World Bank Discussion Papers

Household Food Security and the Role of Women

J. Price Gittinger
with the collaboration of
Sidney Chernick
Nadine R. Horenstein
Katrine Saito
# Recent World Bank Discussion Papers

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Household Food Security and the Role of Women

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This pamphlet reports on the Symposium on Household Food Security and the Role of Women in Kadoma, Zimbabwe, January 21 through 24, 1990. The Symposium was organized by the Women in Development Division of the World Bank and the Training Unit of the African Development Bank in collaboration with the Government of Netherlands Ministry of Foreign Affairs and Development Cooperation. Funding and guidance were also provided by the Canadian International Development Agency and the Economic Development Institute of the World Bank. The host was the Honorable Herbert Ushewokunze, Minister of State for Political Affairs, Government of Zimbabwe. The Symposium Co-Directors were Katrine Saito, Senior Economist, Women in Development Division, World Bank; and Kweku Andah, Director, Training Unit, African Development Bank. Amon Nikoi, formerly Minister of Finance, Government of Ghana, was the moderator. Sidney Chernick was Symposium Advisor and Nadine R. Horenstein helped in the design and organization of the Symposium.

Members of the Symposium participated in plenary discussions, heard major paper presentations, listened to panels, took part in a case study, and worked in small groups to formulate policy and program recommendations. The two major papers presented to the Symposium were Household Food Security and the Role of Women: The Economic Policy Setting by Paul Collier, Unit for the Study of African Economies, Oxford University; and Household Food Security and the Role of Women by Misrak Elias, Regional Advisor, Women’s Economic Activities and Integration, UNICEF. This pamphlet draws liberally from the members' deliberations and the papers presented without further attribution. It is an interpretation of the discussions and presentations, not a proceedings.

This report does not necessarily reflect the views of the sponsoring organizations but those of the Symposium. The report benefited from comments of Barbara Herz, Josette Murphy and Maurizia Tovo. Virginia de Haven Hitchcock edited the report, and Maria Abundo prepared the text for publication.

A collection of papers has been published separately. See List of Documents.

The photographs are courtesy of Curt Carnemark, Nicola de Palma, and the World Bank photo library.
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"Women produce nearly three-quarters of all food grown in Africa."

"Africa's food situation is precarious. One-quarter of Africa's population - 100 million people - do not have access to sufficient food at all times to ensure an active, healthy life."

The Honorable Herbert Ushewokunze
Minister of State for Political Affairs, Government of Zimbabwe
In opening remarks to the Symposium
Women carrying goods to market in West Africa (C. Camemark)
Prologue

Improving household food security in Africa means focusing on the role of women because they play a critical role as food producers and as income earners for their families. Unless the production and productivity of these women is increased, efforts to improve household food security in Africa will not succeed.

In turn, increasing production and productivity of women farmers and entrepreneurs means removing the obstacles they face in doing their work, and improving their access to resources and information so that they can help themselves. In short, women must not be marginalized, but must be brought into the mainstream of economic and social life so that they can use fully their productive capacity and contribute more to the welfare of their families and nation.

To come to grips with this problem, 47 senior African policymakers, program administrators, academic specialists, and staff of international agencies gathered together for the Symposium on Household Food Security and the Role of Women in Kadoma, Zimbabwe, in January 1990. The Symposium’s objectives were:

- To help promote a better understanding of the key issues pertaining to the issue of household food security and the role of women.
- To exchange practical experiences in dealing with these issues among the various participants.
- To identify appropriate policies and programs that could be implemented in specific countries and supported by the international community.

In overview presentations, panel discussions and structured working groups, the symposium participants focused on the constraints that women face and the practical measures to reduce them. Among the issues addressed were nutrition programs for low-income households, and women’s access to credit, extension advice and technology.

The symposium participants were drawn from seven countries in East and Southern Africa--Botswana, Ethiopia, Kenya, Malawi, Tanzania, Uganda and Zimbabwe--but the issues discussed and recommendations made could apply to any African country. The key is to recognize that women are an integral part of the solution to increasing agricultural productivity and household food security.
Planting groundnuts at a seed multiplication farm in Nigeria (World Bank)
Work Women Do

It is now well-known that the African farmer is usually a woman; women produce nearly three-quarters of all food grown in Africa. Unfortunately, this recognition has yet to be translated into concrete policies and programs that would promote a more equitable distribution of resources, enhance women's productivity in agriculture, increase their ability to earn income from nonagricultural sources, and guarantee that each household member has an adequate supply of food throughout the year.

In many African societies women do all of the food processing, fetch most of the water and fuelwood, produce 70 percent of the food, handle 60 percent of the marketing, and do at least half of the tasks involved in storing food and raising animals. In addition they work extensively on cash crop production, laboring on other peoples' crops to earn much-needed cash for their families. They also do nonagricultural work to earn extra money and still find time to take an active role in community self-help activities.

Some policies of governments and development assistance agencies have actually increased the social and economic gap between women and men. By failing to recognize the central role of women as producers as well as household managers and thus ignoring their special needs because of these roles, development efforts have often misdirected resources to men.

As a result of cultural factors and bad policies, among the poor—who are the majority in all African countries—women tend to own the least property and goods, have the poorest nutritional status, and be the most overworked. The situation is even worse in households headed by women, because access to resources, including the labor of others, is even more limited.

With the increasing recognition of women's central role in the provision of household food security, many governments and development agencies are implementing programs that focus on women. This is a welcome development, but more effort is needed to incorporate women's special needs and concerns into ongoing programs.

Women's Agricultural Contribution

Women play a pivotal role in African agriculture. This is true not only of food production—long recognized as a women's activity—but also of other agricultural activities, such as cash cropping and livestock production. The International Labour Organization estimates that 78 percent of the women in Africa are active in agriculture compared with only 64 percent of the men. Since official government data have often seriously underestimated the number of women active in agriculture, the importance of increasing their production and productivity has not been fully recognized. For example, in Malawi official figures in 1972 reported that only 12 percent of women were active in agriculture. In 1977, after more careful examination of the data, that figure was raised to 52 percent—more than four times the number only five years before. The true proportion is likely to be even higher.
Along with a growing recognition of the importance of women in African agriculture, and thus their critical role in improving household food security, has come a realization that households headed by women are increasing throughout Africa. The number of farms managed by women is, in fact, growing rapidly. Women head one-third of the rural households in Malawi. In Kenya, the World Bank estimates at least 40 percent of small holdings are managed by women. More than half the rural households in the communal areas of Zimbabwe are headed by women.

**Women’s Nonagricultural Activities**

Since the agricultural crops produced by households rarely provide all the requirements of the family, cash income is necessary to meet the other basic needs. If a household produces more food crops than it can use, this surplus can be sold to provide cash. More often, however, African rural women must supplement household agricultural production with income earned through nonagricultural activities, such as keeping small animals or bees, making handicrafts, and brewing. For many households, and especially those headed by a woman, these are the main sources of income for food, shelter, clothing, school fees, and medical expenses. Because they operate at the lowest strata of the informal sector, however, most women are trapped in a vicious cycle of low income and low productivity despite long hours of toil.

Women face many problems in trying to earn extra income: lack of direct access to resources such as land, other capital, and credit; lack of opportunities to learn new skills and to acquire affordable technology; and limited access to markets for inputs, production, and sales. In addition, their daily schedule is so overloaded with all the traditional female chores—preparing food, fetching water and wood, and caring for children and elders—that it is often a struggle to find the time for other activities that provide extra income.

