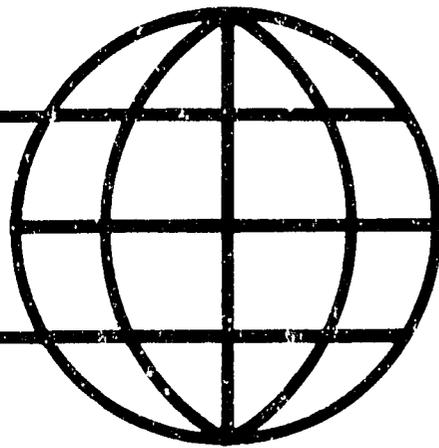


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**COOPERATIVE AGREEMENT ON HUMAN SETTLEMENTS
AND NATURAL RESOURCE SYSTEMS ANALYSIS**



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THE ACCELERATED MAHAWELI PROGRAMME
(AMP)
AND DRY ZONE DEVELOPMENT
REPORT NUMBER SIX

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THE ACCELERATED MAHAWELI PROGRAMME (AMP)
AND DRY ZONE DEVELOPMENT

PREFACE

I. AN ONGOING SERIES OF EVALUATORY REPORTS

This is the sixth in a series of reports assessing the settlement component of the Accelerated Mahaweli Programme (AMP). With the exception of 1982, reports have been issued on an annual basis starting with Number One in 1979. While all reports have focused on the AMP, Number One (May 1979) dealt more generally with a range of issues basic to land settlement in Sri Lanka's Dry Zone, while Number Two (September 1980) contained two extraneous appendices dealing with a proposed center for settlement studies and training, and with suggestions for integrating local residents into the management of national parks, respectively. Reports Number Three through Six deal only with the AMP.

Data was collected for Report Number Six between September 22 and October 26, 1985, with a draft report submitted before Scudder's departure from Sri Lanka. So as to complete the comparative analysis requested in the Scope of Work prepared by the United States Agency for International Development, the draft report was finalized on the basis of further analysis carried out in the United States during December 1985.

The first of the five weeks spent in Sri Lanka was devoted to interviews and report reading in Colombo. The next three weeks were spent in the field, except for two days at the International Irrigation Management Institute. Seven days were spent in System H, five days in System B, three days in System C and two days in Minneriya, Giritale and Elehera. The final week of the mission was spent in Colombo. In addition to wrap-up sessions with the Mahaweli family of agencies and U.S. AID, we also discussed Mahaweli issues at three seminars which were organized by the International Irrigation Management Institute, the Marga Institute, and the Central Bank.

As in the past, we met with family members from each of our sample of 30 families, of which 15 were in System H, 7 in System B, and 8 in System C. Four additional families were added in System B so as to improve coverage of newly settled areas, including the Singala- and Tamil-speaking communities north of the Manampitiya-Wellikande area (indeed, we have regularly visited two Tamil-speaking communities since 1979). Our sampling and interview procedures are

outlined in some detail on pages 2-5 of the fourth report (November 1983). Though some questions are restricted to family members only, usually each family interview eventually becomes a group interview at which there may be representatives from five to ten neighboring households. Not only does this procedure broaden the number of families involved within the study, but it also enables us to check "family specific data" against the experiences of a larger number of families.

We also met with officials in the Mahaweli family of agencies in both Colombo and the field as well as with representatives of other agencies, including the ministries of Lands and Land Development, Agricultural Development and Research, Fisheries, and Finance and Planning; the National Cashew Corporation; the Paddy Marketing Board; the Central Bank, the People's Bank, Hatton's National Bank and the Bank of Ceylon; the Browns Company Soya Milk Projects Factory (Maha Illupalama); and over 25 large, medium and small scale commercial operations, including boutique owners, dealers in tractors and other agricultural equipment, fishermen, and bicycle and other traders. We also reviewed the increasing amount of documentation that is becoming available on the AMP. Though once again we found that many of our views were shared with others knowledgeable about the Mahaweli Programme, we take sole responsibility for the content of this report.

II. THE PURPOSE OF THIS SERIES OF EVALUATORY REPORTS

The purpose of the series is to provide the Mahaweli family of agencies and the United States Agency for International Development with an independent and timely assessment of the strengths and weaknesses of the settlement component of the AMP. In such a large project the settlement component becomes incredibly complex, especially when acceleration of the planning and implementation phases is mandated by the Central Government as a major goal. Under such circumstances, it is natural for an effort to be made to do everything at once with the result that the more difficult tasks associated with community formation and the diversification and intensification of production on settler family holdings are apt to fall behind the construction of head works, and of main and branch canals. In effect, the construction and development phases cease to be synchronized, so that many settlers have a hard time making ends meet after the completion of construction activities simply because they have yet to realize the full production potential of their fields. As a result, insufficient income to move the majority of settlers beyond a subsistence mode of production continues to be a problem even in portions of System H which were first settled nearly ten years ago. Even there the majority of settlers continue to live in poverty as is the case in the more recently settled portions of Systems C and B. It will take a major effort to increase their

disposable incomes and to realize the full employment generation and developmental potential of the AMP.

Fortunately the Mahaweli family of agencies has become increasingly aware of the nature of the problems. Indeed the most gratifying aspect of our current evaluation related to the wide-ranging efforts of the Mahaweli family of agencies to diversify and intensify production on settler holdings by correcting defects in land preparation and irrigation layout; and to recent policy decisions to strengthen turnout organizations by federating them at D-channel levels, and to pursue actively a strategy for Mahaweli enterprise development and employment generation.

III. THE FOCUS OF REPORT NUMBER SIX

This report is divided into three separate parts. Part One was written at the request of the Minister for Mahaweli Development, following a long discussion with him at Giritale on October 15. Except for minor changes it is included here as written for the Minister between October 16-18. It deals sequentially with three critical issues which we believe require immediate attention. These are first, policy planning, coordination and plan implementation for Mahaweli development; second, diversification and intensification on settler holdings; and third, appropriate research for Mahaweli development. Because Part One was written primarily for AMP officials, we have ordered the three problem areas from "top down" rather than from "bottom up."

Part Two of this report relates more directly to the AID Scope of Work for our annual evaluation. In that Scope of Work we were requested to undertake four major tasks. The first was to update our prior evaluatory surveys in Systems H, C and B by assessing the nature of such support activities as agricultural credit; production and marketing; and health and sanitation, with recommendations made for improving such services where appropriate. The second was to examine plans for future settlement, with special reference to System B, and to the extent to which lessons previously learned were being incorporated within current policy making and plan implementation activities. The third task was to assess the extent to which the settlement and development activities of the AMP were being planned and implemented on a regional (as opposed to a more limited project by project -- or command area -- basis). Dealing with these first three tasks, Part Two focuses on three topics. These are: (1) diversification of production on settler holdings and within the AMP command areas; (2) community formation, social services, and settler organizations; and (3) other issues. Special attention is also paid to issues discussed with MASL and MEA officials during a "wrap up" session on October 25. Where the first topic overlaps with material in Part One, cross-referencing is used.

The fourth and final task outlined in the AID Scope of Work was a new one. Its intent was to require us to examine our five earlier reports in regard to the validity of the conclusions reached, and in regard to actions taken by the Mahaweli family of agencies concerning conclusions and recommendations that have stood the test of time -- in that they remain applicable today. That task is addressed in Part Three. So as to facilitate reading by busy readers, recommendations throughout this report are underlined.

IV. ACKNOWLEDGMENTS

During our current evaluation we held discussions with literally hundreds of people. We are especially grateful to the Minister for Mahaweli Development, to the Secretaries of the Ministries of Mahaweli Development and of Lands and Land Development, and to the Director General of the Mahaweli Authority of Sri Lanka. Within the MASL, we also wish to extend our gratitude to the Secretary General and his staff, to the Executive Director of the Mahaweli Economic Agency and his Colombo based staff, and to the Resident Project Managers and their staff in Systems B, C, G and H. In addition special thanks go to Dr. Walter Abeygunawardena, Dr. Abhaya Attanayake, Dr. M. H. J. P. Fernando, Dr. C. Pannabokke, Dr. Percy Silva, Dr. M. U. A. Tennakoon, and Dr. Rangit Wanigaratne (who joined us in the field for several days) for sharing their expertise with us. Finally we wish to thank again the members of the thirty-four households whose narratives about their experiences as Mahaweli settlers continue to provide much of the material on which we draw during our annual evaluations.

The current evaluation was supported financially by the United States Agency for International Development through AID's Colombo Mission and through the Clark University/Institute for Development Anthropology Cooperative Agreement on Human Settlements and Natural Resources Systems Analysis.

PART ONE

I. Introduction

Since our last evaluation, in September 1984, the "winds of change" have begun to intensify in regard to the settlement and development component of the AMP. Increasing emphasis is being placed on such objectives as correction of land preparation and irrigation system defects; on revitalization of turnout groups along with the first tentative steps for their federation at the D-channel level where farmers can organize themselves into organizations for the taking of operations and maintenance (O&M) contracts; on the integration of livestock in the form of dairy and poultry into the farming systems; and on the contracting out of the necessary studies for preparing a Mahaweli enterprise development and employment generation strategy. The emphasis on these and other topics we find most gratifying -- especially since correction of defects, and dairy production, for example, are already having a positive effect on the disposable income of settler households.

On the other hand, as is the case with any complex project, and especially one where development strategies are based on an accelerated program, three major problem areas remain which we believe require immediate attention if the AMP is to realize its stated goals for raising settler incomes beyond subsistence and for employment generation. Because this section is intended primarily for Mahaweli officials we have ordered these problem areas from "the top down" rather than from "the bottom up." The three problem areas are first, policy planning, coordination, and plan implementation for Mahaweli development; second, diversification and intensification of production on settler holdings (both 2.5 acre holdings and home lots) and within the various AMP command areas; and third, appropriate research for Mahaweli development. There is also a range of other issues to which we wish to direct attention.

Our procedure will be to present several recommendations under each topic, followed by discussion to serve as background to the recommendations. The recommendations are underlined so they can be easily picked out by busy readers.

II. POLICY PLANNING, COORDINATION AND PLAN IMPLEMENTATION FOR MAHAWELI DEVELOPMENT

A. Recommendation One: A Cabinet Level Committee (perhaps in the form of the old Agricultural Sub-Committee) should be formed to bring important interministerial and inter-agency issues concerning Mahaweli to the attention of the Economic Sub-Committee, the Cabinet and the President for policy formulation and plan implementation.

1. Discussion

We believe there is an urgent need for such a high-level action committee which has the political clout to ensure that its policy recommendations receive the necessary attention at the highest level, and where approved, to ensure that such recommendations are implemented.

During each of our annual evaluations we have come across issues critical to the overall success of the Mahaweli programme which are not receiving the type of inter-ministerial and inter-agency attention that they need. Examples relate to pricing policies for Mahaweli produce and to the need for coordinating import policies with development projects like Mahaweli which are supposed to increase domestic production of such imported produce as bombay onions. In addition to such long-standing issues, there is a need to address the kind of new problems that can be expected to appear with projects as complicated as the AMP. In our fifth report, for example, we stated our belief that there was an urgent need to assess and take action upon the health problems of Mahaweli settler households, including mental health problems. We also noted the appearance of a serious weed problem in irrigated settler holdings.

In this report we would like to bring attention to three additional new issues which came to our attention during our recent evaluation. These are first, the disease threat to chillies production; second, the need for a national policy toward soya production; and third, coordination of policy between the Mahaweli family of agencies and the Cashew Corporation.

a. The Disease Threat to Chillies Production

Mahaweli officials are justly proud of the fact that this yala approximately one-third of the chillies harvested in Sri Lanka were produced in H-System. Yet since yala 1984 chillies production has been facing a serious disease threat which can be expected to worsen as the seasons go by. The situation is serious enough that the cost-effectiveness of chillies as a Mahaweli crop could be compromised within several seasons.

Farmers in our sample referred to three sorts of pests/diseases threatening their chillies. One causes leaf curl and leaf yellowing; the second is called hiti-merima ("standing death"), with one farmer noting that he could find no appropriate drug for dealing with it; the third is called panuva and is associated in the minds of farmers with a worm that emerges at night to eat pods and leaves. It is said to have only appeared this yala season.

In parts of System H chillies are almost grown as a monocrop. Under such circumstances one would expect new diseases/pests to arise, yet according to research staff at Maha Illupalama no new varieties of chillies have been developed for Sri Lankan conditions since MI 2 was developed in the mid-1970s. As for the most serious disease of chillies today, Maha Illupalama staff told us that it has yet to be positively identified, being currently labeled as a mycoplasma (that is, something between a fungus and a bacterium).

Part of the reason why so little research has been done on the development of new chillies varieties is failure of certain international donors to include chillies among food crops -- hence donor support in the form of equipment, fellowships, etc. is less available than for other crops. As a result, good researchers are unwilling to concentrate on chillies for the length of time needed to develop new varieties.

