

PD-AAV-870 Sri Lanka

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WID ASSESSMENT OF MAHAWELI DEVELOPMENT PROGRAM,
SRI LANKA

I. INTRODUCTION

1. Background

1.1 Project Summary

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The Accelerated Mahaweli Program (AMP) of the Government of Sri Lanka (GSL) is an extremely large and complicated river basin development project utilizing over U.S. \$2.2 billion in assistance from at least seven international donors. The program involves damming the Mahaweli Ganga, the country's longest river, and extending irrigation to several settlement schemes or "systems" which are being established in the sparsely-settled dry zone of north central Sri Lanka. By dramatically increasing the amount of land under intensive agriculture, the project is intended to generate employment, increase national production of basic foodgrains (especially rice), and provide land to landless people from the heavily populated wet zone.

1.2 Purpose of Assessment

The purpose of the women in development (WID) assessment is to examine the project's impact on women. To what extent have women been specifically included in this development program as participants and beneficiaries? In what ways, if any, has project design responded to the needs of women as well as men? Have planners considered female roles in production and means of maximizing women's labor through appropriate technology, training, access to extension, etc.? Have plans relating to women actually been implemented, and with what results? Do different attitudes toward implementation appear at different levels of the project bureaucracy? More generally, what can be learned from the Mahaweli experience about designing and implementing projects which integrate women into the economic development process?

1.3 Agency/CDIE/WID Perspective

A basic premise held by AID/CDIE is that gender roles have important implications for project success or failure. Research during the last ten years has shown that men and women differ in such matters as their access to and control over basic resources; work schedules and customary task assignments; responses to development incentives; and access to extension information, education, and credit. When women play central economic roles as farmers, traders, and livestock raisers, as they do in many parts of the world, an understanding of these roles is crucial to planners. Lack of attention to gender analysis can result in poor project design and lowered investment returns. AID/CDIE policy therefore stresses improving the economic potential of women as a means of strengthening development efforts in general.

1.4 Methodology

The methodology used in this research, given our very limited time-frame of 16 days in-country, was necessarily "quick and dirty". Following a short briefing period in Colombo, we travelled to the north central province and spent ten days interviewing project staff and settlers (both women and men). We conducted approximately 110 interviews in all, 50 with scholars and officials (including a few in the U.S.) and 60 with farm families. It should be noted that many interviews included several members of the same family, generally husband and wife. Since two of the three current USAID projects focus on System B we visited that settlement scheme first, even though only a few areas have been occupied so far. We then travelled to System H, the earliest of these schemes, to see a) what changes in administration and farmer response might occur at a later stage of settlement and b) what changes in program design for B and other systems the Mahaweli Authority (MA) has initiated due to their experiences in H.

In entering each system, we began by interviewing the Resident Project Manager (RPM) (the top local official) and other project personnel in his office, then rapidly moved down the administrative hierarchy to consult lower-level officers and visit farm families. Having a team consisting of a male and a female member facilitated communication and gave legitimacy to the concern with gender analysis; however, people at all levels were cooperative and relatively frank in their discussions. Undoubtedly some sensitive issues were not raised since we were frequently accompanied by project personnel; on the other hand, their presence also occasionally triggered heated complaints. We attempted to roughly sample households according to category of settler (e.g. evacuee vs. purana villager--see below), length of time settled, and socioeconomic status. While we could not sample scientifically given the time restrictions, and are aware of considerable social and economic variation within the project, we feel reasonably confident that we have at least identified key issues warranting further consideration.

2. Project Setting

2.1 Country Context

Sri Lanka is a small island republic the size of West Virginia situated just south of India. Its population of 15 million is 75% Sinhalese (mostly Buddhist), while minority groups include largely Hindu Tamils of south Indian origin (20%), Christians and Muslims. Following independence from Britain in 1948, the government invested heavily in health, subsidized food, and educational programs, resulting in socioeconomic indicators unusual for a South Asian country; a high literacy rate (86%), high life expectancy (69), low infant mortality and low birth rates. Sri Lanka has remained a poor country, however, with a per capita income of only U.S. \$320 in 1984.

Despite a slowing low birth rate, the population has more than doubled since 1946. Lack of productivity and low prices for traditional export crops such as tea led to food deficits and widespread unemployment by the late 1970's. Communal conflict between Sinhalese and Tamils has also plagued Sri Lanka in recent years, with Tamil-speaking separatists claiming north and eastern parts of the island in areas bordering the

Mahaweli Project.

In relation to other South Asian countries, the status of women in Sri Lanka appears to be fairly high. The island's much-quoted socioeconomic indicators (high literacy rate, declining birth rate, etc.) are undoubtedly partly related to women's relative freedom at least among the Sinhalese ethnic group. As of 1981, a larger percentage of females than males of the same age group were enrolled in secondary school (54% vs. 49%) and the ratio of adult male to adult female literacy was 1.1. In Bangladesh, by way of contrast, four times as many males as females are enrolled in secondary school and half as many women as men have ever attended primary school. () Sinhalese kinship structure is bilateral, meaning that relationships are traced through women as well as men; both women and men could formerly inherit land; and a husband might reside in his wife's community after marriage. Kinship patterns and female decision-making powers are generally similar to those of Kerala in India where high female literacy is correlated with a reduced birth rate. ()

Physically, Sri Lanka is characterized by two major climatic and ecological divisions. The Wet Zone, located in the island's southwest quadrant, receives more than 2000 mm. of rain per year and contains the island's densest population. The Dry Zone receives less than 2000 mm. per year and has an 'effective dry period' of three consecutive months. Reliability of rainfall rather than average amount is the greatest constraint to agriculture, making irrigation imperative in order to consistently produce two crops per year. (Johnson and Scriver p.6) The Mahaweli Project therefore has enormous potential for increasing productivity.

2.2 USAID Country Strategy and Portfolio

Following the election of J.R. Jayewardene in 1977, GSL economic policies drastically reduced state control in order to stimulate production and increase employment opportunities. USAID has supported the Jayewardene government's goal of reducing food imports by investing in several agricultural programs: the Rice Research project, the Diversified Agriculture Research project, the Water Management Project, and the Mahaweli Project. The mission is also encouraging entrepreneurship through the Private Enterprise Promotion project. (Front Lines March 1983:10-11)

USAID country strategy with regard to gender issues is not explicitly stated in the materials available to the authors; however, some references do appear in Mahaweli Project papers, e.g.:

Obviously Sri Lankan women have a key role in agriculture (transplanting, weeding, harvesting and threshing of paddy; care of the homestead gardens and tree crops), but it is expected that they will also be heavily involved in the agricultural and non-agricultural diversification on which the project depends for regional development. To encourage and promote this, families in which women have special skills are being given priority in the selection of settlers. In addition, training courses are planned to provide new skills which the women can utilize to supplement family incomes. Also, there is a special effort underway to recruit women for the provision of services which will be of prime concern to the project (e.g., women agricultural extension agents, health workers, and irrigationists) (PP System B:42).

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The extent to which these strategies have been successfully implemented will be discussed later in this paper.

2.3 Project History

Initial plans for harnessing the hydroelectric power and irrigation potential of the Mahaweli Ganga were funded by a predecessor of AID, USOM, during 1958-61. Between 1965 and 1968 UNDP/FAO together with the GSL Irrigation Department created a Master Plan for a 30-year development program to affect 900,000 acres. The government began work on the program's first phase in 1970 with construction of the Polgolla dam and Bowatenna reservoir, diverting part of the river water northward to System H. This early settlement scheme, co-financed by the World Bank and AID, is located generally in the area south of Anuradhapura (Project #383-0042) (Phase 2 System B p. 20).

Following elections in 1977, the new government announced that in order to generate employment, reduce food imports, and produce needed hydroelectric power for industrial development, the Mahaweli Project would be accelerated to completion within 5 (?) years. In 1979-80 AID financed a major environmental impact study of the Accelerated Mahaweli Project (AMP), later funding the Mahaweli Environmental Project. The GSL also requested AID'S participation in the development of System B, located south of Polonnaruwa.

II. PROJECT ANALYSIS

1. Project Description and Strategy

1.1 Description

AID's present support to the AMP consists of three projects. Two specifically focus on irrigation construction in System B, while a third is a flexible US \$50 million Sector Support Loan which the GSL may use for a wide range of downstream activities (i.e. excluding headworks construction).

The Mahaweli Basin Development Phase I project (#383-0056) provided technical assistance in the design and construction supervision of the parts of the System B irrigation system on the left bank of the Maduru Oya River. The Mahaweli Basin Development Phase II project (#383-0073), approved in 1981 and amended in 1983, provides a long-term loan of \$107 million and a technical assistance grant of \$3 million. The remaining total project costs of about \$251 million are provided by the GSL from its own resources, other donor funds, and the Mahaweli Sector Support loan (see below). The Phase II project funds the construction of 57 kms. of main canals and 87 kms. of branch canals in the System B left bank area.

In neither of these projects is AID specifically funding the activities not related to construction; the original project outputs are stated almost exclusively in terms of construction objectives. A 1983 amendment of Mahaweli Phase II revised the log frame to include detailed downstream and resettlement obligations of the GSL in the System B left bank area. Among others, these include distributary canals, field channels, drains, roads, and a wide range of "administrative and social infrastructure facilities and services" including hamlets, schools, and hospitals. (REF?)

These two projects will irrigate approximately 20,300 hectares; 20,300 farm families and 5,292 non-farm families, almost all Sinhalese, will eventually settle this area (the left bank of the Maduru Oya). Annual paddy (see) production is estimated at 106,340 tons and planners estimate an annual average farm family income of 11,000 rupees per year by the end of the project (\$474 at 1985 exchange rates).

The third project, the Mahaweli Sector Support Loan (#383-0078), approved in 1981, is a \$50 million loan which the GSL can draw on to finance downstream activities of the AMP (e.g. minor irrigation channels, farm-to-market roads). It provides broad, flexible economic assistance to enable the GSL to generate local currency for counterpart costs not financed by other international donors. It was particularly designed to deal with an economic and foreign currency crisis which had serious budgetary implications for the GSL and threatened to slow utilization of international donor assistance. This non-specific support also expressed AID'S general confidence in the GSL's implementation of the Mahaweli Program.