Governments, nongovernmental organizations, and development assistance agencies have undertaken many initiatives in Africa to support women’s efforts to earn more income. In most cases, however, these are small projects that are outside the mainstream of economic activities. What is really needed is to bring women’s economic activities on a par with other (men’s) economic activities. This is why efforts should focus on removing the obstacles faced by women rather than on setting up special programs for women.

**Women’s Household Tasks**

In addition to agricultural and nonagricultural activities, women traditionally have the central role in managing households and do most of the work needed for the household to function.

Women process and prepare all the food for the household. They grind or pound grain, fetch water and firewood, and cook the meals—all arduous and time-consuming activities. To save time and energy for activities that produce cash, women often reduce the frequency of cooking and increase the amount of food cooked each time. This, in
turn, has an adverse effect on the nutritional status of the family, especially small children who need more frequent feeding. It also increases the chance of spoilage.

Difficulties in preserving and storing food make things worse. This is particularly true of vegetables and fruits, which rural women have little opportunity to store for use in the dry seasons because they lack information and technology on how to store as well as the time during the harvest season to do so. Thus, for many weeks during the year, women are unable to provide the food needed to adequately feed themselves and their households.

Rural African women generally collect firewood for cooking. This task is becoming even more difficult because of deforestation and environmental degradation. Women have to walk increasingly long distances to find wood, and it is not uncommon for them to spend up to two hours a day collecting firewood. The scarcity of firewood and lack of alternative sources of energy compel women to reduce further their frequency of cooking, which directly reduces the level of household nutrition.

Many women spend another two hours a day fetching water for household use. In addition to the fact that this adds to women's work load, the lack of clean water affects the health of household members. Many development programs involving water approach it as a health issue and ignore the fact that women must carry most of the water themselves.

Women are the principal providers of care for household members, particularly children and elders. They are also responsible for caring for ill members of the household; most medical care in Africa is done in the home, principally by women.
Women grinding maize in Malawi (N. de Palma)
Constraints Women Face

Women face different constraints on their economic activities than do men. Four distinct underlying mechanisms account for this:

- The burden of reproduction
- Asymmetric rights and obligations within the household
- Different role models
- Women's limited access to resources and information.

These four factors largely account for the different allocation of labor between women and men. They also explain why women’s time tends to be confined to activities that produce lower returns and that cannot be easily shifted in response to changes in incentives. As a result, women are usually concentrated in food production and small-scale marketing and are substantially underrepresented in the public sector, private formal employment, and formal export agriculture.

The Burden of Reproduction

The physical demands of childbearing and breast-feeding strain health, and recent studies clearly show that women’s health goes through a trough in the child-rearing years.

This deterioration can be reversed, however, if women become involved in income-earning opportunities. Because child-rearing responsibilities limit the ability to continue formal employment, women become confined to economic activities in which the uncertainty of being able to work is relatively unimportant, such as microenterprises.

In addition, in the absence of birth control it is difficult for a household to plan for long-term investments, and therefore some of them may be postponed. There is evidence that certain investments may be discouraged if the mother is young, because of the possibility of an increase in family size. For example, in rural Kenya the most significant factor in explaining the decision to invest in private secondary education for children is the number of fertile years remaining to their mother. If the mother has several fertile years remaining, parents will be less likely to pay for their children’s secondary education, because of the need to keep money aside in case other children are born. Thus the probability of a child being sent to a private secondary school rises with the age of the mother at the time the decision is made; but when the mother reaches age 44, there is no further increase in probability. This suggests that the adoption of birth control would have a rapid and powerful effect on the capacity of households to undertake longer-term investments in education, and, hence, to raise their incomes in the long run.

Asymmetric Rights and Obligations within the Household

In rural Africa, women are expected to grow subsistence food crops, to weed all crops, to gather fuel and water, to cook, and to rear children. In return, men provide cash for the household and usually are responsible for the allocation of land. This pattern of reciprocal obligations often is unequal in the sense that women’s obligations are more
time-consuming than men's. As a result, women generally have to work considerably more hours than men. Part of this work is on men's crops, that is, crops for which men control the profits. Thus women must work without knowing for certain whether they will get something out of it for themselves or their children.

One of the consequences of this arrangement is that women have less time for other activities, including those that could provide income. Another is that they have little incentive to do a good job. For example, in Kenya women are responsible for weeding maize. There are two weedings a season, and each weeding significantly raises yields. However, one study showed that while in households headed by women these weedings raised yields by 56 percent, in households headed by men the yield increased only 15 percent. The most likely explanation is that in households headed by men, women had little incentive to do a thorough job, because they would gain nothing for their time and effort. On a national scale this disincentive effect is about equal to the gain in yield from applying phosphate and nitrogen fertilizers.

Different Role Models

Another mechanism is the different directions in which the tendency to imitate role models attracts men and women. To be influenced by what other people do, especially those we admire, is a universal feature of human behavior. It is a key way in which innovations spread through the population, but it is also a reason for the lasting of traditions. Role models tend to be gender specific: girls copy women and boys copy men. For example, in urban Côte d'Ivoire, people were much more likely to enter formal wage employment if their parents had done so. However, girls were not influenced by their father's occupation nor boys by their mother's; each copied only the parent of the same gender. This implies that if some new economic opportunity is initially taken up by men, it may be automatically diffused to other men but not to women.

Women's Limited Access to Resources and Information

Women often encounter discrimination outside the household, which limits their access to resources and information. Unlike the other constraints faced by women, which may be deeply embedded in social custom, discrimination outside the household is something that policies and programs can help change.

Access to land

In most African countries the legal system and traditional practices give ownership and control of land to men. Women's access to land is mostly through their husbands, sons, or male relatives. Both households and governments give priority to cash crops such as coffee, tea, or cotton. The best land is used to produce these crops, leaving only the poorest land to women for subsistence food crops. Thus mechanization and cash crop production have increasingly marginalized food crops and, in turn, the status of women.

Women's traditional role in food production has been further undermined by
policies that keep food prices low for urban dwellers. In many countries women have
turned their attention to household gardens where they raise vegetables and small
animals—that is, to activities and income sources that they can control.

Access to credit

To expand their economic activities and earn more money to support their families,
women need access to more resources. If there is a well-functioning credit market, an
investment can be financed through borrowing. When financial markets are rudimentary,
however, there will be less intermediation, and a person will have to save the money
needed for investment. Because women usually have less income than men, it will be
harder for them to save enough for a particular investment.

Even where credit is available, access requires collateral—either assets or
reputation. Women’s limited autonomy implies that they control far fewer marketable
assets and thus may lack the opportunity to build independent reputations for
creditworthiness. Even public credit programs depend to a large extent on physical
collateral and so are heavily biased toward male heads of households. A symptom of
women’s difficulties in obtaining private savings and credit is that informal savings clubs
seem to be predominantly made up of women. Such clubs are likely to be formed in
response to women’s lack of access to formal credit.

Public limitation of interest rates in the private sector tends to reduce the incentive
to invest in savings accounts and thus reduces the mobilization of savings by the banking
system. This, in turn, reduces the availability of credit, and thus those with relatively poor
creditworthiness—disproportionately women—tend to be squeezed out of the credit
market.

Finally, governments have typically imposed high implicit taxation on savings,
because deficit financing usually results in an inflation tax. This tax, in turn, falls
disproportionately on those who must rely on cash savings rather than the credit market
to finance their investments, and women are precisely in that position.