The problem outlined above is a very serious one. While Mahaweli officials point to the rapid increase of chillies production with justifiable pride, the future of those very chillies hangs in the balance. Here is where closer coordination between the Mahaweli family of agencies and the Ministry of Agricultural Research and Development (and, we might add, the donor nations) is needed.

b. The Need for a National Policy for Soya Production

Currently Mahaweli farmers who grow soya receive only 6/- per kilo. That is too low a producer price with the result that very few farmers have planted soya this yala. Yet soya is not only a nutritionally advantageous crop which also enriches the soil, but it also has a relatively low labor demand and -- of special importance in H System -- a relatively low water demand. If most farmers grew half to one acre of yala soya, not only would their labor costs be lower, but it also might not be necessary to do bettna cultivation during the yala season -- which understandably is unpopular with farmers since it reduces control over how one's land is utilized and it also significantly reduces the incomes of participating households.

During our 1985 evaluation we visited the Dried Soya Milk Products factory at Maha Illupalama. Because insufficient soya was planted by farmers in the vicinity, the factory has recently been importing soya at 12/- per kilo, while CARE is importing soya for treposha at 11.50/- per kilo. Not only are domestic supplies limited due to insufficient price incentives for Sri Lankan farmers and to a

range of subsidies for other commodities, but demand is also limited primarily to treposha and to workers on the hill estates. Yet if 5 percent soya was added to wheat flour (an addition which we were told would have no noticeable effect on taste although it might lead to a price increase), demand would increase dramatically. There would also be a reduction in foreign exchange requirements for wheat purchases. As for farmers, we have been told on innumerable occasions that they have no inherent objection to growing soya provided the price is right -- perhaps 10/- a kilo under present conditions.

We give this example not to argue that soya should necessarily be added to wheat flour, but to illustrate how crops suitable for Mahaweli farmers and Mahaweli conditions (and especially the water deficit conditions in System H which can be expected to continue during future yala seasons) require close coordination between a number of government agencies, as well as policy decisions relating to pricing and import policies.

c. Coordination Between the Mahaweli Family of Agencies and the Cashew Corporation

Currently the Cashew Corporation is clearing land for planting some 5,000 acres of cashews in the northern portion of System B. By the end of 1985 approximately 2,500 acres will have been cleared. After the State Timber Corporation removes the large timber, we were told by contractors working on the spot, their instructions are to clear and burn all remaining timber aside from five trees per acre. That means that timber that could be used for housing construction for Mahaweli settlers and for the making of furniture is being systematically destroyed, including such Class A timber as ebony, satin and rosewood. Meanwhile, a few miles away in System B, the MEA has told farmers to cut their own rafters and other housing construction timber from the surrounding forests, hence hastening their destruction. And in much of System H settlers and carpenters have insufficient timber to meet their housing and carpentry needs, hence slowing the construction and furnishing of improved housing. Again, we see the need for policy formulation and coordination so that usable timber being cleared in the cashew area can be stock piled for use elsewhere by settler households and artisans.

2. Discussion Summary

The three examples discussed above represent only a few of the vital issues which require inter-ministerial and inter-agency policy making and coordination. Many other examples could be given. Many of these relate to rural-urban terms of trade that are unfavorable to Mahaweli settlers and other rural producers. In our 1980 Evaluation we noted that "it is very difficult for government-sponsored land settlements to sustain themselves through time, let alone realize their potential for integrated area development, if rural-urban terms of trade are unfavorable to agriculture and rural industry." We then

gave the example where recent imports by the Food Commissioner's Office resulted in a drastic reduction of the producer price in System H for onions which farmers were about to harvest in significant amounts for the first time. To correct such deficiencies will require policy making and coordination at the highest level since vital political economic, social, and ecological issues are at stake. For this reason we recommend the formation of a high powered cabinet committee to deal with Mahaweli issues in relationship to the rest of Sri Lanka.

While we would not presume to recommend the form such a committee should take, one possibility would be to reconstitute the old Agricultural Sub-Committee. Regardless of how such a committee is constituted, however, we believe it should include members from such crucial ministries as Agriculture; Food and Cooperatives; Finance and Planning; Plan Implementation; Rural Industrial Development; Trade and Shipping; and the Ministries of Mahaweli Development and Lands and Land Development. Such a sub-committee could be assisted by a Secretariat composed of the Secretaries of the participating ministries or specialist officers within those ministries (such as the Director of the Policy Planning Unit within the Ministry of Mahaweli Development or the Director of the National Planning Division within the Ministry of Finance and Planning).

B. Recommendation Two: A small but highly professional policy making unit should be developed within the Ministry of Mahaweli Development which is chaired by the Minister himself and which reports directly to the Minister.

1. Discussion

Though currently without a director, a Policy Planning Unit has recently been institutionalized within the Ministry of Mahaweli Development. Properly staffed and supported, we believe that such a unit is of crucial importance for the AMP. It would have two basic functions. The first would be to formulate policies for Mahaweli development and to prioritize those policies (it is the task of the Ministry of Mahaweli Development to undertake policy formulation, such policies being passed on to the Mahaweli Authority of Sri Lanka for implementation). The second function of the policy making unit would be to keep the Secretariat of the Cabinet level committee informed of the various policy options, and to seek advice and information, where appropriate, from the Secretariat and other individuals and agencies.

Composed of a small but highly professional staff, the Policy Planning Unit should be backstopped by adequate supporting personnel, finance, office space, and equipment (including transport). As for professional staff, we suggest that this Unit draw on professionals from within both the Ministry of Mahaweli Development and the

Ministry of Lands and Land Development so as to allow sufficient coordination between the Unit and the more technically oriented Settlement Planning and Management Unit which has recently been created within the Ministry of Lands and Land Development, and other divisions and units within that Ministry. Close cooperation between the two ministries is crucial for two major reasons. First, Lands and Land Development includes within its responsibilities both land settlement and irrigation. Since the AMP is the largest irrigated settlement scheme in Sri Lanka (indeed, one of the largest in the world), the need for close linkages between the two ministries should be obvious. Second, sooner or later Mahaweli settlements and responsibilities will be handed over to the Ministry of Lands and Land Development, and to such other ministries as Agricultural Development and Research. Experience throughout the world shows that the handing over process is greatly facilitated where the receiving agency or agencies have played a major role in the planning of the projects and programs to be handed over.

C. Recommendation Three: The planning function of the PMU of the MASL should be strengthened so as to better plan for the implementation of policy decisions coming from the Ministries of Mahaweli Development and Lands and Land Development, and from the Cabinet Committee.

1. Discussion

We continue to believe that the PMU has insufficient planning capability to deal with the regional development of the Mahaweli, Kala Oya, Madura Oya Basin, and adjacent areas. Since both UNDP and CIDA are apparently prepared to assist the PMU to develop its planning capability, now is an appropriate time to correct for this deficiency within the MASL.

D. Summary Statement on Recommendations

Since our first reports in 1979 we have consistently emphasized the need for upgrading the planning capability of the Mahaweli family of agencies. As used here, planning refers not merely to the physical planning of infrastructure and the laying out of townships, but to national policy planning and project planning for the integrated rural and urban development of the northeastern portion of Sri Lanka, including not just the Mahaweli command areas (which continue to be planned largely on a project-by-project basis as if they existed within a vacuum), but also the relationship of the AMP zones to such existing settlement schemes as Ninipe and Minneriya and such existing townships as Mahiyangana, Kekirawa, Kadulawela-Polonnaruwa, and Hingurakgoda.

Hingurakgoda is a prime example of the type of urban development that can be stimulated by land settlement. It is probably the most dynamic rural regional center in the dry zone of Sri Lanka. It owes that status to the fact that the Minneriya Settlement Scheme is one of the most successful in the world. If the AMP, with its much smaller land holdings, is to stimulate a similar process of rural and urban development (with the increased earning capacity of thousands of settler households generating significant amounts of nonfarm employment), improved policy planning and plan implementation is absolutely essential.

Policy planning should, initially, be the responsibility of the Ministries of Mahaweli Development and Lands and Land Development, and of the Cabinet Sub-Committee where inter-ministerial and inter-agency jurisdictions are involved. Planning for development implementation should be the responsibility of the MASL's PMU. Action at all three levels (Cabinet; ministries of Mahaweli Development and of Lands and Land Development; and Mahaweli Authority of Sri Lanka) is essential, in our opinion, if the AMP is to realize its potential.

III. DIVERSIFICATION AND INTENSIFICATION ON SETTLER HOLDINGS (BOTH THE 2.5 ACRE ALLOTMENT AND THE HOME LOT) AND WITHIN THE VARIOUS MAHAWELI COMMAND AREAS

A. Recommendation One: Current efforts to diversify production on both the 2.5 acre allotment and the home lot should be intensified with diversification including not just crop diversification through multi-cropping, inter-cropping and relay-cropping, but also the integration of livestock management, agro-forestry and nonfarm enterprise development into the production system of the settler household.

1. Discussion

Diversification of production on settler holdings we believe to be essential for a number of reasons. First, and of greatest importance, we now believe that the double-cropping of paddy on a 2.5 acre holding will not advance the large majority of Mahaweli settler households beyond a subsistence level even after the correction of land preparation and irrigation system defects. Though this majority will be better off in most cases than they were in the past, their disposable income will be insufficient to raise them beyond poverty. Such a situation will adversely affect the AMP since it is the rising incomes of thousands of settler households that is the driving force behind enterprise development and the creation of nonfarm employment. Poor farmers do not hire many seasonal and permanent laborers. Furthermore, poor farmers have little demand for a wide range of locally available goods and services, with the result that their presence does not generate much nonfarm employment.

The evidence that the double-cropping of paddy on a 2.5 acre holding will merely shift poverty from other parts of Sri Lanka to the Dry Zone is both quantitative and qualitative.

In his October 1984, People's Bank Publication on A Study of People's Bank Crop Cultivation Financing in the Mahaweli "H" Area, Vidanapathirana noted a deficit in his two survey regions after comparing income of settler households in relation to cost of living. In effect "almost 80 percent of the settlers are below the break even point." While Vidanapathirana believes that this adverse situation may be partly due to the unsuccessful yala 1983 season, his data also include maha 1982/83, which settlers in H System continue to consider the best maha season for paddy to date -- with the possible exception of maha 1984/85.

In their August 1985 paper, Sikurajapathy and M. H. J. P. Fernando consider net income per hectare received from paddy cultivation during yala 1981, yala 1982, and yala 1983. During those yala seasons net income ranged from 858/- rupees per hectare to 2,290/- rupees as opposed to over 10,000/- received from such crops as chillies, and bombay and red onions. In a still more recent paper (September 1985), dealing with a small sample of twenty households in Zone 2 of System C who were surveyed during maha 1984/85 and yala 1985, the MEA sociologist noted that "9 households, that is 45% of the sample made a net loss on paddy cultivation. . . ." Our own data on costs of production for paddy cultivation during maha 1984/85 and yala 1985 support these conclusions.

While our data relate to only a small number of farmers, they are remarkably consistent, and reinforce the conclusion that the double-cropping of paddy on a 2.5 acre holding will not move the majority of Mahaweli settlers beyond a subsistence level of production. The main reason is due to unfavorable rural/urban terms of trade; that is, production costs and the prices of the basic needs of Mahaweli settlers are rising faster than the producer prices for their paddy harvests. Hence in a transcript of the August 1985 Seminar on Land Settlement in Sri Lanka 1978-1985, the Executive Director of the MEA noted that between 1977 and 1984 "open market rice prices increased by only 158 per cent, whereas the price of kerosene increased during the same period 733 per cent, coconut oil by 399 per cent, milk powder by 346 per cent." Our own data indicate that labor costs for Mahaweli paddy producers nearly doubled during that same period while the cost of two-wheel tractors soared.

Diversification of production will provide a number of advantages for Mahaweli settlers. Where farm plans (and eventually, for each 2.5 acre allotment, there should be a farm plan that takes into consideration soil characteristics and water availability) include crops, such as chillies, onions, and legumes; livestock management (including dairy and poultry on the home lot); and -- in appropriate locales -- small fish ponds, settler incomes go up, as was the case when Minneriya farmers diversified beyond paddy cultivation in the 1970s. Appropriate diversification also reduces water demand: a very

tant factor in H System where water scarcity may well characterize a majority of the yala seasons in the future. Diversification can also create more resilient, ecologically stable (and hence more resistant to pests and diseases) and productive farm enterprises. It also makes better use of family labor throughout the annual cycle, improves the nutritional level of farm families (and especially -- through home lot development -- that of women and children), and provides a wider range of foodstuffs and agricultural commodities for nonfarm families and agro-industries.