1.2 Strategy

In addition to dams and water diversion structures on the upstream Mahaweli Ganga, extensive irrigation systems, ranging from large main canals to secondary and tertiary distribution canals and field channels, must be constructed. The preparation of fields, roads, canals, and homesteads requires clearing large areas of jungle.

Resettling people is as least as complicated as physically reshaping the environment. Fields for irrigation and the upland areas designated for homestead plots are surveyed and divided into allotments of equal size. Prior residents in the area (virtually all without land titles) are assigned landholdings. Evacuees from areas flooded by the large dams upstream receive reimbursement for their losses and land in the resettlement area. And eligible new settlers must be selected from different electorates around the country. All settlers must be moved, often in stages encouraging some members (usually men) to begin clearing and or building houses before the entire family comes. The MA also expects them to earn some income from construction activities on the project.

Most settlers receive support from the Mahaweli Authority in the form of tools, ceramic roof tiles and latrine slabs, and temporary water sources. In System B, a model plan for developing the homestead plot and garden is suggested and seeds or saplings provided. In most cases settlers also require food (provided by the World Food Programme) until they can harvest their first irrigated crop.

At the community and regional level, a whole range of public services and infrastructure are established where virtually none existed before: roads, schools, health services, post offices, community centers, market facilities, home development and vocational training centers, and in some cases even market towns. The MA also provides agricultural inputs, credit, extension advice, and marketing services. Irrigation turnout groups are organized to handle water management at the field level.

1.3 Focus of the WID Assessment

This WID assessment was loosely attached to a larger evaluation of the three AID projects supporting the Accelerated Mahaweli Program. Several characteristics of these projects raised problems in deciding how broadly or narrowly to focus the WID assessment. AID support in Mahaweli Phase I and II is specifically targeted for major canal construction in System B, and gender analysis of the irrigation system makes sense only once the irrigation schemes are functioning. Yet that stage had just begun in an extremely small area of System B during the 1984-85 Maha cultivation season which preceded our visit.

Gender analysis of the complex resettlement process seems logical, as it is essential to utilizing the irrigation systems and meeting the broad economic and social goals for the project. But with the exception of some possible minor support from the Mahaweli Sector Support Loan, AID is not directly supporting resettlement, while AID project documents provide little detail concerning these plans.

The Sector Support Loan posed the opposite problem: it is so broad that the AID project provides little by way of specific assumptions or activities supported by AID that can be analyzed in gender terms.

In spite of these limitations, we decided to look broadly at the significance of gender differences for resettlement activities carried out by the Mahaweli Authority. These activities are the basis of current interaction between Mahaweli field staff and the intended beneficiaries, and are essential to the use of the irrigation infrastructure which AID has funded.

1.4 Institutional Framework; Organization and Management

The Mahaweli Authority of Sri Lanka (MA or MASL), within the Ministry for Mahaweli Development, was legally established in February 1979 for the purpose of planning and implementing the Accelerated Mahaweli program. Initially the Authority used Ministry staff, but it later began to hire highly qualified people for key positions. We were particularly impressed by the energy and enthusiasm of this staff in System B. The Authority develops policy for the AMP and designs feasibility studies of various aspects of the program. (Phase I v.1 p.79)

Within the Authority, the major implementing agencies are the Central Engineering Consultancy Bureau (CECB), the Mahaweli Engineering Construction Agency (MECA), and the Mahaweli Economic Agency (MEA).

The CECB carries out headworks construction for the AMP, including the Maduru Oya dam and link tunnel for System B, while MECA takes charge of downstream works (all physical infrastructure including hamlet plots

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and canals. MEA is responsible for the complex process of settlement as well as supplying farmers with credit, marketing, and extension services. Health and schooling, however, are the responsibility of other ministries than Mahaweli. Additional agencies within the MA include Headworks, Administration, Operation and Maintenance (HAOM), the Water Management Secretariat (WMS), and the Planning and Monitoring Unit (PMU). The PMU is the MA's major agency for data-gathering, reporting, monitoring, and evaluation.

The current administrative framework for settlement includes three organizational levels within a given Mahaweli "System" or project: the Unit, the Block, and the Project. The Unit consists of one or two hamlets with 200-250 households, served by a Unit Manager and a Field Assistant. These officials are supported by specialists in land allocation, agriculture, engineering, marketing, community development, livestock, etc. at the Block (consisting of 2000-2500 households) and Project levels (c. 10,000 households or more). (CHECK FIGS>) The Block Manager (BM) and the Resident Project Manager (RPM) are senior officials at the two higher levels.

2. Socio-economic and Gender Assumptions Underlying the Project Strategy

2.1 Characteristics of the Intended Target Group

The System B project papers assume that the major beneficiaries will be poor or landless people, farm families and non-farm settlers, who will come mainly from outside the project area through a voluntary settler selection program. Another category of beneficiaries are the construction workers, some of whom will be settlers. Finally, it is assumed that benefits will accrue to others for whom jobs in agro-industry, services, etc. will be created as part of the regional development spurred by intensified agricultural production. Planners estimated that one non-farm family for each settled family would be employed in this way. (Phase I, v. 1, p. 20, 40). In fact not all recipients are poor; many are evacuees from dam construction sites or from old villages within project areas; and off-farm income generation schemes, particularly for women, are still in an embryonic stage on both B and H.

Another assumption about target group composition made by planners was that each household would consist of a nuclear rather than an extended family. Subdivision of plots is illegal, and homestead plots are too small to contain several houses and gardens. Some settlers expressed great frustration at this since they prefer to be surrounded by their married children. This is not as much a problem for evacuees or villagers formerly resident in the area as it is for people from the electorates, since in the case of the two former groups, married children are often given allotments in the same project area as their parents.

With the exception of a few households of alleged Vedda heritage, we interviewed only Sinhalese farmers; statements about gender will therefore refer primarily to this group. Sinhalese are being settled on the left bank of System B, while Tamils will receive plots on the right bank. Each ethnic group will be proportionately represented among settlers. (41)

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2.2 Assumptions Concerning Conditions Necessary for Project Success

Project planners assumed that new settlers would be poor; would be resident on their land; would farm with family labor; would have households consisting only of nuclear families; and would quickly achieve a superior standard of living by using inputs of hybrid seed, assured irrigation water, and fertilizer provided by the project. Their greatly enhanced production would support an equal number of nonfarm families whose employment was based on growing consumer demands. However, none of these assumptions quite fit the actual situation. Family labor is insufficient for many households during peak seasons, for example, while additional family members may share homesteads. The socio-economic status of farm households appears to vary widely (judged by quality of housing, ownership of working capital, goods such as motorcycles and tractors, etc.), affecting the ability to maintain the high inputs required for hybrid paddy. On System H, water is insufficient for two crops due to a variety of factors and leasing is common (between 20-38% in particularly water-deficient areas). Lack of water, coupled with loan defaults due to bad weather, have led to lowered inputs in System H and therefore lowered yields. Some of these problems may plague System B at a later stage; many of them are characteristic of other settlement schemes in Sri Lanka as well.

Certain economic assumptions deserve special attention: First, that water will be available for at least two crops per year; second, that the one-hectare allotment is sufficient to produce a household surplus which will support the development of non-farm economic activities; third, that a half-acre homestead site is sufficient for both a house and a homestead garden. We were particularly interested in exploring the potential of homestead gardens both as a source of needed food for the family and as a basis for some diversification in the farming system, e.g. through keeping a dairy animal.

2.3 Gender Assumptions Underlying Project Strategy

Gender assumptions underlying project strategy are not all apparent from AID project papers, which do not give many details on settlement. A statement asserting the important agricultural role of women and giving plans for training does appear in papers on System B, as quoted earlier. The statement also indicates that during settler selection, families in which women have special skills will be given priority. When we interviewed project officials, however, they indicated that only the background of the husband (all settlers must be legally married) is being taken into consideration. An implicit assumption at the electorate level therefore seems to be that all household heads are male (not necessarily true) and that men have primary responsibility for farming, particularly in the case of cash crops like paddy toward which the Mahaweli project is so heavily oriented.

Gender assumptions are not clear in the formal design of the agricultural support services or irrigation services. The project paper does state that women are to be trained as irrigators, extension workers etc. but implementation procedures are not outlined.

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Another assumption, inherent not in project design but in the Land Ordinance of 1935, is that only one descendant, preferably male, may inherit. This law (which may or may not be enforceable) is designed to prevent land fragmentation in the next generation. If enforced, it could mean that 90% of the land titles will go to men (see discussion under 3.1 below).

Finally, one apparent assumption of officials noted during field work is that married women--i.e. women with family responsibilities--are not appropriate targets for extension programs which emphasize agricultural training, income-generating activities, or volunteer health work. All these programs were aimed at young unmarried women. This pattern may be due to the felt need for off-farm employment by settlers' adult children, or at least partly to the assumption that married women will be occupied with their families and unable or unwilling to participate in training programs. Many married women with children in fact expressed an interest in employment opportunities when questioned.

3. The Role of Women in Local Systems of Production and Consumption

3.1 Land Tenure

Access to land is an important and complicated issue in Sri Lanka as in all agricultural societies. We cannot do justice to the extensive literature on Sri Lankan land tenure and the regional and ethnic variation that clearly exists, but will try to present findings pertinent to the Mahaweli Project.

In the Sinhalese areas of Sri Lanka, ownership and control of land by women was formerly taken for granted much more than in some other South Asian countries. Both sons and unmarried daughters, for example, inherited property among all classes. All marriages were classified as diga (virilocal) or binna (uxorilocal or matrilocal). Binna marriages, in which a husband came to live with a land-owning wife or her family, were common. In such cases the married daughter and not her husband would inherit land upon her parents' death. Although wealthy Kandyan families tried to restrict land inheritance to sons, this was not the case among ordinary villagers of the North Central Province. Land was often given to a daughter when she married. (See Leach 136; Yalman 136, 122-126.)

The above remarks refer to irrigated paddy fields, and it should be noted that prior to British administrative intrusion, private property in land consisted of shares in the village paddy acreage. Jungle outside the village could be cultivated by anyone, male or female, in swidden cultivation (chena), but rights were held only as long as the land was actually in use. Women heads of households (widows or those separated from their husbands) could support their families by swidden cultivation and allowing their paddy fields to be sharecropped (ande) by others. (Schrijvers 192).

