factors including operating costs, competition from other mills in the same catchment area, and the number of women in the group. Women within the group stand to benefit more if they themselves learn how to operate the mill and to undertake the necessary bookkeeping/accounting functions. In addition, a careful assessment of the market, i.e. of other mills within the same catchment area, is critical to the profitability of the enterprise.

Continued emphasis on improving rural water supplies will contribute to household food security and yield substantial benefits for women and their families. Such efforts should be based on community involvement (particularly that of women) and on technologies that are appropriate in terms of scale, cost, maintenance and skill requirements. For example, hand-dug wells, hand-pumps, roof catchment systems, subsurface dams and small gravity piping systems are likely to be more feasible for village level operation and maintenance (GOK and UNICEF, 1988).

Since the development of water sources can provide substantial benefits in terms of time savings, efforts should be made to capitalize on these savings by supporting complementary training and income-earning opportunities for women. For example, women could use increased water supplies for small vegetable and cash crop plots and for small livestock activities (World Bank, 1989). The skills learned by women in conjunction with water supply management or maintenance could also be important for other income-generation activities.

3. Improving access to credit

Women still face a number of barriers to getting access to credit. Of particular significance is women's lack of legally-owned assets such as land to

use as collateral. Joint title between husbands and wives or legally recognized user rights could expand women's access to formal credit that requires land as collateral. Other efforts include trying to shift from land title-based collateral to group lending as a means of pooling resources for collateral and sharing both the risks and benefits of borrowing; incorporating the advantages of informal credit systems into more formal schemes (innovative collateral requirements, reduced paperwork, female administrators); and broader dissemination of information about credit facilities (World Bank, 1989; African Development and Economic Consultants, 1986).

The Government of Kenya has expressed interest in the group approach modeled along the lines of the Grameen Bank in Bangladesh. Under this scheme, small amounts of money are lent to individuals (who are assetless) within groups. The group members discuss the potential loan and are able to borrow in turn. This program currently has a 95 percent repayment rate (World Bank, 1989). This kind of approach that does not require land title as collateral, but instead relies on peer support and emphasizes group members' ability to pay could be undertaken through local cooperatives, banks and other financial institutions (World Bank, 1989).

Although still going through some troubled start-up times and aimed primarily at urban women who are already engaged in business enterprises, the Kenya Women's Finance Trust (KWFT) is attempting to reach women by guaranteeing loans to them through other banks. Eventually, these services may be more available to poorer women in rural areas.

4. Improving access to and control over income

The "nutritional-efficiency of resources in the household" depends on a number of inter-related factors including income control and the allocation of resources within the household (McGuire and Popkin, 1988). Because of women's predominant role in providing food for the family, their access to and control over income is critical to their roles in assuring household food security. In addition to the fact that women's income tends to be spent along more nutritionally-advantageous lines, women's increased participation in income-producing activities can improve their influence and stature within the household.

The issue of control over income is a delicate one since it is often related to access to land and can impinge upon deep-seated cultural mores and traditions. But it has been shown that the ability to control income affects peoples' willingness to provide labor input and be more productive (Collier, 1989). This has significance for women who have a critical role in feeding the family and assuring household level food security. For example, in certain out-grower cash crop areas, where the bulk of income is derived from those crops, but where the income is controlled by men and perceived as men's income, companies should be encouraged to list the contract in both the husband's and wife's name. This might allow women to have at least some control over the income and a greater say about expenditures and therefore on nurturing activities which have an observable nutritional benefit (Kennedy, 1988).

According to a recent employment study, rural non-farm employment will be the largest single source of additional employment for the foreseeable future (World Bank, 1988b). As noted above, rural women presently have limited off-farm income-earning opportunities. Their main sources of income are derived from the farm and other household-based activities involving food processing and petty trade. In this regard, improvements in agricultural productivity (strongly influenced by access to services and resources) will continue to play a major role in increasing incomes. It will be important, however, for women to be able to participate in the non-farm growth sector. Labor-saving technologies to help alleviate some of their work burden can contribute to women's ability to engage in remunerative off-farm activities. In addition, if the employment possibilities and incomes of women are to improve on a continuous basis, short-term solutions based on the development and dissemination of new technologies must be complemented by longer-term policies to increase women's access to training, credit and other resources.

Special attention needs to be paid to increasing the economic viability of women's groups since many group income-earning activities are being supported and few have shown themselves to be financially strong. Better market feasibility studies and supportive management and technical training are essential elements to making these projects truly income-generating. The proposed activities need to be carefully assessed as to the marketability of the products, and the technical and administrative skills requirements. To the extent that poorer women, including female heads of household and landless women, are currently under-represented in women's groups, public and private development agencies who are funding such groups should make efforts to identify such women and encourage their participation. In addition, however, individual women also need to be targetted for training and employment opportunities.

The continued development and dissemination to producers of improved technologies and methods in food processing, storage, and preservation (charcoal refrigerators, solar drying equipment, improved stoves) could open up new income-earning opportunities for women (in addition to having a beneficial nutritional impact). The cultivation of existing or new high value horticultural crops (if market feasibility studies supported such cultivation) could be enhanced by such developments. Many areas already grow fruits and vegetables which are plentiful at harvest time. There exists a potentially large international market for dried products such as mango, banana chips and coconut (Monsted and Riunge, 1987). A better dissemination of the technical information by public or private agencies, perhaps in conjunction with the establishment of an appropriate technology center, in addition to the development or expansion of distribution channels will be necessary to reach this potential.

Assisting women to market their produce is an essential part of their motivation to produce a greater diversity and quantity of agricultural goods and their ability to earn income. At present, women's involvement in marketing is limited to a small geographical area. The lack of coordination in marketing efforts often leads to a situation where different groups of women are in competition with each other in trying to market their goods to the same local market. The development of marketing cooperatives and/or women's increased participation in existing cooperatives could help them better organize their

efforts and take advantage of economies of scale. Improvements in the marketing infrastructure and transportation system in addition to relevant agricultural extension information are also essential elements to improving women's ability and willingness to produce and market their output.

There are also other activities that women are already involved in, but whose income-earning potential could be expanded and improved. Tailoring and knitting projects are often tied to the local market and have proven to be generally successful in terms of employment creation. However, it has been found, within women's groups in particular, that skills are lacking and that market outlets are limited. The lack of access to markets means that the work remains seasonal and the machines are underutilized (Monsted and Riunge, 1987). If more emphasis was placed on training in sewing, cutting, knitting and marketing, then the women would develop better skills, have higher quality products and a better chance at earning a more remunerative income. In addition, more emphasis should be placed on identifying potential new market outlets.

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