B. Recommendation Two: In the future the size of the home lot should be increased from one-half acre to one acre.

1. Discussion

Almost without exception settlers and officials alike have told us over the years that a half acre home lot is too small for purposes of diversification and for social purposes. We first emphasized this point in our May 1979, report where we noted that we had heard "no convincing social or economic arguments that justify the present size of 0.5 acres for homesite plots." Since that time more reasons have arisen for enlarging the home lot.

As stated in our 1979 report, "in terms of the integration of livestock with agriculture . . . , of crop diversification to enhance settler household self-reliance, and of increases in family size, a one acre holding makes more sense." The current 0.5 acre home lots are just too small for the functions that they are supposed to fulfill. These include a home lot on which tree crops are not so closely spaced that they stunt their own growth and interfere with the cultivation of vegetables, maize and other annual crops; on which two bullocks for plowing and cart hauling can be kept along with two dairy cows, several calves to eventually replace the mature bullocks and cows, and some poultry. In addition, there is need for room to expand family housing and to provide a place for the settler's heir to build his or her house. Add to this a well and a toilet, and it should become apparent why the current 0.5 acre home lot is too small. At the time that size was selected there were no plans to integrate livestock management with home garden production on the home lot, nor were planners aware of the desire of settlers for their heir to build on their home lot. Heirs are doing just that today, since the majority of Mahaweli settlers are not electorate selectees with small families, but rather are resettlers and evacuees who include the full range of family types. Sons and daughters already are marrying, and some already are building houses on their parents' home lot.

Since there appears to be sufficient highland in the northern portion of System C and the unsettled portions of System B, we recommend that future settlers be allocated one acre home lots in those areas. The counter argument of social equity between Mahaweli

systems is not convincing. Settlers in Zone 2 of System C were actually allocated one acre homelots, so that a precedent exists. Furthermore, settlers in Mahaweli settlement areas are not equal. They arrive with different skills, attitudes and resources. The most successful settlers today are those who received substantial compensation as evacuees or who had other sources of capital on their arrival. Already a significant proportion of those settlers are enlarging their holdings through ande, badu, ukas and other such arrangements. While there are ways to reduce the degree of social stratification that is already under way within the Mahaweli settlement areas -- ways which reduce the proportion of settlers who fall hopelessly into debt -- a degree of social stratification is inevitable.

C. Recommendation Three: Current efforts to diversify production within and between settlement areas should continue to receive support.

1. Discussion

Here we have in mind the stocking of tanks with tilapia and carp; the incorporation of fishermen as settlers (as is now the policy for the Madura Oya and Pimburetewa reservoirs in System B); the construction of fish ponds in suitable locales near or on settler holdings as has commenced in System G and H; and the selection of dairy settlers to utilize 5 acre holdings of irrigated fodder as is being pioneered in Zone 5 of System B. We also believe that perhaps 3,000 acres of the Cashew Corporation's 5,000 acre estate in System C might be allocated to 300 settler families who would colonize 10 acre holdings around the Cashew Corporation's nuclear estate of, say, 2,000 acres. Consideration might also be given to other types of land use systems that incorporate rainfed agro-forestry (as discussed in Report Number Five), livestock and annual cropping components -- with the cropping of annuals and wage employment supporting the settlers until the perennial crops and the livestock mature.

D. Recommendation Four: So as to intensify production on existing 2.5 acre holdings, more attention should be paid now to (a) correcting defects in land preparation and in distributary, field and drainage canals; (b) improving the effectiveness of credit currently given by both private and government banks to Mahaweli settlers; (c) federating turnout units at the D-channel level; and (d) intensifying and improving crop and livestock extension work.

1. Discussion

Significant improvement in several of the above activities has already begun in several Mahaweli Systems -- improvements which can serve as models for other systems. Hence during 1984 a major effort

was begun in Zone 2 of System C to correct land preparation and infrastructural defects, an effort which was extended to Zone 3 during 1985. A similar effort is currently under way in Zone 5 of System B. Defect correction deserves even more priority. Along with non-availability of water (which is partly due to land preparation and infrastructural defects) and with credit deficiencies, defects have been a major complaint of settler households that we have interviewed. Where corrections have been made settlers are appreciative, since they have seen their yields and incomes go up.

The recent policy decision to place more emphasis on self-sufficient turnout groups and to federate turnout groups at the D-channel level is an excellent one. While its implementation has already begun in parts of System H, turnout leaders to whom we talked in Systems B and C were still unaware of the new policy. Indeed, in some cases their suggestions to MEA officials that they be given contracts to maintain D-channels were rebuffed. Granted the correlation between strong water user associations and increased production, we recommend that the new policy be systematically implemented in all Mahaweli Systems at the earliest practical time.

The current situation regarding agricultural credit and extension is less encouraging. Indeed, it is our opinion that the present system of seasonal cultivation loans is actually leading to the impoverishment of a significant number of Mahaweli settlers. Such impoverishment is apt to occur during the first few seasons that a settler household received a cultivation loan. A number of factors may be involved. As in Kandegama, in System B's Zone 5, settler households may be unfamiliar with irrigated paddy cultivation. Due to inadequate extension, they make mistakes, obtain relatively low yields, and default on their loan repayments. In other cases, drought, diseases and pests, and floods lead to default, while in still other cases, the illness of the head of the household is a major reason behind defaulting. Funeral and marriage expenses may also be involved.

During our interviews we have found that Mahaweli settlers with access to other resources (such as compensation for evacuees, private enterprises for purana villages, and atamaru networks for others) can draw on these to pay off their loans when crop income is insufficient. Such settlers are least apt to be electorate selectees. While selectees are in the minority in Mahaweli systems that have already been settled, proportionately their numbers will increase in areas still to be settled in Systems C and B.

With less access to other resources, electorate selectees will be especially dependent on loans from banks and other credit sources. Where defaulting occurs for reasons beyond their control during the early years of settlement, consequences for such settler households can be severe. Unable to receive further credit (and it is our impression that policies to reschedule the loans of such settlers are apt to be "paper" policies), such farmers are likely to turn to money

lenders for credit at rates of interest that range between 15 percent and 20 percent per month. Though there are no reliable figures on the extent to which such farmers are eventually forced to lease out their Mahaweli allotments to money lenders and others, we have learned of examples in each System that we have visited.

We are uncertain as to what solutions are best for correcting this problem. One obvious solution is for the MEA to improve the quality of its agricultural extension and for the banks to hire more agricultural staff. Unlike Hatton's National Bank, the Bank of Ceylon and the People's Bank appear to be "reluctant participants" in the AMP. In H-5, Hatton's National Bank is a pioneer, with its larger agricultural staff no doubt part of the reason for higher repayment rates. Hatton's National Bank has also shown a greater willingness to experiment with different approaches to credit than have the other banks, both of which also appear to be understaffed in those Mahaweli systems in which we made enquiries.

In U.S. AID's June 1985 Evaluations of three AID Mahaweli Projects, the authors suggested that the state and private banks charge higher interest rates, using the increased funds to improve the quality and quantity of their agricultural services and staff. The idea is an interesting one since studies of small farmers elsewhere have shown a willingness to pay commercial rates for well-directed and well-utilized credit (current rates are rather heavily subsidized).

Our own suggestion for dealing with the problem of early, non-willful defaulters (and we agree with the conclusion of the People's Bank's Vidanapathirana that the proportion of willful defaulters is small) is to provide Mahaweli settlers without liquid resources with development loans which would become part of the development costs of the AMP. These would be granted just prior to the first water issues. They might be repayable over a three to five year period at commercial rates of interest, or they might be added to the land purchase price that settlers must pay. Paid into settlers' banking accounts, it might be wise for withdrawal of such funds to have the approval of a bank or a MEA staff member, although we are rather indecisive on this point. We believe, however, that the concept of a development loan of 5,000/- to 10,000/- given to the poorer farmers at the commencement of their Mahaweli years warrants careful consideration, as does the granting of a smaller number of "compassionate" loans which would only be given under special circumstances.

Regardless of the approach taken, corrective action is essential. Due to default there is an increasing gap, as Vidanapathirana points out in his October 1984 People's Bank Report on H System, between the numbers of settler households receiving bank loans and the total number of settler families. Furthermore, "on the whole, the non-repayment of crop loans in the study area was basically due to external factors over which the People's Bank has apparently very

limited operational or administrative control," since failure to repay is due largely to such factors as "crop failure, settlement of previous debt, low income and health problems" -- variables which our data suggest are also of major importance in other AMP Systems. Furthermore, the amount allocated through seasonal cultivation loans has failed to keep up with increasing production costs.

In addition to development loans allocated to the poorer settlers at the commencement of their irrigated agriculture, such loans might also be given to already settled good farmers who have been in default for reasons beyond their control. Currently, such farmers are caught up in a vicious circle. Unable to obtain further bank credit, either they take private loans at high interest rates or they cut back on the use of fertilizers and agro-chemicals, hence reducing their yields.

As for agricultural extension under the MEA, we have found it to be deficient at all levels -- including Headquarters, RPM's Office, Block Office, and Unit Office. While the number of agricultural staff is quite high, their training and extension techniques are deficient. Too much extension is restricted to meetings and classroom sessions as opposed to field and home lot visits. A case in point is H-9, where settlers continue to adversely compare the present system of agricultural extension to that used by the Ceylon Tobacco Corporation which, with fewer, but better trained, staff left a lasting impression on H-9 farmers due to their frequent visits to farmers' fields.

Furthermore, far too little extension is directed toward women. In spite of innumerable studies showing that women carry out many agricultural tasks both on home lots and field allotments, and that they want more agricultural training, extension continues to be directed at the male settler -- with only a few exceptions such as the two Home Development Centres in System H (and even there the agricultural portion of the training does not receive first priority). Furthermore, we have yet to meet any agricultural staff (with the exception of the just mentioned Home Development Centres) who are women.

We recommend that a panel of agriculturalists should be established to examine closely agricultural extension in the Mahaweli areas, and to recommend ways in which that extension could be made more effective. This panel should examine the activities not just of the Mahaweli agricultural staff but also of the Unit Managers who are supposed to coordinate what can be called "a unified" extension service. In the future we recommend that at least 50 percent of Unit Managers should be diplomates in agriculture, since the agricultural training of university graduates in arts and sciences is insufficient to meet the need for increasing diversification and intensification of farming systems. Hence in System C the RPM has observed that much of the best diversification work is undertaken by diplomates in agriculture rather than by university graduates. Since the latter

may be better trained to deal with such issues as community formation, it might make sense to place diplomats in units adjacent to university graduates and vice versa.

IV. APPROPRIATE RESEARCH

A. Recommendation One: More emphasis should be placed on research of direct relevance to certain major Mahaweli issues.

1. Discussion

Appropriate research has been shown to be especially cost effective. In this report we have already referred to a number of research topics that need urgent attention. Some are highly technical, such as research on the diseases/pests of chillies and on the breeding of new chillies varieties. Others are more developmental, an example being the urgent need for studying the income and expenditures (as opposed to the production costs for individual crops) of a carefully selected, but relatively small, number of Mahaweli settler households. At the moment little is known about the magnitude of such expenses and income, and hence of the disposable income available to the different categories of Mahaweli settlers. This gap in available knowledge is a serious one, since it is the rising incomes of thousands of settler households that stimulates the generation of nonfarm enterprise development and employment generation. The need is urgent, we believe, to include such a study among the sub-tasks already contracted out under the Scope of Work for the preparation of a Mahaweli Enterprise Development/Employment Generation Strategy.

There is also a need to research problems as they are identified by settler households. A case in point is the weed problem. During the past few seasons farmers, in System H especially, have been complaining about the invasion of weeds in their paddy fields. Some list this as their most serious problem. While the most common weed to which they refer is bajiri, during our recent field trip farmers referred to new weeds with which they had had no previous contact. One they called masuram, the symbolism of the name referring to the prolific growth of the weed. Another, first identified by farmers during yala 1984, they referred to as vine or hokdunkooru which they believe to have been transported into System H by irrigation waters from the upper Mahaweli.

Such weeds are creating a serious problem for farmers, especially in H System. Some have actually stopped cultivation of certain portions of their paddy fields, finding weedicides to have little effect. While it is possible that agricultural research staff are aware of these weeds and the means for controlling them, such information has not reached Mahaweli extension staff. Yet another serious weed problem concerns the aquatic weed Salvinia which has become a serious problem in several tanks in System C, and which has

been reproducing rapidly within the Madura Oya reservoir to the detriment of the local fisheries.