(1) One classic resource for information on land tenure and kinship in the North Central Province is Edmund Leach's Pul Eliya: A Village in Ceylon. Other recent writings deal more specifically with the Mahaweli Project and its affects on female landholding.

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According to some accounts, women's land rights began to erode during the British colonial period. The Land Development Ordinance of 1935 required that Crown lands (land other than house sites, paddy fields and gardens in use at the time of British survey) could be given only on permanent lease (badu); the tenant was required to nominate a single heir for the holding. This contradicted the cultural rule of equal inheritance by all children. (Schrijvers 197-198) Our interviews with land officers on the Mahaweli project confirmed that this law is still in force, and that in 90% of the cases people nominate a successor who is usually the eldest son. According to the Ordinance, land first goes to a man's wife upon his death; then to his sons in order of seniority; lacking sons, to daughters; and lacking daughters, to living grandchildren. The nomination can be changed by the allottee at any time, and will usually be cancelled by the husband if he divorces his wife. If the wife is the allottee, as she is in certain circumstances (see below), the converse is true; however, divorce is quite rare in rural areas. If the wife is nominated as a successor and remarries after her husband's death, then the second husband gets rights to the land and her children may lose all rights.

The implications of current land tenure laws for women's ownership in the first generation of settlers are quite different than for those in the second generation. We found that percentages of women title-holders were quite high among two of the three settler groups characterized by place of origin: Those from purana villages already existing in the project area (resettlers) and evacuees from flooded areas. For example, one land officer surprised us by stating that approximately 35% of plots in his area were registered in the wife's name. Since only one person in the family may obtain title to land, husband or wife, in the case of these settlers it may be the wife rather than the husband who has local residential qualifications.

When settlers are chosen from the electorate, however, allotments are apparently given only to male household heads. Widows of course own the land after their husbands' deaths, and officers estimate that about 10% of the land titles in areas settled by electorate people are held by women. In the case of the first hamlet we visited in System B, we found that women (usually widows) held title in 10 of 224 households, or roughly 5%.

Great variation in the proportion of land titles held by women (5% to 35%) therefore characterizes different categories of settlers in the first generation, while if inheritance rules laid down by the Land Development Ordinance are actually enforced, land-holding by women is apt to be greatly reduced in the second generation. We have examined land tenure in such detail not only because land is a key resource, but because banks give credit only to title-holders. Owning land is therefore an essential basis for receiving other resources. The question of land management is

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another issue, discussed in 3.3 below.

3.2 Ownership and Control of Assets

In pre-British times, women and men apparently entered marriage possessing distinct property (livestock, land, jewelry), at least among middle-class people for whom property ownership had any significance. Poor settlers on the Mahaweli Project possess little property of any kind other than houses and paddy plots, while others own tractors (two or four-wheeled), draft animals, bicycles, sewing machines, etc. We do not have detailed data on ownership of property other than land, but some authors suggest that machinery and animals handled by men (e.g. draft animals) are considered male property.

In our household interviews, we tried to learn whether men and women have separate income and expenditure streams, and how families handle finances. Financial decision-making is a delicate issue, one which frequently results in intra-familial conflict in many cultures; too much confidence should not, therefore, be placed in statements given by people during formal interviews. However, we did question both wives and husbands systematically enough to arrive at a few generalizations.

Men and women sometimes earn income independently, though opportunities are fewer for women than for men and involve smaller amounts of money. The main field crops, paddy or chillies, are more likely to be marketed by men than by women; women sometimes sell vegetables, fruits, eggs, or small quantities of grain to itinerant traders or local markets. Both men and women visit rural markets, but women are much less likely to go if they live at a distance or have small children at home. Female mobility is considerably less on System B than on System H because roads and markets are not yet fully developed on B. Among poorer families, women as well as men work as agricultural laborers for neighbors. In both System B and System H we met a few unusually entrepreneurial women engaged in trading or cottage industries, as well as instances of men with government jobs (usually resettlers or evacuees) whose wives managed the farm.

It appears that the earnings of both men and women usually go into a common household fund. In most of our interviews, people stated that the fund was managed either by husband or wife, but with substantial joint participation in major financial decisions. An exception to this joint decision-making mentioned by some settlers was the unilateral purchase of cigarettes or alcohol by a husband. In a few households, it appeared that this fund is held and controlled solely by the husband, while in other cases, the husband admitted that he turned over all or most income to the wife, and the wife seems to have taken the leading role in expenditure decisions.

The common fund among Mahaweli families may be partly due to the predominance of nuclear families among settlers. Husband and wife are much more dependent on each other than they would be under the extended family circumstances found in many other rural areas (cf De Silva???)

3.3 Male Off-Farm Employment and Female Farm Managers

In a number of households we interviewed, husbands were engaged in off-farm employment (usually government service) while wives supervised hired laborers and cultivated on a day-to-day basis. Some of these cases were evacuee households; others consisted of families who had received an allotment in Pimburettewa, an old settlement scheme now incorporated into System B, but have not permanently moved from their original home in nearby Polonnaruwa. While there were no firm sex-disaggregated data concerning this point, a local bank official estimated that approximately 30% of the agricultural loans made to Pimburettewa settlers were in the wife's name, since she held title. Our interviews indicated that it was not uncommon for these women to do much of the farm management as well.

Farm management is also handled by female household heads, usually widows, with the aid of children and other relatives if available. Women are apt to give the land for sharecropping if children are small and they have no adult male assistance, but will try to cultivate it themselves if they have sufficient family labor. Although our data are very limited, perhaps 5 to 10% of the settler households on System B are headed by women with full responsibility for their families. More might be expected on the scheme at a later stage as the population ages.

Since serious labor shortages appear to occur at certain points in the paddy cultivation cycle, little outmigration of men for manual labor apparently takes place; on the contrary, laborers (mostly men, but some young women as well) migrate seasonally from the Wet Zone to the Mahaweli project. Scudder questions whether the MA has reserved sufficient household plots for non-farming, particularly laboring, families.

3.3 Division of Labor by Sex

The traditional subsistence economy of villagers in the North Central Province was based on two kinds of agriculture, swidden (chena) and tank-irrigated paddy cultivation. Women and men participated in both types of cultivation, but women played a greater role in chena and men in paddy production. Men cleared the fields for swidden cultivation and watched the crops by night, while women harvested; both sexes sowed, weeded, and watched during the day. The chena produced finger millet (kurakkan) of high nutritional value as well as other grains, pulses, and vegetables. Men played a more dominant role in paddy production, although women participated in harvesting and threshing (except where done with buffaloes). Women were also responsible for post-harvest grain processing, cooking, fetching water and firewood, and child care. (Schrijvers 189-191)

Interviews with Mahaweli settlers and officials produced a similar picture; the biggest difference is that the Project makes no provision for swidden cultivation, which traditionally sustained villagers under low-rainfall conditions and produced nutritional foods for the family. Until recently most emphasis has been placed on paddy, which is clearly seen as a male crop (because it is a cash crop, and also the most prestigious

food). The cultural assumption is that paddy fields are managed by men. Agricultural operations are sex-typed but not rigidly so. Men are most involved in land preparation (plowing and hoeing), irrigation, applying fertilizers and pesticides, transport and marketing of crops. Women do much of the transplanting (a new technique), weeding, and grain processing; they also prepare food for hired labor and carry it to the fields. Women collect fuelwood and fetch drinking water. Both men and women participate in harvesting. Women are seen as somewhat more responsible than men for the homestead garden because of its proximity to the house and the fact that men are more interested in paddy.

Although this is the cultural model most often presented by people when questioned in the abstract, observation and detailed inquiries revealed that exceptions often occur. We talked to a number of women with living husbands, for example, who manage paddy fields (i.e. make production decisions, hire labor, supervise, and sell produce). Ploughing is usually a male task, always when tractors are used, yet we interviewed one family where a widow and her older daughters do the ploughing. Cross-cultural studies suggest that ploughing is so commonly assigned to men not because women necessarily lack the strength but because it requires specialized training and is incompatible with child care, unlike hoe cultivation. We observed both men and women hoeing and transplanting. We were told that livestock were grazed mainly by boys on System B because girls were afraid to herd in isolated locations, although elsewhere either sex might be called upon.

The handling of pesticides and fertilizers seems to be seen very strictly as men's work. One Mahaweli official expressed strong feelings against changing that because of the large number of injuries and deaths due to pesticide misuse. Yet improper handling of pesticides in food areas, as well as the occasional necessity for women to farm without male help, suggests that a better solution might be an intensive safety campaign in which all family members participate.

3.4 Women and the Homestead Garden

In addition to paddy fields, another potentially important component of the Mahaweli farming system is the homestead garden. These are sometimes planted and tended by women but all family members may contribute labor; in some families, women did not claim to be involved in gardening at all. Who cultivates the garden probably depends on a number of factors; whether a woman has young children and no assistance in child care, whether a male settler is preoccupied with paddy cultivation at a given time, differences in settlers' farming backgrounds, and especially the incentives for gardening. Women certainly have the potential for making a substantial contribution here.

The homestead gardens are in a very early stage of development on System B, particularly the fruit trees which take several years to bear. Wet Zone gardens in the Kandyan highlands from which many of the new settlers come are very important for the nutritional status of the family

and also provide steady income throughout the year. These may contain 16 or more different species and provide a wide range of food needed by a household, including all spices (an important cash crop) and coconuts (a dietary staple providing 20% of the average Sri Lankan's calories) (REF) as well as other fruits and vegetables. If grazing or land for fodder crops is available, a milch animal or two (especially female water-buffalo) kept on the homestead plot could also provide milk for the children and for sale. Women and other family members could milk and care for the animals.

Mahaweli officials on System B are aware of the garden's potential value and encourage settlers to start one as soon as possible after arrival. (Once irrigation water is available, people tend to concentrate only on the paddy fields.) The MA suggests a model garden plan and creates demonstration plots at individual hamlets; it also provides settlers with seeds and saplings. Most of the livestock emphasis so far has been on breeding draft animals, and we were told that the country suffers from a serious shortage of milch stock. Apparently fodder can be grown on the bunds between paddy fields, while urea-treated paddy straw can also be fed to animals. In System H, newly-instituted Home Development Centers are training young women in these techniques; so far, however, the dairy animals are unavailable.