Access to education and agricultural extension services

Entry into activities that provide higher returns depends on dissemination of
information about such opportunities and on well-functioning labor and capital markets.
One of the main sources of information is formal education. There is evidence that better
educated farmers are more likely to enter into export agriculture because education
appears to increase the ability and willingness to reallocate resources efficiently when
prices or technology change. In rural Africa, because women have significantly less
education than men and constitute the majority of agricultural labor, this educational bias
seriously inhibits the pace of development.

Within the agricultural sector, information about new techniques is spread through
both public extension services and private imitation. Recent work indicates that the
imitation process is very powerful. For example, among contiguous groups of 200
households in Kenya, on average every two households that began to grow coffee induced a third household to follow suit. Moreover, as discussed earlier, in the formal labor market there is evidence that this imitation process is gender specific: men copy men and women copy women. It is logical, but not certain, that this also applies to agriculture; if it does, then households headed by women have a lower likelihood of entering sectors in which they were initially underrepresented.

Agricultural extension services in many African countries still design their programs as if all farmers were men. This is because of the erroneous belief that men are the main decision-makers in agriculture. It also reflects the fact that the extension service is overwhelmingly staffed by men. As a result male agricultural extension agents tend to provide production information to male farmers, while female home economics extension agents, who target women, concentrate more on subjects such as food processing and crafts. Women extension agents also generally have lower status, less influence in the extension service hierarchy, and less logistical support—particularly transport—to perform their services.

The design, timing, and location of training programs do not consider women’s agricultural roles or their multiple responsibilities for food processing and storage and caretaking within the family. Frequently, farmer training centers do not have facilities for women and their children and do not address the need for childcare. Overall, the timing and location of programs must take account of women’s multiple roles and responsibilities, particularly the severe constraints on their time and mobility.

**Availability of appropriate agricultural technology**

Even if the agricultural extension service puts more emphasis on reaching women farmers, it may lack the appropriate technology to recommend. The technological improvements in agricultural production are mostly intended to improve cash crop production, which traditionally provides no benefits for women, even though they may provide some of the labor. Furthermore, most of the technical improvements are geared to tasks largely performed by men, such as plowing rather than weeding. When technological innovations do address women’s tasks and make them more profitable, men often take them over. This was exactly what happened when pump irrigation was introduced for rice production in West Africa.
Introducing Technologies: The Risks

The introduction of agricultural technologies is critical for improving agricultural productivity but it may have a mixed impact on women. Designed to increase output, they have often unintentionally increased women’s workloads, and increased demand for women’s labor without additional compensation. Some examples are as follows:

(a) Experience with the partial mechanization of agriculture through the introduction of cash crops with more mechanization has shown that cash crops are often taken up more quickly by men. This may be due to women’s poorer access to information and credit as well as cultural traditions. The effect, however, is that the more onerous requirements for complementary labor, which often result from related tasks, tend to fall to women.

(b) Experience with the introduction of ploughing (traditionally men’s work in many areas) leads to increased land under cultivation but also requires more non-mechanized transplanting and weeding (traditionally women’s work). As the experience in rice production efforts in the Cameroon has shown, women may, in fact, not increase their labor as required for increased production if they do not directly control the income generated, and may even withhold some labor. However, if improvements to “men’s crops” mean increases in family income spent in ways to improve family welfare, then women may feel that the benefits outweigh the loss of direct control over income derived from their individual farm activities.

(c) Experience has demonstrated that mechanization often displaces farm women who -- like any poor and unskilled group -- suffer “technological unemployment” when traditional lines of women’s work are replaced by new and less labor-intensive approaches. Weaker qualifications for new kinds of work because of poor education and training may have the effect of slowing the introduction of needed new technologies because they inadvertently, but directly, threaten the most destitute women and their families.

(d) Experience with the introduction of inputs that require additional labor inputs can, in fact, result in decreased available income because of the need to hire additional labor. The additional labor necessary to collect more water when fertilizer is used can also cause a decrease in disposable income since less time is available to devote to crops or livestock managed by women, which traditionally represent an independent source or income for women. In addition, inputs which increase female labor requirements that strain the time allocations between productive labor and domestic labor can deter women farmers from their use.
Woman examining her corn in the Lilongwe Land Development scheme in Malawi (World Bank)
Household Strategies to Improve Food Security

In addition to the constraints rural African women face in trying to meet the needs of their households, they must face a risky economic environment. This environment can produce shocks that cause the household's supply of food to fluctuate and lead to food insecurity.

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<td>Food insecurity arises from variations in the amount of food provided by the work and wealth of the household. The level of food consumption can vary because of shocks in work, in production, or in assets. The shock can be a change in the quantity available or a change in the price.</td>
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<tr>
<td>Work shocks</td>
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<tr>
<td>The quantity of work the household can perform may change abruptly; for example, illness may reduce labor supply at harvest, or a household wage earner may lose a job and be unable find another rapidly.</td>
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<tr>
<td>The wage rate the household gets for the labor it sells on the market may suddenly fall.</td>
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<td>Output shocks</td>
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<td>The quantity of output produced by a given quantity of work may abruptly fall, as might happen when rains fail after planting.</td>
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<tr>
<td>The price of an output may abruptly fall, for example, because of a fall in world prices or a rise in taxation.</td>
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<tr>
<td>Food shocks</td>
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<tr>
<td>Food may become unavailable or only sporadically available in the market.</td>
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<tr>
<td>The price of food may abruptly rise, because of rapid inflation, abolition of price controls, or devaluation.</td>
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<tr>
<td>Asset shocks</td>
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<tr>
<td>There may be a sudden fall in the quantity of assets; for example, the death of livestock may represent such a large loss to the household that consumption must be drastically curtailed.</td>
</tr>
<tr>
<td>The price of assets may suddenly fall; for example, during a drought when many households are trying to sell livestock or when a sudden rise in inflation reduces the real value of money held by the household.</td>
</tr>
</tbody>
</table>

There are basically three strategies that households---and the women who generally manage them---can adopt to cope with food insecurity: raise the level of income, vary assets to smooth consumption, and change the structure of income. No single strategy dominates the others. However, because some strategies improve security but cause average income to fall substantially, they will be avoided if households have better alternatives.
Raising the Level of Income

For a given variability of income, the higher the income is on average, the lower the risk that income will fall below the level necessary to ensure an adequate level of food consumption. This is obvious but important because it implies that in many cases the problem of food insecurity does not need to be separately addressed but can be solved in the process of raising incomes. As development raises incomes, the core problem of food insecurity gradually changes from being one of overcoming long-term poverty to one of riding out short-term adverse economic shocks.

Varying Assets to Smooth Consumption

For given fluctuations in income, food consumption can be stabilized through changes in assets and debts. Hence, the more liquid assets the household has and the better its access to credit, the safer it is.

Changing the Structure of Income

The typical household can generate income many different ways. One factor is how much the household participates in markets. At one extreme the household might function purely at the subsistence level; at the other it may sell all its production and purchase all its food. Another factor is the range of activities in which the household is engaged. At one extreme it might be completely specialized and get its income all from one source; at the other it may have many different agricultural activities as well as nonagricultural sources of income, including household members who work at other locations. The economic structure that provides the least risk is the outcome of four distinct considerations: diversification, skewing, matching, and limiting input parsimony.

Diversification

For a given expected income, diversified income sources will reduce fluctuations as long as the incomes from the different activities do not all vary in the same direction at the same time.

