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(PFE)

PN-RAK-549

an AID workshop on

WOMEN IN DEVELOPMENT

BUREAU
OF
APPLIED RESEARCH
IN
ANTHROPOLOGY

and

NATIONAL
EDUCATION
FOUNDATION

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WORKSHOP ON
WOMEN IN DEVELOPMENT

Bangkok, Thailand
March 13-15, 1985

Funded by: The Bureau for Program and
Policy Coordination/Office of
Women in Development

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**Bureau of Applied
Research in Anthropology**
University of Arizona
Tucson, AZ

**National Education
Foundation**
720 Dillon Drive
Colorado Springs, CO

March 13, 1985

Dear Participant:

We are pleased that you have been selected to participate in the Workshop on Women in Development (WID). We would like to take this opportunity to welcome you and to provide some details on the workshop format.

A major thrust of the workshop is the case method analysis. The cases that have been developed are based on various types of actual AID projects from several regions. The case presents a description rather than an analysis of projects. They provide a basis for individual analysis and group discussion during the workshop. To supplement the case studies and enrich the discussion, there are technical background papers on selected issues which should preferably be read in conjunction with the case studies.

To facilitate analysis and discussion of the case studies, an analytical framework will be introduced to participants during the introductory session of the workshop. It is intended that this framework will provide participants with the necessary research and design skills for use in preparing project documents in the field.

Secondarily, the activity of the workshop will be the introduction and discussion of a design for a workbook that will be used, eventually, to measure and insure the integration of WID in project planning, implementation, and evaluation phases.

Thirdly, there will be a presentation and critical review of a micro-computer simulation model during the final day of the workshop. The purpose of the model is to demonstrate visually and graphically the roles of women and their relationship to development planning in the Yemen Arab Republic. The model was designed, recently, as a new type of tool to illustrate the significance of women and girls to economic development in the LDC's. The model can be replicated for use in any region.

Finally, a questionnaire will be administered to workshop participants for evaluating the effectiveness of: 1) The analytical model; 2) The case studies; 3) The workbook design; and 4) The computer simulation model.

We welcome you to the workshop. We think it will be a productive and stimulating experience for all.

BARA/NEF
Staff

PRESENTING STAFF FOR WORKSHOP
ON WOMEN IN DEVELOPMENT

BONNIE ANN STEWART

Dr. Stewart holds a Ph.D. degree in Oriental Studies/Agricultural Economics with emphasis on international development and change--institutional, economic, and agricultural. She has extensive overseas professional experience that includes work in the Middle East, North East and West Africa, South Asia, East Asia and Mexico. She is fluent in Arabic and has training in Spanish and French. She has written and published many articles on a broad range of development topics. Her professional experience includes university level teaching, research and administration. She has been a consultant for numerous AID projects, the most recent project being the computer simulation model. Currently, she is the Director of project development seconded from National Education International to National Education Foundation (NEF) a nonprofit consortium of education and training institutions from all over the United States.

WILLIAM TAFT STUART

Dr. Stuart holds a Ph.D. degree in Anthropology from the University of Oregon, Eugene. His field research has concentrated on the ecological implications of development, and was conducted while working on National Science grants and as a Carnegie Fellow. He has extensive experience in the areas of Ethnography and Population Research conducted in the British Virgin Islands, South America, and Zambia. He is the author of numerous publications dealing with cultural ecology and socio-cultural systems. He will present the working paper on the Analytic Framework and has written the Indonesia Case Study. He is currently the Program Director of the Admiral H. G. Rickover Foundation and serves as the Director for the Rickover Science Foundation.

Annex I

Production of Goods and Services

AGRICULTURE

Field Prep			MA
Terracing			MA
Planting	FA	FC	
Hoeing	FA	FC	
Weeding	FA	FC	MA (Tec. Change-Rotary Weeder)
Harvesting	FA	FC	MA (Tec. Change-Sickles)
Livestock	FA	FC	MA
<u>Wage Labor</u>	FA		MA
<u>Communal Labor</u>	FA		MA
<u>Food Processing</u>	FA		MA
Rice Milling	FA		(Tec. Change-Mechanical milling)
Other	FA		(MA)
<u>Handicrafts</u>	FA		(MA)
<u>Trading</u>	FA		(MA) (FA increase due to female labor displacement from above technology changes)

Maintenance of Human Resources

Child Care	FA	FC	MA
Food Preparation	FA		
Housework	FA		
Fuel Collection	(FA)		MA
Water Collection	FC		
Finance Management	FA		

Note: Parentheses indicate that the activity is performed but to a relatively minor degree.

Annex 2

Access & Control

	<u>Female</u>	<u>Male</u>
Credit		
Informal	Hi	
Formal	Lo	Hi
Land		
	Lo	Hi
	No Collateral	Male Ownership
Family		
Income	Hi	Lo
Stream		
Labor		
Jobs	Lo	Hi
Wages	Lo	Hi
Technology	Lo	Hi
Education	Med	Hi
Political		
Power	Lo (indirect)	Hi

WORKSHOP ON
WOMEN IN DEVELOPMENT

MARCH 13-15, 1985

SCHEDULE

Wednesday, March 13:

- 12:00 p.m. Registration, lunch and opening comments and distribution of Analytical Framework.
- 2:30 p.m. Introduction and discussion of framework for analyzing WID issues in general program and project planning and in reviewing case studies to be used in workshop
- 5:00 p.m. Distribution and explanation of remaining workshop reading materials
- 7:00 p.m. Dinner

Thursday, March 14:

- 8:45 a.m. Initial analysis of Thailand case study (sericulture) by participants working in three small study groups.
- 10:00 a.m. Coffee break
- 10:30 a.m. Analysis of Thailand case study in plenary session.
- 12:00 p.m. Lunch
- 1:30 p.m. Analysis of Indonesia case study (credit project) in small groups.
- 2:15 p.m. Analysis of Indonesia case study in plenary session.
- 3:15 p.m. Coffee break
- 3:30 p.m. Introduction and discussion of "how to" workbook on integrating WID in project planning, implementation, and evaluation phases.
- 5:00 p.m. Review of first day's session and discussion of second day's activities.

Friday, March 15:

- 8:30 a.m. Presentation and analysis of microcomputer Simulation Model of women's roles, and their relationship to development planning, in Yemen: a case study.
- 10:00 a.m. Coffee break
- 10:15 a.m. Wrap-up discussion and evaluation
- 12:00 p.m. Lunch and departure

GARY NIGEL HOWE

Dr. Howe holds a Ph.D. degree with concentration in Socio-economics from the London School of Economics, University of London. His fields of specialization are third world economic development and international division of labor with an emphasis on agricultural and industrial production and their impact on rural communities and urban household organization. His professional experience includes university level lecturing, teaching, and research. He has been a consultant/socio-economist on numerous International Fund for Agriculture (IFAD) and AID projects, the most recent being in the Yemen Arab Republic where he was analyzing the role of women in agriculture and developing the computer simulation model.

JOHN J. HOURIHAN

Dr. Hourihan holds a Ph.D. degree in Social Anthropology from the University of Massachusetts. Over the past decade, he has taught both graduate and undergraduate courses in Anthropology dealing with issues in social and economic change within a multi-disciplined framework. His field research has focused on providing government and nongovernment organizations with social, economic, and political data to facilitate the implementation of development plans. He has assisted senior-level AID staff in the development of six previous workshops dealing with the integration of gender issues into project design. In his current position of Social Science Analyst for the Office of Women in Development, he has served as project manager for ten development projects and acted as liason from that office to the university community, BIFAD, and the Asia Bureau of AID.

WORKSHOP ON
WOMEN IN DEVELOPMENT
FACT SHEET

PPC/WID Goal: PPC/WID's goal is that these workshops will significantly address the lack of practical knowledge on how to approach women in development issues in project design and implementation.

Purpose of the Workshop: The training will provide AID personnel and private development practitioners with a new set of conceptual perspectives and analytical skills for dealing with women-related issues in a broad spectrum of development projects.

Methodology: A series of case studies on AID projects have been written and are to be used as the core training tool. As background material, technical papers on women and agricultural productivity, technology transfer and small enterprise development, as well as the framework for analyzing women's economic and social roles, have been prepared.

The case studies used in the workshops present only the factual descriptions of development situations facing decision-makers. They purposely do not contain an analysis of the situation or any evaluative assessments, but rather are the basis for discussion. The trainers and trainees--through collective discussions--provide the analysis. As such, there are no "right" or "wrong" answers. Moreover, the case method is especially effective for development practitioners who can draw on their own experiences to enrich the discussions.

Another training approach used in the workshop is the design for a WID workbook. The purpose of the workbook is to provide a guide to measure and ensure the integration of gender-related issues and perspectives in the planning, implementation and evaluation of development projects. Utilization of this workbook will be a major step toward the ultimate goal of shifting responsibility for WID to the Agency's bureaus, and missions and the PVO community.

Finally, a micro-computer simulation model on the roles of women in Yemen will be shown to participants. The model was designed as a new type of tool to illustrate the significance of women and girls to economic development in the LDCs. This model can be repeated for use in any region of the world.

WORKSHOP ON
WOMEN IN DEVELOPMENT
INTRODUCTION ON CASE STUDY METHOD

1. The Workshop on Women in Development will use the case method. The purpose of these notes is to give a brief introduction to the case study method for participants who may not have had previous experience with this training technique.
2. For the first sessions, two cases will be assigned to be read by all participants and prepared for discussion and analysis. Discussion will take place first in small groups and then in a plenary session. The primary objectives are to allow participants to exercise their analytical skills in a workshop environment by dealing selectively and intensively with a variety of factors affecting women's actual and potential contribution to development.
3. Case study analysis, as a learning process, requires the concentrated involvement of participants. The method is highly participatory. What participants get out of it will depend, more than anything else, on what they can put into it. Participants will need to read and analyze the case, arrive at a justifiable conclusion, discuss their conclusions with other participants and then objectively review their conclusions.
4. The purpose of a case study is not to arrive at predetermined proven solutions. Rather it is to illustrate analytical concepts and allow participants to compare their conclusions with those of other participants.
5. Background material on issues that affect women's opportunities in development are available in four technical papers. You will find these papers useful for analyzing the cases.
6. Three common criticisms of case studies are that: (a) the information provided is insufficient (which is inevitable without the insights gained from first-hand experience) and, therefore, it is impossible to make an adequate analysis of the material; (b) the case is a "snapshot" taken at a point in time while, in reality, all field situations are fluid; and (c) a case will lack reality in that participants are called on--and indeed required--to make decisions which they do not have the responsibility for implementing. Readers should find it helpful to be aware of the above weaknesses but not let them distract from the value of the case study process. The more exhaustive your study of the case material, the less you will be conscious of these weaknesses. In its field, the case study method is the best thing to date, but nothing can totally substitute for the real thing.

Suggestions for Preparing a Case

1. People approach the task in different ways, but, for newcomers to case work, the following might provide a useful basis to start from.
 - a) Brief through the case very quickly to answer these questions:
 - "What is the case talking about?" and
 - "What kinds of information am I being given to analyze?"
 - b) Read carefully through the case, marking all the key facts as you go, and develop an outline on scratch paper of the major areas of the case and their interactions.
 - c) Put yourself in the decision-making position and reexamine the important information making sure you have a grasp of the problems, their causes, and possible alternative courses of action.
 - d) Develop your recommendations in a form in which you can present and argue them.

This workshop is intensive and you will find that you need to have a grasp of a lot of information on individual cases, and also that you have to move rapidly from one case to another. Clear but concise notes from your readings will be helpful.

2. After your individual reading, you will meet with your discussion group, present your arguments to the members of the group, and hear theirs. This testing of your analysis and recommendations is an important preparatory step for discussion in the plenary sessions, and provides you with an opportunity to reexamine and evaluate your earlier conclusions in the light of the insights of others.
3. In the plenary sessions, while the faculty members will provide a structure for the case discussions, it is their role to prod you to explore fully the avenues of investigation and to lead you into consideration of areas you may have missed. Finally, the faculty will summarize the discussions and draw out the useful lessons and observations which are inherent in the case problem and which emerge from the discussions.

WORKSHOP ON
WOMEN IN DEVELOPMENT
BANGKOK WORKSHOP
QUESTIONNAIRE EVALUATION SYSTEM EXPLANATION

YOUR INPUT IS CRITICAL

It is important that job-related training programs be designed and evaluated with a solid understanding of the actual conditions on the job. The background of professionals in the job setting, their perceptions of job conditions, and their assessment of training programs are all critical parts of this process.

With this in mind, we constructed a series of three questionnaires to be administered during the course of this workshop. We want to share with you what we see as the importance of each of them.

The "PRE-WORKSHOP QUESTIONNAIRE"
(Day 1) is designed to:

- o provide us with information about the type of individuals for whom the training is designed
- o help us identify existing perceptions about important job-related training issues

The "PROPOSED WORKBOOK EVALUATION"
(Day 2) is included so we can get your perspective as a field professional on:

- o probable merits of the workbook
- o suggestions for improvement

The "POST-WORKSHOP QUESTIONNAIRE"
(Day 3) is designed so you can:

- o let us know if your attitudes about training issues have changed during the course of the workshop
- o tell us how useful you found the various components of the training you received

YOUR RESPONSES ARE COMPLETELY CONFIDENTIAL

We ask you not to write your name on the questionnaires. We have provided numbered stickers to be placed on the front of each to help us analyze response across questionnaires. To further ensure confidentiality, reports of responses will be presented in summary form only.

WANT TO KNOW HOW YOUR GROUP RESPONDED?

If you are interested in a summary of responses to the questionnaire, please contact the WID Office of USAID.

THE VIEWS AND INTERPRETATIONS PRESENTED IN THE TECHNICAL PAPERS AND IN THE CASE STUDIES ARE THOSE OF THE AUTHORS AND OF THE STAFF OF THE BUREAU OF APPLIED RESEARCH IN ANTHROPOLOGY AND NATIONAL EDUCATION FOUNDATION. THEY SHOULD NOT BE ATTRIBUTED TO THE AGENCY FOR INTERNATIONAL DEVELOPMENT OR TO ANY INDIVIDUAL ACTING IN ITS BEHALF.

WOMEN IN DEVELOPMENT:
A FRAMEWORK FOR PROJECT ANALYSIS

Revised by William T. Stuart

Whether or not they are consulted directly in the design and implementation of development projects, what women do has an impact on the success of virtually all such projects. This is true, of course, of projects which have women as their intended beneficiaries; it also holds for projects which have other primary beneficiaries. As the principal vehicles used by governments and international agencies to channel resources in the development process, projects have nonetheless, failed to recognize fully the contributions of women in traditional settings or to appreciate the significance of women in affecting the success of development projects.

The overall effect of this neglect of women's roles has, in the past, often been to limit the success of many development projects and to jeopardize further the already unequal status of women encountered in many societies. Although there has been, over the past two decades, more explicit concern for such issues, development planning efforts in general still fail to acknowledge the significance of women's many contributions to the development process.

I. ANALYTIC FRAMEWORK

The framework for project analysis presented here is intended to assist project designers and reviewers in several ways; to improve the overall clarity, realism and equity in the definition of project goals; to offer a basis of assessing how, in the short run, projects incorporate consideration of women's roles; and to anticipate how, in the long run, projects will be likely to affect the future status of women.

This framework is not limited in application to projects directed only to women as their beneficiaries. In deed, it possesses heuristic value for uncovering otherwise hidden patterns of gender inequity both in traditional culture and in projects directed toward other target populations.

As a starting point for integrating women in development projects, data must be provided relating to the divers ways in which women participate in their society and economy. The cornerstone of the present framework is, therefore,

the providing of an adequate data base for considering, among other things, what women do and the social contexts and economic consequences of their activities. A goal of the framework is to facilitate presentation of information in a way which will be useful to those involved in the process of project development and review.

Data are organized in terms of four related topics: Activity Profile; Access and Control Profile; Analysis of Factors Influencing Activities, Access and Control; and Project Cycle Analysis. Together, these four topics are intended to supply a basis for identifying, designing, implementing, and evaluating projects which can both benefit women and which, in turn, stand to be benefitted by enhanced women's participation.

The first topic, the Activity Profile, focuses on the gender-based division of labor. The economic activities of the population in the project area, both locally and country-wide, will be delineated according, first, to age and sex, and then, to ethnicity, social class, or other important distinguishing characteristics. The amount of time spent by individuals to accomplish these activities should also be monitored.

The second topic, Access and Control Profile is concerned with identifying the manner in which individuals--in terms of sex, age or other distinguishing social category--are differentially given access to basic resources and/or the benefits which derive from their mobilization.

Analysis of Factors Influencing Activities, Access, and Control focuses on the factors which determine various sorts of divisions of labor and control over resources and benefits. Among these factors are the cultural, social structural and legal factors which create opportunities or limitations on differential sexual participation in activities and benefits both traditionally and in the context of the development project.

The final topic, Project Cycle Analysis, consists of indicating how the foregoing basic data relate to the project phases and in identifying the ways in which the project has affected or will be likely to affect traditional gender and status differences.

II. ACTIVITY PROFILE

To assess the economic and cultural place of women—or, for that matter, the members of any social category—in traditional (i.e., pre-project) contexts, it is useful to examine two broad categories of activity, Production of Goods and Services and Reproduction and Maintenance of Human Resources.

A. PRODUCTION OF GOODS AND SERVICES

Too often project planners have failed to recognize the significance of women in traditional productive activities. It is important, therefore, to identify in some detail the relative contribution of both men and women in all activities associated with the production of goods and services; this should include attention to activities which, though they are not directly involved in production, are nonetheless critical for productive success.

To some extent, of course, the degree of detail provided concerning the division of labor associated with various productive activities will reflect the nature of the project itself. The activity domains most closely associated with a project should be examined in greatest detail. For example, if the project concerns improved agricultural technology, the division of labor in the agricultural sector should be most closely scrutinized; those activities associated with, say, indigenous patterns of small trading need be discussed in less detail.

B. REPRODUCTION AND MAINTENANCE OF HUMAN RESOURCES

This category refers to those activities involved in reproduction itself as well as in the nurturing, provisioning and socializing of family member. Such activities will include, but are not limited to, fuel and water collection, food preparation, pregnancy and birthing, child care, education, health care and public hygiene. Unfortunately, too often such activities are viewed as "noneconomic," as they generally lie outside the market economy and, accordingly, are not monitored in terms of money as remuneration. Nonetheless, it is important to realize that such reproductive and maintenance tasks are among the very most essential economic and social activities; their significance in supplying the human capital for both family and nation can hardly be overemphasized.

Women figure prominently in such reproductive and maintenance activities in virtually all cultures. And for low-income women involved in such activities, free time is often the scarcest resource of all, as such, can represent a severe constraint of flexibility both in women's traditional pursuits as well as in their having sufficient time for participation in development projects. The design of a project which involves new demands on a woman's time for new activities should thus be considered carefully in relation to her existing commitments to necessary reproductive and maintenance activities.

So that the discussion of activities will be most useful for analysis of development projects, but the various productive and reproductive/maintenance activities can be examined more closely, in terms of the following dimensions.

1. Sex and Age Denomination

This identifies who undertakes the activity: women, men, children, elders, etc. It reveals the underlying sex/gender patterns in work activities and is a key to identifying the effects of projects on gender patterns.

2. Time Allocation

This specifies what percentage of an individual's time is allocated to each activity. Attention should be paid to whether the activity is daily, seasonal, or irregularly schedule.

3. Activity Locus

This specifies both where the activity hierarchically takes place, especially in relation to the locations, and competing time requirements for other activities. Among other things, the degree of female nobility among activity locations should be noted.

④ 4. Activity Cooperation

The degree of interpersonal cooperation involved in activities should be described, as should the degree to which such cooperation is hierarchally organized, and the subordination of one gender or sex to the other.

Table I provides a format for summarizing information on activities.

Many development projects are not targeted to homogeneous populations, in terms of such variables as socioeconomic class or ethnic affiliation. It is important, therefore, to provide separate activity profiles for each of the distinct populational sub-groupings to whom the project is targeted. The likely significance of each different activity pattern for a given project should be discussed.

III. ACCESS AND CONTROL PROFILE

Providing an activity profile which identifies the sex specific activities in production and in reproduction and maintenance is necessary. But an equally important step in preparing data useful in projects--from design stage through evaluation--is the presentation of information concerning who has access to and control over resources as well as to/over the products/benefits derived from them.

Information concerning access to productive and reproductive/maintenance activities has already been considered--as a kind of "use right" to the resources while they are being used. Of concern here, however, is identifying the degree to which access to resources is limited to use only at the time of the activity and the degree to which the products and benefits of activity are differentially accessible to individuals of various social statuses. As employed here, the term resource "access" refers simply to the hands-on right to use. Of course even this right may be limited. By contrast, resource "control" refers to a more lasting, more basic right in and over resources, not only to use of them. "Control" thus implies the right/power to sell or spend a resource or otherwise determine the resource's allocation in the future. Control, then, is closer to

"ownership" though it may be partitive, [?] shared than to mere use right. Table 2 provides a format for presenting information concerning access and control of resources.

Even where women have relatively unconstrained access to use resources, they are not always able to exercise any significant role in decision-making concerning allocating them. Moreover, women are very often restricted in making use of ~~or~~ allocating the products/benefits derived from the mobilization of resources. Sometimes such patterns of unequal access and control are only de facto; often in LDSs, however, such limitations are traditionally or even legally reinforced as de jure custom or law.

By focusing on both resources and products/benefits when addressing the question of access and control, one can obtain a reasonably accurate assessment of the relative power of individuals to control their respective destinies—based as the latter so often are on use and/or ownership of critical resources AND their products. This question of access and control should aid project designers, implementors, and evaluators to anticipate the obstacles to women's participation in development projects and realistically to assess the effects of projects on women's status.

IV. ANALYSIS OF FACTORS INFLUENCING ACTIVITIES, ACCESS AND CONTROL

In order adequately to explicate the patterns of individual's differential participation in activities and access and control over resources, it is important to identify the social and cultural factors which underlie such patterns. Several categories of potentially influential factors are worth searching for; among them are the following:

A. GENERAL ECONOMIC CONDITIONS

These can include poverty level, inflation rate, "thinness" of job and market access, income distribution, economic infrastructure, etc.

B. DEMOGRAPHIC FACTORS

Including minority status; age/sex imbalance, health statistics, etc.

C. POLITICAL STRUCTURES

Including government bureaucratic structure and pattern of decision-making, pattern of appointment/election, both locally and nationwide, etc.

D. SOCIO-CULTURAL FACTORS

Traditional community norms and the social structures (family units, clans, etc.) with which they are associated, religious sanctioning of role/status systems, legal restrictions, etc.

E. EDUCATION AND SOCIALIZATION

Differential access to technology and skills associated with productive and other activities, etc.

The rationale for considering such environing factors is to appreciate the large and longer-term context in which the target population lives and into which the development project is introduced. In this way one can appreciate more realistically such things as the degree of cultural resistance to change, the ecological feasibility of and obstacles to development, as well as the benefits to be derived from project success.

The consideration of such exogenous factors and forces is especially important with reference to women. Women often are faced with patterns of inequality which, indeed, are not of local or recent origin. On the other hand, it is increasing^{ly} the case that women benefit as well as suffer from larger scale forces in the economy, in standards of health, and in political changes at the national level. Many of the potential changes which are generated from the macro-environment confront individuals--perhaps especially women--with zero-sum, or high risk economic options which have the effect of removing them from the local securities provided by the traditional culture.

V. PROJECT CYCLE ANALYSIS

The immediate test of the utility of providing the kinds of information provided above is the degree to which the data facilitate more clearly defined goals of more realistic projects. Such data are especially important -- and useful -- when assessing and anticipating the participation of women in projects. This has two aspects: first, the significance of greater female participation as a determinant of project success, and, second the consequences of project success for bettering the quality of life of women. Annex I provides specific questions which might be asked concerning project cycle analysis.

At the project identification stage it is important to identify the degree to which women are included as intended beneficiaries--either direct or indirect. It will be appropriate to appreciate accurately the social constraints on women's participation, not only in certain sectors of the traditional society, but, as a consequence of either tradition or logistic considerations, in development projects. Finally, it is appropriate to anticipate the long-term consequences for women of project success--both those costs to women of not participating as well as the costs of participating.

The design stage of the project involves more focused attention on the significance of the pattern of women's activities, access and control, and benefits. In addition, questions regarding the relationship of the behavior of local women to project personnel, and to the timing, location and organization of project activities need to be asked.

Project implementation can also benefit from use of data organized according to this framework. Specifically, the analysis of women's activities and access and control to resources should provide the empirical basis for improving projects.

Finally, evaluation of the short and long-term effects and the unintended, as well as the intended, consequences of the projects should be facilitated--indeed expedited--through review of data collected and analyzed according to the analytical framework.

VI. CONCLUSION

The analytic framework is intended to guide project identification by revealing where women are and what they are doing. The framework can assist project design, implementation and evaluation by highlighting the problems which are likely to arise as the project impacts the traditional culture and vice versa.

A caveat is in order here. Each country's situation is, of course, to an important degree unique. Accordingly, this analytical framework will require adjustment to be of maximum value to specific countries, cultures and projects. The framework thus should be viewed as a flexible instrument rather than as a rigid format. Moreover, it is intended primarily as a guide to asking questions and analyzing data regarding specific communities and the projects being introduced in them. We do not intend it at this stage as a means of generating either cross-cultural or cross-project generalizations.

* * * * *

This paper is a revision of a document of the same title preparation for USAID/WID. By: Catherine Overhold, Kathleen Cloud, Mary Soughman Anderson, and James Austin. Responsibility for change and any error in the present document is, of course, the current author's.

ANNEX I

The following sets of questions are the key ones for each of the four main stages in the project cycle; identification, design, implementation, evaluation.

I. WOMEN'S DIMENSION IN PROJECT IDENTIFICATION

A. ASSESSING WOMEN'S NEEDS

1. What needs and opportunities exist for increasing women's productivity and/or production?
2. What needs and opportunities exist for increasing women's access to and control of resources?
3. What needs and opportunities exist for increasing women's access to and control of benefits?
4. How do these needs and opportunities relate to the country's other general and sectoral development needs and opportunities?
5. Have women been directly consulted in identifying such needs and opportunities?

B. DEFINING GENERAL PROJECT OBJECTIVES

1. Are project objectives explicitly related to women's needs?
2. Do these objectives adequately reflect women's needs?
3. Have women participated in setting those objectives?
4. Have there been any earlier efforts?
5. How has present proposal built in earlier activity?

C. IDENTIFYING POSSIBLE NEGATIVE EFFECTS

1. Might the project reduce women's access to or control of resources and benefits?
2. Might it adversely affect women's situation in some other way?
3. What will be the effects on women in the short and longer run?

II. WOMEN'S DIMENSION IN PROJECT DESIGN

A. PROJECT IMPACT ON WOMEN'S ACTIVITIES

1. Which of these activities (production, reproduction and maintenance, sociopolitical) does the project affect?
2. Is the planned component consistent with the current gender denomination for the activity?
3. If it plans to change the women's performance of that activity, is this feasible and what possible or negative effects would it have on women?
4. If it does not change it, is this a missed opportunity for women's roles in the development process?
5. If it plans to change the activity locus of that activity, is this feasible, and what positive or negative effects would it have on women?
6. If it does not change it, is this a missed opportunity for women's role in the development process?

7. If it plans to change the remunerative mode of that activity, is this feasible, and what positive or negative effects would it have on women?
8. If it does not change it, is this a missed opportunity for women's role in the development process?
9. If it plans to change the technology mode of that activity, is this feasible, and what positive or negative effects would it have on women?
10. If it does not change it, is this a missed opportunity for women's role in the development process?
11. How can the project design be adjusted to increase the above-mentioned positive effects, and reduce or eliminate the negative ones?

B. PROJECT IMPACT ON WOMEN'S ACCESS AND CONTROL

1. How will each of the project components affect women's access to and control of the resources and benefits engaged in and stemming from the production of goods and services?
2. How will each of the project components affect women's access to and control of the resources and benefits engaged in and stemming from the reproduction and maintenance of the human resources.
3. How will each of the project components affect women's access to and control of the resources and benefits engaged in and stemming from the sociopolitical functions?
4. If it does not change it, is this a missed opportunity for women's roles in the development process?

5. If it plans to change the activity locus of that activity, is this feasible, and what positive or negative effects would it have on women?
6. If it does not change it, is this a missed opportunity for women's role in the development process?
7. If it plans to change the remunerative mode of that activity, is this feasible, and what positive or negative effects would it have on women?
8. If it does not change it, is this a missed opportunity for women's role in the development process?
9. If it plans to change the technology mode of that activity, is this feasible, and what positive or negative effects would it have on women?
10. If it does not change it, is this a missed opportunity for women's role in the development process?
11. How can the project design be adjusted to increase the above-mentioned positive effects, and reduce or eliminate the negative ones?

? ~~E.~~

PROJECT IMPACT ON WOMEN'S ACCESS AND CONTROL

1. How will each of the project components affect women's access to and control of the resources and benefits engaged in and stemming from the production of goods and services?
2. How will each of the project components affect women's access to and control of the resources and benefits engaged in and stemming from the reproduction and maintenance of the human resources.



3. How will each of the project components affect women's access to and control of the resources and benefits engaged in and stemming from the sociopolitical functions?
4. What forces have been set into motion to induce further exploration of constraints and possible improvements?
5. How can the project design be adjusted to increase women's access to and control of resources and benefits?

III. WOMEN'S DIMENSION IN PROJECT IMPLEMENTATION

A. PERSONNEL

1. Are project personnel sufficiently aware of and sympathetic toward women's needs?
2. Are women used to deliver the goods or services to women beneficiaries?
3. Do personnel have the necessary skills to provide any special inputs required by women?
4. What training techniques will be used to develop delivery system?
5. Are there appropriate opportunities for women participation in project management positions?

B. ORGANIZATIONAL STRUCTURES

1. Does the organizational form enhance women's access to resources?
2. Does the organization have adequate power to obtain resources needed by women from other organizations?

3. Does the organization have the institutional capability to support and protect women during the change process?

C. OPERATIONS AND LOGISTICS

1. Are the organization's delivery channels accessible to women in terms of personnel, location and timing?
2. Do control procedures exist to ensure dependable delivery of the goods and services?
3. Are there mechanisms to ensure that the project resources or benefits are not usurped by males?

D. FINANCES

1. Do funding mechanisms exist to ensure program continuity?
2. Are funding levels adequate for proposed tasks?
3. Is preferential access to resources by males avoided?
4. Is it possible to trace funds for women from allocation to delivery with a fair degree of accuracy?

E. FLEXIBILITY

1. Does the project have a management information system which will allow it to detect the effects of the operation on women?
2. Does the organization have enough flexibility to adapt its structures and operations to meet the changing or new-found situations of women?

IV. WOMEN'S DIMENSION IN PROJECT EVALUATION

A. DATA REQUIREMENTS

1. Does the project's monitoring and evaluation system explicitly measure the project's effects on women?
2. Does it also collect data to update the Activity Analysis and the Women's Access and Control Analysis?
3. Are women involved in designating the data requirements?

B. DATA COLLECTION AND ANALYSIS

1. Are the data collected with sufficient frequency so that necessary project adjustments could be made during the project?
2. Are the data fed back to project personnel and beneficiaries in an understandable form and on a timely basis to allow project adjustments?
3. Are women involved in the collection and interpretation of data?
4. Are data analyzed so as to provide guidance to the design of other projects?
5. Are key areas for WID research identified?