It seems to us that an important issue to consider is whether the homestead plot size (1/2 acre) is not too small for these activities. This was a common settler complaint we received as well as a concern in the Scudder evaluations of the project. (REF) Apparently at one point project officials intended to enlarge the plot size, but our observations on System B indicate that this is not being done. At present most of the families on Systems B and H are receiving a special dietary supplement (triposha) because of the inadequacies of their present diet. Even when paddy production is possible on the new schemes, nutritional studies... indicate that when cash-cropping is intensified, people who formerly grew their own food are unapt to use cash income to purchase it. Family nutrition therefore generally suffers.

Until recently, most emphasis in Sri Lankan resettlement schemes has been placed on cash crop (primarily paddy) production. A traditionally diversified farming system has been replaced by one which is highly undiversified and vulnerable to problems of weather, water management, and inadequate credit. It seems to us that even more consideration of the homestead garden might be worthwhile for the reasons given above.

3.5 Implications of Women's Roles for Project Success

Given the overall project goals of generating employment, increasing agricultural productivity, and stimulating regional development, women's roles have several clear implications for project success.

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First, to establish a lowland agricultural system that maximizes scarce land and water resources, the various inputs and services must be available to whomever farms the land, regardless of gender. Sinhalese women (particularly poor women) have traditionally participated in most agricultural operations and some are active farm managers. They may control the family budget and usually are at least consulted about major expenditures. This means that women's motives and incentives for production must be taken into consideration as well as those of men, preferably by encouraging settler participation in policy decisions. For project production goals to be achieved, equal access to inputs is essential.

Another implication is that women as well as men require agricultural extension training, not only or exclusively training in child care, cooking, embroidery, etc. as might be more appropriate for middle-class women in an urban setting. Agricultural training is relevant to all settler women, not simply unmarried ones. It cannot be assumed that husbands are solely responsible for cultivation or will pass on information to wives.

In many situations of agricultural intensification, particularly in South Asia where manual labor is devalued, women tend to withdraw from agriculture as soon as mechanization or hired labor can replace them. Training female officers and extension agents may not only facilitate communication, since rapport is likely to be greater with members of the same gender, but will also create models for young women to emulate and emphasize that agriculture is indeed "women's business". Given problems of labor shortage, unnecessary drudgery must be reduced and women's productive labor must be maximized wherever possible by providing incentives and opportunities for income-generating activities.

For example, the homestead gardens constitute a limited but very important economic resource that can contribute to family nutrition, supplement income, and provide stability to the farming system. If women could generate steady income from the homestead garden by producing saleable crops or keeping a dairy animal, they would have much more incentive for developing this area. At present, many women have no income-generating opportunities of their own at all. The household garden is often not highly valued by settlers because it produces no saleable crops.

Off-farm income generation projects should be focused on women as well as men, particularly since studies in South Asia and elsewhere show that among the poorest groups, women's income is more apt to be spent on basic family subsistence than men's. Female-headed households are apt to be particularly disadvantaged without off-farm income sources. Credit and marketing assistance (particularly market research to determine consumer demand) should be available for women entrepreneurs interested in trade or cottage industries.

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basic family subsistence than men's. Female-headed households are apt to be particularly disadvantaged without off-farm income sources. Credit and marketing assistance (particularly market research to determine consumer demand) should be available for female (and male) entrepreneurs interested in trade or cottage industries. Considering the high priority placed on maternal care, particular attention should be paid to production which can be carried on at home or on a part-time basis, according to needs expressed by the women themselves.

III. PROCESS ANALYSIS

1. General Remarks

Many of the project staff and local leaders we met in System B demonstrated a dynamism, dedication and sense of mission that we found unusual and exciting. Perhaps this is related to the high expectations inherent in the initial stages of a new project. Settlement is gaining momentum, a few zones are beginning to produce crops for the first time, and work on the canals continues literally day and night. The staff appear highly motivated and show unusual flexibility in altering project design to meet unexpected conditions. They seem to identify fairly closely with settlers, show sensitivity to their problems, and are willing to accept their input. They are challenged by an extremely complex task but legitimately proud of their accomplishments.

In the three project areas of System H, we also found many competent, knowledgeable and dedicated staff, some with seven years' experience on that scheme. But the period of rapid change is over, and as bureaucratization sets in, procedures become less flexible. Staff distrust of settler motives and vice versa seems to be a common problem, while poor communication can result in such problems as lack of cooperation between authorities and farmers in water management. Scudder's earlier reports found the same enthusiasm in System H which we now find in System B, but his fifth and most recent report expressed dismay at changes in the direction we noted above.

Another introductory remark we should make is that given the short period we had for field work and the fact that high-level project staff may turn over quite rapidly, it is not easy to identify at what point certain policy decisions were made or even in some cases which agency made them. We feel more confident discussing some of the results than attempting to trace the process of decision-making.

2. Recognition of Women's Roles in Project Implementation

2.1 Orientation of Leadership

We found project leadership generally open and positive in regard to many relevant gender issues, such as women's access to land,

information, and credit. They recognized some of the problem areas and seemed determined to deal with them, even though they acknowledged they did not always have satisfactory solutions.

2.2 Women's Roles Emphasized

As indicated earlier in our discussion of assumptions, officials give priority to the maternal role. For example, it seems to be assumed that married women will not be interested or able to benefit from training programs or to serve as volunteer health workers, presumably because of child care responsibilities. This may not necessarily be the case. On the other hand, officials clearly recognize that women participate in agricultural production, may be land-owners in their own right, and occasionally act as farm managers.

The System B project papers' statement regarding women suggests that AID planners put primary emphasis on women's economic roles, while many Sri Lankans give priority to the maternal role. This difference in values has apparently resulted in some disagreement between Sri Lankan and foreign professionals over appropriate development strategies, e.g. whether or not day care centers should be encouraged (see da Silva).

2.3 Planning vs. Implementation

Not surprisingly, considering the project's complexity and the fact that a large and changing staff is involved, we found discontinuities between planning and implementation. We have already indicated that despite a statement in the project papers to the contrary, women's skills are apparently ignored during settler selection. More surprisingly, some of the plans are in fact being implemented, though it is not always clear to what extent the MA is involved and to what extent other agencies such as UNICEF are making these policy decisions. For example, the statement on women in development in one project paper for System B notes that "there is a special effort underway to recruit women for the provision of services which will be of prime concern to the project. (i.e., women agricultural extension agents, health workers, and irrigationists)." (PP System B p. 43). The same paragraph mentions training courses in new skills for off-farm income generation. In System B, which is just being settled, we found young women health volunteers (provided with training and a medical kit by UNICEF) but no women staff members other than secretaries and no extension programs for women yet. One woman entrepreneur is teaching young women to sew and receiving assistance from the MA in the form of sewing machines, capital and marketing.

In System H, which is older, we found a number of women staff members including Community Development Officers (CDO's) and one Unit Manager. There are supposed to be one male and one female CDO for each block, but in fact women predominate (apparently because male officers have better chances for promotion and tend to move on to higher administrative positions). However, the fact that female officers do exist and that they

seem to be treated with respect by colleagues and settlers alike speaks for the relative openness of the MA bureaucracy.

The MA has also recently created several Home Development Centers, where young unmarried women study a curriculum which includes home gardening and dairying (this curriculum is apparently determined by the Community Development Ministry headquartered in Colombo). UNICEF has provided equipment and bicycles so that the women can commute daily from home, an innovative stroke since lack of mobility limits women's training opportunities in most South Asian countries. The MA has recently begun to sell clothing, preserved foods and handicrafts produced at these centers.

3. Accommodation of Project Design to Target Group

3.1 General Modifications

Given the project's scale and the scattered location of potential settlers, beneficiary participation in project design was apparently minimal. We can, however, ask whether designers and implementers of the present Mahaweli schemes, especially System B, took account of settler needs identified in earlier projects and whether effective mechanisms exist for maximizing settler input into current local decision-making. This section will consider general modifications, while 3.2 below will examine specific accommodations to women.

There seem to be several important ways in which the Mahaweli Authority, and System B in particular, has attempted to improve on earlier settlement schemes. Some of these are concerned with broad approaches, while others involve very specific policies. For example, while most AID funds support canal construction, the Mahaweli Authority takes a broad "multi-sectoral" approach to the whole resettlement process which recognizes that a complete economic and social infrastructure and numerous support services are necessary to project success. Planning and support attempt to address this full range of needs, from settler selection to maintenance until the first irrigated crop can be introduced to follow-up extension and training.

In addition to this comprehensive orientation, project officials in System B try to respond flexibly to settlers' problems. For example, according to the Scudder reports on System H some settler families found themselves in desperate straits when no more employment from construction work was available and irrigation had not yet started. In System B, families receive World Food aid until their first harvest even if this means that they extend the usual time limit. Consequently leasing or abandonment of farms does not seem to be a problem in B.

Authorities have also changed from a system of clearing all land before assignment to asking settlers to clear their own household plot. The Authority allocates tools and materials for building (house tiles, latrine slab, cement well ring) but allows settlers to design their own

homes and gardens as they please. Project officials also leave useful trees standing now instead of felling indiscriminately, partly for use as firewood.

Project planners also seek to maximize social solidarity on System B by settling people from the same parent community, ethnic group, and sometimes the same extended family in a single hamlet whenever possible. Apparently there is more social heterogeneity on H with considerably less sense of community and social support for individual families.

To what extent does the MA build in mechanisms for feedback from settlers or participation in decision-making? Two types of organizations promoted by the Mahaweli Authority provide a forum for some feedback: irrigation turnout organizations and community development organizations. Though membership overlaps, a clear conceptual and practical distinction exists between these groups. The first is organized around an irrigation turnout, consisting of farmers who must cooperate with each other if their fields are to receive adequate water. They organize work groups to clear and repair irrigation channels, rotate water among their fields, mediate disputes, and represent themselves as a group to officials in charge of the larger irrigation system. The community development group, based on the residential unit or hamlet, is conceptualized as the vehicle for other community projects. These organizations may build temples, provide child care, or protect settlers from wild animals; in some places they provided an important means of communicating settler problems to the Mahaweli officials.