<table>
<thead>
<tr>
<th>More Activities Produce More Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>About 5 percent of rural households in Zimbabwe have subsistence food production as their only identifiable source of income. They are far poorer than any other group. Households that have managed to add another activity, such as generating income from livestock, have more than doubled their income. Households that have begun to produce market crops have more than tripled their income. Households that combine all three activities—subsistence crops plus livestock plus marketed crops—have more than five times the income of those in pure subsistence farming.</td>
</tr>
<tr>
<td>Households that are able to add nonfarm self-employment to these three activities raise their income by a further 40 percent. If they add migration and remittances of a household member, they nearly double their income.</td>
</tr>
</tbody>
</table>
Even if all the activities are somewhat risky, as long as the risks are at least partially independent of each other, the household increases its safety by undertaking more activities. Thus growing maize on one plot may be viewed as a distinct activity from growing maize on another plot some distance away if, because of this distance, disease or bird damage will be substantially different on the two plots.

Skewing

Not all activities are equally risky, however. Hence a household may reduce the fluctuation in its income by skewing its resources away from high-risk activities. But it usually will be best to limit skewing so that the household retains at least a few high-risk activities, although at a diminished level. Some exposure to high-risk activities will actually reduce overall risk as long as the incomes from high-risk activities do not all vary in the same direction at the same time.

Matching

If a household does not produce any of the food it consumes, it is subject to price risks arising from a sudden increase in the price of food it buys or a sudden fall in price of the output it sells. Thus the household can reduce its exposure to price risks by matching its production structure more closely to its consumption structure, that is, by producing more of the food it consumes. A second reason for matching is that it avoids transaction costs. Often in Africa the spreads between the farmgate and export prices of crops and between urban and rural prices of consumer goods are very wide. This is partly because transport costs are frequently high, reflecting poor infrastructure, and partly because marketing channels are frequently uncompetitive, resulting from the fact that in any village or small locality only a very few will buy export crops or sell food. A third reason for matching is that food is stored by the household instead of by centralized agencies, and there is probably more scope for the government to reduce storage costs at the household level than through promoting centralized pest-resistant facilities. When food-crop marketing agencies are given privileged access to bank borrowing at negative real interest rates, they can store food for later sale (even to producers) at a relatively low cost so that matching is discouraged, and the result is socially costly.

Input parsimony

Generally, for a given expected net income, the more inputs the household uses, the more it is exposed to risk. This might happen when fertilizer is applied, but the rains fail. Hence the household can reduce fluctuations in net income by restricting the use of inputs. There is an important exception, however, because some inputs reduce the variation in output. For example, spraying for coffee berry disease does not raise maximum output, but it does raise the minimum output.

The Cost of Strategies to Vulnerable Groups

Generally, these strategies have some cost. Holding assets in a liquid form will
usually involve a lower return. Input parsimony and skewing will reduce expected income. Diversification, skewing, matching, and input parsimony will generally conflict. For example, the household that aims to be self-sufficient in food, thus avoiding price risk, may be so heavily oriented to food production that it is excessively exposed to quantity risk. There will be some ideal balance among the various strategies, which will differ for each household.

A household may be especially vulnerable to food insecurity if it has an unusually high incidence of the various kinds of risk or if it has an unusually high cost of achieving security. On the whole, price risks do not differ, and all households face the same prices. However, the quantity risks vary substantially between households and between persons. For example, in both Kenya and Tanzania women between the ages of 16 and 49 are too ill to work for twice as many days as men, whereas there is no such difference for other age groups. Government policy should thus aim to improve the health of women because this contributes significantly to increasing household food security.

The most important difference between households is the ability to use these strategies to cope with food insecurity. Vulnerable groups will have the same three characteristics that the strategies are meant to overcome: low income, few liquid assets, and few options to adopt a risk-minimizing structure of income.

There is a strong relation between household income and the range of activities in which the household participates. To a considerable extent, a rural household increases its income by gradually accumulating more remunerative activities. Households that stay poor are the ones unable to overcome the barriers to entering these activities—whether they be financial, informational, or institutional. Households headed by women tend to be especially disadvantaged in their capacity to overcome such barriers and so are more likely to be poor.

The lower the value of liquid assets a household possesses, the less able it is to smooth consumption by selling assets in bad times or by borrowing against them as collateral. Households with few liquid assets typically have no livestock or secure title to land. Both these characteristics tend to describe female-headed households.

Vulnerable households also tend to be insufficiently diversified. This is illustrated by survey data from Zimbabwe. During 1983 there was an incipient problem of food insecurity in Zimbabwe, and the government very effectively avoided severe hardship by distributing famine relief to households perceived to be in hardship. Among households with roughly comparable incomes, three characteristics were found significantly to reduce the likelihood a household would need famine relief; two of these illustrate the importance of asset-based strategies. First, access to credit, either because of collateral or reputation, reduced the likelihood of needing food aid by three-quarters. Second, in otherwise identical households, ownership of livestock reduced the likelihood of needing food aid by nearly a third. The third significant influence on reducing the need for food aid was the degree of diversification of activities, with the most vulnerable households heavily reliant on subsistence for their income.
Furthermore, households that are unable to diversify, and thereby reduce risk and raise income at the same time, must resort to strategies that reduce risk but also reduce income. The most extreme example of this is the household that is confined to a single low-return activity---usually subsistence food production---and can do nothing else but limit inputs. Using fewer inputs reduces risk, but it also lowers yield. The household reduces its insecurity, but it locks itself into a low income and continues to be excessively vulnerable.
Weaving for the market in Madagascar (N. de Palma)
Public Policies to Increase Household Food Security

Because all efforts to increase household food security and to reduce inequitable burdens on women take place in the context of macroeconomic policies, there are policy measures that governments can adopt to improve the situation.

Macro Policies to Enhance Women’s Economic Activities

Many governments in Africa are undertaking structural adjustment programs, which put substantial emphasis on cash cropping for export or for import substitution. Thus the results of research into the effect of cash cropping on household food security and on women are extremely important.

In the early 1980s the International Food Policy Research Institute did a series of studies on the effects of the commercialization of agriculture---or cash cropping---on household income, household expenditure, and agricultural production, as well as on the individuals within the households. Five similar studies were conducted in The Gambia, Guatemala, Kenya, Philippines, and Rwanda.

Results from each of the case studies showed that the incomes of the households participating in the cash cropping schemes increased significantly compared with the non-cash-cropping households. A part of this incremental income was spent on additional food for the household, but the improvement was less than proportional to the increase in income. This occurred despite the fact that almost all the households were consuming fewer calories than the number needed to provide adequate nutrition.

The data from Kenya were used to study the effect of sugarcane production on women’s income, on how they allocated their time (including time spent on sugarcane production), and on their health and nutritional status. The results showed that households that produced sugarcane had higher incomes than similar households that did not produce sugarcane. Absolute incomes of women were higher in sugar-producing households regardless of whether the household was headed by a man or a woman because women were able to diversify their income sources. However, the proportion of income controlled by women was higher in households that were headed by women but that did not produce sugar. Interestingly, households headed by women earned a higher income from sugarcane production than did households headed by men. Both absolute household income and the proportion of that income controlled by women are important for ensuring household food security.

In addition, the cash cropping studies show that the income controlled by women is more likely to be spent for food than the income controlled by men. This conclusion is supported by the data from Kenya, which indicated that children from households headed by women were less likely to be moderately or severely malnourished than children from households headed by men because a greater proportion of incremental household calories was allocated to preschool children.

The surveys indicated that women spend virtually no time in sugarcane production
because sugarcane is perceived to be a men's crop, and women are not compensated for time spent working on sugarcane. However, women in sugarcane-producing households and those in households that did not produce cane spent the same amount of time on other agricultural activities.