We believe that there is also a critical need to study the farming systems that purana villagers have developed over the centuries to utilize the little known soil types of System B. According to the July 1985 Report of the Winrock International Team, the soil types of System B "are extremely variable and are known to be difficult to manage under both irrigated and rain fed conditions." Research on how purana villagers utilize such soils may reveal important management approaches which will reduce the difficulties involved. While we believe that the Winrock Team underestimated the importance of indigenous knowledge as it relates to farming systems for System B soils, the team did note that "some information can be gleaned from local farmer experience as well as from research studies and farmer experiences in areas with similar soils." To the best of our knowledge no such research has been carried out to date, even though it may have very important implications for Zones 4A and 4B along the left bank canal and for the entire right bank canal command area. When it is carried out it should include both the cropping and livestock management systems that purana villagers, LDO allottees, and encroachers have developed over the years.

Other appropriate research topics include the indigenous grasses of villu areas which might have potential for fodder production in water-logged areas of the Mahaweli Systems; the social and economic integration of seasonal and permanent laborers into the Mahaweli system; the spread effects of the AMP to adjacent towns, purana villages and other communities; and appropriate producer prices for soya and other leguminous crops.

V. OTHER ISSUES: ENCOURAGING THOSE BETTER MAHAWELI FARMERS WHO CONTINUE TO BE FULL-TIME FARMERS

A. Recommendation One: The children of full-time farmers within specific D-channels should be allowed (and perhaps eventually encouraged) to purchase land from reluctant settler households within the same D-channel.

1. Discussion

Those traveling through the Mahaweli areas are rightly impressed by the quality of the houses, and by the tractors and other agricultural equipment owned by 15 to 20 percent of the settler households. In the large majority of such cases, however, the settler households involved owe their current prosperity not to their 2.5 acre Mahaweli allotment and their home garden, but to other resources that were available to them during their initial years of settlement (including, for example, compensation in the case of evacuees; businesses in the case of purana villagers, and construction contracts in the case

of other settlers). More typical than these settlers are households struggling to make a living from their field allotment and their home lot. Some of these settler households have already shown themselves to be superior farmers who are leasing in additional land on ande or badu, or paying ukas for additional land. While many of those leasing out their lands to such farmers do so unwillingly because of indebtedness or other misfortunes, others are what we call "reluctant settlers." They do not wish to remain Mahaweli farmers and, if offered a fair price for their land, would be willing to sell out. Since such people already are involved in illegal transactions with government officials, other settlers, and mudalalis and other outsiders, and since a degree of stratification will inevitably arise through time, we believe it would make sense to legalize such transactions under a restricted set of conditions.

For example, we agree with Dr. Pannabokke that sales should be initially restricted to settler households in the same turnout and we agree with Dr. Abeygunawardena that married children should receive priority as buyers. They would have "right of first refusal," for example. Only if no one within the turnout wished to acquire the land in question would the pool of buyers be enlarged to include settler households within adjacent turnouts. As for land sales, we believe that the Land Bank idea advocated by Ministry of Lands and Land Development Secretary Nanda Abeyrickrema warrants consideration. In AMP areas the Land Bank could acquire the land in question, paying the seller a fair market price (currently estimated in System H at approximately 50,000 rupees for a 2.5 acre paddy allotment). The buyer could then take out a mortgage on that land from the Land Bank which he/she could gradually pay off at commercial rates of interest over an extended time period. Initially no farmer would be allowed to obtain more than one allotment.

We favor such land acquisition for two reasons. First, it would help resolve the "second generation" problem. Second, such land acquisition would not only legalize a process of land accumulation that is already illegally under way, but it would also reduce the acquisition of land by officials, mudalalis, and other outsiders. As for the seller, he/she would at least receive a fair market price. At the same time the seller could receive counseling through the private enterprise development section of the MASL concerning nonfarm investments for the money received.

PART TWO

I. DIVERSIFICATION

A. Introduction

The need for diversification, due to the likelihood that the double-cropping of paddy in a 2.5 acre allotment will not advance settler household beyond a subsistence standard of living, has been discussed in Part One. As defined there (and in our earlier reports) diversification includes cropping systems, livestock management, and nonfarm employment and enterprises, all of which we have recommended should be combined within a single settler household production system. This definition views the household production system as a small-scale production corporation -- as a small family firm, so to speak. We believe this is the way that the settlers see themselves, their concept of a production system tending to be broader and more dynamic than that of policy makers and planners in both the Mahaweli family of agencies and the donor agencies. Hence income from wage labor is seen by Mahaweli settlers to be a crucial component of their household income to the extent that a minority of Mahaweli family members (including both husbands and wives) are actually traveling to the Middle East to obtain sufficient funds to invest in agricultural equipment, small business enterprises, and improved housing.

Currently, Mahaweli policies and programs are stressing for the first time all three facets of production: that is, cropping systems, livestock management, and nonfarm employment and enterprise. We see this as a very important forward step, although we still believe that there is a need to articulate more clearly the three facets in a policy statement which in time should be implemented, to the extent possible, as a production plan for each settler household, such a plan being in effect a farm plan that incorporates nonfarming activities.

B. Cropping Systems

During the 1970-1975 period the original Mahaweli planners were primarily concerned with a diversified cropping system, crop diversification being stressed on the Maha Illupalama and Pelwehera Pilot Projects (livestock management and settler enterprise development were not considered; in the former case, no doubt, because the assumption had been made that two-wheeled tractors would replace animal traction). For reasons that are not entirely clear, during the latter part of the 1970s less emphasis was placed on crop diversification and more on paddy cultivation. This may have been partly due to feasibility studies like the Huntings' Report on System C which concluded, on the basis of inadequate information, that most

of the soils there were only suitable for the double-cropping of paddy. Be that as it may, during the 1980s the importance of crop diversification has again been acknowledged, so that today it is being strongly pushed not just as a means for saving water but also as a means for increasing settler incomes. Dr. Walter Abeygunawardena, former agricultural adviser to the MASL, has recently stressed the need for "agronomic systems of multi-cropping, inter-cropping and relay-cropping to optimize production," while the RPMs in the various systems are all stressing crop diversification. This is even the case in System C, where the RPM is pushing trials for Bombay onions on settler holdings, recent government studies indicating that up to 50 percent of the soils in System C can be planted with other field crops during the yala season.

C. Livestock Management and Fisheries

As for livestock management, the MASL has been fortunate to have the services of a senior livestock specialist. Through his efforts, and those of the first managers of the Niravelia Farm in System H, increasing emphasis has been placed on the provision and upgrading of draft animals (with special emphasis on bullocks), with holding areas planned for System B for "stockpiling" and upgrading "surplus" indigenous stock -- both draft and dairy animals -- which can then be sold or auctioned to Mahaweli settlers who in the meanwhile must learn the rudiments of intensive livestock management on their home lots.

Simultaneously, dairy routes, collecting points, and farmers' societies are being pioneered in Zone 2 of System C. Currently, there are three routes and twelve societies, with approximately 600 members having between one and four cows apiece. Through upgrading, it is hoped to raise yields per cow from approximately one liter to five liters per day over a 200-day milking period per annum. At four to five rupees per liter, two to three dairy cows per settler household would substantially raise incomes. Currently the secretaries of eleven of the twelve societies are women, and it is hoped that dairy production will become, to a large extent, a woman's activity, with the income (and increased status within the family as a joint decision-making and production unit) going to those women involved.

During 1986, dairy routes will be extended into Zone 3. (They have also been recently established in H System and a pilot project, with a limited number of settler households on 5 acres of irrigated fodder, is proceeding in System B -- which has the greatest potential of the four systems for livestock management.) In System C there are also plans to organize the twelve societies by the end of this year into a Mahaweli System C Milk Producers' Union, which in time will own, manage, and profit from the processing facilities at Girandu Kote -- facilities which will be able to handle 4,000 liters a day (as opposed to 1,000 currently) once the EEC-financed processing plant is operational.

As for other forms of livestock management, poultry production through the supply of day-old chicks is now approved policy, while some attention is now being paid to small ruminants. Beekeeping is also receiving more attention. The same goes for fishing. In our fifth report (January 1985) we discussed the role that fishing could play in improving settler nutrition, and income and employment generation, using the Pimburetewa Tank in System B as an example. The concept of fishermen settlers advanced by the former RPM of System B has now been accepted, and fishermen families at both the Pimburetewa and Madura Oya reservoirs have been informed that they will be provided with quarter-acre lots near their fishing grounds.

While Tilapia are being stocked in System B by the Department of Fisheries, the Department's Dambula Oya Fish Hatcheries Project in System H began stocking reservoirs there with Chinese and Indian carp in 1983. To date almost all suitable tanks within H System have been stocked, with the same pattern of gillnet fishing and bicycle trading developing there as in System B. In addition, the Department of Fisheries and the MEA are cooperating in developing small (1/16th of an acre, for example) settler-owned fish ponds on water-logged sites on or near settler holdings, with one block near Dambula Oya already having fifteen ponds in various stages of construction -- four of which have already been stocked -- while another five requests for ponds have been received. Although construction costs must be borne by the settlers, stocking with up to 500 fingerlings is provided free of charge.

As part of our interview schedule this year we asked our sample families about their consumption of tank fish. Modal consumption was two to three times per week, with the usual purchase being a kilo of fish for approximately 10/-. That is a much cheaper and more wholesome source of fish than the imported tinned fish which is available in most boutiques, with 425 gram tins selling for 15/-.

D. Enterprise Development and Employment Generation

The MASL, with strong backing from the Minister for Mahaweli Development and the President, is now fully committed to preparing and implementing an enterprise development/employment generation strategy. Currently a series of seven sub-tasks is being undertaken with AID funding by teams of experts drawn largely from the private sector. Draft reports are due by the end of October 1985, with the final report scheduled for the end of November 1985. According to the Scope of Work for the seven sub-tasks, "a dynamic and sustained effort must be launched to ensure that the full range of potential economic benefits inherent in the Accelerated Mahaweli Programme are actually derived by the settler families and the country as a whole. The mission is to create an environment within which individual initiative and private enterprise can proceed rapidly forward to supplement farm family income, add value to Mahaweli crops and create

new employment opportunities for second generation Mahaweli farm family members." What is needed is "a single strategy adopted by the MASL, communicated to investors and the general public, and implemented on a priority basis." After discussion with the Minister and the President, the current intention is to elaborate this strategy as a Cabinet paper, so that it will have support at the highest levels.

We believe that the intention of the Mahaweli family of agencies to plan and implement an enterprise development and employment generation strategy is a major step forward. While we have placed more emphasis in past reports on employment generation for nonfarm families, we believe that the MASL is correct in emphasizing employment generation for the second generation of settler children. This is because the second generation problem already exists. If jobs are not created soon for the children of settlers, many will be forced to join their parents in farming 2.5 acre holdings. As the number of people dependent on such small holdings goes up, it is likely (as shown by Wanigaratne's research at Kaltota) that extended families will place more emphasis on paddy cultivation for home consumption, hence reducing the potential of the AMP for increasing disposable incomes through sale of higher value crops. Since increased disposable incomes are "the engine" that drives enterprise development (and hence employment generation), it is critical that settler households move beyond subsistence.

E. Concluding Statement and Recommendations

We have outlined recent developments as they relate to diversification in some detail to show the magnitude of the progress that has been made over the past twelve months. Not only is this progress most gratifying, but it shows every sign of picking up further momentum during the months ahead. The recommendations that follow are not intended to slow down this momentum, but rather to point up what appear to us to be certain gaps and weaknesses in conceptualization. They are additional to the three recommendations dealing with diversification discussed in Part One.

1. Recommendation One: We believe that there is a greater need to integrate the three diversification facets (cropping systems, livestock management, and enterprise development/employment generation) into a single strategy designed to increase the productivity and the income and employment generation aspects of the production systems of settler households.

Discussion

No reports or statements with which we are familiar have emphasized this integration. While the Winrock International Team in their July 1985, Report on System B emphasize the need for farming systems research and for combining cropping systems with livestock

management, little mention is made of the importance of the nonfarm component of the settler household production system. As for the Scope of Work for the Enterprise Development/Employment Generation Strategy (the responsibility for which now falls under the office of the Secretary General of the MASL), that deals more with individual crops than with cropping systems, and no mention is made of livestock development. However, we have been told by those participating in the studies that livestock management is included and that the MASL has been working on a strategy to integrate cropping systems, livestock management, and enterprise development.

2. Recommendation Two: Under the Scope of Work for a Mahaweli Enterprise Development/Employment Generation Strategy we believe that there is need to add an eighth sub-task. Rather than dealing with costs of production, this sub-task would collect information on the basic expenses of Mahaweli settler households -- including not just expenses on food, shelter, clothing, and production costs, but also expenditures on health; on membership fees for funeral, temple and other voluntary associations; on pilgrimages and visitation to communities and areas of origin (an important cost for evacuees and electorate selectees); on charms; on education; on important social events like weddings; on interest; and so on.