Scudder's earlier reports were very optimistic about these groups; the latest (number five) expressed dismay concerning policy changes which would almost certainly affect the vitality of the settler organizations. First, in some places MEA attempted to combine the two types of organization, though extensive experience in Sri Lanka and elsewhere has established that serious deterioration of water management almost inevitably results. This policy has apparently been reversed, and it seems that in most places in Systems H and B, separate irrigation and community organizations are again being promoted. (In System B, of course, few turnout groups are actually functioning since irrigation water is not yet widely available.)

The second policy change was that Unit Managers, rather than elected settlers, were being installed as chairmen of the community development groups. Our field visits confirm that this is in fact the rule in many units of both System H and B. According to Scudder, this had already resulted in diminished settler participation and a general sense that the organizations were no longer theirs. We could not fully substantiate this observation, but tended to receive the same impression from settlers and project staff. Although limited feedback mechanisms exist in the form of the two groups described above, it seems that a more participatory approach would facilitate communication and cooperation between settlers and staff, particularly during later stages of the project.

While there is no rigid bar to female participation in the turnout and community development groups (we heard of one woman-headed turnout group in System H), it should be noted that membership is heavily male and female leadership rare. There does not seem to be any regular mechanism for the expression of women's needs except through male-dominated groups.

3.2 Accomodation of Project Design to Women

According to the System B project papers, the contributions of women to area development were not adequately considered when System H was implemented; settler selection criteria for B were therefore to be revised to favor families with skilled women. As already indicated, this does not seem to be the case. The project papers (written in 1980 and 1981) state that several aspects of project design reflect women's needs, not only for agricultural training and supplementary income but for "privacy, access to bathing facilities, markets and shops" (pp. 42-43) in the settlements. It is not clear to us exactly how women's input affected settlement design, except possibly in the decision of the MA to locate fellow villagers or kin in the same hamlets wherever possible. This had important practical consequences for women, particularly those with young children. These women were apparently much more restricted in mobility on System H because they had no relatives or trusted neighbors to care for children in their absence.

In addition, the same project paper notes that women have complained that the half acre homestead plot is too small, and that the GSL is examining the issue (p. 103); a later paper indicates that plot size will be increased. This change has not, however, been implemented to the best of our knowledge.

Another accomodation of project design, on System H at least, has been to require that at least half the Community Development Officers be women. System B has only male officers at present, but Home Development Centers are planned and female staff will be recruited at a later stage of the project.

Finally, day care centers (supported by UNICEF) have been introduced on both systems, apparently due to settler request. Some controversy seems to exist over their appropriateness for developing countries and whether mothers did not in fact desire a Montessori-type school rather than a simple day-care facility (see da Silva). As we arrived during a holiday period we could not adequately judge how well these were attended, but from settlers' statements it seems that about 10% of settler families use them.

IV. ANALYSIS OF RESULTS

1. Progress in Implementation (General)

1.1 Introduction

The present report is intended primarily as a WID assessment and not as a full-scale evaluation of the AMP. Our general comments are therefore tentative and should be read in conjunction with the broader evaluation. Having said this, we will make a few observations relative to implementation of the project as a whole. Comments will focus on the AMP's social impact rather than engineering outputs in most cases.

1.2 Outputs in Relation to Targets

The AMP seeks to generate income and hydroelectric power, increase production, spur regional development, and improve settlers' quality of life. What have the outputs been to date with regard to settlement?

First, as noted earlier, Systems H and B are at very different stages of the settlement process. System H has been settled and provided with irrigation water, while the MA must still clear large areas of System B, select and move the settlers, and complete canals and other physical infrastructure. Major targets to consider in B at present would be numbers of people settled and acreage provided with irrigation.

Settlement started on B in 1982; as of the end of March 1985 there were 7,645 settlers on the entire system, with plans to settle another 5,000 before the end of the year. The first irrigation water arrived in October 1984, about two years after the earliest settlers moved onto the scheme, and is so far available only in Zone 5; farmers in Zone 1 have been promised water by October 1985 for the main maha season. Construction crews are behind schedule on the canals and consequently working day and night.

One implementation problem, then (also mentioned in Scudder's fifth report), is the time lag between movement of settlers on-scheme and the completion of irrigation canals. In the initial settlement period, farmers are expected to build their houses, level fields, and start home gardens; they support themselves through construction work for the MA and receive food assistance from the World Food Program (WFP). Scudder found that on System H, settlers had difficulty supporting themselves without irrigation after 18 months, when World Food supplies were discontinued and few jobs were available on-scheme. Many resorted to illegal leasing-out, migrated for employment elsewhere, or went into debt to money-lenders to pay for subsistence. We did not find this situation on System B, partly because most people receive World Food supplies so far, and settler morale appears relatively high; yet we heard more complaints about this issue than anything else. Inordinate delay in providing irrigation could very well erode the confidence which many settlers have in the MA at present.

Another implementation problem, this time on System H, also concerns irrigation. Early estimates of the availability of water for the dry season were overly optimistic; due to a combination of factors (engineering errors, drought, poor water management), not enough water is available for a second crop and in many cases only half the available

land can be cultivated.

acreage can be cultivated at this time. Uncertainty about water release creates other problems, such as lack of cooperation between settlers and project staff; for example, farmers may be unwilling to prepare their fields if they are not confident that the water will actually be authorized. In tail-end areas, where adequate water is a particularly severe problem, some farmers prefer to lease their land to others and to work as laborers. Since many settlers had apparently expected to obtain two or even three crops per year, they are understandably unhappy about the current situation.

Other serious constraints in System H are the unreliability of bank credit and crop insurance (see Peoples' Bank report). Since the new farming system depends heavily on purchased inputs, farmers require adequate capital in order to obtain maximum production. According to officials and bank managers, however, after several years of drought and bad weather approximately 70-80% of farmers on System H are in default (and therefore ineligible to obtain further bank loans). Crop insurance was supposed to protect against such losses but apparently did not adequately cover farmers. Some bank personnel also express the view that farmers tend to see the loans as government grants and are reluctant to repay them. Settlers may be obtaining credit from sources other than banks (e.g. loans from relatives or moneylenders); however, our interviews indicate that many lack sufficient capital for the necessary inputs. A number of settlers have reduced fertilizer use, with a consequent drop in yields, while others lease out their land for the same reason. Some farmers who are successfully repaying bank loans commented to us that they are just barely breaking even.

1.2 Impact on Goals

The project's impact on its primary goals (employment, increased productivity, regional development, and improvement of the quality of life) will be considered in this section.

Income generation. One of the AMP's major goals is to alleviate unemployment. Planners anticipated three categories of beneficiaries; those receiving irrigated and upland farms (173,000 people), laborers working on system construction (some of whom would be settlers), and those benefitting from an estimated 30,800 new jobs created through regional development. The total number of direct and indirect beneficiaries was estimated (in 1980) to be 430,000 to 480,000 people for the entire AMP by its completion in 1990. (Phase I System B p. 20) We do not have data on total numbers of people employed and so cannot comment on the accuracy of these estimates; however, we do know that targets were reduced in 1981 (?) due to budgetary problems. The System B Sector Support Paper of 1981 anticipates that 34,600 families will be settled in System B (LATER REDUCED?), of whom 7,645 (a total population of roughly 38,000) had been settled by March 1985. Many of these people have worked, or are working, in system construction. Other forms of off-farm employment are minimal at this stage, with the exception of some households in the old Pimburettewa

settlement scheme where husbands hold jobs in Polonnaruwa. Two exceptions are a blacksmith's cooperative employing men from related families (one lower-caste group settled as a unit) and a women's project (headed by the wife of the blacksmith cooperative's president) manufacturing mosquito nets. The MA gives credit to both groups and purchases their products for use on the System.

In System H, the pilot phase of the Mahaweli Program, employment from construction has ceased and income must now come from crop production, agricultural labor, and off-farm activities. Concerned about employment for the second generation, project authorities have recently established several vocational training programs including those at Home Development Centers (to be discussed below). Since these programs are very new, they have had little effect on employment so far. For example, one training program in carpentry was established three years ago near Galnewa in the Kalawewa Project area of System H, which has a total population of 11,012 families or about 55,000 people. The carpentry program is an income-generating project for off-season employment and most participants are male farmers or the sons of farmers. The MA provides a building and members make bee boxes, desks, chairs, cupboards etc. We were told that carpenters can earn up to Rs. 1500 per month; so far, however, only 12 people have completed the nine-month course and there are only 21 members of the cooperative formed last year. There is a cooperative at Galikiriagama for basket-weavers (who use locally available materials and sell within the project), as well as a training center for brass-work and wood-carving, together with a Home Development Center, at Helambewa in the same project area.

The need for shops, private clinics, machinery repair, etc. has of course created new job opportunities and in some cases entirely new market towns (more evident on System H so far than System B); we do not, however, have data on numbers of new jobs produced in this manner.

Another point to consider in regard to the goal of generating employment is to what extent settlers were in fact previously unemployed or without resources. We do not have detailed information on this issue; however, contrary to our expectations we found that most people on System H were not from the electorates (and therefore selected on the basis of landlessness). Approximately 60% are resettlers from old schemes or purana villages in the area, while 15% are evacuees from locations such as Victoria and Kotmale flooded during dam construction. Both evacuees and resettlers were frequently farmers before their inclusion in System H, while we found that a number of resettlers hold off-farm jobs. We also found considerable wealth variation between families; in some cases evacuees received up to Rs. 800,000 in property compensation. It therefore cannot be assumed that all project settlers were previously poor or unemployed.

Increased Production. In addition to employment, planners of the Mahaweli Project sought self-sufficiency in rice. In fact by 1985 Sri

Lanka was producing 90% of its needs, at least partly due to the extension of cultivated area under the Mahaweli Project. We were told that the first paddy yields in System B averaged over 100 bushels per acre, about twice the customary yield in Sri Lanka (CHECK)).