Contrary to what might have been expected, the health and nutritional status of women in Kenya did not improve as household income increased. Increased household income was not associated with a decrease in women's illness because the incremental income was spent on a mix of goods and services that did not lessen women's morbidity. This may be in part explained by the fact that the increased income was controlled by men and because women may not have access to or perceive the benefits of health care which could reduce morbidity. More curious was the fact that as income controlled by women increased, their nutritional status declined slightly. It was discovered that most of the additional income was generated from very energy-intensive activities, such as weeding, and that the increased expenditure of energy was not compensated for by the increase in caloric intake.

Three lessons emerge from these data:

There is a very close link between macroeconomic policies and their effects at the household level. For example, in the Kenya case study, the increased income associated with cash-cropping was due in large part to the government's pricing policy on sugarcane. If this policy were to change, the micro-level effects would very likely also be different. In order to understand the determinants of household food security, it is crucial to understand the links between the macro and micro levels.

Increments in income from cash-cropping made a statistically significant but modest contribution to reducing hunger in each of the case study areas. However, increased income by itself was less successful in alleviating malnutrition. To have dramatic effects on the nutritional status of individuals---at least in the short term---programs to increase agricultural production must be linked to programs to improve household nutrition.

Agricultural policies and programs will not have positive effects on women unless women are specifically incorporated into the planning and implementation of schemes to generate income. Planners need to look at the range of policies pursued by governments and attempt to assess the effects of these policies on households and on the women in these households. Based on this assessment, positive effects can be enhanced and negative ones reduced.

Policies That Directly Increase Household Food Security

Macroeconomic policies aimed directly at improving household food security should try to improve the ability of vulnerable households to adopt risk-reducing strategies rather than try to reduce price fluctuations or to increase job security.
Enabling households to adopt risk-reducing strategies

Government policy can help vulnerable households reduce their risks by increasing their capacity to hold more liquid income, to raise their incomes, and to alter the structure of their income.

The obvious liquid assets for households to hold are financial. Financial assets have the enormous advantage of being socially costless. Since financial assets are just a network of offsetting claims and liabilities, they do not use up real resources. Of course it takes time for poor households to put aside enough money out of their earnings, but even very low savings rates of 2 or 3 percent of income would, over a decade, leave them in a radically more secure position. The government can encourage savings by tax policy and by institution building. In parts of Africa much government expenditure has been financed by the inflation tax, which is a tax on savings. In turn, savings have often been the only financial asset available to poor people in rural areas. The government can encourage development of a rural banking system that offers a range of appropriate savings instruments with after-tax positive real rates of return.

Governments can also help vulnerable households expand into higher-return activities through carefully designed policy measures. In Kenya, for example, tea is the most important export activity with potential for expansion because it is not subject to international quotas. Yet the ability of vulnerable households—especially those headed by women—to add tea production to their income-generating activities is severely restricted; households headed by women have only half the propensity to adopt tea enterprises as those headed by men. Since around 40 percent of rural households in Kenya are headed by women, this national diminished propensity is substantial. Further, the case of Kenyan tea is particularly revealing because most of the labor of tea picking is done by women. In households otherwise very similar, extra male labor has no effect on the likelihood of adopting tea, whereas an additional woman in an otherwise average household raises the propensity to adopt tea growing by around a quarter. Thus in Kenya the tea sector is characterized by three apparently incompatible facts: women do most of the work on tea, households with more women are more likely to adopt the crop, and yet households headed by women are far less likely to do so.

Constraints that prevent households from restructuring their income also inhibit the economy from restructuring. Hence, policies to help vulnerable groups to overcome constraints improve the mobility of resources in the economy as a whole and thereby contribute to structural adjustment.

Reducing risks outside the household

In the past, the macroeconomic policies of many African governments to improve household food security have concentrated directly on reducing three kinds of risk: variations in crop prices through stabilization schemes, variations in consumer prices through price controls, and job loss through legal job security (for wages employees in the private sector) and subsidized unprofitable activities (for wage employees in the public
sector). None of these is a good use of resources.

Stabilizing crop prices has a long, unhappy history. Marketing boards were supposed to build up surpluses when world prices were high and then use these to subsidize domestic prices when world prices were low. In practice, however, two things happened. First, to cover their administrative costs, marketing board margins tended to become greater, the classic case being the cocoa board of Ghana. Second, revenue fluctuations tended to destabilize the government budget. In Kenya, for example, for every shilling of windfall revenue the government received, public expenditure increased by KSh 1.35. During the coffee boom of the late 1970s, however, Kenyan coffee growers saved around 70 percent of their windfall income. Hence, the poor farmers seemed to be able to handle the most common kind of large price shock rather well, whereas the government did not.

Price controls on consumer goods were used extensively in Tanzania until 1984, but they seemed to increase rather than decrease overall risk. By holding prices below the point at which supply would equal demand, they created acute excess demand and severely uncertain supply. People had to waste time searching or queuing for consumer goods---time that could have been used to generate more income.

Job security confers real benefits on those who have it, but this is paid for by those who do not, either in the form of taxes to finance the subsidy of public enterprises or the form of reduced employment opportunities when private firms restrict recruitment to provide job security. Because those with wage employment are the least vulnerable group in the society, these benefits are very poorly targeted.

Gathering Information for Policymaking and Program Design

To enable governments to better design macro policies to enhance women’s economic activities, a better information base is needed. This can be provided by modifying their current survey instruments, adding more household and micro-level studies, commissioning special studies, and seeking information from nongovernmental organizations and international agencies. In addition, a conscious effort is needed to ensure that this information is used to modify policies. An interministerial committee could regularly examine the effect of policies on low-income households and women, and a lead agency could be assigned to interpret this information for policymakers.

Accurate information about the status of women and about how policies and programs affect women plays an important role in efforts to increase household food security and to raise the incomes of low-income women. However, a framework is necessary to gather and analyze that information. Such a framework helps identify the roles of women and men and the different ways policies and programs affect them.

A framework can be useful to policymakers and project designers for several different reasons. First, it can help them identify factors that cause or contribute to specific cases of food insecurity or inequitable treatment of women and the relevant actors or decisionmakers in each area. Second, it can help design policy and program
interventions and identify the appropriate target population or participants. And, third, it can help screen policy or program interventions and their likely effect on individuals and households and help monitor the effects of changes.

One such information-gathering framework is organized around three separate aspects of household food security: food produced and consumed directly by the household, household income sources and expenditures, and the consumption and nutrition of household members. Within each aspect the factors affecting food security and the status of women fall into three areas of analysis: access to and control of resources, task and time allocation, and decisionmaking. The information analyzed in this framework could come from sectoral reports or from research at the household level.

The three aspects of analysis proposed by this framework highlight the elements amenable to policy or program interventions to improve household food security and the status of women. A strictly economic analysis will reveal factors affecting prices of inputs, outputs, and consumption. By treating the household as an undifferentiated unit, however, it will mask the roles of different decisionmakers and actors, the constraints they face, or their contribution to household and individual food security. Agriculture studies tend to focus on production, while health and nutrition studies may focus only on women and children. In contrast, this framework focuses on the human dimension of food security and women's daily life—the activities, resources, and decisions involved in the use of income or output and made by women and men as producers and consumers. Based on this, governments can structure more effective policies and programs to improve household food security, the status of women, and, thus, their contribution to household food security.
Women's dual responsibilities in Madagascar (N. de Palma)
Programs to Increase Women’s Access to Services and Resources

Governments should reassess their programs in rural areas to make adjustments that will increase women’s access to the resources and information they need to increase their incomes and thus the food security of their households. Programs oriented towards women’s needs are now being implemented in several countries in credit and finance; it is important to learn from this experience, but more action is needed in agricultural extension, technology, and nutrition.