Discussion

In assessing the merit of different production systems for settler households, more information is needed on basic settler expenses. What little information is available suggests that such expenses are significantly higher than is currently thought to be the case. We suspect, but the figure is only a guess, that current household expenses other than rice average over 12,000 rupees per year. Among our sample households, for example, it is not exceptional for over 1,000/- a year to be spent on family health -- such an amount including not just costs of transport and treatment by "Western" and Aryuvedic practitioners but also costs for folk medicine, including treatment of misfortunes thought to be caused by the jealousy or ill will of neighbors and relatives. In this regard we have found fear and treatment of suspected sorcery to be surprisingly common among Mahaweli settlers, snake bite, for example, being usually attributed to sorcery.

3. Recommendation Three: While we strongly support the joint efforts between the Department of Fisheries and the MASL to develop fishponds for settlers, we believe more careful analysis of the costs of fishpond construction is needed.

Discussion

We noticed a significant difference between the cost and labor estimates for fishpond production of fisheries officials and the actual financial costs of construction to settler households. In one case, for example, a settler informed us that he would not have gone ahead with a fishpond if he had known that the labor costs were going to exceed 3,000/-. While he should be able to recover those costs, with good luck, within three to four years, still we think the economics of fishponding needs more careful examination. Furthermore, the impact of possible seepage from fishponds into adjacent agricultural allotments needs examination, especially during the yala season.

II. COMMUNITY FORMATION, SOCIAL SERVICES AND SETTLER ORGANIZATIONS

A. Introduction

Community formation, along with increasing the living standards and disposable income of settler households, should be major goals of settlement planners as they relate to the settler population. By community formation, we mean the formation through time of communities (with a range of community organizations which people wish to join) in which settler households wish to live out their lives and raise their children. The formation of viable communities has been one of the least successful components of government-sponsored settlement projects around the world in spite of government rhetoric about the creation of new lives for families in pioneer zones.

One of the reasons for this poor record is the sheer magnitude of the task. As the sociological adviser to the World Bank, Michael Cernea, has written, "it is hard to imagine a more difficult socio-economic and political task for planners than designing and implementing 'from scratch' the creation of new communities." Over the years we have made a number of recommendations to the Mahaweli authorities as to approaches which we believe will facilitate the eventual emergence of viable communities. The most important of these recommendations are discussed below, along with action taken upon them, and their current relevance.

B. Household Selection

Following the successful selection process developed by Malaysia's FELDA, we have recommended that both the husbands and wives of

prospective Mahaweli settlers be interviewed to ensure that the household as a whole, or at least both spouses, have the skills and the desire to pioneer the dry zone. No action has been taken on this recommendation to the best of our knowledge, with the selection process continuing to focus on the male head of household. Furthermore, in extension activities relating to agricultural production and in the recruitment of Mahaweli officials (other than community development officers, social scientists and health personnel) there continues to be a male bias which we believe to be counter-productive in terms not just of community formation, but also in terms of maintaining (let alone reinforcing and improving) the customary role of the woman in the farming household and in terms of increasing production.

Generally speaking, we have little to criticize about the type of male settlers recruited. In fact, Mahaweli policy toward settler recruitment is one of the most enlightened in the world. This is because priority is given to the host population unless they are very recent encroachers. We have applauded this policy in the past and once again we wish to single it out for praise. Because of political pressures we suspect that it has not been easy to implement, since the proportion of resettlers has been much higher than anticipated -- hence reducing the proportion of electorate selectees.

In the June 1985 Projects Evaluations of U.S. AID-Assisted Projects in System B, the authors note that as of early 1985, 79 percent of the settlers in H System (where settlement is virtually complete) were resettlers, as were 19 percent of settlers in System C and 58 percent in System B, with 63 percent of all settlers being resettlers as of that time. As a result, settlers represent a fuller range of occupations and family statuses (ranging from recently married couples to elderly ones) than is usually the case with land settlement projects. This policy of giving preference to the host population has greatly aided community formation simply because it has involved the relocation of existing communities more than the resettlement of the aggregates of households which characterizes electorate selectees.

Mahaweli policy toward evacuees has also been exemplary since they have been given the option of resettling as communities either in the catchment area of their former homes or in one of the Mahaweli command areas. While families opting to resettle in the command areas (and apparently they constitute a majority of the evacuees) tend to be more spread around the various Mahaweli zones, nonetheless they too tend to be resettled in the same blocks, which has facilitated their adaptation and community formation. Evacuees also represent a fuller range of occupations and family statuses than electorate selectees although not to the extent of resettlers, since older evacuees, boutique owners, and the more urbanized families are more apt to opt for relocation within the catchment area of their former homes if that option is available. In some cases, as with people moved from sanctuary areas, that option is not available and entire communities are moved as communities. When evacuees are added to

resettlers, over 75 percent of Mahaweli settlers to date belong to those two categories, with the result that community formation is less of a problem than in other Sri Lankan settlement projects and in other countries.

Looking to the future, we believe that it is even more critical than in the past for the government to continue giving priority to the host population. We recommend this for three reasons. The first has been the basis of settlement policy all along -- in all fairness priority has been given to people already settled in an area. The second relates to community formation -- for that becomes an easier task when entire communities or sections of communities are resettled as units as is Mahaweli policy. Interestingly enough, when members of our 34 sample households were asked which category of settlers were the best farmers, the most frequent answers related to resettlers and evacuees. In the former case, two of the reasons given were, first, that they could draw on existing kinship and patron-client relationships for recruitment of labor, acquisition of interest-free loans, and other needs; and, second, that they were more familiar with the command area habitat. In the case of evacuees (and some resettlers) reasons given referred to their compensation, which provided them with not only a safety net unavailable to electorate selectees but also investment capital.

The third reason for giving preference to host populations is that currently the development of Zones 2 and 3 in System B is reaching into areas where Tamil-speaking Hindus and Tamil-speaking Muslims live. Within some blocks they are a majority of the population, and this is especially the case in regard to blocks still to be developed in Zones 4A and along the proposed Right Bank Canal (Zones 6-8). We believe that donor nations and perhaps also the Mahaweli family of agencies have been insufficiently aware of the extent to which development of these various zones could contribute to a solution to the communal problem within the country by showing that the Accelerated Mahaweli Programme is for all Sri Lankans regardless of ethnic composition. System B is the first Mahaweli System where Tamil-speakers are being settled. In Zone 2, the government -- through land katcheries and the Mahaweli family of agencies -- is proceeding with the incorporation of Tamil-speaking villages in the same fashion that Singala-speaking villages have been incorporated elsewhere. In this regard the donor nations perhaps need reminding that completion of Left Bank development and initiation of Right Bank development would involve benefits (in terms of contributing to a solution to the communal problem) that are not easily measured in terms of economic rates of return.

While we believe they have seriously overestimated (due to the natural tendency to undercount the existing host population) the proportion of electorate selectees (more than 90 percent) that can be settled in the still-to-be-developed portions of Systems C and B, the authors of AID's June 1985 Mahaweli Projects Evaluations make an important point in emphasizing that as Mahaweli development moves

north the proportion of selectees will increase -- partly because most evacuees have already been resettled while Mahaweli development also is extending into previously forested, sparsely settled zones (as in Zone 4 of System C and as would be the case if System A is developed). As the authors point out, this provides the opportunity for more careful selection of settler households. In this regard, we urge once again that both spouses of prospective settler households should be interviewed.

Although the data are sparse, it is sufficient to suggest that a number of electorate selectee households are disintegrating or are a source of friction within the community because the wives are unhappy. They are what we call "reluctant settlers" -- people who would not have opted to move to the dry zone with their children if they had a choice in the matter. Such wives appear to be more susceptible to physical and mental illnesses although again much more data is needed on the topic. They are also apt to absent themselves from Mahaweli settlement areas on extended visits to their communities of origin -- again with adverse impacts on family structure, not to mention productivity.

As for selection criteria for men and women alike, we again wish to emphasize the need for a national set of selection criteria -- as discussed in Report Number 2 (September 1980), and for the consistent implementation of those criteria. While the proportion of settlers who do not meet the accepted criteria relating to degree of landlessness and level of income is relatively low (we doubt that it exceeds 10 percent), the situation needs to be carefully watched, especially because evidence from Sri Lanka, as well as elsewhere, suggests that so-called "middle-class settlers" make worse farmers, in terms of lower productivity and higher absentee rates, than do "lower-class settlers." For this reason alone we doubt the wisdom of allocating holdings larger than five acres to settler households concentrating on annual crops, or ten to fifteen acres for those emphasizing tree crops and agro-forestry (in other words, we do not see any economic justification for the allocation of holdings between fifteen and fifty acres).

C. Orientation and Extension: The Role and Status of Mahaweli Women

The AMP is one of the few settlement projects where some orientation is given to settlers before their arrival in the settlement zones. This is a plus on which we have commented before. On the other hand, both orientation and extension are focused far more on men than on women. We recommend that this bias be corrected for two major reasons. First, surveys by Lund, de Silva, Gunawardena, Schrijvers, Emmert and Benson, and ourselves, all show that Mahaweli women not only are heavily involved in agricultural activities, but desire agricultural training.

Furthermore, a significant minority of settler households are headed by women, while in other households the woman plays the dominant role as agricultural manager since the husband is involved in off-farm employment. The latest report on the topic of gender roles in Mahaweli areas is Emmert's and Benson's July 1985 draft report for U.S. AID. In the draft summary to that report they reported that they "found a significant minority of women . . . who manage paddy cultivation (supervising hired laborers, attending farmers' meetings, deciding on input use, and selling produce). These women may be widowed or separated, but also may have living husbands who are incapacitated, absent, otherwise employed, or not interested in farming. Because of the cultural expectation that cash crops are men's crops, the presence of women managers may often be overlooked and most agricultural extension aimed at a male audience."

The second reason why we recommend that the bias against women as producers as opposed to mothers and housewives must be corrected is the observation that settlement projects in many different countries have actually reduced the economic and social status of women to a position that is lower than in their communities of origin. We noted this point in our 1980 report on H-1 and H-2 that commented on ways in which the position of women had deteriorated since their arrival in those Mahaweli settlement zones. Recent titles of papers by Joke Schrijvers that deal with Mahaweli emphasize the same point, two 1985 papers being titled, respectively: "Mothers for Life: Motherhood and Marginalization in the North Central Province of Sri Lanka" and "Blueprint for Under-Nourishment: The Example of the Mahaweli River Development Scheme."

While we have emphasized in each of our reports the need to view women as producers as well as mothers in households that should be viewed as joint decisionmaking and production units, we now realize that we have not sufficiently emphasized the bias against this view. Nor have we emphasized sufficiently the reasons for correcting this bias. These reasons relate not just to nutritional levels and to intensification and diversification of production, but also to family stability and community formation. We doubt that Mahaweli policies toward both diversification and intensification can be successfully realized unless more agricultural extension work (dealing with both cropping systems and livestock management) and enterprise development extension is directed at women as producers. We have already noted the need to improve the quality of agricultural extension. There is also a need to recruit more women as technical officers. (In their draft report Emmert and Benson note, for example, that there "are no female staff in System B aside from clerks and Health Volunteers"). Furthermore, should the status of women in Mahaweli systems continue to deteriorate or remain at present levels we would expect such a situation to contribute to family instability and neighborhood factionalism, and hence to have an adverse effect on community formation.

In reply to such a critique the usual response is to refer to the Home Development Centres in System H, to pilot demonstration plots which stress women's productive roles on the home lot, and to the recruitment of settler daughters as secretaries to the dairy societies. While these are steps in the right direction, they are insufficient. Furthermore, the curriculum of the Home Development Centres is still biased toward homecrafts as opposed to agriculture.

D. Settlement Nucleation and Homogeneity

Both settlement nucleation and homogeneity foster community formation, while the former, of course, also fosters the provisions of educational, medical, and other social services. We have been supportive throughout concerning the Mahaweli policy on nucleation, and the flexibility shown in implementing that policy (including a simplification of the settlement hierarchy after the development of H System, and the upgrading of existing townships in System B as opposed to the costly creation of new ones).

While the policy of the Mahaweli family of agencies also has been to cluster people according to their communities of origin (in the case of resettlers and evacuees) and their electorates of origin (in the case of selectees), in fact we find that people of very different backgrounds have become mixed up in various units. In H System, for example, turnout units of under 20 farmers may include both purana villagers and electorate selectees, while Singala- and Tamil-speakers are being settled in the same communities in Zone 2 of System B. While such heterogeneity may be viewed as an important nation-building technique, study after study of settlement projects in different countries indicate that heterogeneity makes both increased productivity and community formation more difficult. We believe that such is the case in the Mahaweli Project as well.

During the difficult initial pioneering years -- and it is easy for officials in their comfortable quarters to forget the rigors that settler households must endure for years at a time -- cooperative efforts in regard to house construction, land preparation and community formation are best carried out by people who already know each other and who share similar linguistic, religious and caste backgrounds. Our data indicate that poor functioning of turnout groups and community factionalism is often attributed to too much heterogeneity. We recommend that in the future the MEA make a stronger effort to aggregate people of common origin in the same communities and place neighbors within the same turnout group wherever possible.