In contrast, a diagnostic analysis of System H found that paddy yields were far below their potential (2,456kg/ha in Maha 81/82 vs. experimental yields of 5,165 to 6,817 kg/ha). Major problems, as indicated above, were water shortages, farmers' inadequate knowledge of water management, and lack of sufficient capital. (p. 27) Researchers found that no institutional decision-making mechanism existed for farmers, and that 58% of their sample had received no advice at all on water management. (p. 30) Settlers also suffered from shortage of draft power, which delayed agricultural operations. Average farm income ranged from Rs. 8,796 for households at the tail reach of turnouts to Rs. 10,741 at the head reach, roughly comparable to the income of clerks or teachers but much more seasonal in nature. This report found no crop insurance scheme in operation in the study area. (p. 27) We received conflicting information on paddy yields in H from both official sources and farmers. Some settlers were producing over 100 bushels per acre while others clearly were not.

The lessons of System H seem to be clear: settlers require more than land and water in order to reach and maintain high levels of productivity. Credit or working capital, crop insurance, training in water management and new cultivation practices, sufficient draft power and labor must be available. In addition, the farming system must be diversified or supplementary income generated if farmers are to avoid taking subsistence loans to maintain themselves between crops. The real challenge to be met on System B will come in the provision of adequate training and services for farmers, the development of decision-making mechanisms such as the community development and turnout groups, and the maintenance of the irrigation system.

Regional Development. Another goal of the Mahaweli Project is to promote regional development, which can only be done by pushing farming above subsistence level. Without sufficiently high levels of productivity, consumer demand will not support much in the way of specialized goods and services. The System B project papers assume that approximately 30,800 permanent jobs in agro-industry, consumption goods, services etc. will eventually be created. (1980, p. 20) We do not have data on numbers of jobs created so far, but interviews with settlers and bank personnel suggest that consumer demand for many goods is quite limited at present on both B and H. One of the reservations continually voiced by people when we discussed possible income-generation schemes was the question of markets. Except for a few items like ready-made clothing and perhaps milk, people tended to see Colombo as the only outlet. Most of the goods produced now by various projects (clothing, simple tools for settlers, mosquito nets) are purchased directly by the MA or privately by its personnel.

Quality of Life. A final goal addressed by the project (often implied rather than directly stated) is improvement in the quality of life. Presumably a higher standard of living, in terms of health, nutrition, education, and satisfaction of other needs should follow from participation in the Project. There are two equally legitimate ways of assessing this; settlers' own evaluations of their present situation and analysis by outsiders which compares present and previous living conditions. Since we do not have information on settlers' lives before they entered the System, it is impossible to measure change. However, we can discuss farmers' reactions as well as some problem areas.

Whether or not settlers feel their situation has improved seems closely related to a) whether they had any resources previously and b) their expectations. Those who had to evacuate property in highland areas tend to be most dissatisfied, while destitute people are very grateful for land. Settlers from the Wet Zone have trouble adjusting to a hotter, drier climate and suffer from malaria. In the older scheme, System H, overly optimistic expectations of water availability have led to disillusionment; however, many people are still happy to have land, or more land (and irrigation) than they had previously.

Settlers also face a number of health problems on the Mahaweli Project. We were told that before families move, meetings are held to warn people to take health precautions (boiling water, malaria prophylaxis), and we found a surprisingly high awareness of the need for these measures by settlers on System B. In spite of this, many people complained of frequent malaria attacks; we were told that malaria is endemic and cannot be controlled. Our impression is that settlers and even many Mahaweli staff do not understand the need for taking pills on a regular schedule, or beginning them some time before moving into a malarial area.

Nutrition is another problem area. It is not clear that nutrition is necessarily poorer on the Mahaweli Project than elsewhere in Sri Lanka, but it leaves much to be desired. Millet is no longer being cultivated, milk is rarely available, tropical fruit trees require several years to bear, and farmers focus almost exclusively on cash crops such as rice and chillies, despite efforts of Project staff to encourage diversification. Children are breast-fed but suffer nutritionally after weaning. International agencies such as CARE and UNICEF are providing triposha, a high-protein mixture of soy, wheat, and maize, to children and mothers throughout the project. Some staff feel that proper food is not available, or that farmers do not keep enough paddy for home consumption (and to be sold bit by bit for other subsistence needs); others feel that nutritional education is the answer. Because of their agricultural and domestic roles, women will clearly play a major part in the solution of this problem. We turn now to a consideration of project performance in reference to women.

2. WID Performance.

2.1 Disaggregate Project Outputs. No targets for women (number of trainees, loan beneficiaries, etc.) were set in the project papers we examined, and gender-disaggregated data are scarce. We were, however, able to locate some data of this type, namely information on title-holding by men and women from Land Officers and figures on numbers of male and female project staff. In addition, officials and bank managers could give us rough estimates of percentages of women obtaining credit, acting as female farm managers, or heading households. Some of these figures have already been mentioned, while others will be given below while discussing specific topics.

2.2 Effects on Women's Access to and Control of Resources. Basic resources in the Mahaweli Project include land, water, capital, credit, employment, and information. Because land is the key resource, we will examine this issue first. Some accounts of System H state that women have lost rights to land under the Mahaweli Program; i.e., that despite a cultural tradition of inheritance by both men and women, only men receive land. The actual situation is considerably more complicated, as briefly discussed earlier in this paper, and varies according to category of settler. Evacuees and prior residents of an area being settled are entitled to receive land, regardless of gender, if they are married. The allotment process is much more restrictive for new settlers chosen from the electorate, with the result that usually only men are considered for allotments and female household heads tend to be excluded. Officials on System B estimated that approximately 35% of allottees there were women. In villages with many evacuees or prior residents, the percentage is higher; for example, in Mahawewa (32) there were 75 women and 102 male land-holders.

With regard to inheritance, three features of the Land Development Ordinance of 1935 appear to have a negative effect on women's access to land: The rule that only one person may hold title, that only one person may inherit land, and the bias that the person inheriting will normally be male. As long as land remains for allotment on the settlement scheme, landless children of either gender can apply for it in their own right; once that land is gone, in most cases eldest sons will inherit the land.

Just because land cannot be legally subdivided, however, does not mean it cannot be subdivided in practice. In fact this commonly happens in settlement schemes world-wide. Land may officially remain in the name of one person while it is actually subdivided according to customary practices. We learned that in some Sri Lankan settlement schemes more than 40 years old, the allotment often remains legally in the name of a person now deceased and serious family disputes arise over its distribution. Such situations may not be unusual 30 years from now in System B. Even now, we found a few cases in B where kin (in one case an allottee's sister and brother-in-law) were the actual residents. Although the situation requires further investigation, it seems that in at least some cases women may have access to land even though they do not hold legal title.

acreage can be cultivated at this time. Uncertainty about water release creates other problems, such as lack of cooperation between settlers and project staff; for example, farmers may be unwilling to prepare their fields if they are not confident that the water will actually be authorized. In tail-end areas, where adequate water is a particularly severe problem, some farmers prefer to lease their land to others and to work as laborers. Since many settlers had apparently expected to obtain two or even three crops per year, they are understandably unhappy about the current situation.

Other serious constraints in System H are the unreliability of bank credit and crop insurance (see Peoples' Bank report). Since the new farming system depends heavily on purchased inputs, farmers require adequate capital in order to obtain maximum production. According to officials and bank managers, however, after several years of drought and bad weather approximately 70-80% of farmers on System H are in default (and therefore ineligible to obtain further bank loans). Crop insurance was supposed to protect against such losses but apparently did not adequately cover farmers. Some bank personnel also express the view that farmers tend to see the loans as government grants and are reluctant to repay them. Settlers may be obtaining credit from sources other than banks (e.g. loans from relatives or moneylenders); however, our interviews indicate that many lack sufficient capital for the necessary inputs. A number of settlers have reduced fertilizer use, with a consequent drop in yields, while others lease out their land for the same reason. Some farmers who are successfully repaying bank loans commented to us that they are just barely breaking even.

1.2 Impact on Goals

The project's impact on its primary goals (employment, increased productivity, regional development, and improvement of the quality of life) will be considered in this section.

Income generation. One of the AMP's major goals is to alleviate unemployment. Planners anticipated three categories of beneficiaries; those receiving irrigated and upland farms (173,000 people), laborers working on system construction (some of whom would be settlers), and those benefitting from an estimated 30,800 new jobs created through regional development. The total number of direct and indirect beneficiaries was estimated (in 1980) to be 430,000 to 480,000 people for the entire AMP by its completion in 1990. (Phase I System B p. 20) We do not have data on total numbers of people employed and so cannot comment on the accuracy of these estimates; however, we do know that targets were reduced in 1981 (?) due to budgetary problems. The System B Sector Support Paper of 1981 anticipates that 34,600 families will be settled in System B (LATER REDUCED?), of whom 7,645 (a total population of roughly 38,000) had been settled by March 1985. Many of these people have worked, or are working, in system construction. Other forms of off-farm employment are minimal at this stage, with the exception of some households in the old Pimburettewa

settlement scheme where husbands hold jobs in Polonnaruwa. Two exceptions are a blacksmith's cooperative employing men from related families (one lower-caste group settled as a unit) and a women's project (headed by the wife of the blacksmith cooperative's president) manufacturing mosquito nets. The MA gives credit to both groups and purchases their products for use on the system.

In System H, the pilot phase of the Mahaweli Program, employment from construction has ceased and income must now come from crop production, agricultural labor, and off-farm activities. Concerned about employment for the second generation, project authorities have recently established several vocational training programs including those at Home Development Centers (to be discussed below). Since these programs are very new, they have had little effect on employment so far. For example, one training program in carpentry was established three years ago near Galnewa in the Kalawewa Project area of System H, which has a total population of 11,012 families or about 55,000 people. The carpentry program is an income-generating project for off-season employment and most participants are male farmers or the sons of farmers. The MA provides a building and members make bee boxes, desks, chairs, cupboards etc. We were told that carpenters can earn up to Rs. 1500 per month; so far, however, only 12 people have completed the nine-month course and there are only 21 members of the cooperative formed last year. There is a cooperative at Galikiriyagama for basket-weavers (who use locally available materials and sell within the project), as well as a training center for brass-work and wood-carving, together with a Home Development Center, at Helambewa in the same project area.