THAILAND SERICULTURE/SETTLEMENTS PROJECT

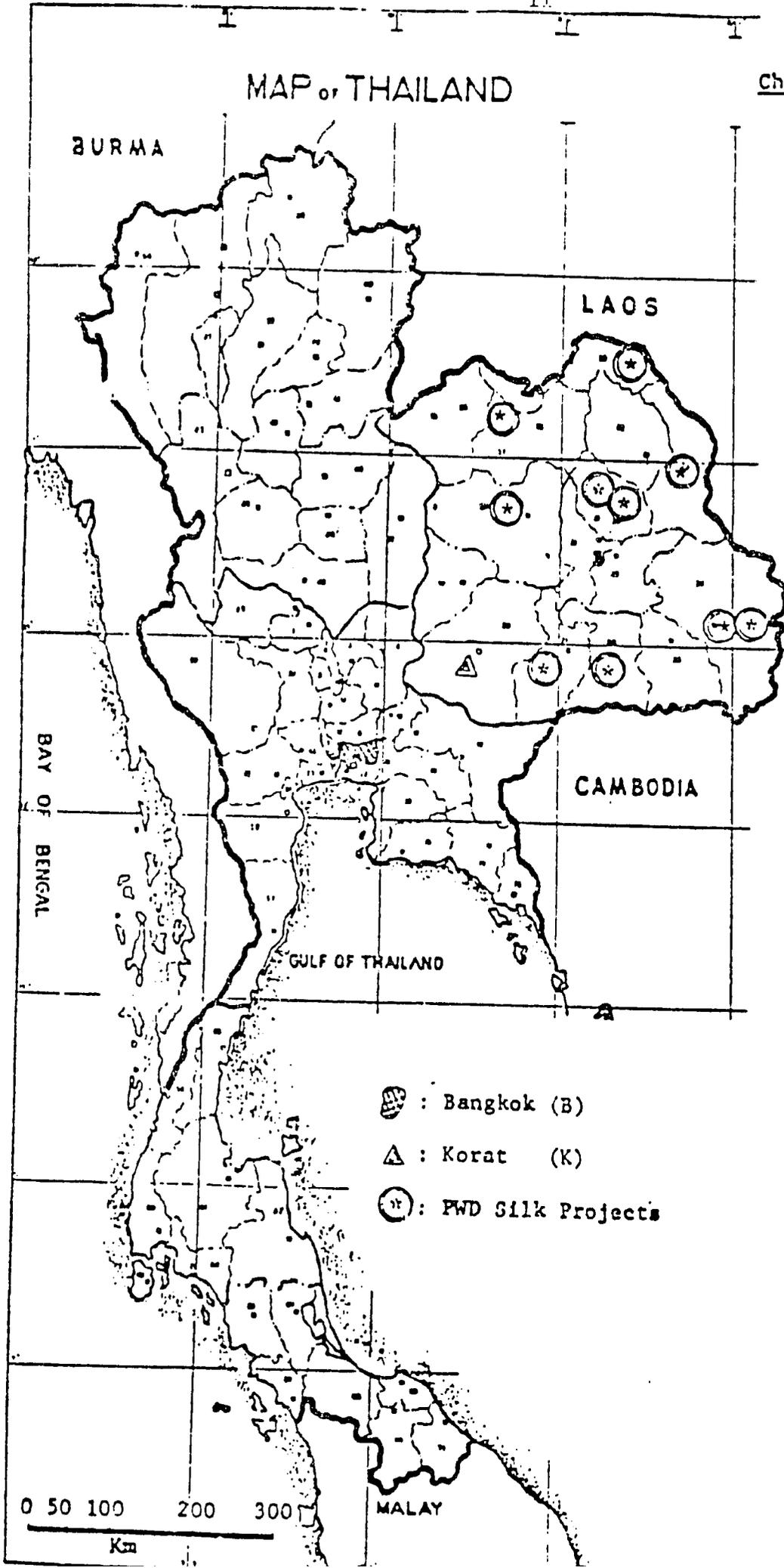
Prepared by Hilary S. Feldstein, based primarily on project documents and papers written by John Hourihan and Ingrid Palmer

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MAP OF THAILAND

Changwats (Provinces)



- 1 Chai-Nat
- 2 Singh-buri
- 3 Lopburi
- 4 Sara-buri
- 5 Ang-thong
- 6 Ayuthya
- 7 Nonthaburi
- 8 Pathum-thani
- 9 Thonburi
- 10 Phra-nakhorn : (B)
- 11 Nakhornayok
- 12 Prachinburi
- 13 Samutprakan
- 14 Cha-choengsao
- 15 Cholburi
- 16 Rayong
- 17 Chant-buri
- 18 Trat
- 19 Chayaphum
- 20 Nakhornratsima : (K)
- 21 Buriram
- 22 Surin
- 23 Srisaket
- 24 Ubonrattani
- 25 Nong-kai
- 26 Loei
- 27 Udornthani
- 28 Sakonnakhorn
- 29 Nakhornphanom
- 30 Khon-baen
- 31 Mahasarakham
- 32 Kalasin
- 33 Roi-et
- 34 Mae-hongsorn
- 35 Chiangmai
- 36 Chiangrai
- 37 Lamphun
- 38 Lampang
- 39 Phrae
- 40 Nan
- 41 Uttaradit
- 42 Tak
- 43 Sukhothai
- 44 Phitsnulok
- 45 Kamphaengphet
- 46 Phichit
- 47 Phetchbun
- 48 Nakhornsawan
- 49 Uthai-thani
- 50 Kanchanaburi
- 51 Suphanburi
- 52 Ratburi
- 53 Nakhornpathom
- 54 Samutsongkhram
- 55 Samutsakhorn
- 56 Phetburi
- 57 Prachuap-khirikhan
- 58 Chumphorn
- 59 Ranong
- 60 Phang-nga
- 61 Surat-thani
- 62 Nakhornsrithamrat
- 63 Phuket
- 64 Krabi
- 65 Trang
- 66 Phatalung
- 67 Satun
- 68 Song-khia
- 69 Pattani
- 70 Yala

-  : Bangkok (B)
-  : Korat (K)
-  : PWD Silk Projects

0 50 100 200 300
Km

WOMEN IN THAILAND -- A SUMMARY

Much of the following summary comes directly from the Survey Report on the Status of Thai Women in Two Rural Areas, published in September 1977 by the National Council of Women of Thailand.

Thailand's labor force is 45% women and 55% men. This is the highest percentage of women in the labor force in the Asian region. The large majority of these women are "unskilled" laborers, including such occupations as farming, raising animals, and doing various part-time jobs, such as street food vendors and/or factory work.

Until 1920, very few women in Thailand had any formal education. Now the numbers of men and women receiving graduate degrees in Thailand are almost equal, although in the primary and secondary schools there are still significantly fewer girls attending school than boys.

Legally, Thai women have had equal status with Thai men since the Civil and Commercial Code Amendment Act (Number 8) of October 5, 1976. Thai women and men have had the right to vote and to run for elections since 1932 when Thailand acquired her first constitution. Before 1932, men were allowed to have more than one wife. Before October, 1976 women needed the written consent of their husbands to carry out any business agreements or even obtain a passport. Although laws have changed and according to the law, women are now equal, many traditional attitudes remain among both men and women.

One tradition, still true in the majority of rural Thai families is that women keep the family's money. If the family has money left over after meeting the family's needs, the wife acquires some power. More often, however, there is not enough money and this gives her the responsibility of making the money stretch to cover family expenses. Women are involved in family decision-making and have important responsibilities within the family, but outside the family Thai women have not been well-represented in the community, district, provincial, or national decision-making areas.

The incidence of poverty in Thailand is today estimated as some 30% of the population. For these people the main concern is to find the means to support their families. Therefore, a woman's problems and needs are directly related to the problems and needs of her family. They cannot be separated. A major

priority is therefore to increase income earning opportunities for women.

Poor urban women also have difficult lives. As "unskilled" laborers, they provide much of the work on construction sites. White collar jobs for women carry unequal status and pay -- women normally provide secretarial and clerical services, seldom management and supervisory functions. Outside the extended family, day-care services are poor or unavailable. Social stigma still makes divorce difficult for Thai women, while men support auxiliary "wives" without social disapproval. Although changing, access to skills training for women has been limited to home economics; "vocational schooling" has meant sewing and typing. Often young women are sent to urban areas to earn income for rural families. Without education and skills, prostitution is a ready venue for earning money. In this profession, women are abused and exploited without recourse to legal or other social services.

With recognition of the above, however, changes are being made. PVOs, in particular, have begun to address many of these problems. In Bangkok alone, a women's legal aid society, banking service, rape-crisis center, and day care centers for children of construction workers have been established; women's leadership training is being conducted; a group to protect the rights of prostitutes has been formed; and numerous other activities relating to women's social and economic development are being implemented through NGOs.

THAILAND SERICULTURE/SETTLEMENTS PROJECT

I. INTRODUCTION

The Thailand Sericulture/Settlements Project began in September 1976. It was designed as a five-year project to introduce new technology in sericulture (silk making) production by providing training, credit and cooperative marketing structures to 1,500 farmers in ten resettlement villages in Northeast Thailand. Though directed toward families, the project was intended in particular to benefit women who generally managed household sericulture production. The Project Paper stated:

Because sericulture is a labor intensive pursuit of women, the project will reduce female underemployment and unemployment. Women's activities in sericulture are expected to expand, and not necessarily as 'unheard' workers. Much attention will be given the women members of farm families since they are the sericulture practitioners; they will be given the training, they will be visited by the extension workers, they will be away from home for the young (worm) rearing phase, they will be responsible for success or failure. These factors will place the women engaged in sericulture on a higher rung of self and external perception. Directly and indirectly, female members of the 1,500 participating families will benefit from the increased net annual incomes, (emphasis in original, Project Paper 1976).

II. COUNTRY AND PROJECT BACKGROUND

A. COUNTRY PROFILE

Thailand is a country of approximately 200,000 square miles and in 1975 contained approximately 49 million people, nearly one-tenth of whom lived in the capital, Bangkok, or its environs. The only other cities of any population size were Chiang Mai (106,000) and Nakhon Ratchasima (Korat)

(87,000). Thus, nearly ninety percent of the population lived in rural areas relying on agriculture and/or fishing as a means of livelihood--especially since most heavy and light industries were centered in and around Bangkok.

In its cultural make-up, ethnic Thais constitute about 75 percent of the population and include the Thai-Lao, an ethnoregional subgroup based in the Northeast region. The Chinese are about 14 percent and other groups, such as the Khymer and the Hill Tribes, from the remaining 11 percent. The language is Thai--85 percent or more speak a dialect of Thai, though there are considerable ethnic and regional dialect variations. In terms of religion, 95.5 percent are Buddhist, and four percent are Muslim.

B. AGRICULTURE

During the 1970's, agricultural commodities accounted for 70 percent of all exports and, unique among the developing countries, Thailand was a net exporter of agricultural products employing about 75 percent of the labor force. Approximately 90 percent of the total population was dependent on this sector for its livelihood. The major agricultural crops are rice, maize, sugarcane, and tapioca.

The agricultural sector accounted for much of the impressive economic growth achieved by Thailand in the 1960's and 1970's. During this period, Northeastern Thai farmers began or expanded cultivation of at least three crops, kenaf (Thai jute), cassava and maize, in response to high export prices. These crops were readily accepted by farmers under the encouragement of middlemen, merchants and officials who supplied advice, agricultural inputs and price information. The great expansion in maize production was catalyzed by high world demand combined with the introduction of a well-adapted variety and the availability of large areas of suitable land.

The opening of large areas of virgin land for cultivation also absorbed much of the rapidly growing population. By the late 1970's, little new land

was available and agriculture became increasingly dependent on the adoption of intensive cultivation.

Agriculture has been dominated by small landholders, most of whom have title to or effective possession of their land. The average size of holdings nationwide was (35 rai (14 acres)*). In 1976, it was estimated that 60 percent of the farmers held formal title to their land, although the numbers were higher in the central plain and lower in the north and northeast regions. Farm tenancy has been significant only in parts of the central plain.

C. THAI SILK INDUSTRY AND SERICULTURE

The traditional Thai silk industry has been in existence for thousands of years, but has been promoted by the government only since 1901. At that time, with Japanese assistance, an experimental sericulture station was established at Korat, in the Northeast, but in 1913 the sericulture activities were suspended in favor of other agricultural research. After World War II, government supported sericulture activities began again and have greatly increased since. Research has been focused on breeding improved strains of mulberry, adapted to conditions in Northeast Thailand. Mulberry is the sole food of silkworms. Research is also directed towards developing more productive hybrid silkworms, capable of producing higher quality silk thread. The primary risk in mulberry production is root rot disease for which research on less vulnerable strains is being pursued at Korat Center. In addition to genetic research, the station has been developing improved practices for mulberry cultivation and silk worm handling. The Third Five Year Plan (1971-1976) called for the diffusion of the improved sericulture technology as part of a strategy for raising labor productivity and incomes on a broad scale in rural areas.

Thai silk represents less than (?) percent of the GOP and (?) percent of exports. The nubby quality for which Thai silk is known comes from the

*1 acre = 2.5 rai

uneven weft yarn produced by traditional sericulture methods. The stronger and smoother yarn necessary for the warp in commercial production is generally imported from Japan and the Royal Thai Government's (RTG) interest in modern sericulture is in increasing domestic production of warp yarn.

In 1975, an estimated 330,000 families in Northeast Thailand produced 2,640,000 kg. of yarn per year of which 660,000 kg. made its way into the commercial markets. The economic returns to the family of traditional silk production were low, approximately Bht. 450 per rai per year. Information on traditional and modern sericulture techniques is contained in Annex C-1.

D. THE NORTHEAST

The Northeast is the poorest of Thailand's four regions. It is a high dry plateau bordered to the west and south by chains of high steep mountains and to the north and east, the Mekong River. Agriculture is rainfed. The dry season runs from February to June, the wet season from July to January with some variation in onset and duration as well as considerable variability between locations. Average rainfall varies from twenty to over sixty inches per year.

In 1975 the Northeast contained one-third of the country's total population and two-fifths of the agricultural households, but produced only 14 percent of the gross national product. The population is predominately Thai-Lao who consider themselves less favored socially and politically than the Thai centered in Bangkok and the central plain. In 1975-76, 38 percent were below the poverty line (1980 Bht/annum) as compared to 12 percent nationwide. The average per family cash income was approximately \$500 (10,000 Bht.) per year against a national average of \$670. The average family size was 6.5 persons; approximately 15 percent of the households in the Northeast were single parent households of which 11 percent were headed by women and four percent by men. The population growth rate in the region was 2.9 percent compared with the national average of 2.56

percent. Most farmers, male and female, have had a fourth grade education.

About 90 percent of the population in the Northeast are engaged in agricultural activities. The variability in terrain, rainfall, and soils causes considerable variation between villages in yields and thus in income producing strategies. For instance, rice yields vary from 200 to 600 kg. per acre. In most villages, over 50 percent of net income comes from rice including the value of subsistence rice. The contributions from cash crop production vary from 3.8 to 32 percent, from animals five to 17 percent, from off-farm sources (remittances and seasonal wage labor) ten to 24 percent. Options for improving cash incomes through agricultural development are small because of the generally poorer soils and less reliable rainfall conditions compared to the other regions of the country. The combined pressures of population growth and decline in arable land, including the increased use of marginal land, is also resulting in decreased yields in some areas as soils become exhausted.

In addition to the poor or uncertain returns of agricultural production, underemployment of farm labor resources was a major reason for the low incomes in the rural areas of the Northeast. Fifty-three percent of the laborers in the area worked less than 40 hours per week, and almost 20 percent of this group worked less than ten hours per week.

E. LAND RESETTLEMENTS

Land resettlement schemes have absorbed much of the population growth over the past forty years. For twenty years, beginning in 1940, land was allocated to the landless or to farmers with too little land by the Self-Help Land Settlement Division of the Department of Public Welfare (PWD). In these years, the Government provided only uncleared land and basic infrastructure. The settlers were to develop the land with their own resources.

From 1961 to 1971, this settlement pattern continued, but PWD also began to provide agricultural support services in an attempt to bolster national agricultural production levels. Since 1971, PWD has attempted to consolidate its existing settlements while establishing a few new ones. In the newer settlements, PWD has cleared the land and provided housing materials as well as providing infrastructure.

The Land Settlement Division of the PWD had a staff of 1,200 employees split about 40/60 between Bangkok and the field. Of these employees, 143 were Extension workers in the 55 land settlements.

The size of the settlements vary greatly (from 12,000 to 165,000 acres), but the actual allocation of land to individual settlers was the same within each settlement, averaging 20 rai (8 acres) per family including the home site. One-acre homesites were centrally grouped to correspond to the traditional Thai village model and farm plots were within easy walking distance. Settlement roads provided access to all homesites and each settlement had at least one second class health center and one primary school as well as a community constructed Buddhist temple.

In the settlement areas, while many of the settlers did not yet own their land, they had security of land tenure. Actual land titles were granted when the following conditions were met:

- TO OWN LAND
1. Repayment of any outstanding debt;
 2. Five-year land tenure;
 3. Utilization of at least three-fifths of the land; and
 4. Construction of a house on and a fence around the settler's land.

Settlers moved to the areas voluntarily as independent nuclear families. Many were Northeasterners from the same province as that in which the settlement to which they moved was located. The 20 rai holdings generally met a family's subsistence needs, but could not reasonably be subdivided into viable farm plots for inheritance. In the settlements, average gross cash income per family varied from Bht. 2,500 to Bht.

CASH
INCOME
EARNERS

13,000 per year. Farmers were engaged primarily in subsistence rice farming devoting one-third or more of their holdings to that. The main cash income earners were cassava, maize, kenaf and cattle. Returns from kenaf or casava production were estimated at Bht. 400 to Bht. 500 per rai and farmers typically put in four to six rai of these crops. Settlement farmers are reputed to be more responsive to innovations than their nonsettler counterparts.

Recently, PWD had become concerned with both the expansion and diversification of the agricultural base and with the provision of off-farm employment in all of its 55 land settlements. In one Northeast settlement village, Ubonrat, the PWD with support from the Governments of New Zealand, Netherlands and Israel, built an irrigation system to provide year-round irrigation. The same settlement was under study for private investment in a pulp paper mill which would require 200,000 metric tons of air-dried kenaf to be supplied by families from an area of about 222,000 rai, both on and off the settlement.

The Federal Republic of Germany was engaged in crop promotion projects in ten PWD settlements and the establishment of multipurpose cooperatives in three. With a \$23 million Agricultural Development loan, the IBRD was helping to upgrade extension services and establish cooperatives in the Northeast including two PWD settlements. The Mekong Committee was financing agricultural extension agents to help install water supply facilities in U'bonrat.

Another government effort to encourage income earning opportunities was the introduction of modern sericulture practices to the area. Though silkmaking was long practiced in the Northeast, farmers had devoted only marginal and offseason resources to sericulture, and the end products had been primarily for family use. Climatic and soil conditions in the Northeast are favorable for six cycles (approximately 21 to 28 days each) of silkworm production a year. Because the farmers in these settlements were among Thailand's poorest and because the settlements had the administrative structure needed for proper extension and monitoring, the

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PWD land settlements in the Northeast appeared to provide an excellent environment to develop a high impact program using new, more productive technology.

III. CONTEXT FOR WOMEN

A. TRADITIONAL RURAL PATTERNS

The traditional Thai rural community is a spatially defined rural village which manages its own affairs and has its own school and temple. Buddhism is critical in all phases of Thai community life. The temple is the center of religious ceremony carried out on a regular basis by the whole community though the goal is the acquisition of merit by individuals. Buddhist monks living in the temples also carry out astrological activities and are often sought out to determine the propitious day for certain undertakings.

Merit is achieved also by foregoing immediate gratification. This ascetism is inculcated into men as they serve three or more months as Buddhist monks at one or more points in their lives. Women's ascetic orientation emerges with childbirth when they follow a ritual of lying by the fire for several days and drinking a medicinal broth. It is expected that women will sacrifice their own interests in favor of their children.

The world view of villagers is based on the Buddhist concept of Kamma (or Karma). Kamma establishes that "normally relevant" actions of previous lives determine a person's relative position in this life. While one's circumstances (relative wealth, health, etc.) result from the actions of the previous life, one has the freedom, even the responsibility, to gain merit in this life towards a higher existence later. This view provides support for activities which improve one's situation, including the accumulation of wealth, so long as it is not at the expense of others. Thus the Thai concept of Kamma both supports individual initiative and elements of determinism or fatalism with respect to one's circumstances.

The basic unit within any village is the family. Villages range from 20 to over 300 families. Residential family groups change their composition and structure throughout their normal developmental cycle: a nuclear family becomes an extended family as children mature and marry and, with the death of the older generation, reverts again to a nuclear family, and so the cycle is repeated. Typically, a man comes to live with the parents of the woman he marries, and pays a token sum to the wife's family's ancestral spirits, so that he would henceforth be protected by them. Thai social organization is said to stress three principles: seniority (a son-in-law defers to his parent-in-law, a younger sibling to an older), formal authority belongs to men rather than women (the proverb says men are to women as are the front legs of an elephant to the hind legs) and matrilineality. In practice the final authority of men combines with the family's dependence on wives' land and with women's important productive and financial responsibilities to produce strong joint action by husbands and wives. Older married daughters and their husbands, serially, move out to establish their own households in proximity to that of the wives' parents and unmarried sisters and usually on the wives' family land. The last daughter and her husband and unmarried children remain with her parents, taking care of them in their old age and inheriting the house when they die.

LABOR POOL { Given this pattern, the most common residential grouping is of parents, married daughters and their husbands, unmarried sons and unmarried daughters. Land is ideally divided equally between children, with sons often selling their interest in the family estate on their marriage and their consequent joining of their wives' families.

{ The continuing control over the land and other productive resources by the senior couple allows for extensive cooperation by a large and related labor pool in a wide range of domestic, religious, and agricultural activities especially during the very labor intensive cycles involved in subsistence rice production, i.e., field preparation, planting, harvesting and processing.

Women are traditionally the keepers of the purse. Income from sales of crops, from small enterprises, wage labor, and remittances are largely

kept by the senior woman for disposition for household needs in investment and consumption.

B. ELEMENTS OF CHANGE

Between 1955 and 1975, conditions facing rural households changed and with them came changes in the family. On a fixed supply of arable land and with subdivision of holdings at each generation, land holdings have become increasingly smaller. As a result, not all children are able to inherit land, older daughters and their husbands move elsewhere, and sons' rights to land are less frequently waived. Many couples moved to new areas such as the Land Resettlement villages. A study of 400 Northeast households indicated that three-quarters had no sons or daughters over eighteen in residence though almost 90 percent had children under eighteen at home.

LABOR
AVAILABILITY
LOW

This changing family pattern had profound effects on the labor patterns. During periods of peak labor demands, families without older children relied on hired or exchange labor which was also undergoing change. The traditional labor exchange system was initially based on the relative equality in landholding of village members, the proximity of kin, and an essentially subsistence mode of agriculture. However, with the growth of the cash economy--the reciprocity inherent to the nonmonetized labor exchange system was becoming less feasible. Overall, unpaid labor in agricultural production was 57 percent. Off-farm wage labor, including seasonal migration to Bangkok and income-generating activities, became a larger proportion of family revenues.

The general decline in unpaid labor has been different for men and women. Among all rural workers, the proportion in unpaid or family labor was 80 percent for women and 33 percent for men. The difference was attributable to the number of men who were listed as "self-employed" (61 percent).

Credit

Increased monetization of the economy of the Northeast has led to an increased need for credit. Credit is negotiated by both men and women. From institutional sources such as the Bank of Agriculture and Agricultural Cooperatives (BAAC), it is usually negotiated by men or jointly; from 'Farmers Group', where they exist, in-kind agricultural credit, such as fertilizers, is negotiated by men; from relatives or village traders, it is generally by women. Overall, households headed by older widows seem to have credit from the same variety of sources as two parent households.

C. DIVISION OF LABOR

Generally, men and women perform distinct roles in production. In crop production, men clear the land, plow, and thresh. Women are more heavily involved in uprooting, transplanting, harvesting, post-harvest transportation, preparation and storage.

This division of labor is not inflexible. A survey of task and time allocation in rice production in twelve villages showed considerable variation between villages. While land clearing and threshing remained predominantly male tasks for half the villages, in the other half women did as much threshing as men. In all the villages, men and women spent an almost equal amount of time planting and harvesting. A similar pattern held for kenaf production.

Another report showed food processing, poultry raising, swine herding, and gardening were almost entirely the responsibility of women and girls. Both men and women carried out small enterprises and sold home produced merchandise. Women sold lighter goods such as clothes, silk and food stuffs; men sold animals and heavy articles, such as large earthen water containers which they made. Women and children predominated in domestic and child-rearing activities, including collecting water for small animal, gardening and domestic purposes. Women were also responsible for the production of items needed by the family and therefore, carried

out silk production and weaving, cotton weaving and basket making during the dry season.

The most intense periods of labor were during planting of kenaf (May, June), transplanting of rice (June, July), rice harvesting (November, December); and harvesting and post-harvest activities of kenaf (September, October).

Seasonal stress on women during the harvesting and planting periods was considerable. Women reduced breastfeeding during harvesting and cooking of meals was less frequent. The highest incidence of infant sicknesses and deaths of under-fives was during March, April and May and of miscarriages in February, March, April and again in November.

One survey reported that farmers said they preferred not to concentrate exclusively on subsistence rice production since cash crops provided more certain income and were also less demanding of the labor of women who had small children.

IV. PROJECT DESCRIPTION

A. INTRODUCTION

In September 1976, USAID and the Royal Thai Government entered into an agreement for an AID development loan of \$2.6 million and a grant of \$100,000 to the Thai Government. The loan was on favorable terms—40 years repayment with ten years grace period at an interest rate of two percent during the grace period and three percent thereafter. It was to be used for introducing modern sericulture into ten resettlement villages in the Northeast and for creating a system which would support the production and marketing of silk warp yarn. Two goals of the Thai Government underlay the project: (a) the desire to expand domestic production of warp yarn to supply silk weavers and reduce imports and (b) to provide opportunities for substantial income generation to the poorer families farming unirrigated upland in the poorest region of Thailand. The

entire project cost \$6.14 million, the balance to be supplied by RTG and the Thai Bank of Agriculture and Agricultural Cooperatives (BAAC). Of the \$2.6 million, \$1.3 million was to go to the Public Welfare Division for its development activities and \$1.3 million to the BAAC for loans to farmers and cooperatives.

B. PROJECT OBJECTIVES

The objective of this project was to increase the annual net cash farm incomes of 1,500 families in ten Northeastern settlements by an average of 50 percent in five years. It was expected that by the end of the project the 1,500 farm families would be producing a total of 316 metric tons of cocoons suitable for producing 40 metric tons of warp yarn each year. The projections were based on the expectation that farmers would raise twelve boxes of worms per year (two boxes a cycle, six cycles a year) with an average weight of 20 kg. per box. These projections included a margin of safety to allow for the possibility of mulberry losses due to disease or drought. At the price of 50 Bht. (\$2.50) per kg. for hybrid cocoons and marketing 210 kg. per year, each farm family would earn 10,500 Bht. in gross revenues or about \$4,000 Bht. net cash income from the project. After loans were paid off (in about nine years) total farmer cash incomes would go up by about Bht. 5,8000 a year, from an average of 8,600 to 14,400 Bht.

In addition to the increased revenue to the project's 1,500 farmers, it was anticipated that the system created by the project, specifically a "productive blend of technology, credit and administrative services" would stimulate a spread from the original families. This would be indicated by a demand for sericulture technology from additional farmers and by the establishment of a structure which included institutionalized credit, marketing, extension, training and sericulture production inputs in sufficient quantity and on acceptable terms which would allow the profitable production of hybrid cocoons by farmers.

Experimental efforts to introduce the new technology at Ban Kruat and Prasat were considered promising as farmers stayed on this project and new farmers wanted to join.

C. PROJECT STRUCTURE AND COMPONENTS

Introduction of improved sericulture technology was structured around central cooperative rearing of worms from eggs through the several stages of their development under carefully controlled conditions followed by farmers individually rearing "old" worms through the last two stages and delivering them to the cooperatives for drying and sale (see Annex B). In order to do this the project had a number of components.

1. Central Rearing Houses

Project plans called for the construction of 30 central silkworm rearing houses (three per settlement) in which young silk worms would be reared for the first three moultings or about two weeks. Each central rearing house would be sufficient for 60 families (120 boxes of eggs). Construction would be phased in with the entrance of new farmers (30 families/settlement/year). The central rearing houses were to be managed by the PMD Sericulture supervisor and the work of raising the silkworms undertaken by project participants on a cooperative basis. The construction was to be financed by the PWD.

2. Central Mulberry Plantations

In addition, the project would establish in each settlement a central mulberry plantation of 100 rai (40 acres), sufficient to provide leaves for the young worms being raised in the central rearing house. Plantations would use high-yield tested varieties of mulberry from the Korat Center and yields were expected to range from 1,000 kg. to 1,500 kg. per rai. It was determined that rainfall was adequate for mulberry in each settlement and irrigation would not be

provided. Soils were surveyed and found suitable for mulberry cultivation. As with the rearing houses, management of mulberry cultivation would be the responsibility of the PWD Sericulture supervisor and labor would be provided by participating farmers.

3. Cooperatives

PWD intended to establish farmers' cooperatives in the ten settlements during the first two years of the project. The cooperatives were to be formed from informal farmers' groups which had two or three years' experience of working together. They were to be the vehicle for a) cooperative rearing of silkworms through the first three stages and cultivation of the central mulberry plantation, b) the access to fertilizer and disinfectants necessary for mulberry cultivation and silk worm hygiene, c) access to short-term credit (1,000 Bht.) for purchase of these items, d) the purchase of mature hybrid cocoons from farmers, e) drying the cocoons, and f) marketing of dried cocoons. The use of cooperatives was intended to strengthen farmers' economic leverage (especially in the marketing of cocoons) and widen their experience in and capacity for group action. Initially the management, credit, supply of inputs, and marketing functions of the coop would be carried out by a PWD supervisor. Later these functions would be turned over to a farmer trained in sericulture and cooperative management and his/her salary and other administrative costs were to be recovered through the sale of dried cocoons. The Federal Republic of German (FRG) had one cooperative training facility and both the FRG and the International Bank for Reconstruction and Development (IBRD) had already assisted the organization of multi-purpose agricultural cooperatives in four of the settlements in which the sericulture project was to be initiated (Phon Phisai, 300 members; Ban Kruat, 255; Mukdahan, 220; and Ubonrat with 800 members; Prasat was to be begun by IBRD).

4. Farmer Rearing Houses

Each farmer would need a rearing house to raise an average of 40 kg. of cocoons per cycle from the fourth moulting through the cocooning stage (approximately two weeks). Farmers would finance these with credit from the BAAC.

5. Farmer Mulberry Plantations

Each family would cultivate up to four rai (1.6 acres) of high yield mulberry to provide sufficient leaves for producing 40 kg. cocoon per cycle for six cycles per year. Cuttings would be provided for 40 Bht. per rai from Korat. Credit would be available from the BAAC. Extension agents from the Sericulture Division of the Ministry of Agriculture and Agricultural Cooperatives (MOAC) would assist the farmers in establishing their individual plantations.

6. Settlement Roads

In order to assure timely delivery of eggs, mulberry leaves, and cocoons, 110 km. of main roads and 170 km. of feeder roads would be upgraded and maintained under the project under the supervision of the PWD settlement manager.

7. Sericulture Officers and Extension Agents

Seventy PWD sericulture extension officers would be provided to the project allowing a ratio of one officer to every 20 participating families. Most were expected to be recent graduates of Thai colleges with agriculture-related degrees. Each settlement would have one PWD Settlement Sericulture supervisor who would supervise the seven Extension agents as well as managing the central mulberry plantation and central worm rearing houses.

8. Farmer Selection

Farmers were to be selected for participation in the project by committees comprising the superintendent of the settlement, officers from MOAC, PWD, Department of Agriculture Extension, and village leaders. Farmers were to be selected for the following characteristics:

- a. Voluntary Participation and Keen Interest in the Property
- b. At Least One Surplus Laborer to Work Full-time on Sericulture
- c. Willingness to Cultivate at Least Four Rai of Mulberry
- d. Industriousness and Good Behavior
- e. Willingness to Send One Family Member to Attend the Training Courses Provided by the Project
- f. Proximity to other participating families (to facilitate group activities)
- g. Willingness to make compost
- h. Understanding of their obligations and responsibilities in meeting production targets and loan repayments

9. Farmer Training

One member of each participating family would be trained in modern silkworm rearing techniques and in mulberry cultivation. Practical training would be emphasized with each course lasting for 30 days, one worm rearing cycle.

10. Other Training

Training would also be provided to the PWD Sericulture Extension officers (20 per year the first two years, ten per year thereafter) and would include 45 days of intensive training at Korat followed by 60 to 70 days of practical training. Settlement supervisors would be

trained for four and one-half months at Korat. Both groups would have refresher training every six months.

11. Supply of Silkworm Eggs

Eggs would be Japanese/Thai hybrids developed at the Korat Center and imported Japanese eggs. Japan had been providing assistance in research, training, and equipment to the Korat Center since 1969.