Credit and Finance for Rural Women

Women need both fixed and working capital for agricultural production and for their off-farm activities that produce income. For agricultural production they need fixed capital for tools, such as hoes, axes, and wheelbarrows; oxen and associated plows and weederers; production inputs, such as seeds and fertilizer; storage facilities, including various kinds of containers and storage buildings; capital items to process and market their agricultural output, such as grinding mills, churns for ghee and butter, hulling machines, peelers, and smoking and drying equipment; and transportation vehicles. For off-farm activities they need fixed capital for market stalls and buildings as well as tools and machinery for cottage industries. Rural women also need fixed capital for household improvements, water storage facilities, and durable appliances, such as stoves or refrigeration equipment.

To match their fixed capital, rural women also need working capital for such agricultural production inputs as hired labor, tractor or animal hire, improved seed, fertilizer, pesticides, bags, rent for storage space, and transport services. In their off-farm activities rural women need working capital for raw materials, equipment, transportation services, and fees and licenses.

African women face many difficulties in obtaining credit to start or to enlarge their enterprises. However, initiatives are now under way in several African countries to increase women’s access to credit.

Expanding lending to women in Uganda

An effort is underway in Uganda to open credit channels to women. Central to this effort is the underlying assumption that lending to women must be institutionalized. Women cannot be expected to obtain credit at reasonable rates and conditions through any other channel. The effort is not to establish a separate credit program; rather it is to look at the factors inhibiting women’s access to credit from existing institutions and to redress them. If the obstacles to women’s access to credit could be removed, no special interest subsidy would be needed. Women would then be able to compete on an equal footing with men for credit.

Based on field research that evaluated women’s participation in the credit market, their constraints, and their strengths, the Central Bank is working with two commercial banks, one cooperative bank, and one nongovernmental organization to increase
women's access to credit. To encourage lending to priority targets—such as women—the Central Bank grants favorable rediscount facilities for loans.

One goal of the effort is to increase the quality of lending to women. The research found that when banks did lend to women, they were so cautious that they tended to underfinance the proposed enterprise and were not willing to lend even up to the approved limits. This disturbed the borrower's plans and forced the woman to work more than planned at other activities. In turn, this reduced the anticipated income from the new enterprise and led to difficulties repaying the loan.

With the help of the Central Bank, the lending institutions improved the quality of their lending for women by modifying the conditions that were reducing women's access. They waived the requirement for collateral, using the reputation of the woman's character and an analysis of the proposed enterprise instead. Since so many women had been denied access to institutionalized credit, the banks also waived the requirement that women borrowers be previous customers. Applications were simplified, and women, especially those who were illiterate, were given extra assistance in making their applications. In some cases loans were made to women's groups, which assumed collective liability and received special training in the use of credit and record keeping.

The program has met with considerable success, and repayment records have been good. Not unexpectedly, there remain problems. One, of course, is extending the reach of the program. Another is trying to incorporate a stronger savings element in what has to date been largely a credit effort. In the view of the Central Bank, however, the program has led to a "breakthrough in lending"—so much so that now the most difficult problem is the availability of loanable funds.

**Learning to use credit through group projects in Zimbabwe**

The Food and Agriculture Organization (FAO) is supporting a project to expand lending to women in Zimbabwe. The project grew from a critique prepared by the Ministry of Community Development, Cooperatives, and Women's Affairs, which found that programs for women were often small, marginalized women in lower-income activities, and drew women away from higher-income activities. Women lacked access to land, inputs, credit, and oxen and often did not control the income from their farming activities. Usually, access to resources was through men, and women had little direct access to agricultural extension information.

The FAO project addresses the problem of credit availability by working with groups, drawing on traditions of labor sharing. The groups usually have between 10 and 20 people, select their own members, and include both men and women. The program suggests that more than half the group be women to reflect the reality of extensive male emigration. Groups undertake collective farming activities, but members also have individual plots.

The project considers credit to be a farming input and believes that farmers must understand that borrowing money is a commercial transaction. The group jointly plans
all aspects of its production, and the connection between inputs and the use of credit is emphasized. Simple records are introduced from the beginning, but they become more sophisticated during a four-year period as the group becomes more experienced. In the first year, a group is eligible for a special subsidized loan, which matches the group's own assets and is made on the basis of an agreed cropping plan. The loan is managed by the group as a whole. If their first year is successful, the group is encouraged to expand their enterprises by borrowing from the Agricultural Finance Corporation at the going rate of 13 percent. No collateral is needed other than the growing crop. The group agrees that the marketing board for the crop will deduct the loan from the proceeds of the crop sale and will remit it to the Agricultural Finance Corporation. Thus, the farmers themselves do not have to make the payment.

Although the scheme is in its early stages, the FAO considers it to be reasonably successful. The small groups develop a group cohesion as a result of their joint production. The individual members learn from their group participation how to use credit productively in their own individual enterprises. An advantage of the group-based approach is that to some degree the group is removed from the household, so women members retain much more control over their share of the income.

One weakness that remains, however, is that the program focuses largely on credit and is not concerned with savings. The Agricultural Finance Corporation is a credit agency, not a full-service bank. Groups are encouraged to save through postal savings or a building society, but it would be preferable if the lending institution also mobilized savings.

Enabling African women to use commercial credit

Women's World Banking (WWB) has instituted an international effort to help women learn economically productive skills and to obtain commercial credit to establish or expand enterprises. Because women tend to have few assets, normal commercial credit is unavailable. The WWB breaks this stalemate by guaranteeing loans made to women by commercial banks.

The program has affiliates in 24 African countries. In Kenya, for example, where several commercial banks are cooperating with the WWB, the international office of the WWB guarantees 50 percent of a loan, the national affiliate guarantees 25 percent, and the commercial bank assumes the remaining 25 percent of the risk. Loans are made at going rates of interest with normal commercial conditions. The program has been in operation about six years and has suffered only one default.

WWB affiliates put considerable emphasis on training women in economic skills and the use of credit. For example, the Kenya Women Finance Trust (KWFT), using funds from the Swedish International Development Agency (SIDA), trained women traders in the two largest markets in the country in business management, accounting, and marketing and then guaranteed loans from a commercial bank. The bank has recently renewed its loan guarantee agreement with the KWFT and is expanding its lending.
The KWFT is embarking on another guarantee scheme with the commercial bank having the most rural branches. The program is targeted to rural women and conducts training courses at many locations throughout Kenya.

The WWB has attracted considerable support from international agencies. In Africa, for example, it has cooperated with the World Bank, the African Development Bank, UNICEF, l'Organisation Canadien pour la solidarité dans le développement, and SIDA, among others.

Orienting Extension toward Women’s Needs

Many African specialists believe that agricultural extension services in Africa do not adequately address the needs of women farmers.

Extension activities are mostly addressed to men because of an erroneous belief that men are the main decisionmakers in agriculture. Furthermore, extension staff are mostly male. For these reasons extension messages do not address the fact that women are generally involved in a much wider range of agricultural activities than men and hence require a wider range of information and technology. Such information should cover not only agricultural production, but also food processing, storage and utilization, and small animal raising. Moreover, women have limited access to agricultural inputs, in part due to their lack of credit. In terms of developing the extension message, there has been inadequate research on traditional, or "minor" food crops, which often are produced by women, such as yams, bananas, and sorghum.

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Women Are Major Users of Extension in Africa

Recently in Africa there has been a growing realization that women have become major users of extension services as more and more men seek off-farm employment.