The need for shops, private clinics, machinery repair, etc. has of course created new job opportunities and in some cases entirely new market towns (more evident on System H so far than System B); we do not, however, have data on numbers of new jobs produced in this manner.

Another point to consider in regard to the goal of generating employment is to what extent settlers were in fact previously unemployed or without resources. We do not have detailed information on this issue; however, contrary to our expectations we found that most people on System H were not from the electorates (and therefore selected on the basis of landlessness). Approximately 60% are resettlers from old schemes or purana villages in the area, while 15% are evacuees from locations such as Victoria and Kotmale flooded during dam construction. Both evacuees and resettlers were frequently farmers before their inclusion in System H, while we found that a number of resettlers hold off-farm jobs. We also found considerable wealth variation between families; in some cases evacuees received up to Rs. 800,000 in property compensation. It therefore cannot be assumed that all project settlers were previously poor or unemployed.

Increased Production. In addition to employment, planners of the Mahaweli Project sought self-sufficiency in rice. In fact by 1985 Sri

Lanka was producing 90% of its needs, at least partly due to the extension of cultivated area under the Mahaweli Project. We were told that the first paddy yields in System B averaged over 100 bushels per acre, about twice the customary yield in Sri Lanka (CHECK)).

In contrast, a diagnostic analysis of System H found that paddy yields were far below their potential (2,456kg/ha in Maha 81/82 vs. experimental yields of 5,165 to 6,817 kg/ha). Major problems, as indicated above, were water shortages, farmers' inadequate knowledge of water management, and lack of sufficient capital. (p. 27) Researchers found that no institutional decision-making mechanism existed for farmers, and that 58% of their sample had received no advice at all on water management. (p. 30) Settlers also suffered from shortage of draft power, which delayed agricultural operations. Average farm income ranged from Rs. 8,796 for households at the tail reach of turnouts to Rs. 10,741 at the head reach, roughly comparable to the income of clerks or teachers but much more seasonal in nature. This report found no crop insurance scheme in operation in the study area. (p. 27) We received conflicting information on paddy yields in H from both official sources and farmers. Some settlers were producing over 100 bushels per acre while others clearly were not.

The lessons of System H seem to be clear: settlers require more than land and water in order to reach and maintain high levels of productivity. Credit or working capital, crop insurance, training in water management and new cultivation practices, sufficient draft power and labor must be available. In addition, the farming system must be diversified or supplementary income generated if farmers are to avoid taking subsistence loans to maintain themselves between crops. The real challenge to be met on System B will come in the provision of adequate training and services for farmers, the development of decision-making mechanisms such as the community development and turnout groups, and the maintenance of the irrigation system.

Regional Development. Another goal of the Mahaweli Project is to promote regional development, which can only be done by pushing farming above subsistence level. Without sufficiently high levels of productivity, consumer demand will not support much in the way of specialized goods and services. The System B project papers assume that approximately 30,800 permanent jobs in agro-industry, consumption goods, services etc. will eventually be created. (1980, p. 20) We do not have data on numbers of jobs created so far, but interviews with settlers and bank personnel suggest that consumer demand for many goods is quite limited at present on both B and H. One of the reservations continually voiced by people when we discussed possible income-generation schemes was the question of markets. Except for a few items like ready-made clothing and perhaps milk, people tended to see Colombo as the only outlet. Most of the goods produced now by various projects (clothing, simple tools for settlers, mosquito nets) are purchased directly by the MA or privately by its personnel.

Quality of Life. A final goal addressed by the project (often implied rather than directly stated) is improvement in the quality of life. Presumably a higher standard of living, in terms of health, nutrition, education, and satisfaction of other needs should follow from participation in the Project. There are two equally legitimate ways of assessing this; settlers' own evaluations of their present situation and analysis by outsiders which compares present and previous living conditions. Since we do not have information on settlers' lives before they entered the System, it is impossible to measure change. However, we can discuss farmers' reactions as well as some problem areas.

Whether or not settlers feel their situation has improved seems closely related to a) whether they had any resources previously and b) their expectations. Those who had to evacuate property in highland areas tend to be most dissatisfied, while destitute people are very grateful for land. Settlers from the Wet Zone have trouble adjusting to a hotter, drier climate and suffer from malaria. In the older scheme, System H, overly optimistic expectations of water availability have led to disillusionment; however, many people are still happy to have land, or more land (and irrigation) than they had previously.

Settlers also face a number of health problems on the Mahaweli Project. We were told that before families move, meetings are held to warn people to take health precautions (boiling water, malaria prophylaxis), and we found a surprisingly high awareness of the need for these measures by settlers on System B. In spite of this, many people complained of frequent malaria attacks; we were told that malaria is endemic and cannot be controlled. Our impression is that settlers and even many Mahaweli staff do not understand the need for taking pills on a regular schedule, or beginning them some time before moving into a malarial area.

Nutrition is another problem area. It is not clear that nutrition is necessarily poorer on the Mahaweli Project than elsewhere in Sri Lanka, but it leaves much to be desired. Millet is no longer being cultivated, milk is rarely available, tropical fruit trees require several years to bear, and farmers focus almost exclusively on cash crops such as rice and chillies, despite efforts of Project staff to encourage diversification. Children are breast-fed but suffer nutritionally after weaning. International agencies such as CARE and UNICEF are providing triposha, a high-protein mixture of soy, wheat, and maize, to children and mothers throughout the project. Some staff feel that proper food is not available, or that farmers do not keep enough paddy for home consumption (and to be sold bit by bit for other subsistence needs); others feel that nutritional education is the answer. Because of their agricultural and domestic roles, women will clearly play a major part in the solution of this problem. We turn now to a consideration of project performance in reference to women.

2. WID Performance.

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2.1 Disaggregate Project Outputs. No targets for women (number of trainees, loan beneficiaries, etc.) were set in the project papers we examined, and gender-disaggregated data are scarce. We were, however, able to locate some information of this type, mainly on allottees and project staff in some areas. Officials and bank managers could also give us rough percentages of women obtaining credit, acting as female farm managers, or heading households. Some of these figures have already been mentioned, while others will be given below while discussing specific topics.

2.2 Effects on Women's Access to and Control of Resources. Basic resources in the Mahaweli Project include land, water, capital, credit, employment, and information. Because land is the key resource, we will examine this issue first. Some accounts of System H state that women have lost rights to land under the Mahaweli Program; i.e., that despite a cultural tradition of inheritance by both men and women, only men receive land. The actual situation is considerably more complicated, as briefly discussed earlier in this paper, and varies according to category of settler. Evacuees and prior residents of an area being settled are entitled to receive land, regardless of gender, if they are married. The allotment process is much more restrictive for new settlers chosen from the electorate, with the result that usually only men are considered for allotments and female household heads tend to be excluded. Officials on System B estimated that approximately 35% of allottees there were women. In villages with many evacuees or prior residents, the percentage is higher; for example, in Mahawewa (32) there were 75 women and 102 male land-holders.

With regard to inheritance, three features of the Land Development Ordinance of 1935 appear to have a negative effect on women's access to land: The rule that only one person may hold title, that only one person may inherit land, and the bias that the person inheriting will normally be male. As long as land remains for allotment on the settlement scheme, landless children of either gender can apply for it in their own right; once that land is gone, in most cases eldest sons will inherit the land.

Just because land cannot be legally subdivided, however, does not mean it cannot be subdivided in practice. In fact this commonly happens in settlement schemes world-wide. Land may officially remain in the name of one person while it is actually subdivided according to customary practices. We learned that in some Sri Lankan settlement schemes more than 40 years old, the allotment often remains legally in the name of a person now deceased and serious family disputes arise over its distribution. Such situations may not be unusual 30 years from now in System B unless sufficient off-farm employment for the second generation is created. Even now, we found a few cases in B where kin (in one case an allottee's sister and brother-in-law) were the actual residents. Illegal inheritance practices under customary law may in fact continue to give women access to land in their own right.

Another point is that if households were previously landless, and especially if wives participate in production and financial decisions with their husbands, women themselves may not perceive the land situation as detrimental to their interests (cf. da Silva) but rather an improvement.

Water (availability and management) is an issue affecting all settlers, male and female. As previously indicated, officials assume that men are most concerned with irrigation, though women apparently participate in turnout groups when husbands are otherwise occupied. Clearly both sexes should be trained in water management. Extension has not been effective in reaching farmers on System H, and it is not clear what changes in approach, if any, will be tried in System B.

Our information on credit availability, at least from banks, indicates that women allottees have no more difficulty than males in receiving crop loans. According to personnel at the Bank of Ceylon in System B (the only bank for zones 1 and 5), 25-30% of seasonal loan recipients are women. Most of them, who not only take loans but actively manage the farms with hired labor, have living husbands. (This is particularly true of Pimburettewa tract 9 where a number of husbands have land and government jobs in Polonnarua. Pimburettewa is an old settlement scheme which has been included in System B.) Whether fewer women will be eligible for loans in the next generation depends on a) how much land is available for allotment to children of present settlers and b) whether customary or legal rules of inheritance prevail.

While crop loans are readily available, entrepreneurs of both sexes find it very difficult to receive bank loans for anything other than farming. The basic problem is that almost everyone has a crop loan already and banks will not exceed certain credit limits. This is a real constraint to the development of small businesses. Bank officials are dubious about the profitability of most rural enterprises because they feel that local demand is insufficient. However, as previously indicated, not all settlers enter these schemes without resources and we met a number of entrepreneurs including several women. The MA has set aside commercial allotments of up to 1 1/2 acres for various enterprises from boutiques (small general stores) to rice mills. In the Kalawewa Project area of System H, 217 people have received allotments for a total commercial area of a little over 42 acres. No sex-disaggregated figures were available, but an officer estimated that about 2% of these are leased to women, mostly for boutiques and dressmaking shops. Commercial allotments are available at hamlet, village center, and township levels, so theoretically women should be able to operate commercial establishments from their own villages. Women from well-to-do families obviously have more investment opportunities than poor women.