12. Credit

BAAC would provide credit needed by project farmers for their individual rearing houses and equipment, for establishing four rai of mulberry plantation and for the first year's supply of silkworm eggs. Credit needs were estimated to be approximately 25,000 Bht. per family. BAAC loan terms for project farmers would be at eight percent. Forty percent of gross sales revenues each year would go towards repayment of principal and interest (8%) in nine years. This repayment rate was designed to protect farmers from poor production or sales in an offyear; that is, payments on interest and principal would never exceed revenues and total repayment could be stretched over a longer period.

D. IMPLEMENTATION ARRANGEMENTS

PWD was to be the lead agency in the project. It would establish the central mulberry plantations and contract for construction of the central "young" worm rearing houses, provide extension service in sericulture technology (1:20 families), select farmers for participation in project and coops, facilitate farmers' borrowing from and repayment to the BAAC, provide management for cooperatives in initial years, contract for the road improvement program, and coordinate and monitor the inputs of all other agencies and organizations.

The Sericulture Division of the MOAC was to be the basic source of technical experience and expertise in silk production for the project. Its key facility was the Korat Sericulture Center. The Sericulture Division would a) provide hybrid silkworm eggs from Korat and after 1978 from four subcenters; b) conduct research related to improving sericulture practice (production of mulberry and the handling of silkworms and cocoons) and the genetic improvement and adaptation for Thailand of mulberry and silkworms; c) train PWD Extension agents and supervisors at the Korat Center d) train participating farmers at the Surin Farmers Training Center (which would be expanded); e) provide technical assistance in mulberry production; and f) purchase up to 15 metric tons per year of cocoons.

The BAAC was to provide credit to farmers and to the cooperatives for facilities and revolving funds. Given favorable terms from USAID, the BAAC was willing to undertake greater than usual risk and would make loans under the following conditions: loans for the full amount of farmer costs for constructing and equipping individual rearing house; establishing mulberry plantation and the initial year's supply of eggs; repayment terms of 40 percent of farmers' gross annual cocoon sales; no collateral or mortgage requirements; loans made to all farmers accepted by PWD and timely action on loans. These flexible conditions were considered essential for the participation of poor farmers.

E. PROJECT RESULTS

After the second year of the project it was concluded that implementation had been slower than anticipated; a number of the project's targets were modified, and three settlements were added to the program. In 1981 after four full years of operation, a four-member team from Kesetsart University did an evaluation of the project. Their main findings with respect to the original project objectives were:

1. 531 farmers were currently participating in the program against a targeted 1,200 (in four years, 1,500 for five years). In a sample

survey, it was determined that 64.8 percent were poor, having incomes under 10,000 Bht. a year before entering the project.

2. In 1980, total production of silkworm cocoons was 37,842 kg. per year; 317,000 had been targeted.
3. On the average, in 980 farmers raised 15.54 kg. per box; 1.5 boxes per cycle (versus two); and had an average production of 125 to 150 kg. versus an anticipated 240 kg.
4. 20 centrally located young silkworm houses had been built and 1,020 rai of central mulberry plantations established.
5. At the end of FY 81 which marked the end of the original five years planned for the project, there would be \$1,155,860 in funds unspent of the original \$2.6 million loaned (\$705,464 in loan funds at the BAAC and \$450,396 at the PWD).
6. On the whole, there had been increases in families' net average cash income but this varied among villages.

*income
AFTER
4 YRS.*

The evaluators pointed out that while the overall numbers were lower than the targets set in the original project, a significant increase in incomes could still be achieved in silkworm production. Of 342 successful farmers, average net income from production was Bht. 6,382 (\$182), relative to the figure of \$290 per family. This was the case in spite of a drop in kg. per box (from 17.3 in 1977 to 15.54 in 1980-81), a condition offset by an increase in the price of cocoons from Bht. 50/kg. to 83.96/kg. Farmers growing four or more rai of mulberry had an average gross income of Bht. 6,269 per rai which netted Bht. 4,000 versus a net income of Bht. 2,200 to 2,500 for kenaf or cassava.

There were a number of shortfalls in project implementation. Cooperatives, which were to be the main vehicle for a number of project functions, were not established and were dropped after two years. Their

functions were taken over by PWD officers who were untrained in management and marketing.

Of the tasks assigned to the PWD, most were carried out, but there were shortfalls in selection of settlers, provision of adequately trained extension agents, and facilitation of repayment to the BAAC. Ten out of ten Sericulture officers had been trained, of whom seven were stationed in the settlements. Fifty-six Extension workers had been trained, of whom 27 were at work in the settlements.

The Sericulture Division established four subcenters but had difficulty in meeting the farmers' requirements for good hatchable quality eggs. Training for PWD staff was not considered adequate. Assistance was supposed to be available to farmers for their mulberry plantations but had never been requested by PWD Supervisors.

The project had trained 342 persons. In the records of four settlements, 147 were trained of which 56 were senior members of the family (parents) and 91 were junior members of the family. Not all those trained participated in the project. In a sample of 114 families for which information was available, 45.6 percent fully participated, 5.2 percent partially participated, 46.5 percent did not participate at all, and 2.7 percent had died.

Of Bht. 50,232,800 available from the BAAC for loans (combined USAID and BAAC funding), 13,354,880 (26.6%) would have been lent by end of FY 81. Repayment of loans was poor. In a sample of 23 farmers, 15 percent were ahead of schedule, eight percent were on schedule and 77 percent behind schedule.

Project
Problems

During the life of the project there was an inadequate supply of inputs and eggs due to production problems (eggs), scheduling (eggs and inputs), and lack of an efficient delivery mechanism (both). There were periodic episodes of root rot disease or silkworm disease for which there was no ready assistance. PWD officers were insufficiently trained to help

farmers in the case of disease to their mulberry plantations or silkworms, nor to insure inputs were available in a timely manner. Nor were there surplus mulberry leaves available to replace those lost by disease.

Nonetheless, overall, two-thirds of all the participating farmers were considered successful by project evaluation.

In order to better understand the components of farmer success, a survey of successful and unsuccessful farmers was undertaken. Participating farmers were divided into three categories: successful (producing over 150 kg./cocoon per year), moderately successful (producing 100-150 kg. cocoons per year), and unsuccessful (producing less than 100 kg. cocoon per year). In the subsample of 261 farmers, 14.6 percent were successful, 34.8 percent were moderately successful and 60.6 percent were less successful.

Based on a sample of 53 of the farmers (11 successful, seven moderately successful, 23 unsuccessful and seven nonparticipants) the following characteristics of successful farmers emerged:

- o Farmers planted four or more rai of mulberry
- ✓ o Farmers considered sericulture a full-time occupation
- o 76 percent of the successful farmers had capital ranging from Bht. 2,000 to Bht. 24,000 when entering the project, with which to buy fertilizer and disinfectant
- o Senior members of the family had been sent for training
- o Frequent weeding and applications of fertilizer were made to the mulberry plantation.

Obviously,
not w/
p-headed
households

Nonparticipating farmers were also interviewed and asked why they had not chosen to participate in the project. The major reasons given were the high risk involved and the lack of capital or lack of surplus labor. The factors affecting unsuccessful farmers were low yields of mulberry leaves because of use of unsuitable land (either poor soil or too distant), shortage

of labor, particularly in May, July and December, and shortage of short-term credit.

✓ ✓ Though the original plans for the project stated that women were to be targeted and the evaluation guidelines called for information on the role of women in the project and its effect on their status, little information on women was recorded. In a survey of task allocation in a sample of 11 families, only cleaning the cocoons was exclusively a women's task. Clearing the field and planting mulberry was done exclusively by men or jointly; picking mulberry leaves and feeding and cleaning was done exclusively by women or jointly. The project evaluation found that most of sericulture trainees were junior members (mostly daughters).

In 1981, USAID extended the project for one additional year after which the Royal Thai Government extended it for three additional years.

A subsequent study in 1983 of three project villages (Khamsoi, Mukdahan, and Ubonrat) showed that female-headed household did better or as well as joint households in kg. of cocoons produced as well as gross sales. In Khamsoi, the most successful of the project villages, female-headed households produced an average of 208 kg. of cocoons a year with gross revenues of Bht. 19,434. In Ubonrat, female head of household production exceeded that of joint households except in 1982; in Mukdahan, female-headed households began on a par with joint households but their production was much less in 1980-1982. Overall, single parent households were 20 percent of the participants in Ubonrat and Mukdahan, and ten percent in Khamsoi. Annex P presents additional findings.

THAILAND SERICULTURE/SETTLEMENTS PROJECT

ANNEXES

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- B3. Table II: Supply and Demand for Warp Silk Yarn in Thailand
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ANNEX A

Table I

SERICULTURE/SETTLEMENTS PROJECT
GENERAL STATISTICS, NORTHEAST THAILAND

<u>Name of Settlement</u>	<u>Year Established</u>	<u>Total Area (Rai)</u>	<u>Area Alloc. (Rai)</u>	<u>Office One Mbship (Families)</u>	<u>Average Family Income (\$)</u>	<u>Family Size (Person)</u>	<u>1 Lot Size (Rai)</u>	<u>Inside Settlement (Rai)</u>	<u>Outside Settlement (Rai)</u>	<u>Land-Holding Family</u>	<u>Number of Health Facilities</u>	<u>Number of Schools</u>
Prasat	1958	245,000	50,125	1,955	280	6.7	25	32.0	3.2	35.2	1	8
Lam Dom Noi	1969	55,504	21,015	1,401	120	6.5	15	19.6	8.4	28.0	2	4
Lam Dom Yai	1971	18,125	75,000	500	196	6.6	15	22.6	9.8	32.4	1	1
*Kham Sol	1956	123,750	38,400	1,740	--	6.7	25	31.8	9.6	41.4	--	--
Mukdahan	1956	12,375	--	--	555	--	25	--	--	--	--	--
Kuchinarai	1963	30,000	12,650	506	650	7.4	25	24.7	6.6	31.1	1	6
Lam Pao	1965	118,000	26,130	1,742	400	7.5	15	20.2	7.8	27.9	3	11
Ubonrat Pam	1964	373,900	61,960	1,946	150	6.4	15	16.6	4.0	20.6	1	11
Chiang Phin	1955	105,000	47,195	2,304	300	7.3	25	32.5	7.2	39.7	3	10
Phon Phisai	1955	165,625	56,371	2,348	450	7.4	25	34.2	5.2	39.4	3	3
Bank Kruat	1959	211,562	81,950	3,255	605	6.6	25	35.4	2.7	38.1	2	11
Average for all settlements						6.9	21	26.9	6.5	33.4		

Source: Kasetsart University, Faculty of Economics and Business Administration,
"Summary Report on Ten Land Settlements Under USAID Sericulture Project, 1977"
Project Paper, Table I, p. 16; Project Evaluation, Appendix A.

*In the Project Paper figures are given for Mukdahan.

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ANNEX B-1

SERICULTURE TECHNOLOGY

THE PROCESS

The chain of production begins with mulberry which is cultivated and fed to silkworms. The worms pass through five stages, separated by four one-day periods of sleep, at which time the old skin is shed. During the first three stages the worms are described as young, and during the last two, as old or mature. In all, the progress through the five stages takes about 21 days; the number varies to some extent according to the variety of worm, the temperature at the time of rearing, the quality and frequency of feeding, and a number of other less significant factors.

At the end of this time, the healthy worm starts to spin its cocoon. Having completed this task in a further five days, the worm then changes into a chrysalis. If nature is allowed to take its course, a moth emerges from the cocoon about seven days later. Mating then occurs within a few hours, followed by the laying of eggs, and the hatching of a new generation of worms. In silk production the cycle is interrupted by drying which kills the chrysalis and preserves the cocoon. This is then placed in hot water which dissolves the serasin by which the cocoon is cemented together, allowing the filament to float free and be combined with others in the reeling process.

The Traditional Method

Although sericulture has a long history in Thailand yields are relatively low and farmers generally produce cocoons for their own use. As traditionally practiced by the Thai-Lao peoples of the Northeast, the sericulture technology utilized is very simple. Little attention is paid to the cultivation of mulberry; once planted, it is rarely, if ever, pruned; fertilizer is not applied, and weeding is not practiced. The

worms are bred by the farmers themselves, and there seems to be no expertise in the selection of good, or even healthy worms for breeding. The quality of silk worm varieties does not, therefore, improve over time, and disease is transmitted readily from one generation to the next. The native worms have developed a certain resistance to the dangers presented by their environment, but at the same time, their growth tends to be stunted, and the average length of filament produced is only about 400 meters, which compares with 800-1,000 meters for the Korat-bred hybrids and 1,200-1,500 meters for the Japanese variety.

The worms are reared in circular baskets, which may themselves act as receptacles and communicators of disease. The tops are covered with cloth to provide protection from the tachnid fly which, if allowed access to the worms, will lay eggs on their bodies, leading eventually to their death.

The silk filaments produced are of irregular quality which must be reeled or spun by hand and they produce an uneven yarn which gives Thai silk its unique textured quality.

The economic returns to the family of traditional silk production are low, approximately Bht. 450 per rai per year. This is based on the production of one rai of mulberry of 400 to 500 kg. of mulberry leaf, yielding 20 to 25 kg. of cocoons which in turn yields 2 to 2-1/2 kg. of yarn at an average price of Bht. 200/kg. Families engaged in traditional sericulture average production of eight kg. per year, but most of it is kept for domestic use.

Modern Technology

Since mulberry is, at present, the only economically viable silk worm food, the foundation of sericulture lies in the growing of mulberry. If mulberry grows fully and has large thick leaves, its harvesting and feeding to worms is easy; silk worms grow well and produce good cocoons. Accordingly, much of the transfer of technology involves the instilling in farmers of improved agricultural practices for mulberry--such as mulching, fertilizing, pruning and weeding. In addition, the Korat Sericulture Center is developing strains of mulberry that are adapted to the Northeast Thailand environment and that are more disease and drought resistant

(disease resistance is especially important because chemicals cannot be used to protect the plant which is eaten by the silk worms). The new varieties are not disease free and the Korat Center is researching the problems of root rot, stem borer, and so forth.

Mulberry trees are expected to yield 2,000 kg. of leaves and shoots per rai and are harvested three times a year, supplying three of the six possible cycles. In order to accommodate the mature period in each of the six cycles, two plots are established, the first cut in early June, mid-September and mid-December (corresponding to the first, third, and fifth cycles), the second in early August, early November and early February for the alternate cycles. For six cycles, two boxes of worms each, a minimum of four rai are required to supply mulberry leaves for silk worms in their final stages of growth.

Modern silk worms technology has the same two elements, i.e., genetic improvement and improved handling. The Korat Center has developed hybrids based on native and Japanese strains which are more productive, produce good quality filament, and survive well in the local environment if properly handled. Modern rearing houses are designed to protect against insect intrusion and may be cleaned by washing and by spraying with a formalin disinfectant solution between cycles. They provide proper light and ventilation.

The modern technology requires discipline on the part of the practicing farmers. However, the higher quality silk filament that is produced has two advantages over the traditional varieties.

1. It can be reeled on machines whereas the traditional silk must be hand reeled; and
2. It produces a yarn that is even and strong and is thus preferable for the warp or longitudinal threads in the silk weaving process.

The output of weaving machines using such yarn is four to six times that obtained using the traditional yarn for warp. Traditional yarn involves much breakdown time due to tension problems and thread breakage as the fibers move up and down past each other in the weaving process.

ANNEX B-1 (continued)

The commercial weaving industry thus uses only the higher quality, even yarns for the warp and it has had to turn to imported yarns to meet its needs. Because of their use in the warp of the fabric, the higher quality yarns are commonly referred to as "warp." In producing Thai silk, commercial weavers continue to use the traditional yarns for the "weft" of the fabric: these are the threads that are passed back and forth with the shuttle across the warp of the fabric. It is the uneven nature of these threads which makes Thai silk distinctive.

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ANNEX B-2

SERICULTURE LABOR REQUIREMENTS

<u>Labor Requirements</u>	<u>Person Days</u>	
	<u>Per Cycle</u>	<u>Per Year</u>
		(6 cycles)
<u>Central Rearing House & Plantation</u>		
rearing of young silkworms	10	60
<u>Farmer Mulberry Plantation</u>		
.Weeding of rai field (3 weedings a year recommended)	25	75
.Harvesting leaves for 'old' silkworm Average 100 kg. needed for 13 days; last 4 days requires 200 kg./day; 1 person can harvest 160 kg./day	17*	68
<u>Silkworm handling: 'Old' worms</u>		
.Feeding, spacing, cleaning	13*	52
.Transferring silkworms from frame, collecting cocoon and transferring to cooperative (1 day)	2	8
	<u>67 days</u>	<u>263 days</u>

*30 days needed during final 13 days of cycle.

Source: Dr. Chavivum Prachuabmoh

ANNEX B-3

TABLE II

Supply and Demand: Wrap Silk Yarn

Year	Total Demand	Thai Private	Existing PWD/MOAC ¹⁾	PWD 1) Project
1973	137	10	--	--
1974	150	15	--	--
1975	135	20	1	0
1976	145	34	2	1
1977	155	50	3	8
1978	165	90	3	16
1979	175	110	3	24
1980	185	130	3	32

1) The "PWD Project" column is nonadditive; it represents the portion of "Thai private" warp silk yarn production attributable to cocoons supplied by the PWD project.

Source: USAID, Project Paper, AID-DLC/P-2168, p. 42.

ANNEX C-1

FARMER PRODUCTION AND REVENUE RELATIONSHIPS

The following relationships based on the present design of the project provide background in considering the economic, marketing and financial implications of the project.

Per Farmer

Mulberry area planted	4 rai
Leaf Production (1,053 kg./rai/yr.)	4,212 kg./yr.
No. of boxes of eggs used (2 per cycle, 6 cycles/yr.)	12 boxes/yr.
Cocoon Production (39 kg./cycle, 6 cycles/yr.)	234 kg./yr.
Cocoon Sales (allowing for 10% rejects)	210.6 kg/yr.
Farmer Revenue (\$2.50/kg.)	\$526.50/yr.

<u>Total Project</u>	<u>1st Yr.</u>	<u>2nd Yr.</u>	<u>3rd Yr.</u>	<u>4th Yr.</u>	<u>5th Yr.</u>
Cocoon sales/yr. (kg.)	63,180	126,360	189,540	252,720	315,900
Total revenue/yr. (\$1,000's)	158.0	315.9	473.8	631.8	789.8
Warp yarn produced/yr. (kg.)	7,897.5	15,795	23,692.5	31,590	39,487.5
Total Warp Yarn value (\$1,000's)	236.9	473.8	710.8	947.7	1,184.6

Source: USAID Project Paper, AID-DLC/P-2168, p. 41.

ANNEX C-2

TABLE IV a.

FARMER INCOME & EXPENSE STATEMENT
COCOON PRODUCTION
Baht

YEAR	0	1	2	3	4	5	6	7
<u>INCOME</u>								
Mature Cocoon Sales		8,530	10,530	10,530	10,530	10,530	10,530	10,530
<u>EXPENSES</u>								
Mulberry Plantation Including Maintenance	2,440	1,360	1,360	1,360	1,360	1,360	1,360	1,360
Farm Rearing House Maintenance & Supplies	5,505	1,355	820	1,355	820	1,355	820	1,355
Eggs - 12 Boxes (8 @ \$150; 4 @ \$250)	1,100	2,200	2,200	2,200	2,200	2,200	2,200	2,200
Subtotal	9,045	4,915	4,380	4,915	4,380	4,915	4,380	4,915
OPERATING INCOME (LOSS)	(9,405)	3,615	6,150	5,615	6,150	5,615	6,150	5,615
Depreciation		933	933	933	933	933	933	933
Interest		1,990	1,813	1,621	1,413	1,190	948	687
Principal Repayment		2,222	2,399	2,591	2,799	3,022	3,264	3,525
NET EARNINGS (LOSS)	(9,045)	(1,530)	(1,005)	(470)	(1,005)	(471)	(1,005)	(470)

Note: Total Farmer investment (and borrowing) is estimated at \$24,880.
This includes Year 0 expenses plus cost of rearing house and a small additional amount for working capital.

Farmer labor provided in kind is not costed.

Principal and Interest Repayment based on 40% of gross sales applied to debt service.
Interest rate is 8%.

ANNEX C-2

TABLE IV b.

FARMER INCOME & EXPENSE STATEMENT
COCOON PRODUCTION
Baht

YEAR	8	9	10	11	12	13	14	15
<u>INCOME</u>								
Mature Cocoon Sales	10,530	10,530	10,530	10,530	10,530	10,530	10,530	10,530
<u>EXPENSES</u>								
Mulberry Plantation Including Maintenance	1,360	1,360	1,360	1,360	1,360	1,360	1,360	1,360
Farm Rearing House Maintenance & Supplies	820	1,355	820	1,355	820	1,355	820	1,355
Eggs - 12 Boxes (8 @ \$150; 4 @ \$250)	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200
Subtotal	4,380	4,915	4,380	4,915	4,380	4,915	4,380	4,915
OPERATING INCOME (LOSS)	6,150	5,615	6,150	5,615	6,150	5,615	6,150	5,615
Depreciation	933	933	933	933	933	933	933	933
Interest	405	100	--	--	--	--	--	--
Principal Repayment	3,807	1,251	--	--	--	--	--	--
NET EARNINGS (LOSS)	1,005	3,331	5,217	4,682	5,217	4,682	5,217	4,677

Note: Total Farmer investment (and borrowing) is estimated at \$24,880.
This includes Year 0 expenses plus cost of rearing house and a small additional amount for working capital.

Farmer labor provided in kind is not costed.

Principal and Interest Repayment based on 40% of gross sales applied to debt service.
Interest rate is 8%.

ANNEX D

TABLE V

SERICULTURE/SETTLEMENTS PROJECT
SILK WORM EGG REQUIREMENTS AND SUPPLY

<u>Year</u>	<u>Project Requirement</u>	<u>Korat/4 Center Capacity</u>	<u>Balance to be Imported</u>
77/78	2,880	1,680	1,200
78/79	6,480	4,080	2,400
79/80	10,000	6,400	3,600
80/81	13,680	8,800	4,800
81/82	17,280	11,280	6,000

Farmers will pay Bht. 150 per box of eggs from the Korat Center (approximately the cost of production). For imported eggs the price is approximately Bht. 250 per box.

ANNEX E

TABLE VI

SUMMARY COST ESTIMATE AND SOURCES OF FUNDS
(in \$000)

<u>Project Costs</u>	<u>Total</u>	<u>BAAC</u>	<u>PWD</u>	<u>MCAC</u>	<u>Kasetsart University & Others</u>
Central Rearing House	549		549		
Central Mulberry Plantations	178		179		
Farmer Rearing Houses	1,463	1,463			
Silkworm Eggs	165	165			
Farmer Mulberry Plantations	183	183			
Farmer Training	75		75		
Management Training	40		40		
Farmer Training Center	194			194	
Cooperatives Facilities/Funds	495	495			
Extension Housing	211		211		
Extension Vehicles	466		466		
Extension Salaries	305		305		
Road improvements	567		567		
Evaluation	77				77
Management Consultants	150		150		—
Subtotal	<u>5,119</u>	<u>2,306</u>	<u>2,542</u>	<u>194</u>	<u>77</u>
Add 20% inflation & contingency	<u>1,023</u>	<u>460</u>	<u>508</u>	<u>39</u>	<u>16</u>
TOTAL	<u><u>6,142</u></u>	<u><u>2,766</u></u>	<u><u>3,050</u></u>	<u><u>233</u></u>	<u><u>93</u></u>
<u>Sources of Funds</u>					
AID Loan Funds	2,600	1,300	1,300	--	--
AID Grant Funds	100	--	7	--	93
BAAC Other Sources	1,466	1,466	--	--	--
RTG	1,976	--	1,743	233	--

ANNEX F

SELECTED STATISTICS ON COCOON PRODUCTION IN
TEN LAND SETTLEMENTS 1977-1981

Items	Sericulture Production Year			
	1977-78	1978-79	1979-80	1980-81
1. Average gross income/ farmer/year 3	4,805.00	8,270.79	12,213.30	12,477.51
2. No. of farmers rearing silkworm/cycle				
Average 3	62	1893	214	231
Range 3	22-88	50-276	48-334	31-370
Median 3	76	205	262	245
3. No. of cycles in rearing silkworms				
Average cycles	2.7	5.5	5.5	5.4
Range	0-5	4-7	4-8	4-7
Median	2	5.5	5	5.5
4. Cocoon production/box				
Average kg.	17.30	15.68	17.69	15.54
Range	4.2-30.3	8.3-22.1	10.05-28.28	9.95-19.51
Median	17.50	15.81	18.71	15.02
5. Price of cocoon/kg. (old & and price)				
Average 3	54.77	64.20	76.06	83.96
Range 3	45.96-76.71	51.26-78.28	61.60-85.65	73.59-95.32
Median	55.0	64.12	77.20	82.50
6. Amount of silkworm rearing/farmer/cycle				
Average boxes	1.08	1.35	1.36	1.50
Range	0.94-1.09	1.02-1.65	0.86-1.61	1.13-1.94
Median	1.01	1.45	1.39	1.45

ANNEX G

MEMBERSHIP AND AVERAGE PRODUCTION OF
MEMBERS OF SERICULTURE SETTLEMENT PROJECTS, BY SETTLEMENT

	1978		1979		1980	
	Membership	Average	Membership	Average	Membership	Average
	<u>(kg. Cocoon/Yr.)</u>		<u>(kg. Cocoon/Yr.)</u>		<u>(kg. Cocoon/Yr.)</u>	
Prasat	51	47.3	51	64.5	53	42.3
Lam Dom Noi	32	48.9	38	44.6	40	47.2
Lam Dom Yai	30	68.8	30	69.4	30	59.6
Kham Soi	45	107.8	69	119.2	107	119.0
Kuchinarai	46	80.8	50	115.6	50	99.1
Lam Pao	45	58.3	48	46.6	48	43.8
Ubonrat	44	134.7	71	110.1	107	40.6
Chiang Phin	23	57.4	23	678.5	23	124.2
Phon Phisai	20	59.7	20	124.2	43	70.9
Ban Kruat	30	17.3	30	56.0	30	50.56
Combined	366	71.6	430	86.3	531	70.6
Planned	600	230.2	900	188.8	1200	195.6

Devised from Appendices G and I. Joint Evaluation:
Thailand Sericulture/Settlements Project.

ANNEX H
 APPLICATIONS
 SERICULTURE/SETTLEMENTS PROJECT

A. Number of Settler Families and Applications:
 Four Settlements, 1980.

<u>Name of Settlement</u>	<u>Number of Settler Families</u>	<u>Number of Applicants as of 1980</u>
Lam Dom Yai	500	41
Lam Dom Noi	1,401	105
Kham Soi	1,740	270
Ubonrat Dam	1,946	130

B. Age Distribution of Applicants.
 Age of Household Head

	<u>Number of Families</u>
30 & Under	12
31-40	38
41-50	59
51 & Over	<u>63</u>
Total	172

Do younger & have needed LAND?

EASIER LABA THAN OTHER CROPS

Source: Files of BAAC.

Source: Appendix C pages 4 and 5. Joint Evaluation:
 Thailand Sericulture/Settlements Project.

ANNEX J

FARMERS' MULBERRY PLANTATION BY SETTLEMENT, 1978-1979

Land Settlement	1978			1979		
	Average	Median	Range	Average	Median	Range
Prasat	3.42	4	1-4	N/A	N/A	N/A
Lam Dom Noi	6.02	6	4-9.5	4.99	5	03.-9.2
Lam Dom Yai	4.59	4	3-6	4.41	4	3-6
Kham Soi	5.73	5	2-12	5.51	5	2-12
Kuchinarai	4.90	4	4-8	4.84	4	4-8
Lam Pao	4.42	4	3-9	4.49	4	3-9
Ubonrat Dam	4.31	4	2.5-9	4.38	4	2.5-9
Chiang Phin	6.62	6	4-14	5.81	5	4-10
Phon Phisai	4.00	4	2-6	3.88	4	2-6
Ban Kruat	N/A	N/A	N/A	N/A	N/A	N/A
Combined	4.89	-	-	4.78	-	-

ANNEX K

NUMBER OF SILKWORM RAISERS, WHO HAD AND HAD NOT RECEIVED FORMAL PROJECT TRAINING
IN 1979-80 PRODUCTION YEAR

Land Settlement	Total Raisers	Raisers Who Received Formal Training		Raisers Who Did ^{NOT Receive} Land Settlement Formal Training	
		Number	Percent	Number	Percent
Prasat	48	38	79.17	10	20.83
Lam Dom Noi	22	16	72.73	6	27.27
Lam Dom Yai	22	16	72.73	6	27.27
Kham Soi	44	34	77.27	10	22.713
Kuchinarai	45	41	91.11	4	8.89
Lam Pao	48	44	91.67	4	8.33
Ubonrat Dam	66	53	80.30	13	19.70
Chiang Phin	14	11	78.57	3	21.43
Phon Phisai	20	14	70.00	6	30.00
Ban Kruat	N/A	N/A	N/A	N/A	N/A
Combined	329	267	81.16	62	18.81

ANNEX L

AVERAGE NET CASH INCOME OF SILKWORM REARING SETTLERS
OF TEN LAND SETTLEMENTS 1978-1980

Land Settlement	Average Net Cash Income (Baht)		
	1978	1979	1980
1. Prasat	2,611	5,343	4,437
2. Lam Dom Noi	3,504	3,379	4,034
3. Lam Dom Yai	3,973	4,931	5,127
4. Kham Soi	4,260	8,843	8,914 ✓
5. Kuchinarai	4,629	8,117	6,719 ✓
6. Lam Pao	2,693	3,452	3,749
7. Ubonrat Dam	8,038	7,395	8,926 ✓
8. Chiang Phin	3,182	5,459	8,926
9. Phen Phisai	2,802	5,704	8,240
10. Ban Kruat	1,878	3,517	4,014
Combined	3,680	6,124	6,382

=====

*BUT what
was their TOTAL
NET income for
YEAR from
ALL sources?
Does increase in
one source mean
decline in
others.*

ANNEX M

DISTRIBUTION OF ANNUAL INCOME AMONG SERICULTURE PROJECT'S FARMERS BY SETTLEMENT, 1977

Land Settlement	Income Brackets (Baht)						Annual Family Income (Baht)			
	<3,000	3,000-5,000	5,001-7,000	7,001-9,000	9,001-11,000	>11,000	All Brackets	Mean	Median	Range
Prasat	15 (40)	7 (19)	5 (13)	1 (3)	1 (3)	8 (22)	37 (100)	6,311	4,481	241-32,692
Lam Dom Noi	10 (45)	9 (23)	8 (20)	4 (10)	-	1 (2)	40 (100)	3,764	3,175	182.5-11,909
Lam Dom Yai	6 (16)	9 (24)	7 (10)	6 (16)	1 (3)	9 (24)	38 (100)	8,170	6,187	1,162-47811
Cham Soi	12 (27)	10 (22)	7 (1)	4 (9)	1 (2)	11 (24)	45 (100)	9,509	6,057	239-74,310
Luchinarai	11 (2)	11 (22)	5 (10)	5 (10)	5 (10)	14 (27)	51 (100)	9,061	5,600	10-57,928
Lam Pao	12 (27)	6 (13)	9 (20)	1 (2)	3 (7)	14 (31)	45 (100)	11,616	6,626	40-51,575
Lbonrat Dam	19 (13)	5 (11)	5 (11)	3 (7)	1 (2)	11 (25)	44 (100)	8,182	4,464	113-56,926
Chiang Phin	1 (6)	4 (23)	3 (18)	-	3 (19)	6 (35)	17 (100)	12,124	9,806	329-30,911
Phon Phisai	12 (54)	5 (23)	-	1 (5)	2 (9)	2 (9)	22 (110)	4,732	2,834	86-20,050
Ban Kruat	11 (44)	3 (12)	1 (4)	3 (12)	1 (4)	6 (24)	25 (100)	7,166	3,561	36-34,826
Combined	117 (32)	69 (19)	50 (14)	28 (0)	10 (5)	02 (22)	364 (100)	8,123	-	-

Note: Figures in parenthesis are percentages.