In Kenya, for example, more than 60 percent of the contact farmers reached by the extension service now are women. Even where a contact list has a man’s name, the actual manager of the farm is often a woman.

The Kenyan extension service is finding that women adopt innovations more quickly than men, especially when they involve mainly changes in practices or inexpensive purchased inputs. At field demonstrations, about 60 percent of the farmers are women, and many farmers’ groups are almost entirely made up of women.

To improve their outreach to women, agricultural extension services will need to better identify the information needed by women farmers. They can do this through surveys that disaggregate information by gender, thorough periodic meetings with extension staff (a prominent feature of the training and visit agricultural extension system...
found in many African countries), and through consultation with central, provincial, and local agencies dealing with women's affairs. The extension services in both Nigeria and Kenya are making considerable progress in better diagnosing the extension needs of women farmers.

Technology and information packages suited to women farmers will need to be developed in many African countries. A much stronger link between the extension service and research agencies needs to be fostered. Researchers should be encouraged to focus more on-farm research on tasks typically performed by women, such as weeding, food processing, and storage. On-farm trials at farms operated by women can increase the effectiveness of research and extension work. To ensure that the results are interpreted accurately, women should be involved in evaluating the results of the trials. To speed development of appropriate technologies, research agencies and agricultural extension services should consult extensively with their counterparts in other countries.

As agencies increase their store of information suited to the needs of women farmers, they will need to strengthen their ability to disseminate that information. Existing extension staff---mostly men---should enhance their ability to work effectively with women farmers (which likely will also increase their effectiveness in working with men). This will involve organizing sessions at which the needs of women farmers are discussed and appointing specialists with expertise on the topics appropriate to women farmers (such as food storage and processing) and the technologies suited to their needs.

Existing home economists should be provided with additional agricultural training and be fully integrated into the regular extension program. Care should be taken not to create a parallel extension system for women farmers; the Nigerian extension system has been notably successful in this regard. More women agricultural agents need to be recruited and trained and women promoted to management responsibilities at all levels. Moreover, agriculture should be added to primary school curriculums so that girls have the opportunity to study this topic and hopefully continue at higher levels of education.

As programs to serve women farmers are extended, more and more contact farmers should be women. To speed this, targets should be set---at least 30 percent of the contact farmers should be women within a reasonably short time. Work should be expanded with women's groups and with rural youth groups that include girls. Of course, given the staffing structure of agricultural extension services, much work with women farmers will continue to be the responsibility of men. To enable men to work more effectively with women's groups, in some countries, such as Cameroon, a woman agent introduces the men who will be working with the groups. Once the women farmers become familiar with the extension system and with the agent, and the agent becomes comfortable working with the women, the woman agent moves on to introduce other male agents to other women's groups.

Farmer training centers should be improved to include residential facilities for women and to provide child care. Since women often find it harder than men to attend these centers, mobile training units can also be used.
Reorienting Nigerian Extension to Serve Women

A program in Nigeria is successfully increasing women's access to agricultural extension information. There are 21 agricultural development projects (ADPs) in that country---one in each state---and they have become the largest government program to promote smallholder agriculture. When they were first established in the mid-1970s, however, the ADPs did not make specific provision for women farmers.

International development agencies urged the Federal Ministry of Agriculture and Rural Development and its Federal Agricultural Coordinating Unit to focus more directly on women's roles as farmers and commissioned consultants to suggest modifications. Based on their recommendations, a nine-month pilot program was adopted, which recruited additional women as extension agents in zones with the purdah system and used retrained home economists to prepare additional processing and simple mechanization messages.

These pilot efforts were so successful that the Federal Department of Agriculture and Rural Development was completely reorganized in 1989. A national workshop on women in agriculture began the process of integrating the women-in-agriculture programs fully into the ADPs. The ADP extension services have been reorganized along the lines of the training and visit extension system to strengthen their services to help both men and women farmers to increase their production and incomes, and to provide support for agricultural development in general. One of the subcomponents of the agricultural extension services department in the ADPs is now called the women-in-agriculture program. These are programs designed to integrate women into all aspects of agricultural production. Within this new concept, women extension agents are being recruited in some ADPs, and in others existing women agents are being encouraged to address the particular needs of women for agricultural production and its complementary activities.

A recent joint study by the Federal Agricultural Coordination Unit and the World Bank highlighted women's progress in the agricultural programs of the ADPs. Among other accomplishments:

At least 16 women farmers (or 20 percent of the total) were selected to be in each of the extension agent's cells.

Production messages were developed for farming activities performed by women, along with ways to more effectively target them to women audiences.

New varieties and technologies were adopted widely through the use of 100-square-meter pilot adoption plots on farms. Improved cassava varieties and cassava farming systems have spread rapidly in southern Nigerian states because women accepted and adopted the new technologies introduced through these small demonstration plots.

Women's cooperative food processing enterprises were established in some ADPs.

Agricultural training programs for women agricultural agents were expanded to improve the quality of advice given to women farmers.

In no small measure, these revitalized agricultural extension efforts have contributed to a resumption of growth in Nigerian agriculture after a long period of stagnation. During the past two years agriculture has grown at an average of 5 percent annually.

Of course, for all these expanded activities to serve women farmers more effectively, new materials aimed directly at women will have to be developed. More emphasis should be placed on radio programs broadcast at convenient times with information targeted to women. Since many women farmers in Sub-Saharan Africa cannot read, new audio-visual materials will be needed.

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To ensure that their programs are moving on schedule and are effective, agricultural extension services will need to adapt their monitoring and evaluation activities to include data disaggregated by gender. Reports prepared by extension agents should describe separately the adoption rates and other activities undertaken by men and women farmers. Surveys undertaken to assess effectiveness will need to disaggregate the results for men and women farmers. And, of course, those responsible for administering extension services will want to review their programs regularly to ensure that women farmers are being effectively reached. Many of these changes are already being made by the extension system in Nigeria.

Improving Women's Access to Technology

If African women are to be able to improve household food security and to enhance their incomes by taking advantage of improved technologies, they will need improved technical skills, better access to credit, and stronger extension information support. The issue of technology involves five major concerns: appropriateness of technology, food technology, transportation technology, the need for economic-sized enterprises, and access to credit.

Appropriateness of technology

Of course, any proposed technological introduction should be appropriate to the social and economic setting where it is to be introduced. It should also be appropriate for the intended users. Unless proposed technological innovations are better than what is already in use, they will not be acceptable. For example, "improved" fish smoking ovens in West Africa produced a taste people did not like. There was also an effort to introduce a red sorghum, which was highly drought resistant and little troubled by bird pests because of the high tannin content. However, the tannin also made the taste bitter for humans, and, furthermore, it tied up the protein in the sorghum and reduced its absorption by the body. It was a classic case of a failure of researchers to talk with users.

While technology must be relevant to end users, in some cases users must meet new technological innovations half way. If the new technology reduces cost and thus the retail price, but produces a somewhat less palatable product, then the price difference will induce some users to accept the less palatable substitute. Those who feel the more palatable product is worth the extra cost can continue with the higher-priced product. The important thing is to make a wide range of products available and then to let the market sort things out.

Policymakers, however, should not focus too narrowly on technological innovation controlled by women. Rather, they should search for any way to increase women's efficiency. For example, mechanical maize mills are often controlled by men, but women take their maize to the mills to save hours of pounding—hours that can then be devoted to economically more productive activities.
Food technology

Despite advances in mechanical grain milling and fuel-efficient stoves, much remains to be done to reduce storage losses. FAO data show that about 15 to 20 percent of the cereals produced in Africa are lost through bad storage. For vegetables, storage losses may run as high as 40 to 50 percent.