E. Advance Alienation, Community Formation and Social Services

In theory "advance alienation" makes sense, since settlers are directly involved in building their new homes, preparing their fields

and creating their new habitat, including the communities within that habitat. In practice, advance alienation makes sense only if essentials for making a living and for servicing community life are provided within a reasonable period of time. Though definitions of what constitutes a reasonable period of time vary, we believe that the rigors endured by Mahaweli settler households are such that it is essential for irrigation water to be provided, at the latest, during the third season following settlement. We have outlined these hardships in earlier reports. In addition to building houses, finalizing land preparation, getting to know new neighbors, learning new production techniques, and adaptation to the Mahaweli system of management, settler households have to cope with increased incidence of snake bite, ill health (especially in regard to malaria), and stress (with the latter probably associated with suicide rates which are higher than the national average -- an observation made by us during both our 1984 and 1985 evaluations and also by the authors of the 1985 Draft Report for AID on Mahaweli Health Needs Assessment).

For such reasons as these we recommend that settler intake be synchronized so that water is provided to settler allotments no later than the commencement of their third season as settlers. While this recommendation has been repeatedly made by us, as well as by various donor agencies, more typically water issues in System C and B are delayed until the commencement of the fourth or fifth season. Furthermore, we see no major attempt to correct for this deficiency, since we believe it unlikely that the Kegalla settlers brought into Zone 2 of System B earlier this year will receive water issues before Yala 1987 or Maha 1986/87. We believe that there is no legitimate reason for such continued insensitivity to the basic needs of settler households.

We also recommend that more attention be paid to synchronizing the provisioning of social services with settler intakes. This is especially the case with schools and basic medical services. While settlers appear reasonably satisfied with schools within two to three years of their arrival, complaints continue over a longer period of time about the inadequacy of health services. Many of these complaints are valid, in our opinion. Hence three years after the first settlers came to System B, there is still no anti-venom at the Aralangwila Rural Health Centre in spite of the high incidence of snakebite deaths, about which Mahaweli officials are well aware. While an effective snakebite seminar was held over two days in Zone 5 of System C (which has significantly reduced snakebite deaths as those bitten now agree to transportation to the Polonnaruwa Hospital), we are not aware of similar seminars being held in Zones 1 and 2. They are needed, as is anti-venom in closer proximity to the settlers.

During yala 1984 the head of household of one of our four Zone 2 sample families died of snakebite. During yala 1985 the wife of another of those household heads died after being bitten by a viper. We feel that both of those deaths were unnecessary in that they could

have been avoided if the MASL had dealt more systematically with the known dangers of snakebite. While the system of Village Health Workers is a good one, and continues to spread throughout System B, the MASL has had a difficult time providing a doctor to that system, there currently being none in residence.

We also recommend that still more attention be paid to malarial prevention and treatment, especially in regard to the increasing incidence of falciparum malaria in Systems B and C. (According to a recent paper presented by Dr. Samarasinghe, Acting Director of the Anti-Malaria Campaign, "a danger signal is the increase of P. falciparum infections especially in the population being settled in the "B" and "C" Systems of the Mahaweli Scheme. The malaria problem in Sri Lanka today is a matter of grave concern with the development activities underway in the dry zone".)

Delayed water issues and delayed provision of adequately staffed social services (the problem being more a staffing problem than a provision of physical infrastructure one) has an adverse effect on community formation in a number of ways. Though settlers are now encouraged to build semi-permanent housing shortly after their arrival so that other family members can join them, there is a tendency to keep school-age children in villages of origin until Mahaweli schools reach equivalent standards. Not only does this cause more frequent "home" visitation, but it also reduces the family labor force during those crucial early years of land preparation and production. Wives are also more apt to absent themselves from settlement zones due to their own illnesses and those of their children when medical services are inadequate. Malaria is especially feared, particularly by evacuees and electorate selectees from non-malarial hill electorates.

F. Settler Organizations

As previously mentioned, important policy changes toward settler organizations have been made during recent months. Recognizing that Unit Manager-led Hamlet Development Associations have not been effective production oriented organizations, current MASL policy has been to redirect attention to turnout groups, and, for the first time, to promote their federation at the D-channel level. In System H both the MEA (in Galnewa, for example) and the MEA and Hatton's National Bank (in H-5) are concentrating extension on pilot turnouts in selected units with good returns in regard to increased production and loan repayment. Recently the former RPM (H-4), who was also the coordinator among the three H System RPMs, issued instructions to staff to prepare turnout groups for eventual federation at the D-channel level so that all federations, with their own elected leaders, can become registered societies for doing maintenance contract work. Since the H-4 RPM has still more recently become a General Manager of the MEA, hopefully this renewed emphasis on settler-run turnout groups and their federation will not only

continue in System H but will also involve Systems B and C where turnout leaders told us that they had yet to be informed about the new policy.

III. OTHER ISSUES

Four additional issues will be briefly examined in this section. These are (a) the extent to which lessons learned in System H and C are having an effect on policy planning and implementation for System B; (b) evaluation; (c) improved donor interaction with the Mahaweli family of agencies; and (d) social infrastructure for fishermen settlers in System B.

A. Transference of Lessons Learned to System B

According to our Scope of Work, we were requested to examine the extent to which lessons learned in other Systems have been systematically transferred to System B. While the request is a good one, it is a difficult one because of the lack of systematic, ongoing evaluation of the AMP and the freedom allowed Resident Project Managers to experiment with their own ideas, some of which may subsequently be experimented with in other Zones.

No evaluation unit has been institutionalized within the Mahaweli family of agencies, the policy being to contract out tasks of evaluation. These tasks are often initiated at the request of donors, for instance, the H System evaluation requested by the World Bank, other types of evaluation required by the Bank as part of Project Completion Reports for Mahaweli I and Mahaweli II, certain evaluatory surveys requested by the EEC, and AID-financed evaluations -- including our own series of reports. Such evaluation reports do not receive wide circulation, and hence discussion, even within the Mahaweli family of agencies let alone donor agencies (we, for example, have found it difficult to gain access to such evaluatory reports). We believe that this situation is counter-productive; however, because of the policy and planning initiatives currently under way at the Minister's request, it is premature to suggest the institutionalization of a larger evaluatory capability within one or more of the Mahaweli family of agencies (for the moment, evaluation is the responsibility of one officer within the PMU).

Experimentation by RPMs is to be encouraged. Some experiments have been widely disseminated. Hence the System of Village Health Workers was pioneered in H-5 and then subsequently was institutionalized in the other Systems, this being an excellent example of a lesson well learned being replicated in other systems. To an extent, the emphasis on diversification in H System has also spread to other Systems, although here feasibility studies and RMP initiative deserve credit. Thus, it was one RPM in System B who pushed the concept of fishermen settlers, along with agro-forestry, while the RPM recently has been experimenting successfully with Bombay onions in System C.

As for lessons that have originated in System B and expanded outward from there, a good example is the experiment of issuing roof tiles to Mahaweli settlers on the assumption, subsequently proved to be correct, that issuance of such tiles would provide an incentive to settlers to build more substantial houses during the early months of settlement. This innovation, or lesson learned, has now spread to the northern portion of System C's Zone 4.

These examples show how successful experiments have been transferred from one system to another. We believe, however, that other experiments are going on which have transfer potential that is not being realized simply because of insufficient evaluation. Hence we doubt that the other banks have much awareness of the innovative extension program at the turnout level currently being expanded by Hatton's National Bank in H-5. So once again we come up with the need for a more systematic, open, and dynamic system of evaluation.

While experimentation by RPM's at the systems level occurs, most Mahaweli policies were either formulated by MDB planners in the early 1970s (the 2.5 acre allotment, for example) or by the MASL in the 1980s. They were then either tested out in one system prior to replication elsewhere (the unit manager system, for example, or the dairy development program) or uniformly implemented in all systems, the Hamlet or Community Development Association being a relatively recent example. The risks associated with new policies -- such as the unfortunate (in terms of local participation and improved water management and productivity) policy to form Community Development Associations headed by Unit Managers -- are less where such policies are tested out in one area and then carefully evaluated in regard to the desirability of their replication in other areas.

B. Evaluation

For the reasons presented in the preceding section, we recommend that during the forthcoming analysis of policy making, coordination, and plan implementation, that consideration also be paid to how a more systematic, open, and dynamic process of evaluation can be carried out in regard to the development component of the AMP. While we believe the current policy of subcontracting out evaluations is a good one, currently it is done on too ad hoc a basis. Furthermore, we suspect that additional resources are needed within the PMU or another Mahaweli Unit to assess the evaluations and translate them into a form that will assist policy makers and planners.

C. Improved Donor Interaction with the Mahaweli Family of Agencies

We believe that there is a need for a broader dialogue between donors and the Mahaweli family of agencies. Although perceptions are changing, the AMP still has the reputation among officials in other agencies of being not just a politically inspired project but a

"closed" project about which little objective evaluatory information is available. This reputation reduces cooperation and coordination between Mahaweli and other agencies. In regard to the donors, we believe that the recent organizational changes within the MASL and the MEA provide an opportunity for opening up at least an informal dialogue about concerns and common problems. Hence we recommend that consideration be given, for example, to an informal series of meetings between donor representatives and the Mahaweli authorities.

D. Social Infrastructure for Fishermen Settlers in System B

The decision has now been made to settle fishermen at Pim-buretewa and Madura Oya reservoirs in System B, and fishermen have been so informed. While schools have now been opened to the children of fishermen, in fact, there are no schools or other social services serving the Madura Oya fishing community, the children of which do not have access to schools nearby. We recommend that adequate social services be provided to this large fishing community, as well as to other fishing communities within the AMP zones.

PART THREE

I. INTRODUCTION

A. Background

Part Three of this report is written in response to two instructions from U.S. AID in our 1985 Scope of Work. According to the first instruction, we were to examine the current validity of the various findings, conclusions, and recommendations made in the previous five reports of this series. According to the second instruction we were to assess the extent to which the Mahaweli family of agencies has responded to these findings, conclusions, and recommendations.

We undertake this task with some hesitation for two reasons. First, the nature of our reports has changed over time. The first two reports, for example, did not include conclusions and recommendations. Furthermore, visits to the field did not concentrate on the AMP zones but rather on other settlement schemes within Sri Lanka. Our purpose was to look at the Accelerated Mahaweli Programme in terms of Sri Lanka's previous experience with land settlement (with which Wimaladharma had great familiarity) and the global experience with land settlement (Scudder being involved at the time in a global evaluation of land settlement in the tropics and subtropics, with special emphasis on policy implications). Drawing on the Sri Lankan and the global experience, we focused on key issues which we expected would be applicable to the AMP.

It was during our 1981 assessment that we began making recommendations relating to the AMP, with still more attention paid to conclusions and recommendations alike in the fourth and fifth reports. It was also during 1981 that we picked a small sample of settler households (including some families interviewed during 1979 and 1980) for annual evaluation, and that we decided to link the third report into a series with the first and second reports and all subsequent reports.

While the first three reports were "upbeat," they tried to identify key issues which the AMP need address to realize its potential for increasing production, improving the living standards of settler households, and generating nonfarm employment. They dealt with the 1979-1981 period. No assessment was carried out by us during 1982. When we carried out fieldwork during 1983, we concluded that various policy decisions were being implemented (in some cases contrary to previous policies) which seriously jeopardized the possibility of the AMP realizing its potential in regard to the settlement component. Hence in the introduction of Report Number Four (November

1983) we included the following underlined section: "We believe . . . that there is a very real danger that this potential is not being realized, and will not be realized in the future, unless action is taken now on the critical issues discussed in subsequent paragraphs." Our concern for the future of the AMP increased as a result of our 1984 evaluation, which was even more critical of certain policy decisions and deficiencies associated with the AMP. Recommendations concerning corrective actions were made.

Currently major corrective action is under way -- characterized by both policy changes and deficiency correction. While we believe that our reports have had some positive impact on Mahaweli planning and plan implementation, we do not wish to imply that our reports were responsible for major policy changes. That is the second reason why we are hesitant to write this section. Linking our findings, conclusions and recommendations to actions taken tends to imply a cause and effect association which we reject. Though we take responsibility for what we have written, many of the suggestions and recommendations are shared with Mahaweli officials with whom we talked in Colombo and the field. They are their recommendations and suggestions as much as ours, our reports serving a major function, we believe, in bringing the concerns of Mahaweli settlers and officials to the attention of the top leadership within the Mahaweli family of agencies.