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ANNEX N

DISTRIBUTION OF INCOME AMONG SERICULTURE PROJECT FARMERS BY SIZE OF MULBERRY PLOT
AND BY SETTLEMENT, 1979

Mulberry Plot Size	Income (Baht)						Combined	Average Income	Range of Income:
	Under 3,000	3,000- 5,000	5,001- 7,000	7,001- 9,000	9,001- 11,000	Over 11,000			
4 rai	53 (20)	52 (20)	37 (20)	23 (13)	12 (7)	7 (4)	184 (100)	4,940	472-18,034
5-6 rai	12 (12)	17 (17)	16 (15)	19 (19)	19 (19)	10 (10)	101 (100)	7,556	875-31,179
7-9 rai	1 (4)	3 (10)	5 (16)	8 (27)	5 (16)	8 (27)	30 (100)	8,450	2,952-19,014
Over 9 rai	-	-	1 (11)	3 (33)	-	5 (56)	9 (100)	11,685	6,925-24,637
Combined	66 (20)	72 (22)	59 (18)	53 (16)	36 (11)	38 (12)	324 (100)	6,269	472-31,179

Note: Figures in parentheses are percentages.

ANNEX 0

PUBLIC WELFARE DEPARTMENT, FINANCIAL STATUS
SHOWING THE REMAINING LOAN FUNDS AT THE END OF FY 181

Items	Project Plan for FY 77-01	Actual				Proposed FY 81 ^{1/}	Total Expenditure FY 77-81	Baht Remaining Fund at The End or FY 81
		FY 77	FY 78	FY 79	FY 80			
1. Central Young Silk Worm Rearing Homes	11,585,000	3,300,000	--	1,580,000	-	-	4,880,000	6,705,000
2. Central Mulberry Production	1,224,000	360,000	360,000	-	100,250	105,000	925,250	298,750
3. Equipment for the CYSW101	1,346,400	385,110	41,500	235,160	40,240	-	702,010	644,390
4. Farmer Training	1,740,000	216,280	136,163	51,000	-	200,000	603,443	1,136,557
5. Road Improvement	6,840,400	3,366,00	2,280,000	1,485,365	-	1,728,125	8,959,490	(2,119,090)
6. Cocoon Drying Plant Establishment	1,306,200 ^{2/}	-	-	989,160	260,300 ^{3/}	-	1,249,160	57,040
7. Management Consultants	3,300,000	-	-	-	525,942 ^{1/}	488,800	1,014,742	2,285,258
Total	27,342,000	7,627,390	2,917,663	4,340,685	926,482	2,521,925	18,334,095	9,007,905

1/ Estimated figure. The plan has been sent to USAID for approval since March 11, 1981.

2/ Transferred from AID loan to BAAC.

3/ Reimbursement was not made to USAID.

ANNEX P

ROLE OF WOMEN IN THE THAILAND SERICULTURE/ SETTLEMENT PROJECT: 1983 STUDY OF THREE PROJECT SITES

In 1983 an analysis was made of the records of a sample of 100 participating farmers from three resettlement villages: Mukdahan, and Khamsoi and Ubonrat. These records cover a five-year period and provide uniform data on participation, productivity (kg. of cocoon produced), and gross revenues from production for the years 1978-1982.

The study was designed to assess the benefits to women of the project. In Mukdahan and Ubonrat, single parent households comprised 20 percent of all project households, and for the sample, the number of single parent households increased over the life of the project while the number of joint households remained about the same. In Khamsoi, the number of female-headed households (100% of whom were included in the sample) increased over time.

In the Mukdahan sample, 22 started in 1978; two families (one joint, one female headed) left in 1981; one joint in 1982; and one joint in 1983. In the Ubonrat project, there was a substantial drop in 1981 primarily among female-headed and joint families with some recovery by 1983. See Tables I and II for data on participation by settlement and household type.

In Khamsoi, the most successful sericulture village, female-headed households (10% of the project participants and 100% of the sample) did well in annual production of cocoons (208 kg. in 1982) and in gross revenues (Bht. 19,434). Female-headed households equaled or exceeded joint family production in Ubonrat between 1978 and 1984, and dropped behind in 1982. Production of cocoons by male-headed single parent households remained low though in 1982 were equal to female-headed house-

ANNEX P (continued)

holds. In Mukdahan, joint family production exceeded that of female-headed households from 1980 through 1982. A comparison of production and revenues by household type is found in Tables III and IV.

In 1983, Ubonrat had a total of 59 project participants, including a group of ten male-headed households who began sericulture in 1979. Eleven project members are listed as female heads of household. As of August 1983, 36 women had received silkworm training of whom 32 were married. In 1980, there was a major supply problem of quality eggs and producers sought private suppliers, but the demand was too new and the supply was not there. In 1981, a paper pulp mill opened which paid Bht. 1,150 a month (23 working days) and employed men and women. The Ubonrat sample includes all 59 households in the project.

The total project membership in Mukdahan is 49, of which ten female heads of household. Of these, two had husbands who died during the course of the project. As of August 1983, 41 women had been trained at Korat or Mukdahan. Of the ten women listed, one quit because her daughter married and left and her husband died; another participant's husband died and the mulberry plantation was infected by root rot disease in the same year, but she has remained in the project. Of the eight men who were trained, only one still participates in the project; others left the settlement, the project, became monks, or died. The sample for Mukdahan was of 23 households: 13 joint and ten single parent female-headed.

In 1983, Khamsoi resettlement included 225 households of which 22 women were listed as the project farmer. As of August 1983, 123 women had been trained, 56 unmarried and 67 married; 188 are listed as raising silkworms of which 14 are unmarried and 174 married; and 75 are listed as picking mulberry leaves, of which 27 are unmarried and 48 married. The total sample included 18 female-headed households.

ANNEX P (continued)

TABLE I

NUMBER OF PARTICIPANTS BY YEAR AND TYPE OF HOUSEHOLD
100 FAMILIES: UBONRAT, KHAMSOI & MUKDAHAN

	Household Type			
	<u>Joint</u>	<u>Female*</u>	<u>Male*</u>	<u>Total</u>
1978	32	20	--	52
1979	43	25	5	73
1980	49	29	8	86
1981	41	34	7	82
1982	35	38	10	94

TABLE II

NUMBER OF PARTICIPANTS BY YEAR, SETTLEMENT AND HOUSEHOLD TYPE

	Ubonrat				Mukdahan			Khamsoi
	<u>Joint</u>	<u>Female*</u>	<u>Male*</u>	<u>Total</u>	<u>Joint</u>	<u>Female*</u>	<u>Total</u>	<u>Female</u>
1978	20	6	--	26	12	10	22	4
1979	30	9	5	44	13	10	23	6
1980	36	10	8	54	13	10	23	9
1981	29	9	7	45	12	7	19	18
1982	35	11	10	56	11	9	20	18

*Female and Male are single parent households.

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ANNEX P (continued)

TABLE III

AVERAGE PRODUCTION (KG)
BY
HOUSEHOLD COMPOSITION

<u>Resettlement</u>	<u>Head of Household</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Khamsoi	Female	114.95	126.48	148.28	187.87	208.69
Mukdahan	Female	81.01	104.95	66.30	50.66	78.07
	Mixed	81.23	136.61	120.40	107.19	157.73
Total	Sample	81.13	122.84	96.8	86.3	121.82
Ubonrat	Male	-	69.64	16.80	52.54	84.10
	Female	138.43	112.08	60.01	112.29	82.38
	Mixed	85.49	95.96	51.16	109.53	107.73
	Total	Sample	97.70	96.26	47.70	101.22

ANNEX P (continued)

TABLE IV

AVERAGE REVENUE (BHAT)
BY
HOUSEHOLD COMPOSITION

<u>Resettlement</u>	<u>Head of Household</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Khamsoi	Female	5,126.57	9,828.04	12,536.50	17,115.40	19,433.70
Mukdahan	Female	4,535.29	7,237.69	5,335.41	4,528.80	6,673.47
	Mixed	4,671.14	9,629.53	8,604.27	10,192.60	14,141.80
Total	Total	4,609.39	8,589.60	7,183.03	8,105.97	10,781.00
Ubonrat	Male	-	4,181.86	1,056.89	5,716.52	5,982.49
	Female	8,532.29	7,628.89	5,020.64	8,706.63	5,945.87
	Mixed	5,450.02	6,396.60	3,785.05	8,382.01	8,051.00
Total	Total	6,161.51	6,394.98	3,609.69	8,037.31	7,268.12

INDONESIA:
EAST JAVA FAMILY PLANNING,
NUTRITION, AND INCOME GENERATION PROJECT

Prepared by David F. Pyle

CONTENTS

- I. Country and Project Context
- II. Culture and Women in Indonesia and East Java
- III. Integrated Family Planning-Nutrition-Credit Project
 - A. Program Design
 - B. Implementation and Operation
 - C. Project Progress

TABLES

ANNEXES

After having been briefed at the BKKBN (National Family Planning Coordinating Board) headquarters in Jakarta, Ann Carter arrived in Surabaya, the capital of East Java, to meet with provincial-level officials. Dr. Pangestu, BKKBN chief for East Java, gave her a warm welcome and reviewed the remarkably successful family planning program he had supervised for the past four years. He related how the program had moved into a new stage which integrated nutrition and income-generating activities with the agency's already well-established population efforts. Having attained a high level of contraceptive prevalence, the BKKBN was concerned with achieving high continuation rates and making the promised "small, happy, prosperous family" norm a reality. Ann was scheduled to tour the province to observe the pilot phase of an income-generating credit project for women funded by USAID, referred to by its Indonesian acronym, P2K. Based on her findings, a decision would be made as to whether the approach should be expanded.

I. COUNTRY AND PROJECT CONTEXT

Ann had several years of experience working in Indonesia and was familiar with the country and its problems. The basic facts and figures were well known to her (Table 1). Indonesia is the world's fifth most populous country. The country is made up of some 13,600 islands, 1,000 of which are inhabited. The archipelago is the western segment of the "Ring of Fire" and has over 400 volcanoes, approximately 75 of them still active. Java contains only 7 percent of the land area, yet is called home by 63 percent of the country's population, making it one of the most densely populated areas in the world. The province of East Java has almost 30 million people and a density of over 600 per square kilometer.

Although Ann has spent most of her time on Java, she had travelled extensively and had gained an appreciation for the ethnic and cultural diversity of the country. Over the centuries, peoples from China, Arabia, Polynesia, mainland Southeast Asia, the Subcontinent, and Europe have migrated to Indonesia.

Indonesian history is made up of wave after wave of migrations of peoples who either absorbed earlier arrivals, killed them off or pushed them into less favorable regions (jungle, high mountains, remote islands). The Malays were followed by the Hindu believers, and the country was influenced by Hinduism, Islam, as well as the Portugese, English and Dutch. When it achieved independence in 1945, Indonesia was an ethnological goldmine where 366 different groups could be identified. Some 250 distinct languages are spoken although Bahasa Indonesian is the official national language.

The country is really a collection of local nations reflected in the Indonesian expression "lain desa, lain adat" (other villages, other customs). Ann herself had seen some of the cultural variety--including the matrilineal Minangkaban culture of western Sumatra and the syncretic hierarchal Javanese; animist villagers and orthodox Muslim landlords; religious minorities including Christians, Buddhists and Hindus. While this cultural variety may be greatest on the outer islands, one can find considerable cultural mix on Java as well.

Farming is the primary source of livelihood in rural Indonesia. Rice production has increased impressively over the last several years, from less than 18 million tons in 1979 to an estimated 23.5 million tons in 1983. The government has recently reported that the country has achieved self-sufficiency in rice. Despite this achievement, the country is expected to import one million tons of rice in 1983. East Java, with its population density, produces 120 percent of its needs and exports rice to other provinces. However, over three-quarters of all farmers own less than half a hectare; a typical wet rice farmer holds .15 hectare of land. The introduction of technological change (i.e., mechanized tillers and hullers) in the 1970s increased the productivity of the larger farmers and led to surpluses, enabling them to buy up smaller, weaker farmers and resulting in increased number of landless. Some estimate that the landless comprise approximately a third of the population of Java.

Despite impressive improvements in per capita income over the last decade, poverty remains a major Indonesian problem. According to 1976 estimates, 57 percent of the population of Java were poor, 34 percent were very poor, and 17 percent were destitute. Although the annual per capita income in East Java

was estimated (1982) at approximately \$400, some 30 percent of the East Java population was considered to be below the poverty line (\$90 per capita per year). Many of them were fishermen along the north coast.

There is a strong tradition of sharing and "communitiness" in Javanese villages. The best known is gotong royong, or mutual assistance in farming. In addition, there is the tradition of tanggung renteng, the principle of mutual responsibility in which villagers, male and female, look out for the well-being of their neighbors and expect the same in return. Another form of community action is the lumbung desa. A percentage of the crop harvested from land belonging to the village council is placed in a "paddy bank". In several East Java villages Ann visited, between one third and one half of the yield from the council's land was put into the lumbung desa. This grain reserve is distributed to needy families if and when emergencies arise or is borrowed by those who run short of rice before harvest and is repaid with no interest after the new crop is in.

Although the traditional social system makes allowances for the poor, this tradition is being slowly eroded. Farmers find it too expensive to share the harvest (one-sixth to one-eighth of what they harvest for neighbors to one-twelfth for those from outside) with a large number of gotong royong members. Smaller teams of men complete the job more quickly for less money. In a labor surplus economy like Java, wage labor is cheap. Moreover, as the price of rice has risen, the traditional gotong royong harvesting shares have become too costly.

Family planning has been a high priority of the Government of Indonesia since 1970, when the BKKBN was created as an independent agency reporting directly to the President. According to USAID (1982), family planning services were offered primarily at health clinics in the six provinces of Java and Bali until 1974 (Phase I). (See Tables 2 and 3 for information on national health statistics and health coverage.) Village-level outreach were emphasized in 1974 as part of Phase II. At the same time, family planning services through health clinics began in ten large provinces (Outer Islands I); by 1977 they were

converted to the village family planning system. In 1979 the remaining eleven provinces started clinic-based family planning activities (Outer Islands II).

East Java, the third most densely populated of the 27 provinces, has consistently out-performed the country as a whole in family planning acceptance rates (Table 4) and by January 1983 had a current user rate of 67.6 percent. In 1982, special emphasis has been placed on increasing the percentage of accepters using IUDs in order to decrease dropout rates and the need for continuous, intensive program-client interaction. In early 1983, 49.4 percent of the contraceptive accepters in East Java were utilizing IUDs. The program had been run through the governmental structure with the appointed village headman (lurah) responsible for promoting family planning in the community. The deferential tradition of Java, particularly East Java, gives the lurah considerable power since villages follow his word with little questioning. As Dr. Haryono (National Chairman of the BKKBN) told Ann, this accounts for the family planning program in Java reversing what Westerners have traditionally accepted to be the normal sequence--people have adopted and practiced contraception before their knowledge and attitude changed.

Malnutrition is another major concern of the government. Approximately 30 percent of the children under five years of age in Indonesia are estimated to be malnourished; 3 percent suffer from severe protein-calorie malnutrition. In addition, 7 percent of the pregnant women and 3 percent of the lactating mothers are classified as malnourished. Iron deficiency anemia and iodine deficiency are two other nutritional problems. At least 63,000 cases of xerophthalmia (severe vitamin A deficiency) are reported in under fives each year in the rural areas.

In the past several years, the government with international donor assistance, launched the Family Nutrition Improvement Program (UPGK) to address the malnutrition problem. The program devotes maximum effort to weighing all the under five children in the village in order to identify those who are not maintaining proper growth rates or are severely malnourished. Each child's progress is charted on a growth chart. The program is monitored by four figures which are placed on a bar chart each month: number of children in the

village; number of children with weight charts; number of children weighed during the month; number of children gaining weight during the past month. Participation rates and nutritional status are calculated on a monthly basis. Nutrition education, home gardening as well as health activities (e.g., immunization, oral rehydration therapy, and massive dose vitamin A capsule distribution) are integral parts of the UPGK Program. The Ministry of Health is responsible for administering the program and relies upon a corps of mostly female volunteers (kader) to oversee the weighing sessions.

According to USAID (1983b), the per capita daily consumption of calories in Indonesia in 1978 was approximately 2000; in East Java it was 1639. Protein intake was 51 grams for Indonesia compared to 42 in East Java. On the average 74 percent of a family's total expenditure is for food; the lowest income groups (40 percent of the population) spend more than 80 percent and nearly half of this for staple foods. Calories and protein intake by income group are given in Table 5. The primary source of calories (77 percent) and proteins (71 percent) are cereals and starch foods (rice, cassava, corn, sweet potatoes). The consumption of rice increases sharply as income increases (from 45 percent of staple food calories in the lowest income group to over 90 percent in the higher incomes); conversely, the consumption of cassava and corn decreases as incomes increase (from 25 to 30 percent for each to virtually nothing).

II. CULTURE AND WOMEN IN INDONESIA AND EAST JAVA

Because of the cultural diversity of Indonesia, it is difficult to generalize and describe a single Indonesian culture. One can find ways of life which are 5000 years apart, ranging from the Neolithic to the Nuclear Ages. Over three-fourths of the population still resides in the rural areas and, as has been the case for centuries, most of their lives revolve around rice cultivation. Village life has changed very little over the years. Many of people's actions are guided by the adat (common or customary law), which has evolved from ancient times when villages were largely self-governing. Although rooted in religion, Islam has been radically modified in many instances to fit the law.

Ann was pleased that this assignment involved Java because she was not as knowledgeable on the cultures and women's position in the Outer Island societies. She felt comfortable in Rural Java where she was familiar with the customary law (adat). On Java, women's rights are generally the same as those of men with respect to marriage, divorce, inheritance and property rights. They have a considerable degree of economic independence and initiative. Women exercise significant social power and are not subordinate as in China and the subcontinent. Although the province of East Java is overwhelmingly Muslim, it has not been a negative influence on women's traditionally high status. Instead, religious beliefs have adapted themselves to the traditional women's role and position in Java. Female children are not considered a negative economic factor since a daughter provides labor and brings a bride price from the husband. In addition, a married daughter may live for a short time with her family before she and her husband procure a house of their own. This may explain why there is no strong desire to have sons among Indonesian women; if there is a preference, it is to have children of both sexes.

The Javanese wife dominates or enjoys equal status in the household decision-making process regarding both production as well as consumption issues. The woman can be described as being the silent head of household (has the "informal" power). The husband is the family representative (has the "formal" power). All income is turned over to the wife and she decides how it will be spent, consulting her husband only on major purchases. Many families, therefore, are dependent on the wives' financial capabilities.

Although women enjoy high status, they do not always share equally in opportunities in the development process. Ann reviewed recent census figures on women-related issues. In education, government efforts during the 1970s virtually eradicated the gap between male-female attendance rates in the primary school years. Women, however, are involved in household and family work from an early age. At seven years old they begin to tend animals and fetch water; by age ten, girls are helping to plant and harvest rice. Use of their labor contributes to higher female absenteeism and dropout rates in school. In addition, parents feel that girls will become "just housewives", thus see no need for as much schooling as boys. An additional educational

disincentive if provided by the fact that many villages have no schools beyond the primary level. Children, therefore, are forced to leave the village and enter a boarding facility if they are to continue their education. Significantly lower school attendance rates among girls of higher age groups as well as lower educational attainment figures (Tables 6,7) are attributable to this situation. Employment opportunities vary directly with educational levels achieved.

A higher percentage of women are economically active in the rural areas than in the cities, with from one-third to almost a half of all village women between the ages of 15 and 65 working (Table 8). The main employment for rural women is agriculture, either on the family's land or as hired labor. Men do the heavy work of field preparation and terrace construction; women plant, transplant, hoe, weed and harvest.

However, within the past decade, the employment opportunities for women in agriculture have decreased dramatically. As the price of rice has increased, the traditional mutual assistance (gotong royong) system (where neighbors help plant and harvest each other's crops for a share of the grain reaped) decreased. Often a family will harvest together or will hire laborers at low wages and sell the crop. Accordingly, instead of harvesting rice with light, hand-held knives, more productive, heavier steel sickles are used but only by men. This has drastically changed labor patterns--reducing 200 women days of harvest work to 70 men days. Moreover, new rotary weeders used only by men are replacing women who used to weed by hand, reducing 20 women days of work to 8 men days. (Babunakis et al, 1978)

Simultaneously, rice is now machine-milled instead of hulled by women hand-pounding. The proportion of rice hand-pounded fell from 80 percent in the early 1970s to 50 percent in 1973, and soon to less than 10 percent (Milone, 1978). The small Japanese rice-hulling machines, with government-assisted financing through decreased import duties and favorable credit, were faster, cheaper, and made the rice somewhat more decay-resistant during storage. An estimated 125 million women days of work were lost per year, involving an income of \$55 million. This equals 8.3 months of half-time, relatively well-paying work for 1,000,000 women. (UNDP, 1980) The only alternative

economic activity for women has been to become petty traders. An estimated 40 percent of women can be classified as small traders. Some say that currently there are more women traders than customers in some rural markets.

The other major source of income for rural women is in elementary processing. Food and drink preparation, preservation, sales are all common forms of income generation as are tapping palm trees and making brown sugar (gula) from it, extracting oil from coconuts, and collecting herbs and producing traditional remedies.

Alternative employment opportunities and sources of income for rural women are severely limited. While modernization in production is accepted, labor is treated and remunerated in a traditional manner. Skilled labor of both sexes, who are better educated and more aware of their worth, are able to command higher wages. Handicrafts and cottage industries have limited economic appeal since village women are largely unorganized and cannot compete with manufactured products in terms of either cost or quality. An exception is woven bamboo products like mats and hats which are utilized in the village itself. (Table 9)

Javanese women tend to work longer hours and earn less for their labor than men. Ann remembered an early 1970 study carried out in Java which compared women's working hours with men's. Poor women put in longer hours than their wealthier counterparts since they cannot afford to hire anyone to assist them with the heavy burden of domestic work (e.g., food preparation and water fetching). In agriculture women do the lighter work and get paid 20 to 30 percent of men's wages for heavy work. Female wages remain at a low level as the labor-intensity of agriculture decreases. This has particularly serious consequences in the poorer families since women contribute a greater percentage to the household income. For families owning less than .2 hectares, females contribute one-third or more to the total family income; over .2 hectares the percentage falls to 15 percent; the figure is 4.4 percent in the highest income groups. (UNDP, 1980)

The problem is particularly acute for female-headed households. Family instability is a serious concern in Indonesia and especially in Java. Indonesia is noted for its high divorce rate. In 1974, 24 percent of all marriages ended in divorces, with East Java having 28 percent. Economic problems are the cause for a significant portion of the break-ups and desertions. It is estimated that 16 percent of all households are headed by women with slightly higher rates in rural areas. The marital status of female-headed households in rural Indonesia is: 1 percent never married; 15 percent married but husband absent (deserted, migrated for work); 13 percent divorced; 71 percent widowed. Over 62 percent of all widows and 74 percent of all divorcees in a rural sample were found to be economically active. Thirty-two percent of the economically active were able to support a single person's need; 49 percent were unable to earn enough to support themselves. (Milone, 1978)

Currently about two thirds of rural women from low income households must contribute to achieve a minimum level of household income through income-generating activities. Poor women already have the longest working hours, spending most of their time searching for work and earning just enough for the next days meals while carrying out household responsibilities.

While both males and females technically have the same access to credit, in reality men receive credit from formal lending agencies and women depend on informal sources for theirs. Property is held in the man's name. This is the greatest constraint for a woman's gaining access to credit since land (i.e., rich field) is required as collateral. Additionally, social convention considers a man's actions more binding than a woman's. Consequently, women have relied upon such traditional sources as the arisan, a rotating savings association. Women meet on the basis of friendship, occupation or neighborliness, generally once a month. Each member contributes an agreed upon amount. Lots are drawn so that one member wins; no one can win twice. Once all had their turn, the group is disbanded. It has a social as well as economic function. It can be considered more a form of forced savings (without interest) rather than credit. Women are able to set aside money and receive a large amount at one time which enables them to invest to start or increase an income generating

activity. One woman Ann met had purchased equipment to establish a small bakery with the proceeds.

Another informal savings and loan group at the village level is the simpan pinjam in which members contribute what they want which entitles them to borrow at low interest rates when in need. Any profits derived from the operation are divided among the members. Most often savings are put into such tangibles as jewelry, fine batik, chickens or even roof tiles, which can be sold in the event of need. Usually women operate on a very small scale due to limited capital; one day's or market's earnings finances the next. One program (Chandak Kulak) makes small-scale loans (Rp. 20,000 to 30,000) to women traders. Of course, there is always the traditional money lenders who charge exorbitant rates but are preferred to formal lending institutions because they are accessible, require no forms be filled out, are more flexible about repayment, and do insist on complete repayment before new loans are made.

The poor live in the social, economic, political, and geographical periphery of the village. Poor women generally do not have either the status or the time to involve themselves in formal women activities such as the PKK (Family Welfare Education). The PKK is the National Women's Movement with a branch in each village. The local chapter must, by law, oversee all women's activities in the village. The wives of the administrative officials at each level head the PKK organizations. In each village, the PKK is under the direction of the lurah's wife. The organization has devoted most of its energies to teaching domestic arts (e.g., sewing). The lurah's wife is assisted by several of the most educated and economically advantaged women of the village, and she controls women's activities in the community. Thus, the social hierarchy for women parallels that for men through the wives of the administrative officials at the province, regency (kabupaten), country (Kecamatan) and village levels and social power relates to social class.

III. INTEGRATED FAMILY PLANNING--NUTRITION--CREDIT PROJECT

A. PROGRAM DESIGN

The program was designed to facilitate and promote integration of family planning, nutrition and income generating activities. Funders included the Government of Indonesia, UNFPA, World Bank, USAID, and ASEAN (Table 10). Total USAID funding for the life of the project was \$ 10,000,000. The amount of credit allocated to each village varies considerably from program to program as well as from village to village.

The National Family Nutrition Improvement Program (UPGK) was begun with UNICEF and USAID support in the late 1970s and was carried out in conjunction with the Ministry of Health infrastructure. By early 1983, that program had been started in some 21,000 villages of the approximately 60,000 villages in Indonesia. In East Java, almost 5,300 villages out of 8,340 had the UPGK Program. Beginning in 1980, the nutrition program activities were coordinated more closely with the BKKBN structure which had been so successful in reaching the village and achieving a high level of contraceptive practice. Village-level kaders were supported and supervised by the BKKBN field worker. The fieldworkers were equally divided among male and female and each was assigned to two or three villages and a population of approximately 12,000 or more. They in turn are supervised by group leaders (one per county). The BKKBN staff were assisted in the program by the local health center personnel. In addition, the fieldworkers from the Agriculture Department helped with such activities as upgrading the nutritional quality of home gardens. The income generating aspect started at the same time the UPGK and family planning activities were combined.

In concept, the East Java, USAID-supported, integrated income generation program is similar in many respects to the other small loan projects elsewhere in Indonesia. However, a few variations are noted. First, in Central Java, the funds are allocated to sub-village administrative units called kelompoks. (Villages in Java usually have from three to six

kelompok although Sidomulyo has 13). The reason for this is to encourage small group formation and operation. The geographical dispersion of Javanese villages provided an incentive for program administrators to bring credit activities closer to the borrowers. A second major difference is that the other loan programs are open to both men and women, and men received the disproportionate percentage of the loans. The USAID scheme is the only one designed explicitly and exclusively for female participants.

Contraceptive acceptance was one of the two principal criteria to become a borrower. The second was being a mother of a child under five years of age. Orientation and regular follow-up meetings for the loan project were to be coordinated with the monthly weighing sessions and thereby serve as an incentive for participation in the nutrition activities. Each sub-village administrative unit or kelompok was to have a women's group to discuss every loan application and vote on its acceptability (i.e., worthiness and ability of the borrower to repay the loan). Mutual responsibility for members' debts and peer pressure for repayment would eliminate the need for collateral. Moreover, accountability was to be established through open management which would help maintain the scheme's integrity once the BKKBN and USAID were no longer involved in supervision.

Maximum loans were fixed at Rp. 50,000. This is not an insignificant amount since most women in the village earn between Rp. 10,000 and 20,000 per month. During the first phase of the loan program, credit was directed at women with existing productive skills. New technical capabilities requiring outside training and/or equipment were to be introduced during Phase Two when cooperative formation also would be featured.

Loans were to be repaid according to an established schedule of three or seven months depending on the amount. Loans below Rp. 10,000 were to be paid back in six installments over a three-month period with a total interest of 20 percent. Loans over Rp. 10,000 were to be repaid over a seven-month period with a total interest of 40 percent. As the repayment schedule in Annex A demonstrates, half of the interest payment was

administration costs (i.e., nutrition programming, program administration expenses and kader incentives). The exact amount allocated to each category was left to the discretion of the individual villages. The second half of the interest payment was termed compulsory savings which was credited to the woman's name but could not be withdrawn until the individual withdrew from the loan program. The money was to accelerate capital formation.

Each month each village was to pay Rp. 14,000 to the bank toward the repayment of the start-up capital. The money, when fully repaid, would be utilized to initiate the credit program in new villages. Repayment would be increased to Rp. 30,000 per month once the second installment was made to the villages.

B. IMPLEMENTATION AND OPERATION

The USAID pilot integrated KB-Gizi credit program began in 1982 and became known as P2K. Twenty-four villages in five kabupatans and 15 kecamatanans were selected based upon their high current contraceptive user rates and good performance in the UPGK Program. Eighteen of the villages received their first installment of Rp. 700,000 (\$700) during September 1982. The final six villages received their first "drop" in early June 1983. Three officers (leader, secretary, treasurer) of the village organized to administer the small loan program were brought to Surabaya for four days of training in mid-June 1982. The training consisted mostly of technical details relating to income generating activities and loan procedures/record keeping. The village women were informed that good performances (i.e., rapid capital accumulation, good repayment record, good program administration) would result in the second and final installment of Rp. 800,000 being given to each village.

The program was administered by the same infrastructure that was responsible for running the Family Planning-Nutrition Program and the BKKN programs, the volunteer kader in the village, and the BKKBN workers in the Kecamatanans. The leaders of the P2K credit activities and

organization on the village level were usually the same as the top PKK or women's movement officials.

C. PROJECT PROGRESS

After being in operation for slightly more than seven months, the credit program had accomplished a lot. Almost 4000 villages throughout the country had received funds for small loans. The most active province was Central Java which had over 3,300 villages with income generating activities. East Java will have almost 200 villages with credit programs by March 1984. A total of nearly Rp. 200,000,000 has been budgeted for the East Java small loan program over its four years of operation.

Ann Carter started her six-village visit by meeting with a group of kabupaten level officials from the various departments which played a role in the integrated program headed by the bupati, the top official in the regency. She then proceeded to the kecamatan in which the first two villages were located. The camat, the official responsible for overall administration and operations at the Kecamatan or sub-agency level, and the BKKBN group leader briefed Ann on the program. To compare performance since the beginning of the credit project, she asked for and was provided with data on family planning program performance in the kabupaten, the kecamatan and on any of the villages having the integrated credit program (Tables 11-12). In addition, in each village she visited, she collected performance figures for the nutrition program over the past year (Table 13) to establish progress since September.

At the first village Ann Carter visited, the performance of the loan program was very impressive. The same was found in the other five villages as well. Capital had accumulated rapidly (more than doubled in one village). Loan repayments were virtually perfect. Only one case of inability to repay was reported, but the woman involved had requested and had been allowed to pay over an extended period and was doing so. Loan records were being maintained in a generally neat and orderly fashion.

When inquiring about who received loans, Ann was told that a large percentage of the PKK/P2K officials and kaders were among the first borrowers, often for the maximum amount. Loan applications were submitted to the women in charge of program operations at the kelompok level who, in turn, would pass them on to the head of the P2K. The decision to grant a loan was made by the three P2K officials and the lurah. In the six villages visited no case of a loan being turned down was reported.

The amounts of money being set aside for nutrition activities, administration and incentives differed greatly from village to village (Table 14). In several villages, no funds had been taken by the P2K leaders so that the capital would accumulate more rapidly. The money for the nutrition fund that had been spent was used for demonstration feeding at the weighing centers to educate the mothers in what to feed their balita and the proper way to prepare it so as to preserve nutritional value. This was in accordance with the guidelines from the provincial BKKBN office which stated that nutrition funds could be utilized for demonstration feeding, first aid, referral of seriously malnourished or supplementation of the diets of the severely malnourished. In fact, the exercise appeared to Ann to be a distribution program to encourage women to come to the weighing center each month.