Off-farm employment opportunities for women, as for most men, are limited primarily to agricultural labor and construction work when available. About 20% of the agricultural laborers on the experimental farm on System B are said to be women. Both men and women receive about 30 /=-

per day for agricultural and construction work (wages are set by the MA). Construction workers are employed about 20-25 days per month while farm laborers are busiest (in areas which have received irrigation) during the two cropping seasons.

One question which might be asked regarding employment is to what extent the MA attempts to recruit female staff members from the settler population. In System B, where settlement began only in 1982, we were told that there were no female staff except clerks and Health Volunteers. The Health Volunteers are young women between 18 and 25, educated up to the 10th standard, whom the Social Services Department trains in such subjects as health, nutrition, child care, and family planning. There eventually should be one Health Volunteer for every 50 families. About 60 have attended the 22-lecture course so far and another 40-60 must be trained. UNICEF, which is assisting the program, provides them with a medical kit. Volunteers receive no salary but value their training and the chance to contribute to the community; in a society that holds education in high esteem, it also gives young women a prestigious position. Much of their work on both systems involves treating malaria.

In addition to the Health Volunteer program, which now has 355 Volunteers (both male and female on H), we found a few female officers on that scheme as well. The Eppawala Project, for example, had nine female staff members other than clerks or typists; one senior CDO, four Block CDO's, one Unit Manager, one Field Assistant, and two Engineering Assistants. Men were far more common than women in all positions except Community Development Officer (CDO) and secretarial work (see Table). A special effort is made to select CDO's from within the project, while according to MA rules each block should have one male and one female CDO. (Female CDOs focus on women and child welfare--nutrition, health, etc.) In the Kalawewa Project area of H, 10 of 13 CDOs were women who had previously been Community Development Assistants (CDA). They were promoted to CDO when the CDA post was eliminated at the time of changeover from MDB to MA. Because men are apt to be promoted more rapidly than women, the tendency has been for women to remain CDO's while men move up. At the Unit level, three of the 88 possible positions are filled by women, all Field Assistants. In Nochchiagama Region, a third major division of System H, there are four female Unit Managers (all apparently in unusually small units) out of a total of 40.

Where the MA has required the recruitment of women and selected staff locally, it seems to have been quite successful in locating qualified female staff and Health Volunteers. As far as can be ascertained on a brief visit, the women officers appear to interact freely with other staff and to be provided with transport (Health Volunteers have bicycles, Unit Managers and some CDOs motorbikes or access to jeeps). However, most of the positions filled by women are low-level (CDOs work under the Unit Manager although their salary is the same) and welfare-oriented; none are Agricultural Officers and only a few, Field Assistants. Health, nutrition, and child care are clearly seen as areas of female interest; agriculture

is not emphasized to the same extent. It appears that a middle-class urban model of female roles, as in many developing countries, may have influenced policy decisions about training appropriate for rural women. One marked exception to this tendency is the curriculum at the Home Development Centers.

Since System B is in the earliest stage of settlement, we cannot easily discuss results with regard to vocational training and income-generating projects for women. Officials are busy moving people in, encouraging them to build houses and latrines and plant homestead gardens, and completing canal construction. The MA does plan to build a Home Development Center (HDC) at some time in the future, and we can comment on the centers of this type which we observed in System H.

The Home Development Centers in H are very recent and oriented towards unmarried women. The one in Kalawewa Project has been in operation for the past year, with 75 women trained so far (three groups) in the four-month course. One particularly innovative feature of the centers is that UNICEF has provided bicycles which those who come from distant locations may use. Elsewhere in South Asia, particularly in rural areas, women are even more handicapped by lack of transportation than men; often it is not customary for women to ride bicycles and they are afraid to travel on foot without a male escort. In System H, however, young women can safely ride to the centers in groups.

Students can attend the program after 10th standard. The curriculum includes four days on national traditions and customs; two weeks of home science; two weeks of health and sanitation; two weeks on cattle and agriculture; and two weeks of needlework and handicrafts. The remaining two months are spent in village projects like home gardens. The Center has its own garden, on which students work; a building for classes; a model house (with thatched roof); a biogas unit (not in operation); and a stall for dairy cattle. No animals are available so far and the students visit a farm for demonstrations of livestock care. Doctors and health educators give guest lectures about common problems such as worms, dysentery, childhood diseases, contaminated water. Agricultural topics include dairy cows; seedbeds; fertilizer; and agrochemicals (not advised for home gardens). There are four regular teachers in addition to the guest speakers.

The Center is presently borrowing two sewing machines but expects to be supplied with 20 of them by UNICEF. Students were making jams and chutney, sewing children's clothes, and making handicrafts to be sold at an upcoming national rural mobile market. The MA has also provided them with a shop at Nochchiagama, the Helebewa Sales Center, while another will be started at Kalawewa. The Center initiated the jam- and chutney-making project in response to local demand; when farmers grew too many vegetables at the same time and glutted the market, they asked officials for some way of preserving them. The MA gives the Center loans to buy vegetables, while UNICEF has supplied canning equipment. Students

who have finished the course are welcome to return to the center whenever they wish to use its equipment and make products for sale. Since the sales center was in its first month of operation, it is hard to say how profitable these endeavors will be. It seems that there is a big demand for school uniforms and children's clothes so tailoring would be a good occupation to encourage; it is not clear whether the jams and chutneys will be saleable items. Other crafts such as wall hangings, wood-carvings, and hand-made lace would have even less appeal in a rural setting. One problem with the income-generating projects is that the Home Development Centers have apparently undertaken little or no marketing research. It seems unwise to raise expectations unless a real demand for the product exists. Neither staff nor students could tell us what the expenses were or in some cases, how items would be priced.

We visited another Home Development Center at Helebewa (Nochchiagama Project) which had been opened in 1982. The course, which has a curriculum very similar to that at the other center, lasts about three or three and a half months; three groups of 40 students are trained per year. There are two women instructors, including one with a BSC in agriculture, and a male handicraft instructor. Agricultural topics include crops suitable for the area; bee-keeping; nurseries and water supply; cropping systems; cattle-rearing; and fodder production. Women are encouraged to grow maize and cowpea or gram in the homestead garden, to plant bananas and (as fodder) ipilipil (SPELLING?) trees. The center has a biogas unit (not functioning, due to lack of water) and six cattle provided by the MA. Students previously sold clothes at this center, but are now marketing them at the new sales outlet. The center decided to sell commercially due to demand from the students themselves, who wanted to profit from their training. According to one instructor, a good seamstress can earn 300/= to 400/= per month. Water is a major problem at this center and they are currently depending on bowsers (tanker trucks carrying water). Gardens will grow only during the main maha season.

The Home Development Centers possess several innovative aspects, such as training in agriculture and livestock-raising for women, and they appear to be responding positively to settler requests for income-generation projects. So far, however, only a few centers are operating (Kalawewa has one for approximately 55,000 settlers) and have trained very small numbers of students. No center exists in the Eppalawa Project, a third major subdivision of H. There are still apparently no agricultural extension programs for married women.

In addition to income-generation projects at the HDCs, we found a few additional programs elsewhere on H. For example, the MA started a vo-tech training center last year at Ipalogama in Nochchiagama Project which teaches young women to make baskets and straw hats, sold locally; 30 students per course attend the six-month program. In the Eppalawa Project, projects include 1) a rexine (plastic products) center at Theriyama ; 2) a sewing center at Pahalagama organized by Community Development (and financed by a 10,000/= interest-free loan for materials

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One demonstrator per block in Eppalawa Project (four in all) visits villages to give lessons in food preparation and handicrafts (artificial flowers, macrame, basket-weaving). CDOs also select young women from each block (twenty from the entire project for each course) to attend a one-month agricultural course at a government training center in Walpita, near Colombo. Only two batches have been sent so far, as accomodations are limited. Sixteen students (eight male, eight female) were trained in bee-keeping at Bandarawella near Kandy by the Agricultural Department in 1984. One Agricultural Officer has been appointed for all of H system to conduct courses and field visits; he held two classes last month and trained 40 people. All the income-generation projects in Eppalawa Block are very recent as settlement ended only in 1981. After 1982, Health Volunteers were trained and day care centers established. CDOs said that some young women had started individual projects as a result of training but no survey or assessment was possible yet. All the projects focus on youth due to the second-generation problem; school-leavers have no employment.

As indicated above, off-farm income schemes often lack sufficient market research or analysis of profitability. Another problem is that the MA is in effect subsidizing many projects by providing intrest-free loans, transportation, shops, or a ready market for goods. Since such projects may not be sustainable once the MA withdraws from the settlement scheme, it may be preferable to encourage local entrepreneurs to develop their own marketing outlets. A larger question, not yet answerable, is whether agricultural production will be sufficient to stimulate much off-farm employment.

2.3 Impact on the Status of Women

Since we do not have information on a comparable group (or groups) of non-settler women, and since System B in particular is in such an early stage of settlement, any generalizations about changes in women's status should be made cautiously. Settlers, including women settlers, face very different situations at different stages of the settlement process. The first two years are most stressful for everyone; women's work loads may increase, settlers must cope with malaria and diarrhea, and nutrition is apt to be poor. We were told that young women are often removed from school when the family moves, while sons are boarded elsewhere to finish

their education; girls may suffer anxiety attacks as a consequence. Their initial adjustment is possibly more traumatic than that of young men. After settlement is complete, however, the MA and other ministries do make special efforts to recruit female volunteers and some female staff locally (Health Volunteers, day care employees, CDOs and other officers). Although the higher education of some young women may be interrupted, others receive opportunities for training of various kinds. Given the importance of women in the farming system, it would be beneficial if married as well as unmarried women could receive agricultural extension, particularly in regard to dairying and the home garden.

Finally, the problem of labor shortage in the Mahaweli Project suggests that expectations of family input (including women's input) were too great. While the situation warrants more study, it appears that women may be withdrawing from agriculture when the family can afford to hire laborers, a common pattern throughout South Asia. Women do not see this as being "excluded" from agriculture; though the actual effect may be less control of income and resources, women find a middle-class model of female roles more prestigious where women's agriculture is undervalued. If the MA wishes to maximize production using family labor, this may not be a desirable trend to encourage. Women would be most likely to retain an interest in agriculture if extension programs publically recognize their input and if there are viable income-generation projects they can undertake.