While the report series has served an important "early warning system" function through the early identification of a range of problems, it also is characterized by what some would call a "utopian" optimism about the ability of settlement projects to catalyze a process of integrated area development. Perhaps our expectations are too high, especially when a decision is made to accelerate such a complicated project as the AMP. A case in point relates to employment generation. In that case we may well have overestimated the employment generation capability of a 2.5 acre holding, no matter how intensively farmed and no matter how diversified the production system. On the other hand, until recently the Mahaweli family of agencies has underestimated the AMP's potential for employment generation. The current emphasis on enterprise development and employment generation for the second generation appears to be an appropriate compromise.

B. Approach

Most of the key issues that currently jeopardize the future of the Accelerated Mahaweli Programme were actually identified in the first report, which was written in May 1979. They were emphasized at that time because lack of attention to them had reduced the development impacts of other settlement projects -- both in Sri Lanka and elsewhere. As our knowledge of the AMP increased, we have increasingly commented on the relevance of these issues to the Mahaweli scheme, defining them more specifically in the process, and linking

them to findings, conclusions and recommendations. The approach taken in this section is chronological. Since all the key issues noted in the first report have proved relevant to Mahaweli, they are dealt with in sequence, along with their current status and action taken for handling them. New issues identified in subsequent reports are then dealt with in the chronological order in which they occur.

C. A Warning

At the moment we believe the AMP is replicating poverty among the majority of the households that have been settled to date in the Mahaweli zones. If that poverty continues, the potential of the AMP to improve living standards and to generate both farm and off-farm employment will be lost. While current intentions to intensify and diversify production, to increase the responsibilities of settler organizations for operation and maintenance of the irrigation system, and to stimulate enterprise development and employment generation are of tremendous importance, the key to the future success of the AMP will depend on the way in which these intentions are implemented, and on the extent to which a 2.5 acre holding can move Mahaweli settlers beyond a subsistence economy. If the development potential of the AMP is to be realized, disposable incomes of thousands and thousands of Mahaweli settler households must increase significantly. Therein lies the challenge.

II. ISSUES, MAJOR FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

A. Policy Planning and Plan Implementation for the Integrated Development of the AMP and Adjacent Areas

The lack of regional planning capabilities within the Mahaweli family of agencies has been emphasized throughout this series of reports, along with the importance of such planning for realizing the potential of the AMP for integrated area development. While lip service continues to be paid to the importance of regional planning, in fact such a planning capability has yet to be institutionalized within the Mahaweli family of agencies. As a result each system continues to be planned on a project by project basis, almost as if it existed in a vacuum, with very little attention paid to relationships between systems and adjacent rural and urban settlements (including regional towns), or even to intersystem relationships.

We continue to see this as a very serious deficiency. Indeed, in Report Number Five (January 1985) we stated that the "continued inability . . . to carry out forward looking planning for integrated development" was the most serious deficiency of the Mahaweli family of agencies. The issue is not so much that the AMP will necessarily have an unfavorable economic rate of return (for electricity exported from the basin is in demand), but rather that the AMP is underutiliz-

ing the human, land and water resources of the Mahaweli, Kala Oya, and Madura Oya Basins.

B. Settlement is Stressful for Settler Households

In noting the dynamics of the land settlement process, the first report emphasized the stressful implications of the initial stages for settler households and the need to alleviate the stress load at the earliest possible time. Such stress was broken down into physiological stress associated with higher morbidity and mortality rates; psychological stress; and sociocultural stress. In later reports we pinpointed a number of areas in which the Mahaweli family of agencies need pay more attention to settler needs.

1. Health

Specific health concerns about the AMP began to emerge in the 1981 report, where a high incidence of snakebite and malnutrition were noted. The 1983 report again stressed the high incidence of snakebite and the critical need to improve health services in Zone 4 of System C and in System B. Evacuees from malaria-free zones were thought to be particularly at risk, with page 21 noting that medical services for such people were "completely inadequate." Our concern about inadequate medical services in the Mahaweli zones was heightened during our 1984 survey, with Report Number Five suggesting that settlement deficiencies were having an adverse effect not just on household incomes but also on health, including mental health. This report, for example, was the first to suggest that Mahaweli areas had high suicide rates by national standards, a conclusion subsequently reiterated in AID's 1985 assessment of Mahaweli health needs. In noting an apparent increase in stress-related deaths, the report also noted an apparent increase in conflicts at the household and community levels. And attention was drawn to an increased incidence in falciparum malaria.

While the Mahaweli family of agencies has pushed an excellent system of health care through trained village volunteers, and become increasingly aware of the need to attack nutritional inadequacies through home lot development and livestock production, the current status of health care in AMP zones continues to be inadequate. In particular more attention needs to be paid in all Mahaweli zones to malaria, especially falciparum malaria, and to stress-related illnesses. In dealing with such problems we endorse the recommendation in the fifth report that an assessment of the health of Mahaweli settlers be undertaken "which is broad enough to assess the mental health of settlers . . . and which results in specific recommendations which can be, and are, implemented" (page 43). Furthermore, in insuring that health needs of settler households be met, we believe that donor agencies should play a more active role. The situation in System C here is instructive. At least partially because the EEC has

insisted on adequate health care, there are two resident doctors in System C, while System B often has no doctor at all.

2. Provision of Water by the Third Season Following Settlement and Early Correction of Irrigation System Deficiencies at the Turnout Level

While advance alienation in theory is a good thing, in practice there is a tendency for provision of irrigation water to be delayed at the expense of settler households. Hence in Systems B and C provision of water is more apt to be delayed to the fourth and fifth seasons, which involves settler households in unnecessary hardship. The same, of course, is true of delayed correction of deficiencies in the irrigation system, a problem which has received emphasis in Reports Two through Five.

While the MEA has begun to initiate crash programs to correct irrigation system defects in a number of zones (hence addressing this issue), equipment inadequacies -- as in System B Zone 5 -- slow down corrective action. As for better synchronization between settler intakes and the timely provision of water, the situation, if anything, is getting worse -- especially in Zone 4 of System C and Zone 2 of System B. Most likely the only satisfactory corrective action is to slow down settler intakes, phasing them more carefully with the development of the irrigation system.

3. Inadequate Attention to Other Needs of Settler Households

In recent reports we have reported a number of instances where Mahaweli authorities appear to be unaware of situations which have adverse impacts on various settler households and communities. To cope with such circumstances we recommend that the MEA staff a small unit with the prime responsibility of identifying, assessing, and proposing solutions to settler problems.

C. Enterprise Development and Nonfarm Employment

All five reports conclude that the Mahaweli family of agencies has not paid enough attention to enterprise development and employment generation, hence jeopardizing the AMP's potential in this regard. Granted the President's emphasis on employment generation as a major (if not the major) goal of the AMP, this deficiency over the years has frankly puzzled us, both as it relates to the employment of seasonal and permanent agricultural labor and the generation of nonfarm employment. As a result we have devoted considerable space to it in our reports, noting, for example, that over half of nonfarm employment in Asia is in rural areas and that successful settlement projects like Minneriya have, indeed, been able to generate significant enterprise development and employment generation, unlike the

majority of settlement projects in Sri Lanka. In spite of this, the fifth report (January 1985) concludes that very little systematic planning has been devoted to the AMP potential to increase different kinds of employment.

Currently action is being taken within the Mahaweli family of agencies and at the presidential level to correct for this deficiency. In addition to studies already commissioned, we recommend that a study also be made of the current expenditures of settler households so that current plans to intensify and diversify Mahaweli production systems will be able to generate sufficient income to move the majority of settler households beyond subsistence.

- D. Diversification of Production Systems at the Household Level to Include Multi-cropping, Inter-cropping and Relay Cropping; Livestock Production; Agro-forestry and Fisheries; and Nonfarm Employment -- also Production System Intensification and Marketing

While this is another theme running throughout the series of five reports (which has been very critical of what we believe to have been an overemphasis on the double cropping of paddy), the Mahaweli family of agencies has begun to pay much more attention to the need for diversification and intensification of production systems at the household and Mahaweli system level. Initially problems of water scarcity in System H were a driving force, but currently diversification is being pushed not just in response to differences in water availability and agro-ecological zones but also as a mechanism to increase settler incomes.

Looking to the future, we recommend that still more attention be paid to integrating (at the household level) the different components of the production system and to assessing not just the productivity of such systems but also their ability to raise disposable incomes beyond subsistence. Accomplishing such goals will require additional research, improved extension (which need be targeted at both men and women), a reorientation of credit to the needs of the household production system as a system (as opposed to credit for specific crops), more realistic pricing for such other food crops as soya, and consistent marketing policies.

While marketing policies received little attention in the earlier reports, more recent reports have noted our inability to learn just what the marketing policy of the MASL is. Reiterating this inability during our 1984 evaluation, we were told by one senior official that our problem was understandable because "no clear-cut marketing policy has been established." We recommend that marketing issues be more systematically addressed in the future, including the coordination of the marketing of Mahaweli produce with the importing of agricultural produce from India and elsewhere.

E. The Need to Pay More Attention to Net Incomes for Settler Households

Another conclusion running throughout the five reports is that the AMP has been planned and implemented too much as an agricultural development scheme (indeed, as a paddy production scheme) as opposed to a project designed to stimulate the integrated development of the dry zone. In that regard too little attention has been paid to the role of rising incomes among thousands of settler households in stimulating regional development through enterprise development and employment generation.

While settler incomes in the older settlement areas of H System appeared to be rising satisfactorily through 1981, in both 1983 and 1984 we emphasized our conviction that living standards for the majority were no longer rising at a satisfactory rate; indeed, for a significant minority they appeared to be falling by 1984. During our current assessment we reached the conclusion that the double cropping of paddy alone will not generate incomes high enough to increase significantly the purchasing power of settler households.

We believe that the current emphasis on diversification and intensification is partly based on the realization that income generation from the double cropping of paddy alone is insufficient. Especially attractive in terms of raising settler incomes and economizing on water are the ideas of the former coordinator of the three subsystems in H concerning the cultivation of short-term varieties of paddy during the maha season. Such an approach would allow a longer season for the cultivation of such higher value crops as chillies during the yala season. It might also allow triple cropping in some units, with settler households taking more advantage of the gingerly rains in March.

On the other hand, our conclusions about the association between the double cropping of paddy on a 2.5 acre holding and the perpetuation of poverty do not appear to have been generally accepted. To clarify the issues involved, and to serve as a sounder basis for future planning, we recommend that more detailed information be collected on the total expenditures of Mahaweli paddy cultivators so that these can be compared with the income received from paddy sales after deductions for loan repayment and costs of inputs, including labor.

F. Settler Participation and Water Management

The first three reports (1979-1981) are complimentary to the Mahaweli family of agencies on their commitment to settler participation, to the creation of turnout units, and to the training of turnout leaders. Against this background, we were very critical in our 1983 and 1984 reports of the subsequent decision to incorporate

turnout units within Community or Hamlet Development Associations led not by settlers but by Unit Managers. There is no evidence that such associations are effective as production organizations. Partly this is because they confuse water management units (turnouts) and functions with residential units (the hamlet) and community development functions when the experience elsewhere is that such functions need to be sharply separated. Partly it is because settlers realize that they have lost control over what were supposed to be participatory organizations and hence have lost interest in them.

During 1985 we were informed that a policy decision had been made to revitalize turnout units, and to federate them at the D-channel level so that they could play a more active role (as contractors, for example) in the operation and maintenance of the irrigation system. Furthermore, we were informed that instructions had recently gone out to implement this decision in H System. While these actions go a long way toward meeting our suggestions and recommendations (for we advocated federating turnouts in our earlier reports), we recommend that they be promptly implemented in all Mahaweli zones, and that Unit Managers and Engineering Assistants henceforward act as advisors to (as opposed to officers of) water user associations. We also recommend that henceforward a clear distinction be made between such associations and Community Development Associations.

G. Environmental Issues

There has always been AMP and donor awareness of the importance of environmental issues, as pointed out in our first report (1979). While this awareness continues, the dynamics of the land settlement process means that new problems need to be continually anticipated through appropriate monitoring and research. Currently the necessary monitoring and research is not being undertaken, with the result that a number of environmental problems seriously threaten the AMP. Those that we have mentioned in our reports include the malarial problem; the problem of new weeds in paddy fields, which are adversely affecting productivity; the problem of new chillie diseases; and the aquatic weed problem.

Yet another problem with serious ecological and economic implications is the deforestation of the Mahaweli zone, deforestation which is not compensated for by reforestation efforts. While we have not assessed the ecological implications of this trend, our first report noted the need for forestry plantations for windbreaks, timber, and firewood. Subsequent reports have emphasized the adverse economic impacts of the failure to initiate a major reforestation program and to preserve timber for construction purposes at the time of bush clearance. Hence settlers and artisans are adversely affected in System H, for example, by the lack of timber for fuel, house construction, and furniture making. The problem there is a serious one. We recommend more support for current efforts at

reforestation in System H (such as the nursery for indigenous trees at Kalawewa), and for agroforestry in the northern portion of System C and throughout System B.