From recent census figures, it was evident that the nutritional status of all children was not being monitored. In Sempu, for example, 430 children between 0 and 4 years were enumerated in March 1983, yet they used only 92 figures for the monthly nutrition report. Sumberoto had a similar case. The average participation rate in the project villagers ranged from 50 to 70 percent of the total number of under fives. The women who attended the weighing sessions appeared to be those who could afford the time and/or lived close to the weighing post. With the villages being so spread out, as much as six to seven kilometers from the village center, distance was often a concern, especially in the mountainous areas along the southern coast of East Java. There was little evidence that special attention was being paid to the children who were found either to be below

60 percent of standard (third degree malnutrition) or not gaining weight for three consecutive months.

The women who joined the P2K program were generally from the middle or upper socio-economic groups in the village. Several P2K officials explained that this was necessary at the early stages of the program to provide an example for others and reduce fear in the loan procedure. The number of households in the six villages ranged from approximately 1000 to almost 1700; the number women receiving loans ranged from 84 to 148. A high percentage of loans in all six villages were concentrated in or around the central kelompok:

- Sumboroto - 68.5% of loans in the central kelompok;
- Rejosari - 55.4% of loans in the central kelompok;
- 90.4% in two of four kelompok;
- Bandung rejo - 83.7% of loans in the central kelompok;
- Sidomulyo - 57.5% of loans in the central kelompok and
- 94.3% in two of four kelompok.

The further one got from the center, the fewer loans could be found. Some of the borrowers were over forty years of age but were considered good credit risks. In Rejosari, 27.7 percent of the borrowers were over 40 years old, the oldest being 55. In Nglaran, 36.4 percent of the borrowers were family planning acceptors, 12.8 percent had balita, 37.5 percent were both acceptors and had young children; 13.3 percent were neither. Few female heads of household received loans--four in Nglaran and three in Bandungrejo and none in the other four villages.

The women used the loans for a variety of activities--small business (production and marketing of such things as palm sugar, coconut oil, tempi), trading, handicrafts (e.g., bamboo mats and hat making), agriculture (purchase of fertilizer), livestock raising (rabbits, chicken, goats). Examples of how individual women utilized their loans and benefits derived are provided in Annex B. In the vast majority of cases the loan generated products which were sold in the village markets. No

examples were found of women who hired other community members to work with them to increase production, hence profits. If extra labor were required, it was recruited from within the family unit (parents, in-laws, children). Moreover, no one provided instructions in skills to those in the village without a trade or skill. The early loans were now repaid and second, even a few third loans were being made to P2K members. A significant percentage of new loans were being made to women who had borrowed money before.

Observing a weighing session, Ann spotted a malnourished child and interviewed the mother. It was not difficult to tell that she was poor. She had not taken out a loan since she had no productive skill or anything to invest in. She expressed an interest to study a skill if it were made available in the village.

Three of the six villages contained health posts, and there was some evidence that immunization and vitamin A distribution were being carried out with varying regularity. In Sidomulyo, a very active and innovative nurse-midwife had mapped the village according to nutritional status (i.e., number of first, second, and third degree malnutrition cases by kelompok). Immunization and vitamin A distribution were also much more regular in Sidomulyo than in the other five villages. Ann did not encounter any agricultural extension officers during her village visits. The most active and involved person in the integrated credit program was inevitably and often exclusively the PLKB who maintained surveillance over the family planning, nutrition activities as well as ensured that the loan program was being administered properly and records were being kept accurately.

At the conclusion of her field visits, Ann returned to Jakarta to debrief the BKKBN and USAID officials and to draft her report on whether the credit program was achieving its objectives, whether the second instalment should be made to the first eighteen villages, and finally, whether the program should be expanded on a larger scale in East Java and elsewhere in Indonesia.

TABLE 1

DATA ON THE REPUBLIC OF INDONESIA

Population (1981)		153,000,000	
Area (sq. km.)		144,000	
Percent of Population in Rural Areas		77.6	
Percent of Eligible Couples as Active Contraceptive Users (1982)		39	
		<u>1971</u> <u>1981</u>	
Birth Rate (per 1,000 population)		46 32	
Death Rate (per 1,000 population)		19 12.5	
Infant Mortality Rate (per 1,000 live births)			100+
Population Growth Rate (1981)			1.8%
Population Doubling Rate			39 years
Percent of Population below 15 Years Old (1980)			40.9
Average Income/Capita (1981)			\$520
Annual Inflation Rate			8%
Percent of Children Enrolled in Primary School (7-12 years old)			85
Agriculture's Share of GDP (1980)			26%
Agriculture's Share of Labor Force (1980)			58%
Literacy Rate (>10 years old) (1980)	Female	63.8	
	Male	80.5	
Life Expectancy	Female	57.2	
	Male	54.5	

TABLE 2

COMMUNICABLE DISEASES AS CAUSES OF DEATH

Respiratory Diseases	19.9%
Diarrheal Diseases	18.8%
Tuberculosis	8.4%
Tetanus	6.5%
Typhoid	3.3%
Other Communicable Diseases	3.0%
Other	<u>40.1%</u>
Total	<u><u>100.0%</u></u>

Source: Health Sector Paper, Jakarta: USAID
(January 1983).

TABLE 3

HEALTH COVERAGE OF VULNERABLES
BY PUBLIC HEALTH SERVICES (1980)

	Percent of Infants Attended	Children 1-4	Pregnant Women
All Indonesia	42%	10.8%	35%
Province with Highest Coverage	76% (East Java)	23% (East Java)	47% (Jakarta)
Province with Lowest Coverage	18% (South Kalimantan)	2% (Jakarta)	14.5% (South Kalimantan)

Source: Health Sector Paper, Jakarta: USAID (January 1983).

TABLE 4

INDONESIA AND EAST JAVA
CONTRACEPTIVE PREVALENCE RATES (1971-82)

	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Indonesia	1	2	6	9	13	17	19	23	27	31	36	39
East Java	-	4	12	20	28	31	34	40	50	57	60	65

Source: Health Sector Paper, Jakarta: USAID (January 1983).

TABLE 5

CALORIE AND PROTEIN INTAKE BY INCOME GROUP (1976)

Expenditure Group (Rp per Capita per Month)	% of Total Population	Per Capita Daily Consumption	
		Calories (Kcal's)	Protein (Grams)
Less than 2000	15.3	1381	22.2
2000-2999	23.8	1870	32.3
3000-3999	19.5	2034	40.2
4000-4999	13.6	2084	47.0
5000-5999	8.8	2280	52.7
Over 6000	19.0	2760	69.2
Average Intake/Capita	100.0	2064	43.3
Minimum Intake Requirement		1900	39.2
Average Availability		2231	

Source: Hutabarat: Proyeksi Distribusi Konsumsi Kalorie Menurut
Kelompok-kelompok Pendapatan di Indonesia Tahun 1990; Sekolah Pasca - Sarjana
IPB 1979.

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TABLE 6

PERCENTAGE OF PERSONS WHO ARE
ATTENDING SCHOOL BY AGE AND SEX
1971 AND 1980

Age	Male		Female	
	1971	1980	1971	1980
(1)	(2)	(3)	(4)	(5)
5	0.0	10.5	0.0	13.1
6	15.2	32.1	15.8	35.9
7	39.9	70.6	39.9	73.2
8	57.7	84.2	56.0	84.0
9	68.3	88.4	64.8	87.8
10	70.1	89.2	65.9	88.3
11	74.8	89.4	68.9	89.3
12	66.0	83.9	57.8	80.8
13	61.5	77.1	57.1	69.8
14	51.0	66.7	39.0	57.9
15	37.2	54.3	26.2	42.8
16	34.6	49.6	22.1	35.3
17	28.3	38.8	15.8	25.0
18	21.9	28.9	10.1	16.2
5 - 6	7.6	21.0	7.9	24.3
7 - 12	61.7	83.9	57.9	83.5
13 - 15	49.4	65.6	38.7	56.3
16 - 18	27.9	38.8	15.4	24.7
19 - 24	12.1	12.6	4.1	5.5
25 +	0.8	0.8	0.2	0.4
Not Stated	21.8	8.9	13.4	1.5
Total	21.2	28.4	16.4	24.1

Source: A Brief Note on 1980 Population Census Results.

TABLE 7

PERCENT DISTRIBUTIONS OF THE SURVEYED POPULATION AGED 15 AND OVER
BY AGE, SEX AND EDUCATIONAL ATTAINMENT, EAST JAVA, 1980

Age Group (1)	Percent Distribution by Educational Attainment					Totals (7)
	No Education (2)	Primary Grades 1-3 (3)	Primary Grades 4-6 (4)	Primary Complete (5)	Junior High + (6)	
<u>Both Sexes</u>						
15-19	13.0	15.2	23.4	22.2	26.2	100.0
20-34	16.6	15.2	22.1	25.7	20.4	100.0
25-29	22.9	16.2	21.0	23.6	16.3	100.0
30-34	30.5	16.3	18.7	20.1	14.4	100.0
35-39	42.5	16.7	14.0	16.5	10.4	100.0
40-44	54.2	16.7	10.5	11.4	7.1	100.0
45-49	60.7	16.6	8.9	9.4	4.4	100.0
50-54	64.5	14.7	7.5	9.5	3.7	100.0
55-60	67.5	13.6	5.7	10.1	3.1	100.0
60-64	78.0	10.3	4.3	5.7	1.7	100.0
65+	84.6	7.4	3.2	3.9	0.9	100.0
Totals	39.9	15.1	15.3	16.9	12.9	100.0
<u>Males</u>						
15-19	9.7	14.8	23.7	21.6	30.3	100.0
20-24	11.2	12.6	21.0	28.3	26.9	100.0
25-29	15.4	13.6	21.8	28.7	20.5	100.0
30-34	19.3	16.0	21.1	25.2	18.5	100.0
35-39	27.7	17.8	17.3	22.0	15.2	100.0
40-44	36.9	20.5	14.9	16.3	11.4	100.0
45-49	44.0	21.7	13.7	13.6	6.9	100.0
50-54	46.2	21.8	11.7	15.0	5.4	100.0
55-59	49.0	20.9	9.5	15.6	5.1	100.0
60-64	60.1	17.5	8.1	11.2	3.1	100.0
65+	69.4	14.2	6.3	8.2	1.9	100.0
Totals	28.2	16.8	17.5	20.7	16.8	100.0
<u>Females</u>						
15-19	16.3	15.6	23.2	22.9	22.1	100.0
20-24	21.0	17.4	23.0	23.6	15.1	100.0
25-29	30.0	18.7	20.3	18.7	12.3	100.0
30-34	41.0	16.6	16.5	15.3	10.6	100.0
35-39	56.1	15.5	10.9	11.3	6.0	100.0
40-44	69.6	13.4	6.6	7.1	3.3	100.0
45-49	76.3	11.7	4.3	5.5	2.1	100.0
50-54	83.5	7.5	3.1	3.9	2.0	100.0
55-59	86.7	6.1	1.8	4.4	1.0	100.0
60-64	92.1	4.7	1.3	1.3	0.6	100.0
65+	95.9	2.4	0.9	0.7	0.2	100.0
Totals	50.5	13.6	13.3	13.3	9.3	100.0

Source: 1980 Baseline Round of the East Java Population Survey: A Final Report (Chapel Hill: International Program of Laboratories for Population Statistics (POPLAB)), June 1982, p. 39.

TABLE 8

ECONOMICALLY-ACTIVE WOMEN CLASSIFIED BY AGE FOR
RURAL AND URBAN AREAS, 1971

Age	Economically Active Women (%)		
	Rural	Urban	Total
10-14	15.3	6.9	13.7
15-19	33.8	19.2	30.8
20-24	35.8	24.2	33.4
25-29	37.2	26.1	35.3
30-34	40.8	29.6	39.0
35-39	43.2	31.9	41.4
40-44	46.6	34.6	44.7
45-49	47.0	34.2	44.9
50-54	44.7	33.1	43.0
55-59	42.3	27.9	40.0
60-64	36.3	24.9	34.7
65-69	31.6	20.4	29.9
70-74	25.3	16.2	24.0
75+	16.8	9.3	15.4
Total	35.3	23.2	33.1

Source: Pudjiwati Sajogyo, "The Integration of Rural Women in National Development in Indonesia." Home Economics and Social Programmes Service, FAO, 1977, p. 16; from UNDP, "Rural Women's Participation in Development" Evaluation Study #3 (New York: June 1980), p. 137.

TABLE 9

PERCENT OF WORKING-TIME DEVOTED TO VARIOUS ACTIVITIES BY ADULT MEN AND WOMEN (AGED 15 AND OVER) IN A SAMPLE OF 20 HOUSEHOLDS, NOVEMBER 1972 - OCTOBER 1973

Activity	Percent of Total Working Hours	
	Men (N=31)	Women (N=33)
1. Childcare	4.2	9.3
2. Housework	0.9	9.4
3. Food Preparation	1.2	24.5
4. Firewood Collection	2.4	0.8
5. Shopping	0.5	2.5
6. Handicrafts	5.1	20.9
7. Food Preparation for Sale	3.9	3.7
8. Animal Care and Feeding	15.2	1.3
9. TGrading	8.3	12.9
10. Garden Cultivation (Own)	8.4	0.9
11. Sawah Cultivation (Own)	21.7	3.7
12. Gotong Royong	8.8	1.4
13. Wage or Exchange Labour (Agricultural)	3.4	6.9
14. Wage or Exchange Labour (Nonagricultural)	12.8	1.5
15. Other	3.2	0.3
Average hours of all work per day:	8.7	11.1
Average hours of directly productive work per day (No's, 6-15 only):	7.9	5.9

Source: UNDP, Rural Women's Participation in Development - Evaluation Study #3 (New York - June 1980) p. 132.

TABLE 10

FUNDING FOR
EAST JAVA SMALL LOAN PROGRAM

Year	Source	Number of Villages	Amount of Capital/Village (Rp)	Total (Rp)
1980-81	GOI	16	700,000	11,200,000
1981-82	GOI	21	6 x 300,000 4 x 450,000 11 x 900,000	13,500,000
1981-82	UNFPA	4	3 x 400,000 1 x 669,000	1,869,000
1982-83	GOI	18	6 x 500,000 12 x 1,000,000	15,000,000
1982-83	World Bank	9	1 x 637,291 4 x 700,000 1 x 757,000 1 x 824,000 2 x 2,000,000	9,018,291
1982-83	USAID	24	18 x 700,000	12,600,000
1983-84	ASEAN	8	8 x 3,856,625	30,853,000
1983-84	GOI	<u>75</u>	75 x 1,000,000	<u>75,000,000</u>
	Totals	195		<u>193,340,291</u>

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TABLE 11

CREDIT PROGRAM PERFORMANCE (AS OF END APRIL 1983)

	<u>Villages</u>					
	<u>Rejosari</u>	<u>Sumberoto</u>	<u>Bandungrejo</u>	<u>Sidomulyo</u>	<u>Nglaran</u>	<u>Sempu</u>
Total Number of Loans	177	130	104	113	209	120
Number of Individual Borrowers	137	115	89	86	148	84
Average Amount of Loan (Rp)	14,070	13,908	17,202	21,858	12,774	18,900
Outstanding Loans (Rp)	1,216,545	1,035,700	1,061,000	1,314,000	1,255,900	1,113,450
Current Value (Rp)	1,316,940	1,145,125	1,161,975	1,416,500	1,353,900	1,255,550
Cumulative Amount Loaned (Rp)	2,490,400	1,808,000	1,789,000	2,470,000	2,669,800	2,268,000
Inc. in Capital Fund (Rp)	569,440	445,125	461,875	717,500	653,900	555,550
(%)*	76.2	63.6	66.0	102.5	93.4	79.4

*All villages received initial capital of Rp. 700,000 except for Rejosari which received an additional Rp. 47,500 from Kabupaten BKKBN funds.

TABLE 12

KABUPATEN, KACAMATAN, VILLAGE FAMILY PLANNING PROGRAM PERFORMANCE
MARCH 1982 - MARCH 1983

	<u>Kabupaten Malang</u>	<u>Kecamatan Bantur</u>	<u>Village Sumboroto</u>	<u>Kabupaten Pacitan</u>	<u>Kecamatan Village</u>	<u>Village Nglaran</u>
March 1982						
CU*	57.1	72.3	87.4	77.6	69.2	N/A
IUD**	37.2	20.7	83.4	96.2	98.6	N/A
April 1982						
CU	50.9	75.5	87.3	N/A	N/A	N/A
IUD	36.1	20.0	83.7	N/A	N/A	N/A
May 1982						
CU	54.5	78.7	86.8	N/A	N/A	N/A
IUD	39.1	19.5	83.7	N/A	N/A	N/A
June 1982						
CU	56.6	56.8	87.1	N/A	N/A	N/A
IUD	37.9	27.2	83.8	N/A	N/A	N/A
July 1982						
CU	56.9	72.0	86.5	76.3	68.3	N/A
IUD	37.7	21.6	83.9	96.3	98.8	N/A
August 1982						
CU	50.8	65.8	87.0	76.2	68.2	N/A
IUD	38.9	23.5	84.0	96.3	98.8	N/A
September 1982						
CU	52.9	80.7	88.2	76.7	68.4	73.2
IUD	37.3	19.4	84.3	96.5	98.8	99.4
October 1982						
CU	N/A	N/A	91.3	N/A	N/A	73.4
IUD	N/A	N/A	85.0	N/A	N/A	99.4
November 1982						
CU	59.5	82.9	93.0	76.8	68.5	73.9
IUD	41.8	24.7	86.1	96.3	98.8	99.4
December 1982						
CU	62.6	88.7	93.8	77.8	59.3	77.3
IUD	42.3	27.9	86.8	96.4	98.9	99.4
January 1983						
CU	61.9	86.4	93.3	79.1	72.0	77.0
IUD	42.3	27.9	86.8	96.4	98.9	99.4
February 1983						
CU	63.5	88.1	93.2	79.2	72.3	77.1
IUD	41.6	27.4	86.8	95.6	98.9	99.2
March 1983						
CU	61.9	86.8	93.4	80.4	75.4	89.1
IUD	43.1	27.8	87.0	96.4	98.7	99.3

*CU = Percent of Eligible Currently Using Contraception.

**IUD = Percent of Current Users Using IUD as Method of Contraception.

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TABLE 13

NUTRITION PROGRAM PERFORMANCE - P2K VILLAGES

	VILLAGES					
	<u>Rejosari</u>	<u>Kab. Malang Sumberoto</u>	<u>Bandungrejo</u>	<u>Kab. Pacitan Sidomulyo</u>	<u>Nglaran</u>	<u>Sempu</u>
<u>1982</u>						
Baseline (April 1982)						
W/N*	85.8	23.9	62.6	98.4	51.0	53.1
G/W**	50.3	50.0	42.6	96.8	26.7	37.2
September						
W/N	N/A	N/A	N/A	60.3	33.1	56.3
G/W	N/A	N/A	N/A	58.0	76.0	39.4
October						
W/N	59.2	21.3	45.2	60.0	36.5	52.6
G/W	59.9	35.2	70.8	63.9	66.7	42.8
November						
W/N	57.4	23.0	44.9	59.3	33.1	45.3
G/W	63.0	39.7	70.3	64.6	76.0	49.3
December						
W/N	64.4	21.1	37.1	66.6	39.4	44.1
G/W	56.9	33.0	89.6	51.0	70.5	75.2
<u>1983</u>						
January						
W/N	25.0	18.6	37.2	43.2	69.9	56.9
G/W	25.0	44.6	50.2	64.5	72.5	51.8
February						
W/N	27.1	19.9	39.7	42.7	68.5	55.9
G/W	27.1	34.3	50.8	62.4	74.5	53.3
March						
W/N	17.1	25.9	45.9	55.9	70.8	56.9
G/W	17.2	34.7	52.0	54.9	74.1	58.9

*W/N = Participation rate (number of children weighed over total number of under fives reported in village).

**G/W = nutritional status (number of children gaining weight over total number of children weighed).

Note #1: Figures for Kabupaten Malang (March 1983) are: W/N = 39.0; G/W = 41.1. Figures for Kabupaten Pacitan (April 1983) are: W/N = 46.0; G/W = 60.0.

#2: Denominators for several villages (Rejosari, Sidomulyo) revised upwards in 1983 causing drop in participation rates: the reverse occurred in Nglaran where denominator was reduced, thus raising participation rates.

TABLE 14

USE OF SERVICE CHARGE (RPS)

	VILLAGES					
	<u>Rejosari</u>	<u>Sumberoto</u>	<u>Bandungrejo*</u>	<u>Sidomulyo</u>	<u>Nglaran</u>	<u>Sempu**</u>
<u>Nutrition Fund</u>						
Percent	50	50	15	60	60	--
Utilized	20,000	17,550	36,650	10,000	--	12,900
In Account	149,080	120,100	7,995	249,800	227,310	--
<u>Administration Fund</u>						
Percent	35	35	35	25	25	--
Utilized	10,350	65,200	69,375	37,750	11,600	35,700
In Account	108,006	31,155	34,330	70,500	83,113	--
<u>P2K Official Incentive Fund</u>						
Percent	15	15	45	15	15	15
Utilized	--	54,000	--	55,575	54,500	30,000
In Account	50,724	(12,705)	133,335	9,375	2,327	26,445
<u>Dues</u>						
Per Meeting (Rupiah)	25	25	25	50	--	--
Total	16,225	11,925	3,700	37,,650	--	--
<u>Compulsory Savings</u>						
Total	299,210	233,100	215,350	366,000	356,850	281,100
Withdrawn	48,500	--	--	--	--	2,000

*Set aside 5% for charity; nothing utilized and Rp. 14,815 in account.

**Set no percentage for Nutrition and Administration Fund--together Rp. 319,555 are in account.

ANNEX A

P2K LOAN REPAYMENT TABLES

1. LOANS UNDER RP. 10,000--THREE MONTHS

Amount of Loan	Admin. Cost <u>FIRST MONTH</u>				Compulsory Savings <u>SECOND MONTH</u>			
	<u>1st Week</u>	<u>2nd Week</u>	<u>3rd Week</u>	<u>4th Week</u>	<u>1st Week</u>	<u>2nd Week</u>	<u>3rd Week</u>	<u>4th Week</u>
1,000	100	100	100	100	100	100	100	100
2,000	200	200	200	200	200	200	200	200
3,000	300	300	300	300	300	300	300	300
4,000	400	400	400	400	400	400	400	400
5,000	500	500	500	500	500	500	500	500
6,000	600	600	600	600	600	600	600	600
7,000	700	700	700	700	700	700	700	700
8,000	800	800	800	800	800	800	800	800
9,000	900	900	900	900	900	900	900	900
10,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

Amount of Loan	<u>Principal Repay.</u> <u>THIRD MONTH</u>				<u>TOTAL</u>
	<u>1st Week</u>	<u>2nd Week</u>	<u>3rd Week</u>	<u>4th Week</u>	
1,000	100	100	100	100	1,200
2,000	200	200	200	200	2,400
3,000	300	300	300	300	3,600
4,000	400	400	400	400	4,800
5,000	500	500	500	500	6,000
6,000	600	600	600	600	7,200
7,000	700	700	700	700	8,400
8,000	800	800	800	800	9,600
9,000	900	900	900	900	10,800
10,000	1,000	1,000	1,000	1,000	12,000

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ANNEX A

2. LOANS OVER RP. 10,000--SEVEN MONTHS

<u>Amount of Loan</u>	<u>Admin. Cost</u>		<u>Compulsory Savings</u>		<u>Principal Repay.</u>		<u>Principal Repay.</u>	
	<u>FIRST MONTH</u>		<u>SECOND MONTH</u>		<u>THIRD MONTH</u>		<u>FOURTH MONTH</u>	
	<u>1st</u>	<u>2nd</u>	<u>1st</u>	<u>2nd</u>	<u>1st</u>	<u>2nd</u>	<u>1st</u>	<u>2nd</u>
15,000	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
20,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
25,000	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
30,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
35,000	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500
40,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
45,000	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
50,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000

<u>Amount of Loan</u>	<u>Principal Repay.</u>		<u>Principal Repay.</u>		<u>Principal Repay.</u>		<u>TOTAL</u>
	<u>FIFTH MONTH</u>		<u>SIXTH MONTH</u>		<u>SEVENTH MONTH</u>		
	<u>1st</u>	<u>2nd</u>	<u>1st</u>	<u>2nd</u>	<u>1st</u>	<u>2nd</u>	
15,000	1,500	1,500	1,500	1,500	1,500	1,500	21,000
20,000	2,000	2,000	2,000	2,000	2,000	2,000	28,000
25,000	2,500	2,500	2,500	2,500	2,500	2,500	35,000
30,000	3,000	3,000	3,000	3,000	3,000	3,000	42,000
35,000	3,500	3,500	3,500	3,500	3,500	3,500	49,000
40,000	4,000	4,000	4,000	4,000	4,000	4,000	56,000
45,000	4,500	4,500	4,500	4,500	4,500	4,500	63,000
50,000	5,000	5,000	5,000	5,000	5,000	5,000	70,000

ANNEX B

EXAMPLES OF WOMEN TAKING LOANS FROM
P2K INCOME-GENERATING PROGRAM IN EAST JAVA

<u>Name</u>	<u>Village</u>	<u>Amount (Rp)</u>	<u>Activity</u>	<u>Benefits</u>
Tbu Kus (Head of PKK/P2K)	Rejosari	50,000	Rabbit Raising	Purchased 20 rabbits at Rp. 500; spent several thousand more on cages and medicine to protect against skin disease; her children provided grass daily; got immunization from government paravet in nearby town; within five months had 120 rabbits and sold 100 large ones at Rp. 1,000.
Ibu Sryant	Sumboroto	10,000	Shop Owner	Increased her stock so that daily sales increased from Rp. 1,000 to Rp. 1,500 each day; wanted second loan of Rp. 30,000 to add fruit to her stock.
Ibu Kaniem	Sumboroto	10,000	Palm Sugar Processing/ Selling	Previously had to deal with <u>ijon</u> (broker) who provided capital and bought blocks of processed sugar at Rp. 250/Kg.; with loan there was no need to deal with <u>ijon</u> and she can now sell sugar at Rp. 500/hg. in market.
Ibu Suhinah	Sumboroto	20,000	Palm Sugar Processing/ Selling	After taking loan no longer works through <u>ijon</u> and has increased production by an additional 40%.
Ibu Yatini	Sumboroto	25,000	Chicken Raising	Bought 50 chickens at Rp. 500; none vaccinated and all died; repaid loan from husband's income.

ANNEX B (continued)

<u>Name</u>	<u>Village</u>	<u>Amount (Rp)</u>	<u>Activity</u>	<u>Benefits</u>
Ibu Misiah	Sumboroto	15,000	Dress	Bought 16 pieces of material to make children's clothes, 1/4 meter in size, for total of Rp. 8,125; other supplies (thread, buttons, etc.) cost Rp. 4,875; made 13 children's garments which sold at Rp. 1,500 at the end of five-month period.
Ibu Jumiati	Sumboroto	15,000	Bamboo Mat Maker	Was able to purchase twice as much raw material; thus she had to make only one trip to market each week rather than two as before; already working at optimal level so that she has been unable to increase her production.
Ibu Kati	Sidomulyo	20,000	Tempe Production	Used to produce only palm sugar; continues that and has begun to produce tempe (fermented soybean) when she got loan; she processes 10 kg. of soy (at Rp. 400/kg.) at a time--this produces 110 packets of temps which she sells at Rp. 50; she does this three times a week; she recently took a second loan for Rp. 25,000 and increased tempe production by 40%; she will use profits to educate her two children (pay for clothes and books).
Ibu Tamu	Nglaran	15,000	Coconut Oil Production	She purchases coconuts at Rp. 80; needs five coconuts to produce one liter of coconut oil which she sells for Rp. 500p in addition, she sells byproducts for another Rp. 300; loan has enabled here to double production and income has increased from Rp. 1,000-1,500/market day to Rp. 2,000-2,500/market day.

ANNEX B (continued)

<u>Name</u>	<u>Village</u>	<u>Amount (Rp)</u>	<u>Activity</u>	<u>Benefits</u>
Ibu Parti	Nglaran	10,000	Bamboo Hat Maker	She used Rp. 8,000 to purchase a goat for raising and Rp. 2,000 to purchase more hatmaking material so that she has to go to the market less frequently; no increase in production since working at optimal level; she sells ten hats every week (two markets) but could sell up to 50 more if production could be increased.

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PROPOSED WORKBOOK

Developed by the Bureau of Applied
Research in Anthropology,

University of Arizona

EXPLANATION OF PROPOSED WORKBOOK

The Bureau of Applied Research in Anthropology at the University of Arizona has proposed a new training workbook for professionals working in development. The purpose of this workbook is to provide you with a set of guidelines for locating, generating, and incorporating information on gender-related issues into development projects. The on-the-job focus of this workbook is designed to help you to:

- o Decide what QUESTIONS to ask and HOW to ask them
- o Valuable data or reports on gender-related issues which may be critical to development activities are seldom collected in a way which makes them easy to use. The framework in the workbook gives you a systematic way to sort through and organize this information in terms of how it relates to your projects
- o Know HOW and WHERE to get ANSWERS to these questions
- o The workbook identifies useful sources of information, and presents guidelines for collecting information about those women's issues which are critical to development planning

As a potential user of the proposed workbook, your comments would be very useful in helping us to determine its probable merits. The attached materials will give you an overview of the workbook as it is currently planned, and an opportunity to suggest changes which you think will make it more useful. The materials include:

- o A descriptive explanation of the workbook
- o An outline of the workbook including sample questions from Part 2 of the Workbook
- o An evaluation questionnaire

OVERVIEW OF WORKBOOK

I. BACKGROUND INFORMATION

In the past decade, development professionals have increasingly recognized the importance of targeting women as participants in and beneficiaries of project planning. This section would provide a brief overview of the growth of interest in gender-relevant issues in development policy. In 1974, the Agency for International Development created a Women in Development (WID) Office. To increase the understanding of the role of this office, the workbook would:

- o Present the AID/WID policy statement
- o Provide an AID/WID table of organization
- o Describe a Mission WID officer's responsibilities

II. SYSTEMATIC QUESTIONS

The workbook would be designed to provide you with a set of key questions and guidelines for assessing women's roles in your country and in individual projects. The questions will be organized into three sections, described below, which can serve as a checklist to help you integrate gender-related issues into development planning. Examples of key questions will be provided in the workbook outline (Pages-- --) for each section of Part 2. These questions will be marked with an asterisk(*).

A. QUESTIONS FOR A COUNTY/REGIONAL SPECIFIC ANALYSIS OF WOMEN

This section contains questions which will enable you to generate an accurate description and analysis of the condition of women in your country. Checklist questions will focus on participation of women in the economy, their domestic roles, and training or education that they are receiving. Guidelines would be formulated to address regional, ethnic,

rural-urban, and socio-economic differences among women. The knowledge created by systematically researching these questions would provide you with a data base for integrating women's issues into development planning.

B. QUESTIONS FOR A PROJECT ANALYSIS

This section would provide questions to help you 1) plan projects with gender-related issues in mind and; 2) review individual projects to determine the impact they are having on women. These checklist questions focus on women's issues and are organized to parallel traditional project planning methods. Consequently, you can use the entire set of questions if you are designing a new program, or just look at those questions which apply to a particular stage of a project with which you are involved.

To make it easier to merge women's issues into the development planning process, the questions checklist will be based on existing requirements for proposal writing and reporting.

C. QUESTIONS FOR A PROGRAM ANALYSIS

It is important to consider the cumulative impact of all the development projects in a country. Checklist questions for this workbook section would help you to: 1) evaluate the effects of the national development program on women and; 2) identify women's needs that are not being met under the existing program.

III. SOURCES OF INFORMATION ON WOMEN

This workbook section would enable you to quickly locate resources on women that can help to provide information for answering the questions in Part 2. In so doing, it will be useful for identifying areas where primary research is needed.

Our concern throughout this workbook is to make the materials as comprehensive as possible, yet flexible enough to allow you to select only what you need when you need it. Questions have been selected from a variety of

sources, modified and compiled into a tool which encompasses issues applicable to nearly all projects (i.e., legal status), and issues which apply only to specialized situations (i.e., agricultural development).

III. SOURCES OF INFORMATION ON WOMEN

A. DOCUMENTS

1. Research Information on Women in Development
 - a. Texts and Publications
 - b. Relevant Journals
 - c. Bibliographies
2. International Development Organization Reports on Women
 - a. Sources (official reports, publications and newsletters)
 - b. Unpublished Documents Available by Country (Limited Release Project Reports, routine debriefings, etc.)