One widely known advance in food technology is the success in reducing infant mortality by introducing better weaning food and growth monitoring in the Iringa District of Tanzania. "Power flour" was introduced as a composite weaning food. In addition to being more energy-dense than traditional weaning food, an interesting innovation was to introduce flour made from germinated seed to increase nutrient density. The technique of germinating seeds for processing was already well-known to women in the district since they use it to make beer. At the same time, the technique of using a simple chart to monitor growth was introduced for virtually all children under five years of age. Those who showed signs of being malnourished received supplemental food at feeding posts established in 60 of the 68 villages in the district. An innovation was to make the village head responsible for checking every child and for being sure that parents were aware of children failing to grow normally. In 1984, when the program began, the infant mortality rate in the region was 152 per thousand; by 1989 it had dropped nearly a third to 106 per thousand.

Transport

Technological improvements in transport should have additional dimensions. Most emphasis has been placed on road transport between urban centers or between urban centers and rural areas. Recent surveys have led to an additional focus. They were conducted by following selected men and women in their daily work. They revealed that in some areas family members spend 2,700 hours a year walking to fetch water or fuelwood. This is the equivalent of a full-time job in the formal sector. When walking is broken into tasks (such as walking to collect firewood, walking to the fields, and the like), walking for crop marketing purposes is surprisingly little---only 10 percent of total walking in Tanzania. Furthermore, 85 percent of the walking is done by women. If something can be done to release that time, the family would have some 2,000 hours a year to put into more productive economic activity.

A related example comes from the Iringa District in Tanzania already mentioned in connection with food technology. Growth monitoring showed that many children were undernourished because mothers had to spend too much time gathering fuel and thus conserved fuel by cooking less often. This led community leaders to ask men to help gather firewood. At first there was serious resistance. So the program produced a film called "Share the Responsibility" and encouraged wives to talk about the fuel problem with their husbands. Over time, men began to help collect fuelwood---and even introduced the new technology of wheelbarrows to increase their efficiency.
Economic size

An important issue in any discussion about technology is the need to make enterprises large enough so that they can be efficient and generate substantial income. Several agencies are now trying to bring women together into groups to establish enterprises with a greater surplus value than can be achieved by the individual women working alone. These larger enterprises, however, have problems of their own: women must receive management training, good information must be available from extension or similar sources, the enterprise must be able to maintain its equipment properly, and the group must have access to sufficient credit. Larger food-processing enterprises have run into the problems of meeting public health hygiene standards and of acquiring appropriate packaging materials.

For larger economic enterprises undertaken by groups of women to be successful, they must be nurtured by national economic policies that support, not discourage, the informal sector.

Access to credit

The availability of credit is an underlying concern in any discussion of technology. If women are to have access to new technology that involves capital expenditure—as so many do—then they must have access to capital. Although some agencies are considering schemes to enable groups of women to lease capital equipment, most often new technology will require access to credit. As discussed earlier, the terms and conditions of bank lending need to be changed to enable women to become commercial borrowers.

Developing technology for rural women

There is a need for explicit national programs to develop technology for rural women, coordinated by a ministry with "clout." Likely, this would have to be the prime minister’s office, since a program to increase technology suited to the needs of rural women and to disseminate information about available technology would involve many sectors and agencies.

Actual implementation of the program, however, probably would be the responsibility of a lead institution in cooperation with institutions in various sectors. The first task would be to identify the needs for better technologies and the problems of providing them. This would be done through discussion with women who would use the technologies in their agricultural production activities, for off-farm enterprises, or to reduce the burden of household work. Once the technological needs were identified, responsibility for developing the technology could be assigned to a national agency working in that area. That agency would have to determine if the technological innovation should be based in the household or whether it might be better to develop it at the village level.

Once the technology was available, the coordinating ministry would need to
organize dissemination. A pilot program among target users would determine the effectiveness, acceptability, and affordability of the new technology. Access to credit for new users would need to be assured if the technology involved significant capital expenditure. Facilities for production—locally where possible—and a sales and maintenance structure would have to be established. If the new technology was simple to use, then printed instruction in local languages might be enough for new users to adopt the technology. If it was more complicated, however, training would need to be organized, perhaps by the agricultural extension service. The extension service would also be responsible for ensuring that rural women learned about the availability of the new technology and its use.

As the technology was disseminated, the coordinating agency or the lead institution would want to monitor its use through feedback from the women who had adopted it. That information would be forwarded to the research and development agencies to help them improve the technology or to be used to develop other related technologies.

In most African countries, establishing a national program to increase the technology available to rural women would most likely need outside support from donor agencies. Once in place, however, the program’s obvious usefulness would justify its support from domestic resources.

Nutrition Programs for Low-Income Households

To improve food security in low-income households, national nutrition programs should be developed that would focus on subsistence farmers, landless rural households, and the urban poor.

Many factors contribute to nutritional status: morbidity, low income, insufficient food supply at the household level, insufficient knowledge about nutrition and health, heavy labor, competing demands for women’s time, accessibility of health and other supporting services, and price policies.

Programs targeted to subsistence farmers and landless rural households would focus first on helping them increase their incomes. They would receive information about improved technology, better crop varieties, diversification into other agricultural activities such as horticulture, more efficient implements, intercropping, and simple irrigation. The program would also seek to improve the markets for inputs and outputs serving low-income rural households. The program would help women in low-income rural households adopt labor-saving technology, organize child-care facilities, and establish community cooperatives. Special efforts would be directed to low-income households to help them improve family health through campaigns to improve health and nutrition education, to inform households about family planning, and to ensure that children were immunized against common diseases. Better water supplies and improved environmental sanitation would also directly improve health and nutritional status.

Programs to improve the nutritional status of the urban poor would also begin with efforts to help them adopt strategies to increase income. Such programs would
help improve markets serving urban poor households, increase access to credit for economic activities in the informal sector, offer training in management and record keeping, provide information about potential opportunities, establish technical infrastructure support such as workshops and workshops, organize child care, and work closely with nongovernmental organizations assisting the urban poor. Urban poor families would also receive particular attention to help them improve their shelter, environmental sanitation, and knowledge about health and nutrition and family planning.

Of course, programs to improve the nutritional status of low-income households would need careful monitoring and evaluation to assure efficient implementation. This would begin with baseline surveys and development of indexes such as those used in growth monitoring. The program would then monitor changes in nutritional status and disease incidence.
Woman carrying wheat from the field in Ethiopia (World Bank)
Epilogue

The presentation of the issues and the wide-ranging discussions in the working groups helped identify a number of different actions that households themselves must take to enhance their food security. But the deliberations also led participants to formulate guidelines for African policymakers and donors so that they can continue to recognize and address the economic and social costs of the inequitable division of work and responsibilities between men and women.

In seeking to improve household food security in Africa, it is also important that consideration be given to increasing the benefits that women receive and improving their decision-making authority. Care must be taken that new policies and programs do not add to women's already large burden of providing food and care for their households.

Would men's rights be reduced if women gain a more important position in economic and social development? No, was the consensus response of the symposium participants. Increasing women's rights would expand opportunities for both men and women. In economic jargon, increasing women's economic opportunities is not a "zero-sum" game, because both men and women gain. As one participant gracefully put it, the aim is "to move forward hand in hand."

In his closing remarks to the symposium, Mr. Jaycox, Vice President for Africa at the World Bank encouraged participants to follow-up with national level workshops on this important topic, and to repeat this symposium at the sub-regional level in West Africa.
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Members of the Symposium participated in their individual capacities, not as representatives of agencies or governments.

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