H. The Size of the Paddy and Home Lot Allotments

While we are now convinced that double cropping of a 2.5 acre paddy allotment will not move settlers beyond subsistence, the solution to this problem is not to increase the size of paddy fields but rather to raise disposable incomes through diversification and intensification, and through a crash program to bring the entire holding under cultivation through the correction of defects in the irrigation system and land preparation. On the other hand, such diversification does require, in our opinion, that home lots be increased to one acre. We have consistently argued this point throughout our Mahaweli reports and thought that the battle had been won in 1981 when we learned that home lots of one acre were being allocated to settler households in Zone 2 of System C. Subsequently, however, half-acre plots were allotted in other zones of both System C and B. We believe the continued allocation of half-acre home lots is a serious mistake. We recommend that future home lots be increased to one acre.

I. The Proper Balance Between Buffaloes and Tractors

Events have now made this distinction less relevant since project design and the size of the home lot is biased against buffaloes. More relevant is the balance between draught bullocks and tractors, although Dr. M. U. A. Tennakoon's idea of encouraging purana villagers living adjacent to Mahaweli zones to breed buffaloes for hire to Mahaweli settlers warrants attention. While the Mahaweli family of agencies is pushing livestock production farms and holding grounds for augmenting the population of bullocks, current sales are restricted to settlers who can pay in cash. More effective credit programs need to be developed so that poorer settlers can also purchase MASL stock.

J. Settler Selection

We continue to recommend national selection criteria which are implemented for all settlement projects, including Mahaweli, and which include both spouses in the interview process. No action has been taken on these recommendations, with the result that too many wives are reluctant settlers with adverse impacts on their health, their families and on production. We also recommend that the Mahaweli policy to aggregate people of similar backgrounds in the same community be followed with greater frequency in the settlement of Systems B and C since we have observed that heterogeneity is more frequently associated with conflicts within turnout units, community

organizations, and hamlets. We also recommend that the periodic temptation to recruit "middle class" settlers be resisted since the Sri Lankan experience and the experience elsewhere is that such settlers are associated with higher rates of absenteeism and lower productivity.

K. Orientation, Extension, and Research

1. Orientation

Orientation refers to extension work among recently recruited Mahaweli settlers prior to their arrival in the Mahaweli settlement zones. It is a strong point of the MASL in comparison to other organizations around the world with land settlement responsibilities. In our fifth report, we recommended that the orientation program be extended to the host population in System B since both encroachers and Tamil-speaking purana villagers have been living under considerable uncertainty as to whether or not their homesteads and villages were to be incorporated within the AMP.

2. Extension

Early reports praise the institutionalization of the unit manager system as an attempt to develop a unified approach to extension work at the hamlet and turnout level. While we continue to see the unit manager system as a major innovation with significant development potential, we believe that this potential has been reduced since 1981 for two reasons. The first reason relates to the politicization of the position in regard to both recruitment and the expectation that the Unit Manager serve as president or chairman of what should be settler run organizations. The second relates to the increasing recruitment of recent university graduates in arts and sciences as opposed to diplomates in agriculture -- who constituted the majority of Unit Managers during the early years of the AMP. Not only are Unit Managers today overloaded with work and responsibilities, they also tend to have little experience with development prior to their recruitment. Since the facilitation of development should be their primary responsibility, we recommend that future recruitment of Unit Managers place more emphasis on appropriate training in agriculture (including cropping systems, livestock management, agroforestry, and fisheries).

Our first report (1979) refers to the global tendency of extension services to focus too much on men in spite of the evidence that women play a crucially important role in agriculture. Subsequent reports criticize the Mahaweli family of agencies for replicating this weakness. Since little corrective action has been taken in spite of the fact that women desire agricultural training, Part Two of this report deals with this issue in some detail.

3. Research

Attention paid to research was greatest during the early years of the Mahaweli Development Board, especially up until 1972. At that time Mahaweli officials worked closely with agriculturalists in other departments and with university staff. Experiments relating to the Mahaweli program were carried out on pilot projects at Pelwehera and Maha Illupalama. Perhaps because of the demands on staff since the decision was made to accelerate the Mahaweli program, the research component of the AMP has been weak.

Now that the attention of planners is shifting from construction to development activities, we recommend that more attention be paid to a range of research topics (some of which are mentioned in Part I of this report) -- including farming systems research, with settler households involved, so that the whole production system can be experimented with, including labor inputs and settler organization for operation and maintenance of the irrigation system. Such an approach was suggested in our first report; it also was elaborated in more detail in the appendix to the second report that dealt with the possibility of establishing in Sri Lanka a Centre for Settlement Studies and Training.

While rarely implemented, the idea of including settlers on experimental pilot projects is not a new one. Indeed, one settler household has been incorporated within the Bulnewa Home Development Centre in H System. Where actual incorporation of settlers within a research station is not feasible, then outreach programs or out-stations should be developed that include a number of turnouts. The new International Irrigation Management Institute at Digana appears to be experimenting with such an approach, although current emphasis is on water management as opposed to a fuller range of production activities. Looking to the future, we recommend that much more support be given to the research facilities at Girandu Kotte and Aralangwila, and that more attention be paid to a farming systems approach (such as is favored by the officer-in-charge at the Aralangwila Farm) that integrates cropping systems with livestock management. Since both extension and research are weak throughout the Mahaweli zones, we also recommend that more agricultural staff be recruited at all levels, including at the advisory level within the MASL.

L. The Need for Infrastructural Phasing

This issue has received attention in all of our reports, although the emphasis has changed through time. In the early reports infrastructural phasing was introduced as a preferential approach to the more common attempt by settlement agencies worldwide to do everything at once for both administrators and settlers, with the all too frequent result that nothing is done well. Also a possible cost

reduction approach, phasing prioritizes the provision of infrastructure according to the needs of the settler population.

Subsequent reports emphasized more the sequencing of physical and social infrastructure for Mahaweli settlers as opposed to settlers in general, with special emphasis on such early priorities as potable water, malarial control, bus services, medical facilities (with the ability to treat, for example, snakebite), proper land preparation, and the timely provision of irrigation water. More recently we have emphasized the need to phase settler intakes more carefully in regard to the provision of irrigation water.

In System H and System C the AMP has tried to do everything at once. There has also been a tendency to overbuild new towns in those systems, providing expensive infrastructure (like post offices) of more relevance to administrators (most of whom still leave their families in Colombo, Kandy, and other major urban centers) than to settlers. We suspect that the provision of more crucial facilities for settlers (such as potable water facilities and properly staffed primary schools) has suffered as a result. While such problems tend to sort themselves out in time, unnecessary hardship is caused to the settler population.

While we realize that the Mahaweli family of agencies has initiated a major program to correct deficiencies in land preparation and irrigation infrastructure, we believe that this program needs more resources to bring the entire 2.5 acre allotment under irrigation at the earliest possible date. And we recommend that the prioritization and timing of infrastructure in Mahaweli areas still to be settled be reassessed, so that settlers do not bring their families before adequate potable water, medical services, and primary schools have been provided for them. Furthermore, we recommend that the AMP phase settler intakes more carefully in regard to the provision of irrigation water -- a recommendation on which inadequate action has been taken over the years in spite of settler and donor concerns.

Another phasing issue relates to the shift from the construction phase of the AMP to the development phase. During the construction phase, settlers can supplement their incomes, with wages often being the main source of income during the initial years of settlement. When construction is finished and contractors move elsewhere, incomes of settler households will drop unless the productivity of their allotments and home gardens has begun to increase significantly. Unfortunately such increases in productivity are not sufficient in the older Mahaweli settlement areas to move households beyond subsistence; indeed, a significant minority have slipped backward. The problem is a major one which we have considered in more detail in the section dealing with incomes.

M. Monitoring and Evaluation (M&E)

In spite of Sri Lanka's experience with land settlement, our first report emphasized the importance of M&E, since the dynamics associated with the settlement process mean that new opportunities and problems are continually arising, while the reasons for former successes or failures, or for former decisions, may no longer be relevant. For that reason we recommended in 1979 the creation within the MDB or the MASL of a M&E Unit. While the Socio-Economic Unit of the MDB was mentioned as a possible starting point, it had inadequate staffing and capability, being able only to undertake one-time surveys as opposed to the monitoring and evaluation of the settlement component through time.

Since 1979, the MASL has developed an excellent capability of monitoring the extent to which the AMP is meeting its targets as they relate to infrastructure and settler intake. Monitoring and evaluation of development as opposed to construction and recruitment processes, however, remain weak. We recommend that the PMU develop an appropriate set of indices to monitor the development phases, including indices dealing with production (both farm and nonfarm), living standards, and community formation. As for evaluation, the current policy of contracting out evaluations is a good one, provided a more open mechanism is created to discuss and process the results of such evaluations, and to feed the results into the decision making process within the Mahaweli family of agencies. For this purpose, we recommend that more resources be provided to the Evaluation Studies Advisor both to formulate scopes of work for externally contracted evaluations and to assess the implications of such evaluations. We also recommend that more support be given to the surveys currently being carried out by the MEA sociologist. Finally we recommend that serious consideration should be given to setting up -- either within the MASL PMU or the MEA -- a problem identification unit as suggested tentatively on the last page of our 1985 report.

N. Credit

In his global evaluation, insufficient and improperly targeted credit was identified by Scudder as one of five factors which were frequently associated with the inability of land settlement projects to realize their development potential. In regard to the AMP, settlers have told us in recent years that their disillusionment over credit policies (especially the lack of loan rescheduling) is second in importance only to their disillusionment over the inability of the Mahaweli family of agencies to provide sufficient water at the right times in the right places. The problem of credit -- for which there is no easy solution -- definitely threatens the AMP, the 1984 lecture to the Central Bank of the former Chairman of the MASL being a good recent assessment of the problem, and of possible solutions.

Institutional credit in the Mahaweli systems is provided primarily by three banks: The Bank of Ceylon, Hatton's National Bank, and the People's Bank, one of which has a monopoly in regard to seasonal loans in each zone. While Hatton's National Bank has the best record of performance, nonetheless there are a number of fundamental problems that need to be addressed. These include, first, the fact that only a small minority of settlers makes use of institutional credit; second, the inability of most settlers who default for reasons beyond their control to obtain further loans; and third, the targeting of loans at specific crops or other items (like cattle or tractors) as opposed to the production system of the settlement household. Solutions to these problems require, we believe, greater commitment to smallholder credit policies on the part of the two government banks; recruitment of additional agricultural staff on the part of those two banks; and, on the part of all three banks, the development of credit policies that are more able to meet the needs of settler households as well as those of the banks. The latter solution might involve, for example, development loans provided at the time of settlement -- as discussed earlier in this report -- and hardship loans, both of which would be repayable over the mid term. It might also involve providing at least some loans at commercial (as opposed to subsidized) rates, with the banks using their increased profits to improve their agricultural staff.

O. Involvement of the Private Sector

This is an example of where we have learned from the policies and the experience of the Mahaweli family of agencies that have pioneered the involvement of private sector organizations in Mahaweli development. The most important experiments involve Hatton's National Bank and the Ceylon Tobacco Corporation. Operating only in H-5, Hatton's National Bank is far and above the most effective development-oriented bank operating in the Mahaweli zones. As for the Ceylon Tobacco Corporation (CTC), between 1979 and 1983 CTC was responsible for managing H-9. In the opinion of H-9 settlers in our sample, the CTC did a superior job (in comparison to the MEA which took over during 1983) in providing extension services, meeting farmers more in the fields at the turnout level than in the classroom. In our assessment (carried out in both 1981 and 1983) the CTC also did a superior job in diversifying production in H-9 and in handling marketing problems.

Though the CTC contract was terminated through mutual agreement (partly over disagreements over the scope of the corporation's involvement, CTC trying to narrow their scope to crop production and marketing while the MASL wanted them also to handle community development and the maintenance of the entire irrigation system along with access roads), we consider the CTC experiment to have been a success. Land settlement is too complicated a development intervention to leave to government organizations alone. That is one reason why more responsibilities should be given to settler organizations. It is

also a reason for involving the private sector, including private corporations and private voluntary organizations. In this regard we believe that the MASL made a mistake in rejecting the offer of Sarvodaya to participate in the Mahaweli project, Sarvodaya having developed an irrigation training program and a training staff which could have played a useful role in the AMP.

Currently Hatton's is the only private sector corporation playing a major development role in the AMP (another effort, Char-lanka -- a joint venture between the State Timber Corporation and an American company -- is currently undergoing liquidation). While other corporations, including CTC, are involved in carrying out studies for the MASL, we recommend that further efforts be made to involve the private sector in the AMP.