B. CONTACTS

1. Formal
 - a. Contacts with Local Women's Organizations
 - b. Contacts with Expatriate and Local Researchers
2. Informal Contacts with Local Inhabitants

C. OTHER RESOURCES (THE MEDIA, LITERATURE AND THE ARTS)

D. ANNOTATED READING LIST ON WOMEN IN DEVELOPMENT

E. ABBREVIATED WID DIRECTORY

REFERENCES

Charlton, Sue Ellen

1984 Women in Third World Development. Westview Press, Boulder, CO.

Dinnerstein, Myra

n.d. "Possible Questions and Methodological Considerations for a Survey on Women in Rural Development." Women's Studies, University of Arizona.

Pezullo, Caroline

1982 Women in Development: Guidelines for Programs and Project Planning. Prepared by CEPAL. United National Publications, Santiago de Chile.

WID WORKBOOK EVALUATION

Prepared by
Bureau of Applied Research
In Anthropology
University of Arizona

Place the
Numbered
Sticker Here

CONFIDENTIAL

1. The purpose and structure of the proposed workbook are clear. _____ Yes
_____ No

In the context of your job setting, what is the importance of the following sections in the proposed workbook?

	<u>Very Important</u>	<u>Important</u>	<u>Undecided</u>	<u>Unimportant</u>	<u>Very Unimportant</u>
2. Background information on women in development.	5	4	3	2	1
3. Systematic questions for conducting a country-specific analysis of women.	5	4	3	2	1
4. Systematic questions for project analysis.	5	4	3	2	1
5. Systematic questions for program analysis.	5	4	3	2	1
6. Sources of information on women in the country in which you are working.	5	4	3	2	1

Overall Usefulness of the Workbook

	<u>Strongly Agree</u>	<u>Agree</u>	<u>Undecided</u>	<u>Disagree</u>	<u>Strongly Disagree</u>
7. The proposed workbook would be useful as a training handbook.	5	4	3	2	1
8. The proposed workbook would be a useful tool for my job.	5	4	3	2	1

A MICRO-COMPUTER
SIMULATION MODEL

Prepared by Gary Howe and
Steven Hawkins for USAID
Sina'a, Yemen Arab Republic,
Bonnie Stewart, consultant

Funded by: Near East Technical Support/
Social Analysis and Rural Development
Division (NE/TECH/SARD) and the Bureau for
Program and Policy Coordination/
Office of Women in Development (PPC/WID)

The Women In Yemen presentation was written and programmed by Steven A. Hawkins. The program was developed from original concepts by Gary Howe, Steven A. Hawkins, and the staff of USAID, Sana'a, Yemen Arab Republic.

The program was developed by:

The Futures Group
1111 14th Street N.W.
Washington, DC 20005

Women In Yemen was developed under contract to USAID Near East Tech division and the Office of Women In Development. For further information please contact:

Gerry Donnelly - USAID/Sana'a, Yemen Arab Republic - 231 732

or

Kay Davies, Director - Office of Women In Development
USAID/Washington - 632 3992

1/2

INTRODUCTION

The RAPiD presentation showed a grim picture of possible futures for the Yemen Arab Republic. This presentation emphasizes a resource that gives considerable hope that the future need not be so bleak.

This resource is the productive labor of the women of Yemen. The presentation will suggest ways in which the resource can be used to increase Yemen's labor potential and reduce the outward flow of scarce foreign exchange. This presentation deals specifically with three areas of the economy; agriculture, education, and health care.

AGRICULTURE

Over the 8 year period from 1975 to 1982, substantial changes occurred in the foreign exchange picture of Yemen. Total imports, shown in the solid line number 1, rose from less than 2 billion Yemeni Riials in 1975 to over 8 billion in 1980. At the end of the period they seem to have levelled off at around 7 billion riials.

Exports, shown in the heavy dashed line number 2, also rose between 1978 and 1982 but amounted to only 217 million riials at their peak in 1981. They fell to half that level, 113 million riials, in 1982.

But Yemen does not depend on the export of materials as a major source of foreign exchange. By far the greatest export of Yemen is labor. As a result, the money that workers in other countries send back (remittances) is the greatest source of foreign exchange. These remittances, shown in the dotted line number 3, rose from 2.4 billion riials in 1975 to a peak of 6.4 billion in 1977. As late as 1979 they were still greater than or nearly equal to the level of imports.

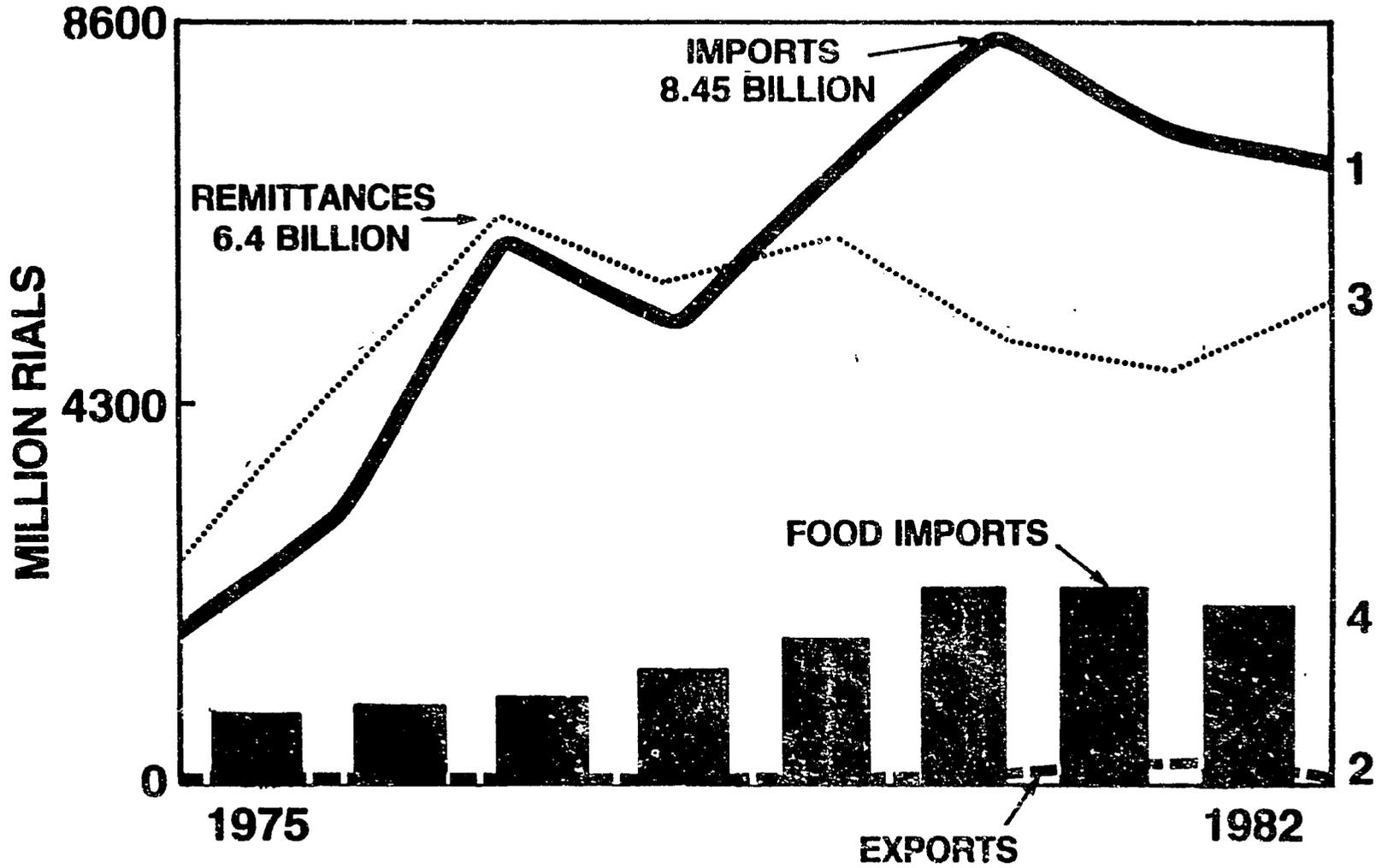
However, in the years after 1980 imports continued to rise for two years after remittances peaked. It appears that although both imports and remittances have stabilized somewhat, they have done so at levels that put imports about 1 1/2 billion riials higher than remittances.

High levels of imports are not unusual for a country with economic growth as intense as Yemen's. Typically these imports include materials and equipment for modernization and must be considered a wise investment in the future. But sometimes significant amounts of the import bill are taken up by food. This may restrict the pace of modernization because it absorbs large amounts of money that could be invested in development.

As shown in the solid bars, it seems that in Yemen food imports are a substantial portion of overall imports. In fact, they appear to be about the same size as the foreign exchange gap.

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IMPORTS AND EXPORTS

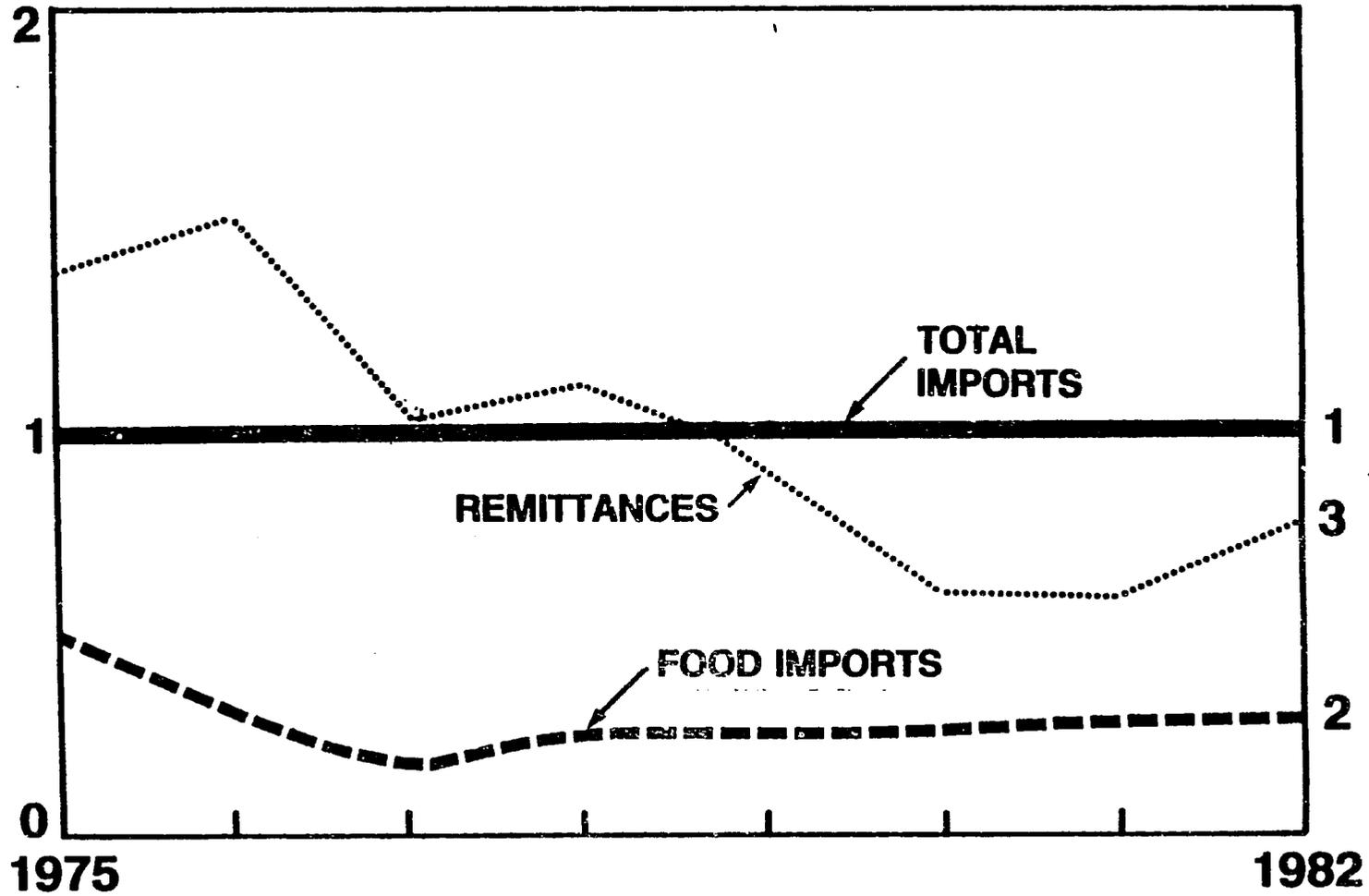


159

This next display is designed to show a little more clearly the proportional relationship between overall imports and food imports. Here, the level of overall imports is assigned the value 1 and is displayed as the solid line number 1 across the middle of the page. Other values will be shown in proportion to the overall import level. Food imports are shown by the heavy dashed line number 2 in the lower portion of the page. On this scale you can clearly see that in recent years food imports seem to be constant at about 30 percent of overall imports.

On the same scale, the dotted line number 3 shows that remittances have dropped from as much as 1 1/2 times imports to a value in recent years of only 70 or 80 percent of the import level.

PROPORTION OF IMPORTS



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This display shows what foods made up these food imports in 1978 and again in 1982. Here you see food items divided into seven groups. The numbers across the middle of the display are the level of 1978 and 1982 imports in millions of rials. You can see that for all groups except eggs the level of imports increased significantly.

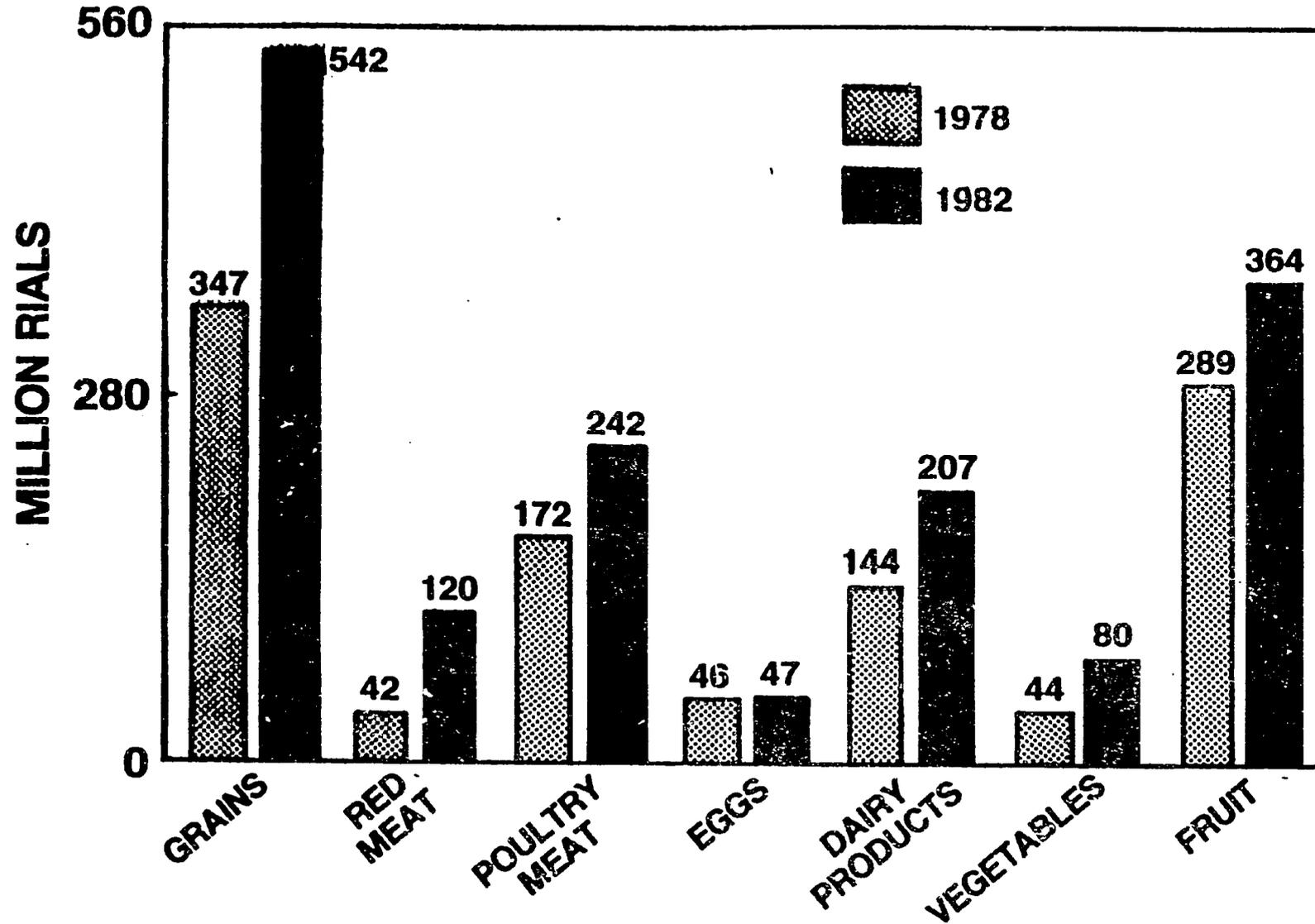
Overall agricultural production within Yemen during the same period did not decline, however. In fact, the total value of agricultural products over the period increased from 3 billion rials to 3.8 billion; over 25 percent. If agricultural production has been increasing and food imports also increasing it must mean that increases in production have simply not been able to keep up with increases in demand. If this is the case, then there must be something holding production back or slowing its growth. What could it be?

There are, of course, a large number of items that could limit the growth of agricultural production. Four items present themselves at first glance; land, water, money, and labor. In fact, these factors are very much interdependent and it is hard to separate the impact of one from the others. With that said, however, it must be recognized that there is evidence that labor is probably the major limitation.

One indication of this is that when you deduct for changes in prices you find that the rate of increase in domestic agricultural production has been almost exactly the same as the rate of increase in the laborforce; about 2 to 3 percent per year. In addition, the large number of rural workers that have left for higher paying jobs seems to indicate strongly that Yemeni agriculture is being limited by the availability of productive labor.

It must also be pointed out that recent drought conditions that have affected agricultural production occurred after the period examined here and represent an additional, more temporary limit. This means that when weather conditions change this limit will probably be removed but the barrier presented by the labor shortage will probably continue.

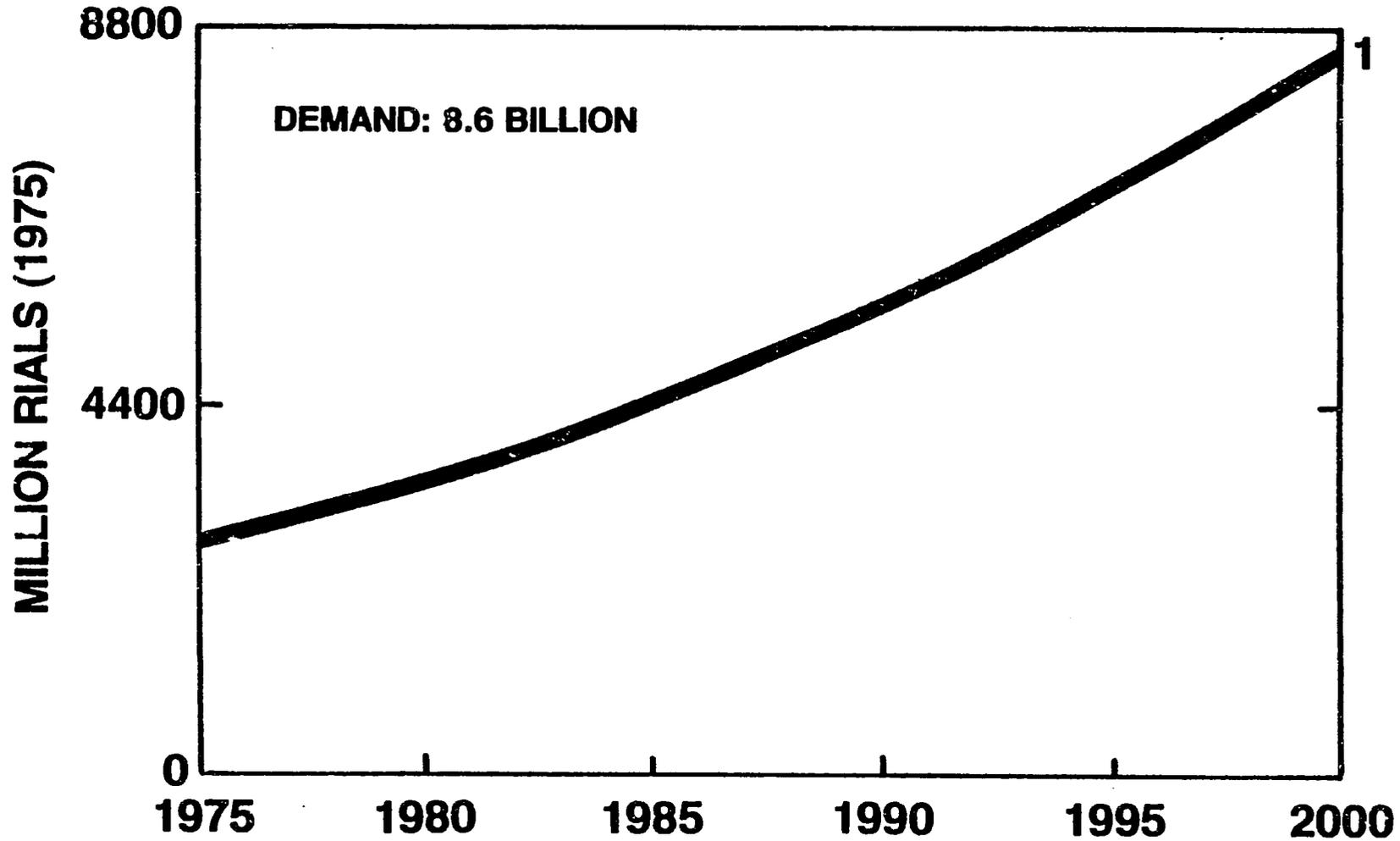
FOOD IMPORTS



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With this assumption in mind, we can make some projections of food supply and demand to the year 2000. First, we will project food demand. Historically, food demand has been about 35 percent of the total Gross National Product. If we project growth in Gross National Product at an annual 4 1/2 percent over the period and food demand to continue at 35 percent of GNP we arrive at total food demand, as shown in the solid line, rising from about 2.8 billion rials in 1975 to 8.6 billion in the year 2000. Please note that this projection is in constant 1975 rials.

FOOD DEMAND



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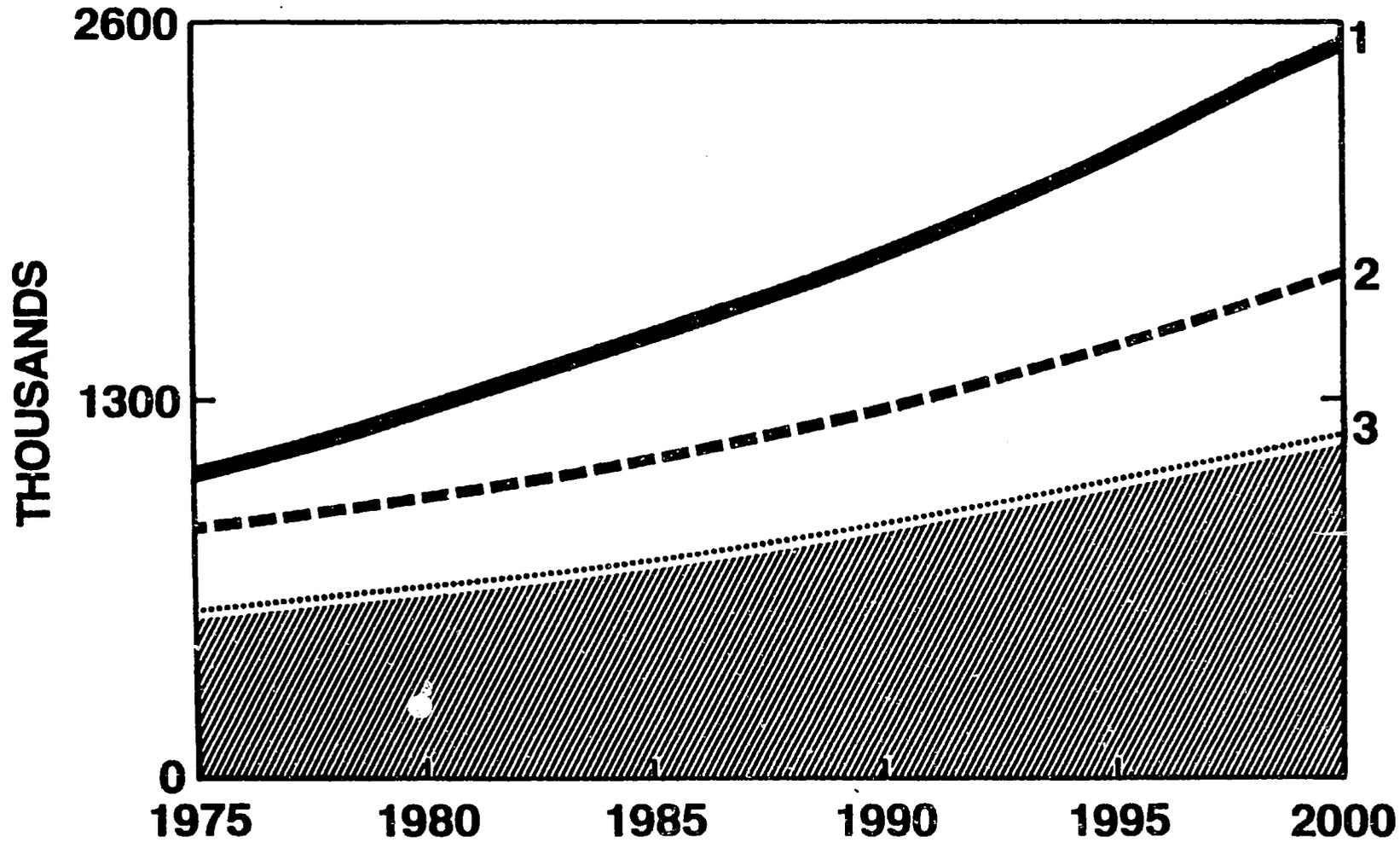
Projecting labor supply over the same period we see that the total number of available rural males between the ages of 15 and 59, as shown in solid line number 1, will rise from 1 million in 1975 to around 2 1/2 million in the year 2000.

However, about 50 percent of the 15 to 34 year old males leave the rural area to work in the cities or other countries. This leaves only those shown in heavy dashed line number 2 as the rural domestic laborforce.

Of this male rural domestic laborforce, only 69 percent work in agriculture. This is shown in dotted line number 3 and the shaded area at the bottom of the display. This remaining laborforce only grows from around 570 thousand in 1975 to 1.2 million in the year 2000. This increase of around 2 to 3 percent per year must be compared to the food demand curve which was increasing at 4 1/2 percent per year.

Some have pointed out that many of the men that have left for jobs in other countries may return to Yemen because of the discovery of oil there. Although this may be true, these men will still be returning to construction jobs and positions in the cities created by the oil industry. Their labor would still remain out of the agriculture sector.

MALE AGRICULTURAL LABOR FORCE



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This next display places the food supply and demand curves on the same scale. This scale takes all projected values as measured in constant 1975 Riials. Both food demand, as shown in solid line number 1, and food supply, as shown in heavy dashed line number 2, are shown in constant 1975 units. It also shows food imports as the shaded area between the food demand and food supply lines.

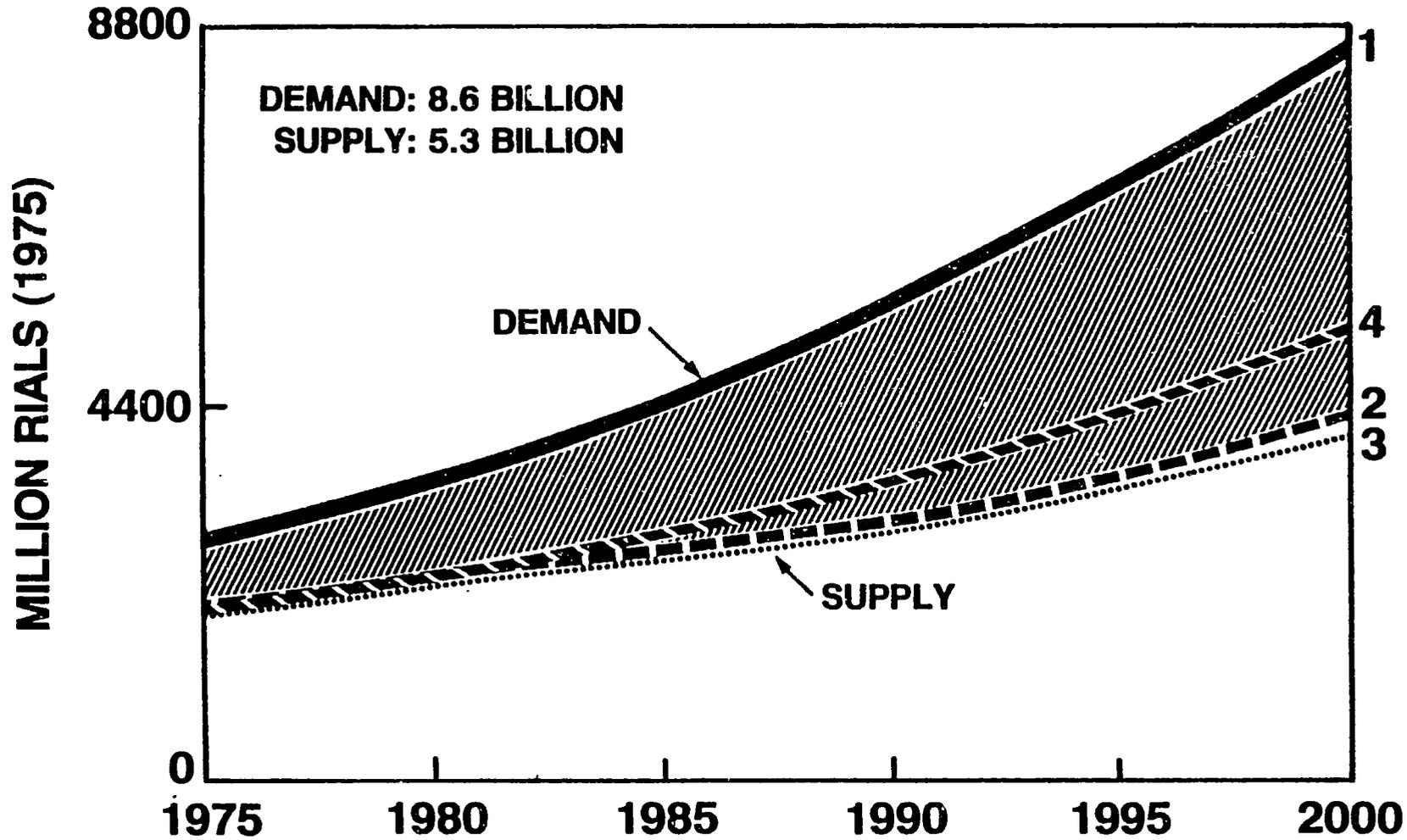
In 1975, Yemeni agricultural production satisfied about 3 billion or around 70 percent of the total food demand of 3.8 billion riials. Food imports in 1975 were about 800 million riials. In this display you can see that by the year 2000 food demand can be expected to rise to 8.6 billion riials while food supply can only be expected to rise to 4.2 billion. This means that food imports would rise from 800 million riials to 4.4 billion; more than five times the level of 1975 food imports. This also represents a drop in food self-sufficiency from more than 70 percent in 1975 to less than 50 percent in the year 2000.

It is initially surprising, but if we include the female laborforce in the food supply projection there is nearly no impact on this initial projection. The food supply projection shown in dotted line number 3 is nearly identical to that shown in line number 2. This is because this display is only affected by differences in growth rates. The female laborforce is growing at about the same 2 to 3 percent per year level as the male laborforce and so the projection based on this growth rate is about the same.

One of the obvious weaknesses of the projections shown in lines number 2 and 3 is that they assume that the productivity of labor hours is constant over the projection period. As a general rule, this is not the case. With education and extension programs, labor hours tend to become more productive over time.

The diagonal dashed line number 4 shows a food supply projection that includes a typical productivity increase due to the present extension and education programs. In this projection it is assumed that the productivity of labor hours increases by 2 1/2 percent per year starting now, in 1985. Although this does raise food production in the year 2000 by over 1 billion riials to a value of 5.3 billion riials, the required food imports are still over 4 times their 1975 value.

FOOD DEMAND AND SUPPLY



12/11

To investigate ways in which domestic agricultural production might be increased we found it useful to look at a 'typical' agricultural family. This family has 8 people; two older adults, two younger adults, two adolescents, and two young children. There is one male and one female in each category. However, one of the males, in this case the younger adult, has gone off to work in the city or another country. This leaves only the seven people shown.

Next to each person is a clock on which will be shown the way each person divides his or her work time. The printed percentage values beside each clock are the percent of work time spent in agriculture.

For the older male, the bulk of the day is spent in agricultural activities as shown in the heavy diagonal striped area. Only about 10 percent of his time, shown in the solid area, is taken up by marketing or other non-agricultural work.

For the adolescent male, about half of his time, shown by the diagonal stripes, is spent in agricultural activities. The remaining half, shown in the solid area, is taken up primarily by school.

For the youngest male, only perhaps 10 percent of his time, the striped area, is in productive agriculture. The bulk of his time, shown in the solid area, is taken up either in school or simply in playing and growing up.

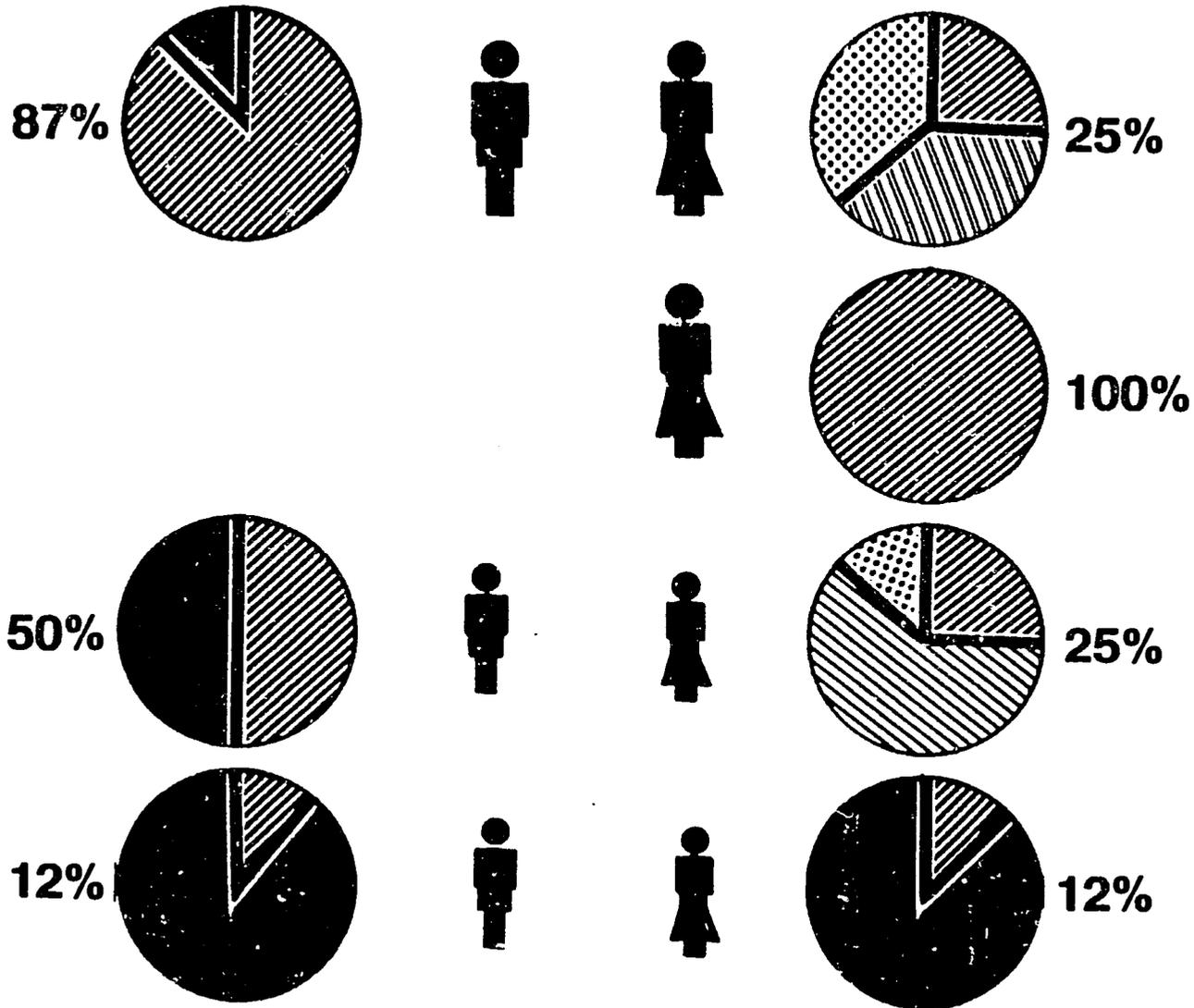
On the other side of the family we begin with the older female. She spends perhaps 25 percent of her time (the heavy diagonal striped area) in agriculture, usually not in the field, but around the home in poultry and cattle raising. The bulk of her time is taken up either in fuelwood collection (the diagonal double-striped area) or in domestic tasks such as food preparation (the dotted area).

The younger adult female spends essentially all of her productive time in agriculture, mostly in field activities.

The adolescent female is able to spend only about 25 percent of her time (the heavy striped area) in agriculture because the bulk of her time is taken up in water collection (the lighter striped area). She also has some domestic responsibilities (the dotted area).

The youngest girl spends her time in a manner very similar to her little brother.

THE AGRICULTURAL HOUSEHOLD



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Looking at these time allocations, the important question is, "Is there waste and low productivity time that could be converted to agriculture?". On the male side, the activities seemed to be mostly agriculture, school, or other activities that are either of fairly high productivity or are investments in increasing future productivity.

On the female side, however, it appears that there may be some opportunity for improvement. Three types of low productivity time were shown on the female side; fuelwood collection, water collection, and domestic activities.

Two technological changes can have a significant impact on these three activities. First, it has been estimated that village level water supply might reduce water collection time from around 5 hours to around 1 hour per day per household. Second, it is clear that use of commercial fuels would eliminate fuelwood collection time entirely. Commercial fuels also reduce the time required for domestic tasks significantly. Some estimates are that food preparation time can be reduced from 4 hours per day to only 1.

In this display is shown the possible impact that these two technological changes might have on the ability of these women to work in agriculture.

The older female might have as much as 90 percent of her time (the striped area) available for productive agriculture such as poultry raising and dairy activities. This is because her requirement for fuelwood collection has disappeared completely and only 10 percent of her time (the dotted area) is now required for food preparation.

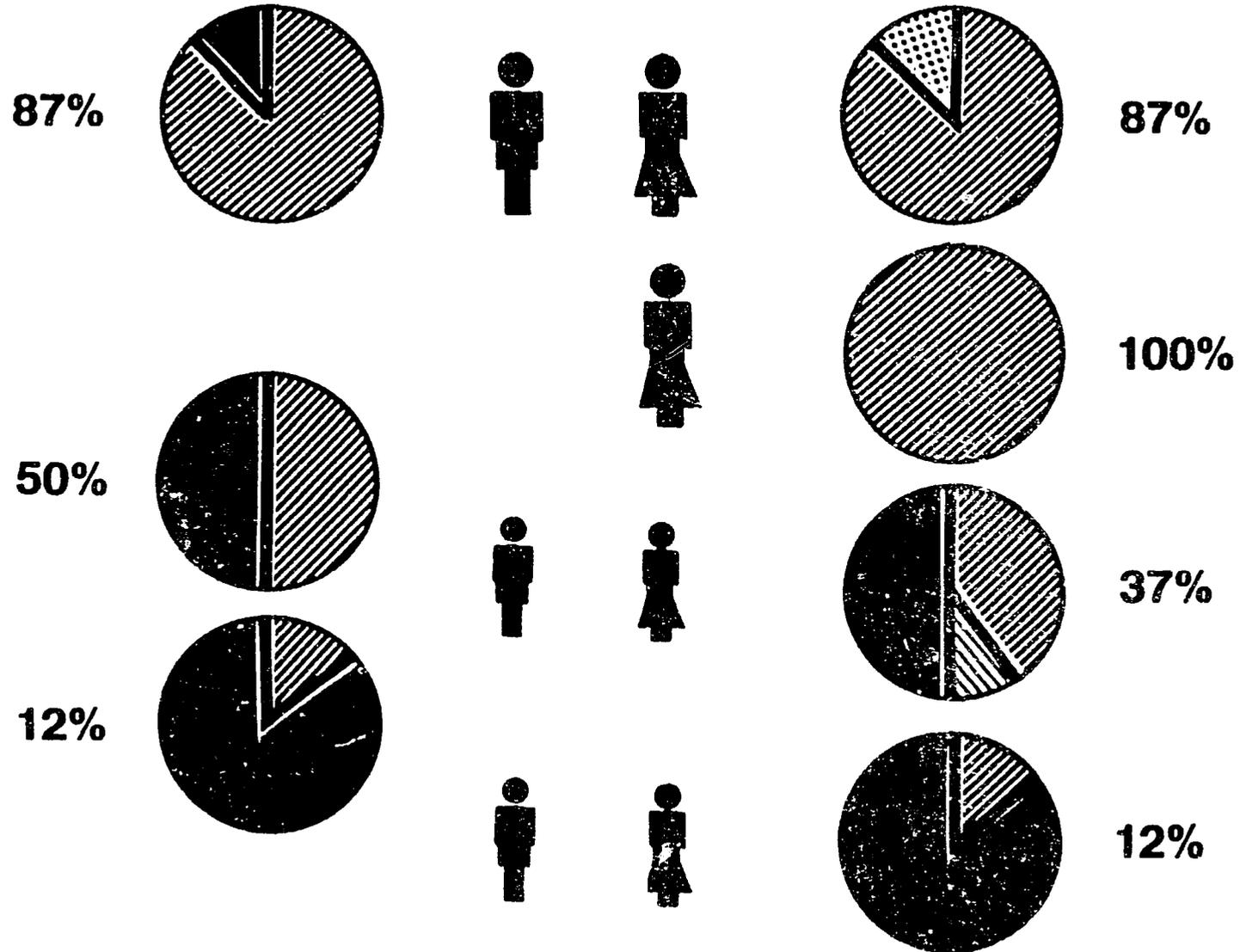
The younger adult female is still able to spend full time in agriculture.

The adolescent female is able to both increase her time in agriculture (the heavy striped area) and have time to remain in school (the solid area) like her older brother. This is because the time for water collection is now only 10 percent of her day (the lighter striped area). Her new-found time to stay in school will become important later in our discussions of other areas of the economy.

The youngest girl is unaffected.

Looking at the labor time in summary you will note that the time for the older female workers in agriculture has increased from 1 1/2 person days to 2 1/4 person days, an increase of 50 percent.

THE AGRICULTURAL HOUSEHOLD



In this display, we reexamine the food supply and demand projections to see what the effect of this change in labor time might be. As we left it, lines 1 through 4 and the shaded area representing imports were already in place.

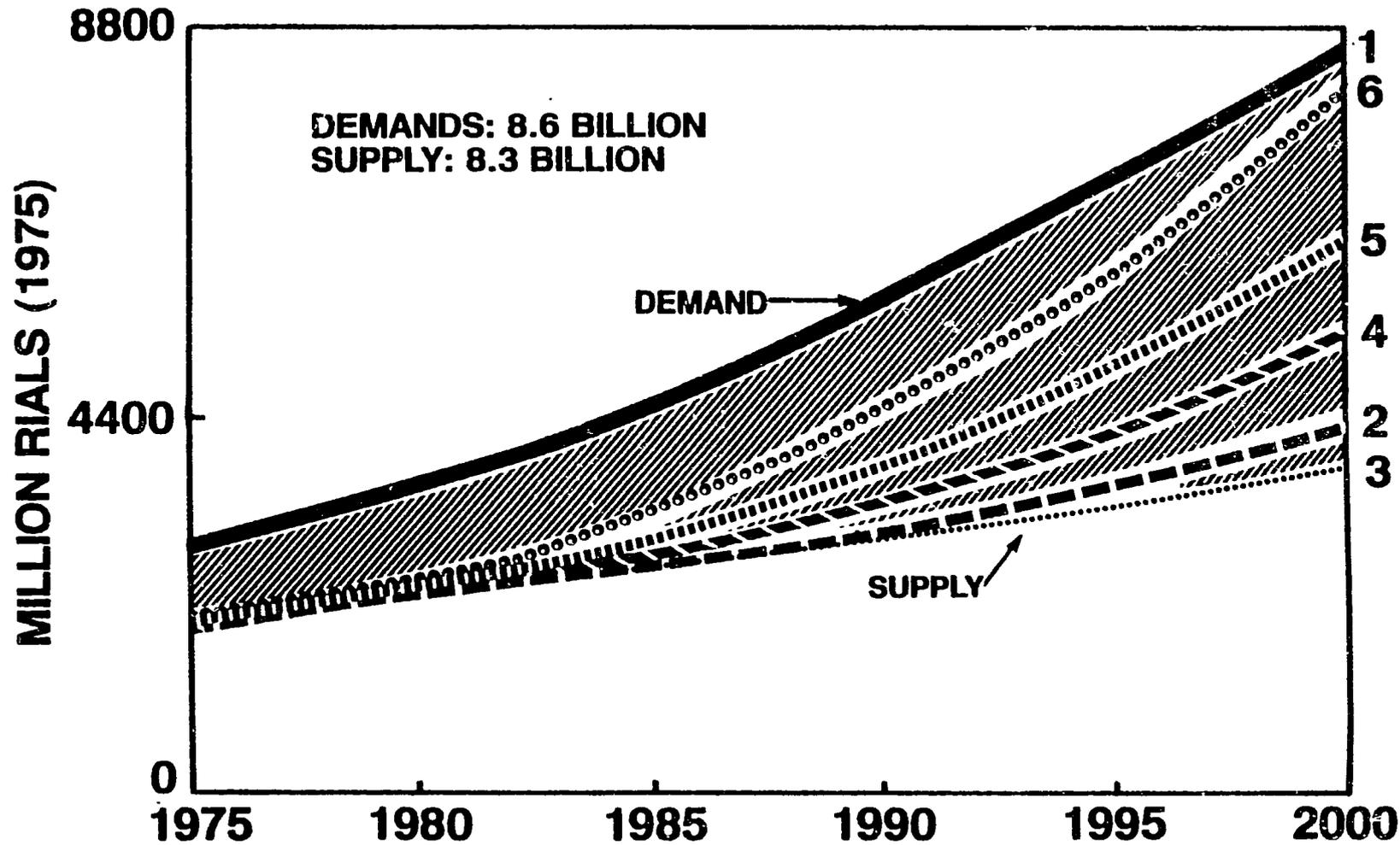
If we add the increased participation of women so that their hours have increased by 50 percent in the year 2000 we can increase the food supply, shown in the short dashed line number 5, by another 1 billion rials. Although this is a significant increase, a still greater increase is desirable.

Remember that when we put up the increased productivity line (the diagonal dashed line, number 4) we said that it represented the increases that might be expected to occur from the present education and extension programs. The present programs are directed primarily at males. If we were able to increase the productivity of female labor hours by the same 2 1/2 percent per year by extending similar programs to them, we could increase food supply to the values shown in large dotted line number 6.

The combined impact of the increased labor time available and the increased productivity of that time is quite significant. The food supply projection has now increased to 8.3 billion rials. That leaves a food import gap of only 300 million rials, less than half the size of actual 1975 food imports.

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FOOD DEMAND AND SUPPLY



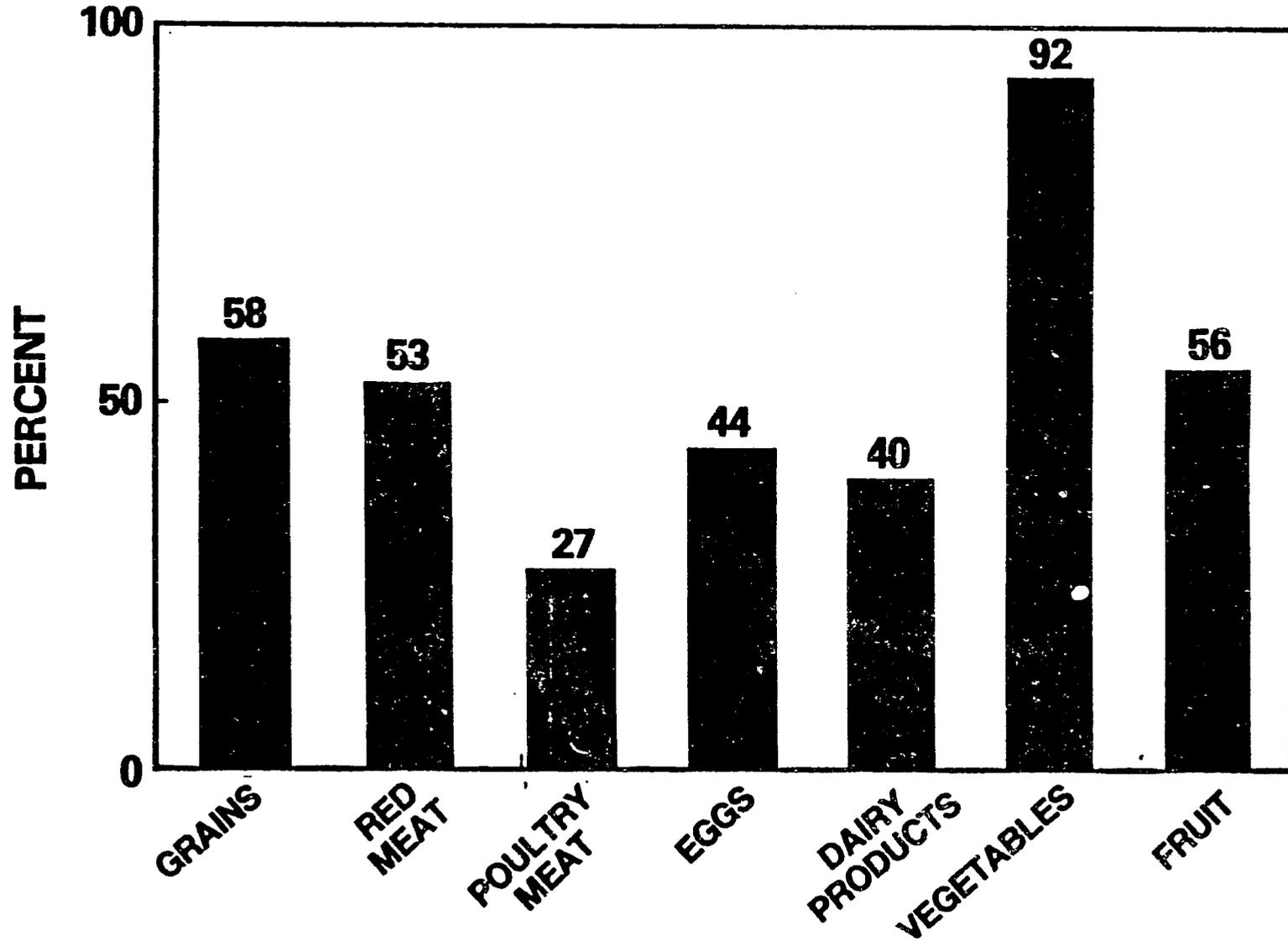
This display further emphasizes the importance of women to the future of Yemeni agriculture. Shown here are the food self-sufficiencies for each of the seven food categories. Note that the four worst categories are red meat, poultry meat, eggs, and dairy products. The production of all of these foodstuffs is woman dominated. This is an indication that the goods produced by increased female agricultural labor would probably be the products that Yemen needs most.

Summarizing what we've seen in agriculture before moving on to other sectors:

First, food imports represent a significant barrier to investment in products that are necessary for the expansion of Yemen's modern sector and they are likely to be an increasing barrier in the future.

Second, the two keys to increasing domestic food production lie in one, making available increased female labor time for agricultural activities through technological improvements such as village water supply and commercial fuels and two, increasing the productivity of that labor time through education and extension. That bears repeating, technology and education combined can increase female labor time and productivity.

FOOD SELF-SUFFICIENCY

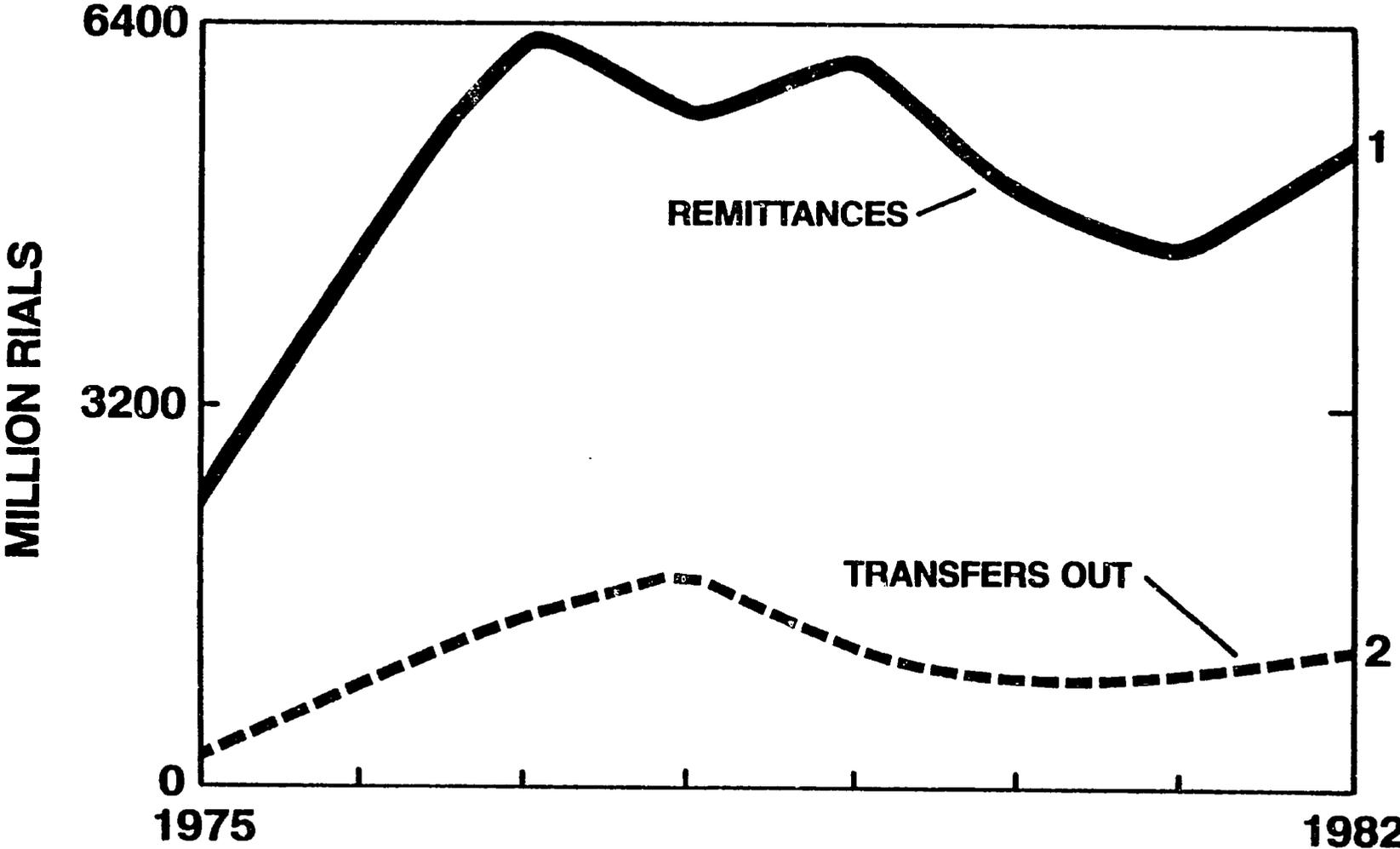


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EDUCATION

We've seen that food imports represent a major foreign exchange drain, but they are not the only one. In this display the graph of money from Yemeni workers in other countries is shown in solid line number 1. But, on the same scale, we can see the flow of money out of Yemen from expatriate workers in this country (the heavy dashed line number 2). Around 20 percent of the money from workers in other countries in effect turns right around and flows back out. But that's not all. In addition, this display does not reflect the fact that the education system is largely financed by other countries and staffed by expatriates, primarily Egyptians. At present levels some 600 million rials flows straight from other countries to Egypt rather than into Yemen.

REMITTANCES AND TRANSFERS OUT

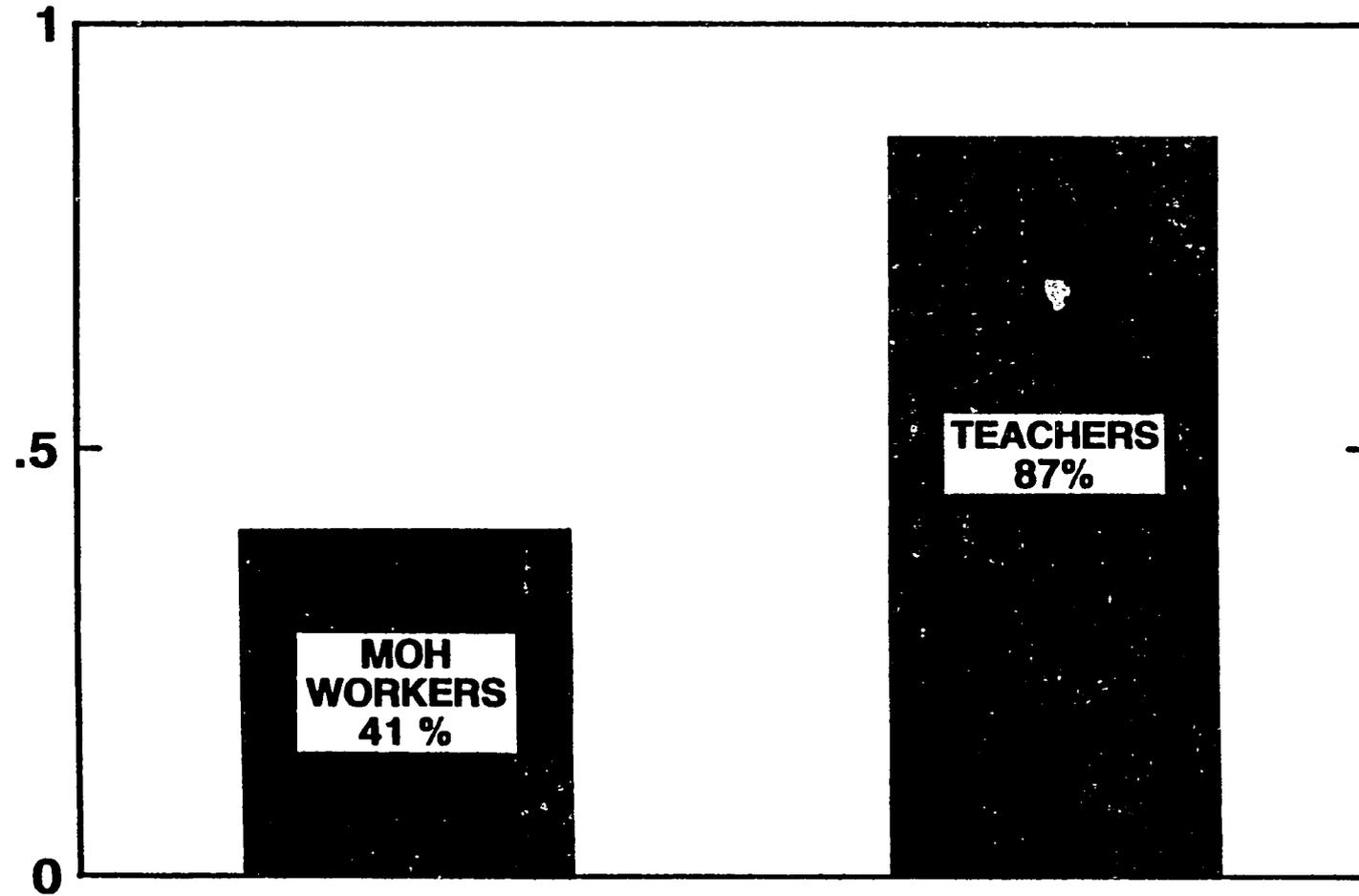


15/1

How significant is the number of expatriate workers in Yemen? Data are not available for many areas but we do have data for workers in the Ministry of Health and for teachers. In 1983, the most recent year for which we have data, 41 percent of Ministry of Health workers and 87 percent of all teachers were expatriates. In addition, it must be pointed out that the Ministry of Health expatriates are heavily weighted toward the highest skill positions. Over 50 percent of doctors and nearly 2/3 of nurses were expatriates.

1/60

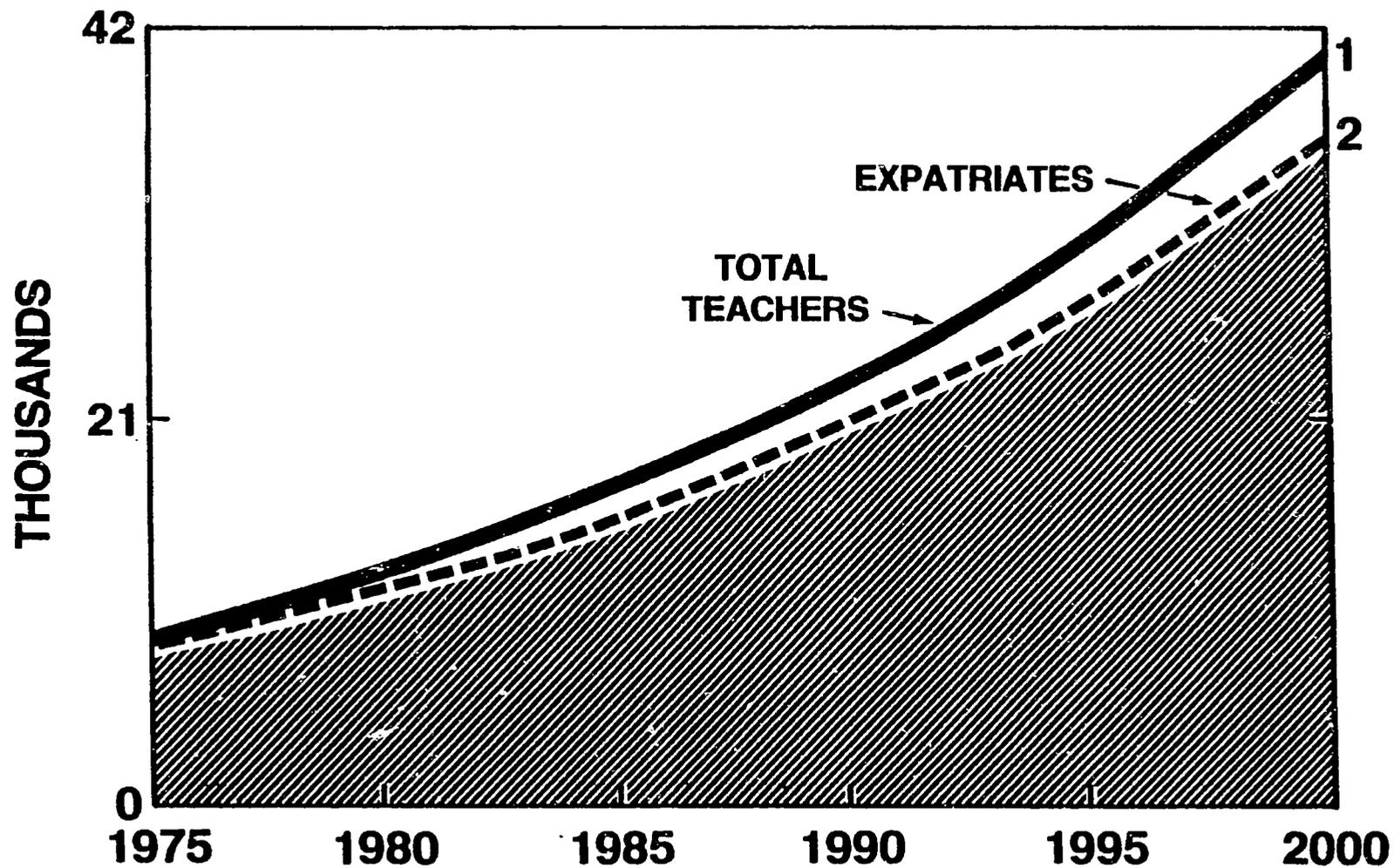
FOREIGN LABOR



In this display is shown a projection of the number of teachers required in Yemen to the year 2000. Assuming a constant increase of 1 percentage point per year in all male enrollment rates, the number of teachers required in Yemen (shown in solid line number 1) will rise from 9 thousand in 1975 to over 40 thousand in 2000.

Assuming that 90 percent of these positions continue to be filled by non-Yemenis, there will be 36 thousand expatriate teachers (shown in heavy dashed line 2) in Yemen in the year 2000. The entire shaded area is expatriates while only the slim slice between lines 1 and 2 is Yemeni.

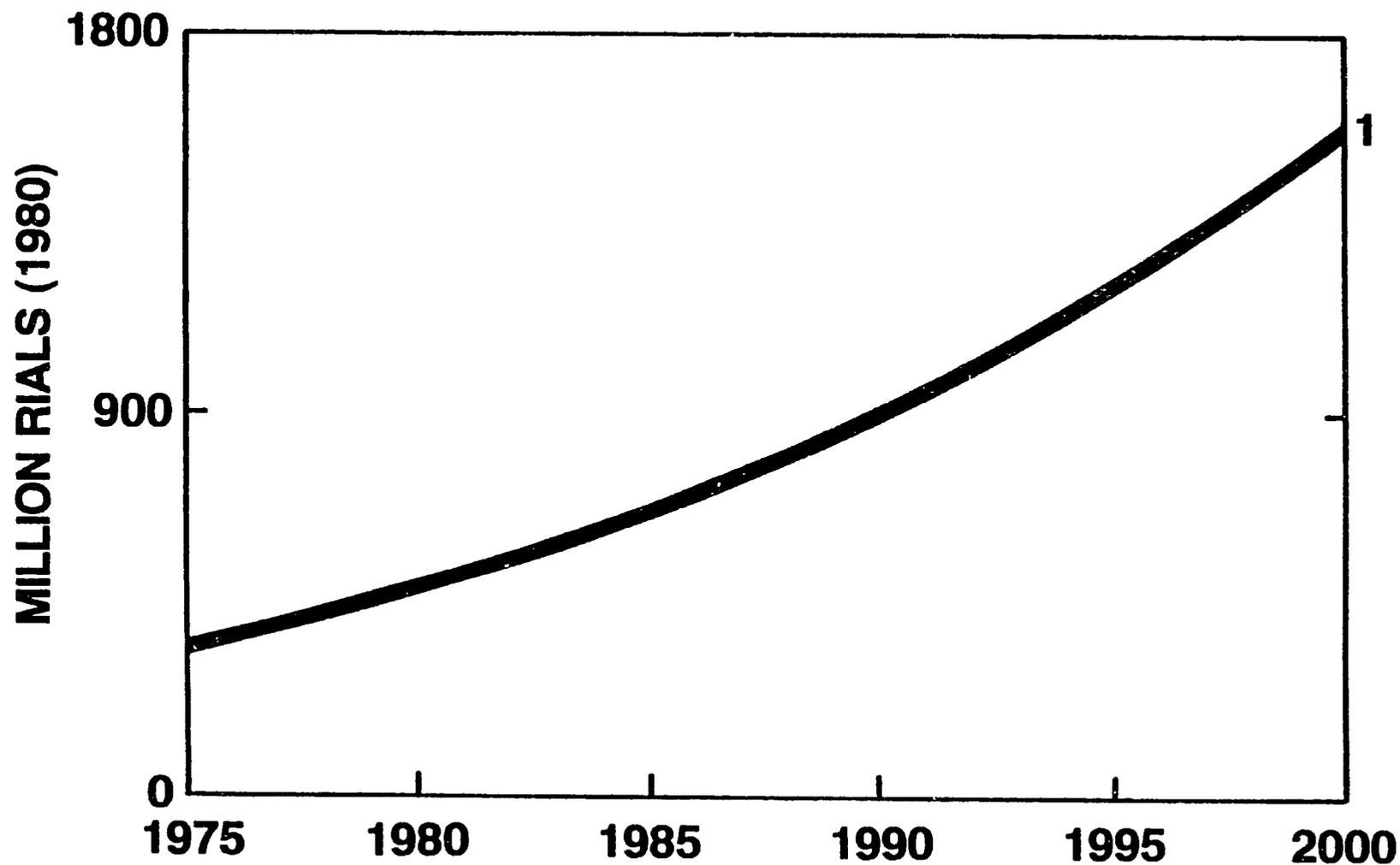
TEACHER REQUIREMENT



The estimated foreign exchange cost of these expatriate teachers, which either represents money that could come to Yemen but continues to pass through, or money that Yemen will have to pay if the other donors decrease education funding, will rise from 400 million rials in 1975 to 1.7 billion in the year 2000. This amount is equivalent to the entire 1979 food import bill.

10/4

ANNUAL COST OF NON-YEMENI TEACHERS



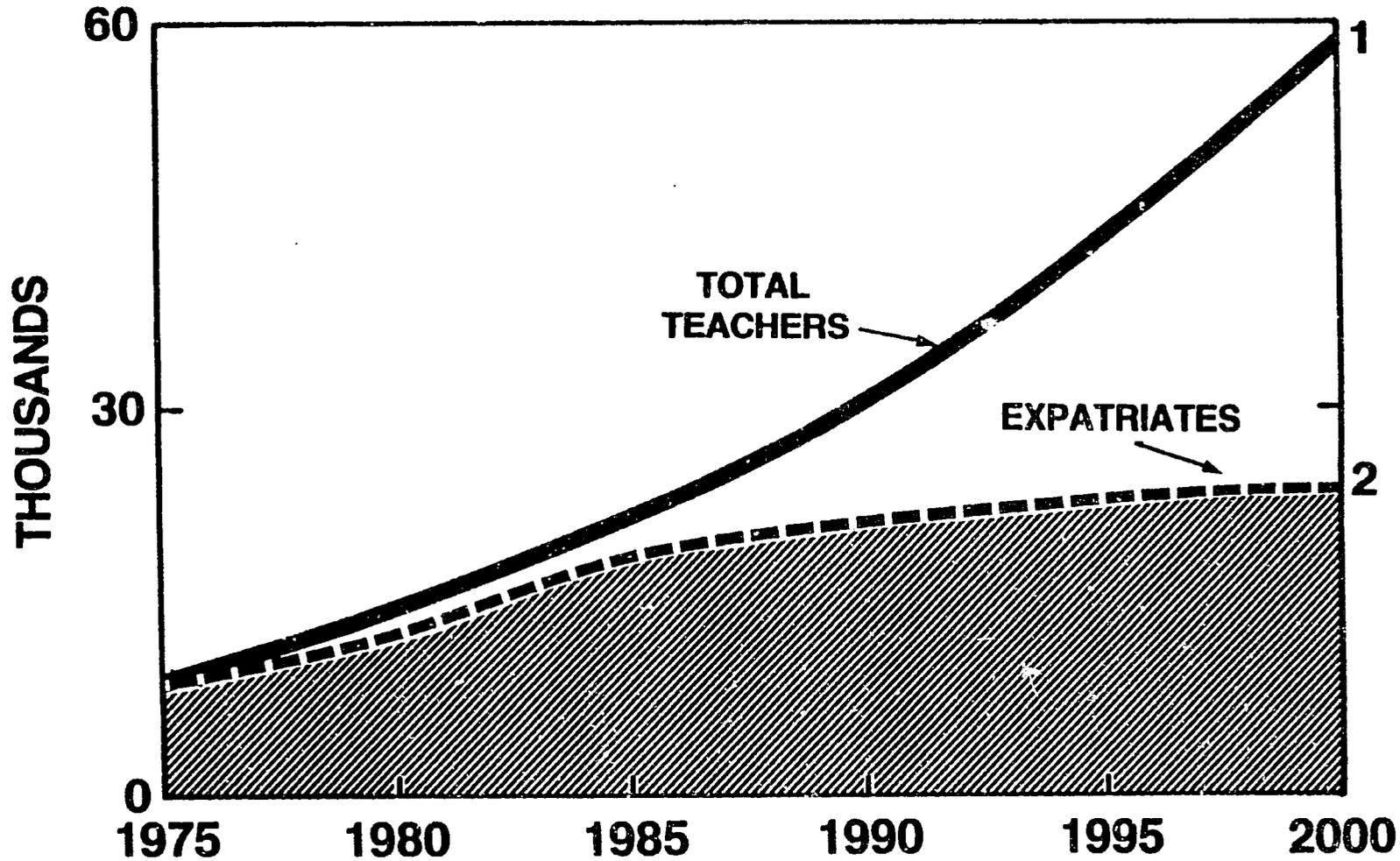
165-

How can the resources of Yemeni women be used to ease this situation? Some investment is required but the payoff is very short and very good.

In this display it has been assumed that all female enrollment rates increase at the same 1 percentage point annual rate that had been projected earlier for males. The impact, shown in solid line number 1, is an increase in the teacher requirement from 40 thousand in the year 2000 under our previous assumption to nearly 60 thousand. Since more teachers just cost more money, that really hasn't helped solve our problem. However, shown in dashed line number 2 is the number of these teachers that would still be expatriate if just 10 percent of the secondary school graduating girls became primary school teachers.

Even though the first increased class of graduates doesn't become available until 1990, the impact is dramatic and very quick. In fact, all primary school teacher positions could be filled very quickly under this scenario and efforts could be devoted to preparatory and secondary school teachers which have a similar but slightly longer term payoff. The number of expatriate teachers required in the year 2000 would be reduced from 36 thousand to 24 thousand.

TEACHER REQUIREMENT



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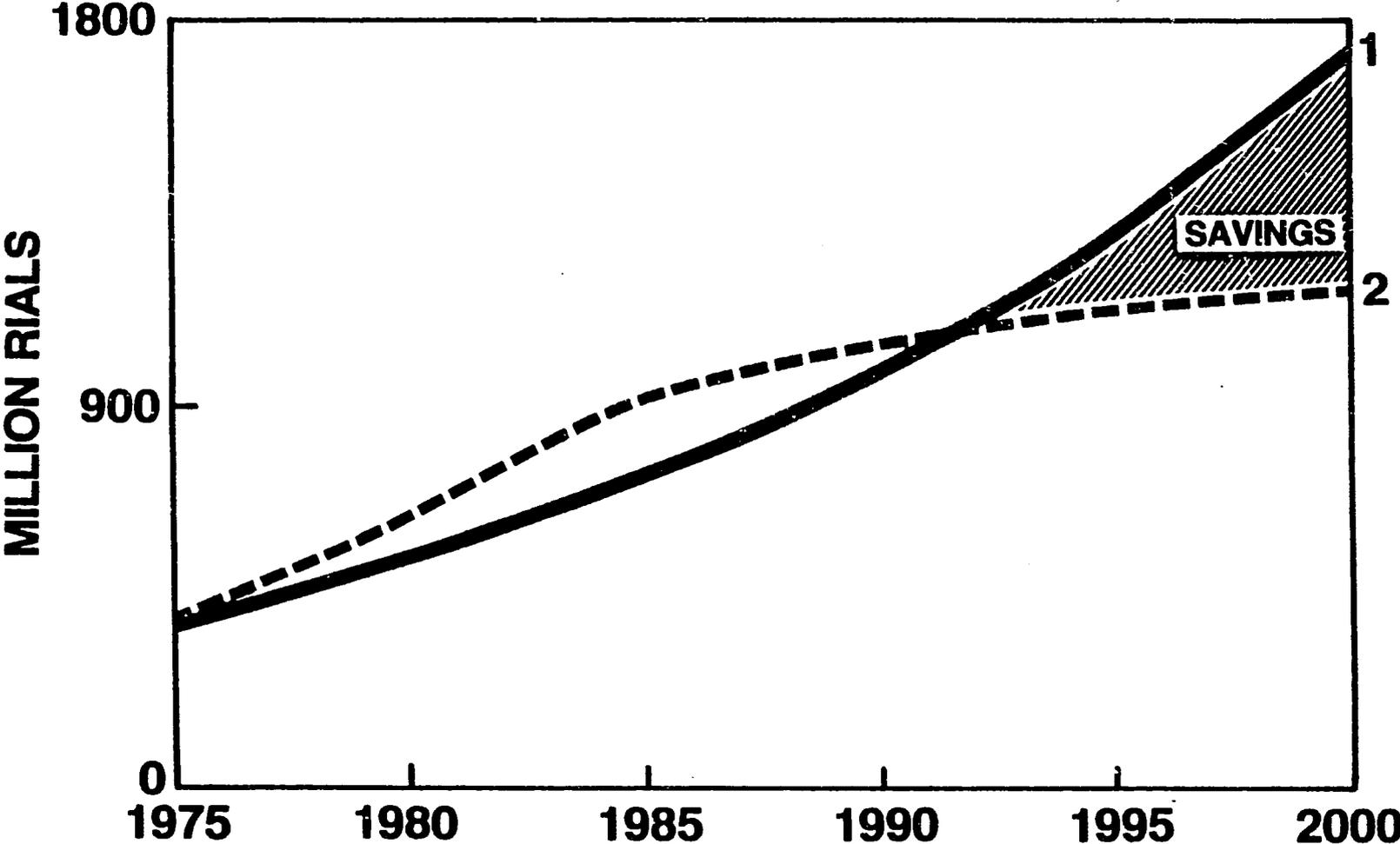
This display shows the monetary impact of this program in terms of foreign exchange. The payments required for non-Yemeni teachers under the previous assumption are shown in solid line number 1. The cost of expatriates with the increased participation of Yemeni women is shown in dashed line number 2. With increased female enrollments, it is not surprising that the cost for expatriate teachers is initially higher. But they become balanced between 1990 and 1995. After that, the money flowing away from Yemen is reduced significantly. The savings shown in the shaded area represent nearly 2 billion rials. The annual payment in the year 2000 would be down to 1.2 billion rials; a reduction of 500 million rials per year.

People frequently point out that using these women as teachers removes them from the agricultural laborforce and is therefore in conflict with the previous section. However, this entire new teacher corps amounts to only around 12,000 women. Even if this entire force were drawn from rural areas, this represents only 1/2 of one percent of the female agricultural workforce. The impact of this miniscule reduction in the laborforce is more than compensated for by the increased productivity of the better educated workers.

To summarize again before proceeding to the next section, we have seen that, as in the agriculture section, technologies that allow time to take advantage of education and the increased productivity resulting from that education were the keys to reducing foreign exchange outflows by increasing the potential of a resource already available in Yemen.

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ANNUAL COST OF FOREIGN TEACHERS



16c

HEALTH CARE

In the health care sector the situation is very similar to that of education. A significant proportion of the workers, particularly the highly skilled ones, are expatriates. In addition, it is generally recognized that the health care sector is badly understaffed. Because of this, the country's development goals include objectives relating to the vast expansion of health care services.

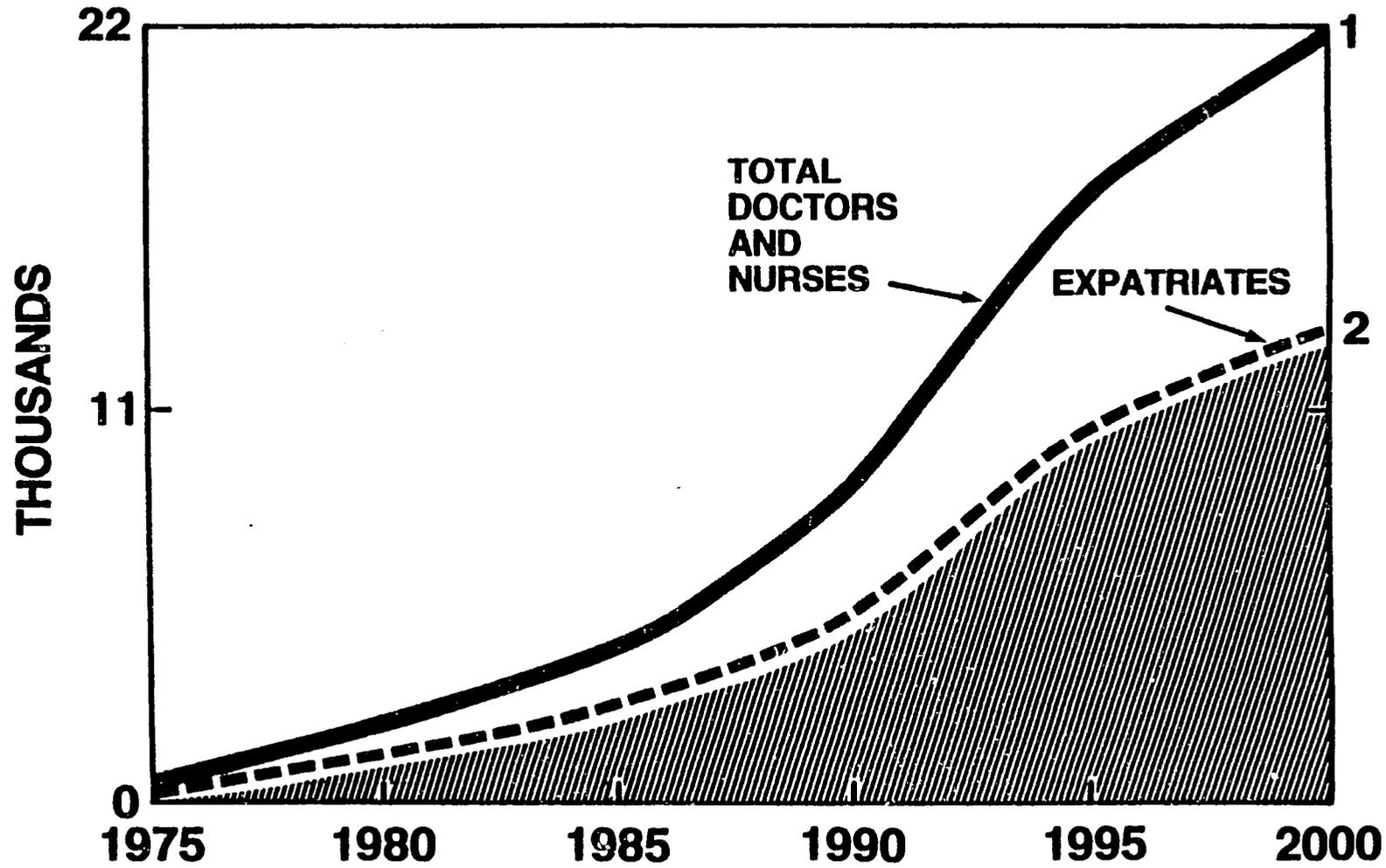
In 1980, it was estimated that health care was available to only around 12 percent of Yemen's people. The stated goal of the government is health care for all, but there is a lot of work to do before this can become a reality. To be a little more conservative, the projection shown in this display is based on the assumption that health care can be provided to 50 percent of the people by the year 2000.

Under that assumption, the total number of doctors and nurses in Yemen will have to rise from about 2,200 as it was in 1983 to a value of some 22,000 in the year 2000. This is shown by the solid line number 1.

Even assuming that the current expatriate proportions of 56 percent for doctors and 65 percent for nurses are maintained, 13,000 of these doctors and nurses will be expatriate as shown in heavy dashed line number 2.

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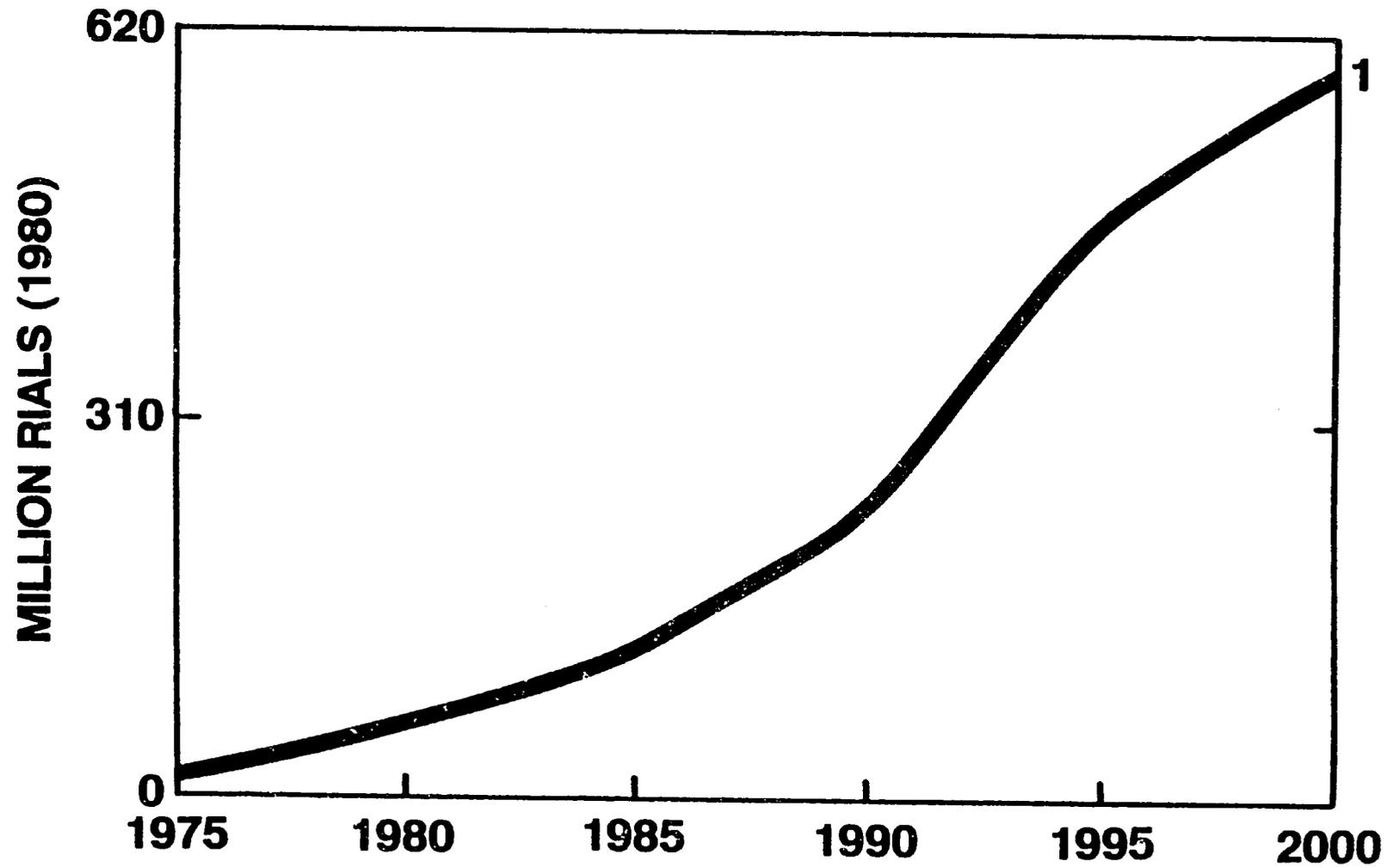
MOH DOCTORS AND NURSES



The cost of these foreign workers in foreign exchange outflow will increase from a value at present of around 80 million rials to a value in the year 2000 of nearly 620 million rials. This is shown in the solid line.

1/2

ANNUAL COST OF NON-YEMENI DOCTORS AND NURSES

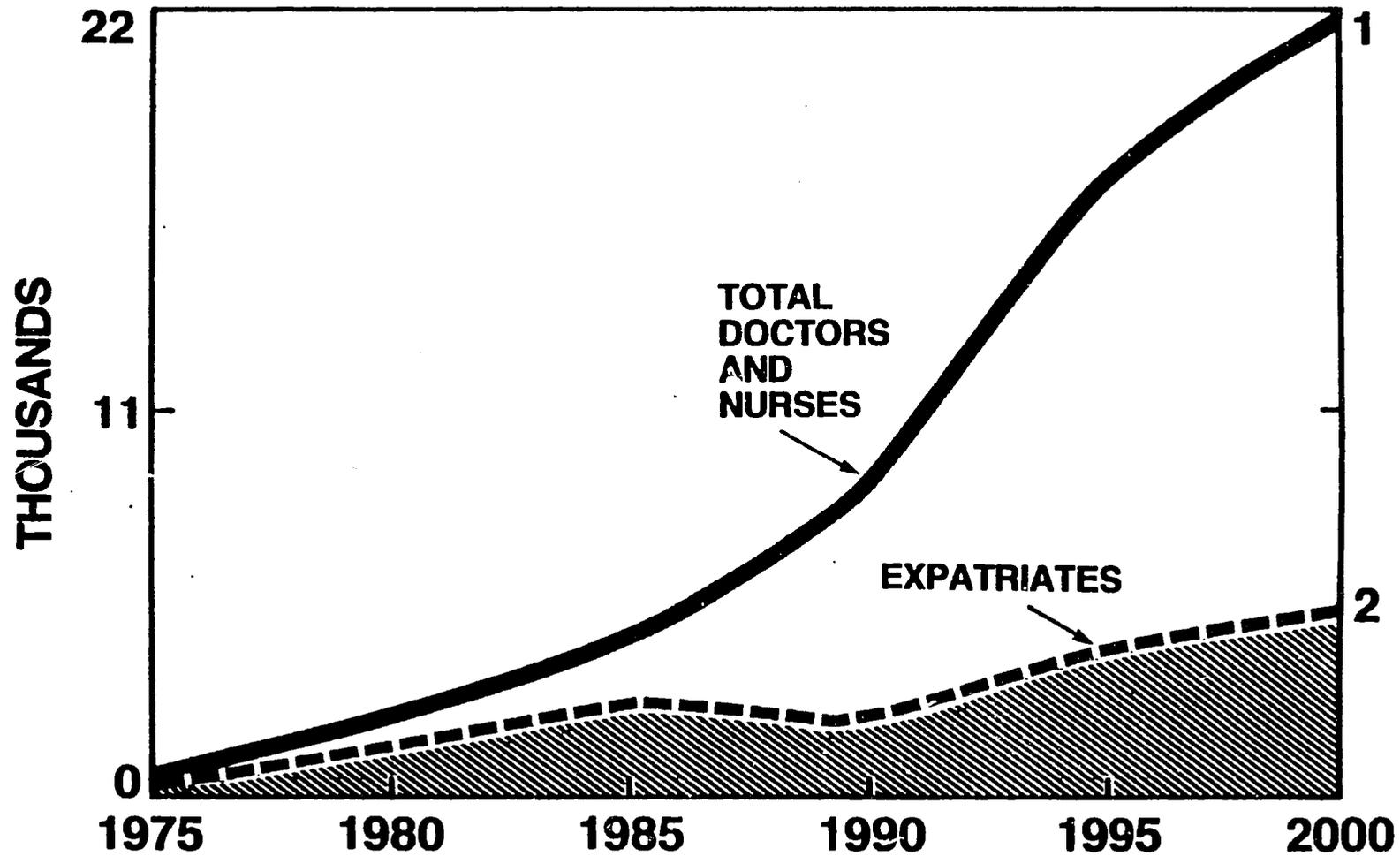


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Again, just as we did in education, we can see a display that shows how the application of women's resources might help reduce this outflow. First, shown in line number 1, is the doctor and nurse requirement as shown before. Compared to this, in dashed line number 2, is the number of required expatriates if it is assumed that 10 percent of the secondary educated girls could be used as nurses.

Much as we saw in education, the application of female resources to the problem made a significant difference very quickly.

MOH DOCTORS AND NURSES



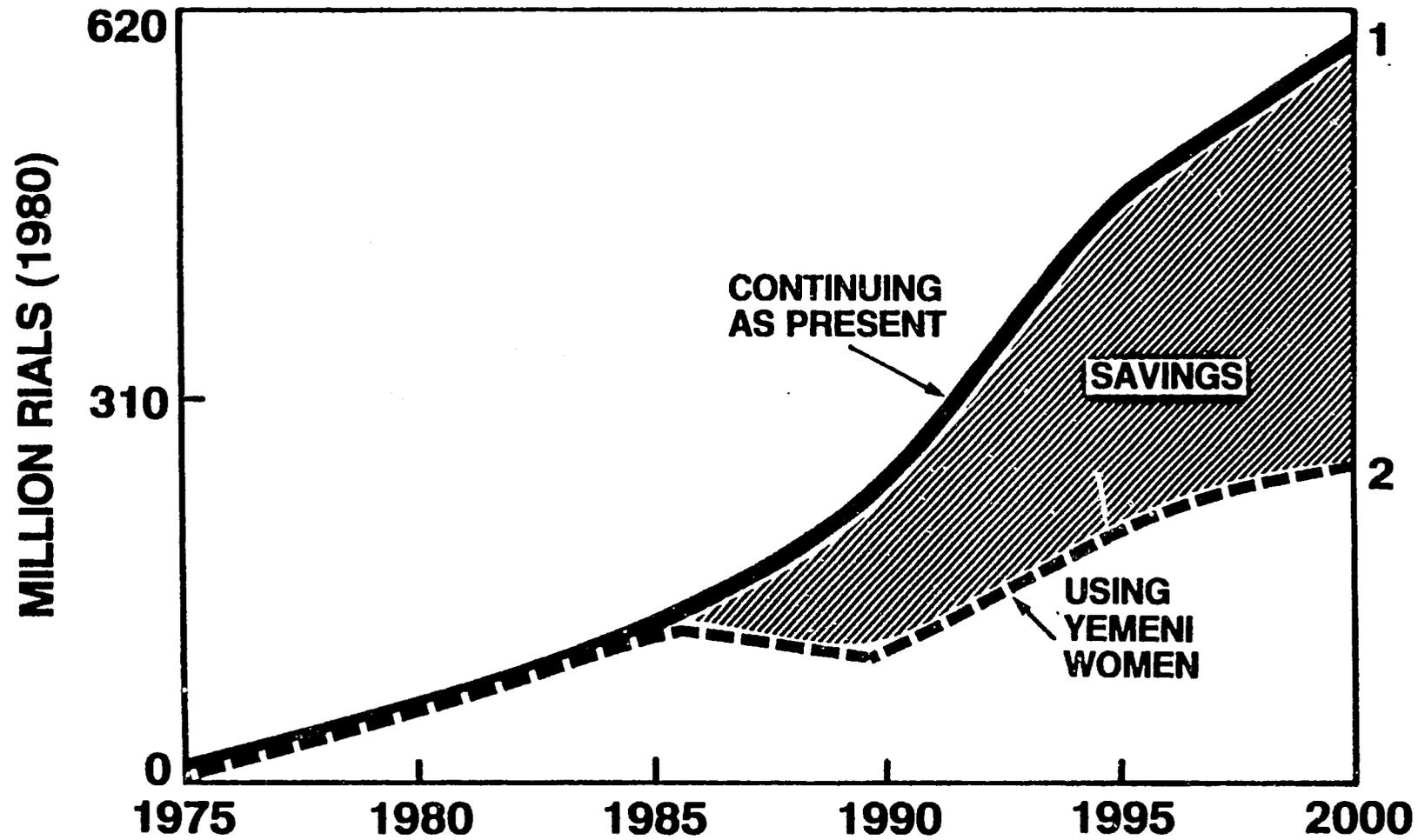
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Looking at the foreign exchange impact of this change we can compare the foreign exchange outflow under the previous assumption, shown in solid line number 1, to the foreign exchange requirement with increased participation of Yemeni women as shown in dashed line 2. It is easy to see that the foreign exchange outflow in the year 2000 has been cut in half. The entire shaded area is savings that can be invested in development and modernization.

In addition, it must be pointed out that this projection only applied women as replacements for the expatriate nursing staff. There certainly is every reason to apply them against the requirement for foreign doctors as well. The payoffs are even larger since doctors are paid more than nurses, but the investment time is also longer since the education requirements are longer.

Again it must be pointed out that although the number of women is very significant to the required number of health care workers, the total change is only around 6,000 women. This clearly is not significant enough to have an impact on the agricultural laborforce. The impact that the healthier population might have on agricultural productivity, however, is inestimable.

ANNUAL COST OF NON-YEMENI DOCTORS AND NURSES



TOTAL LABORFORCE

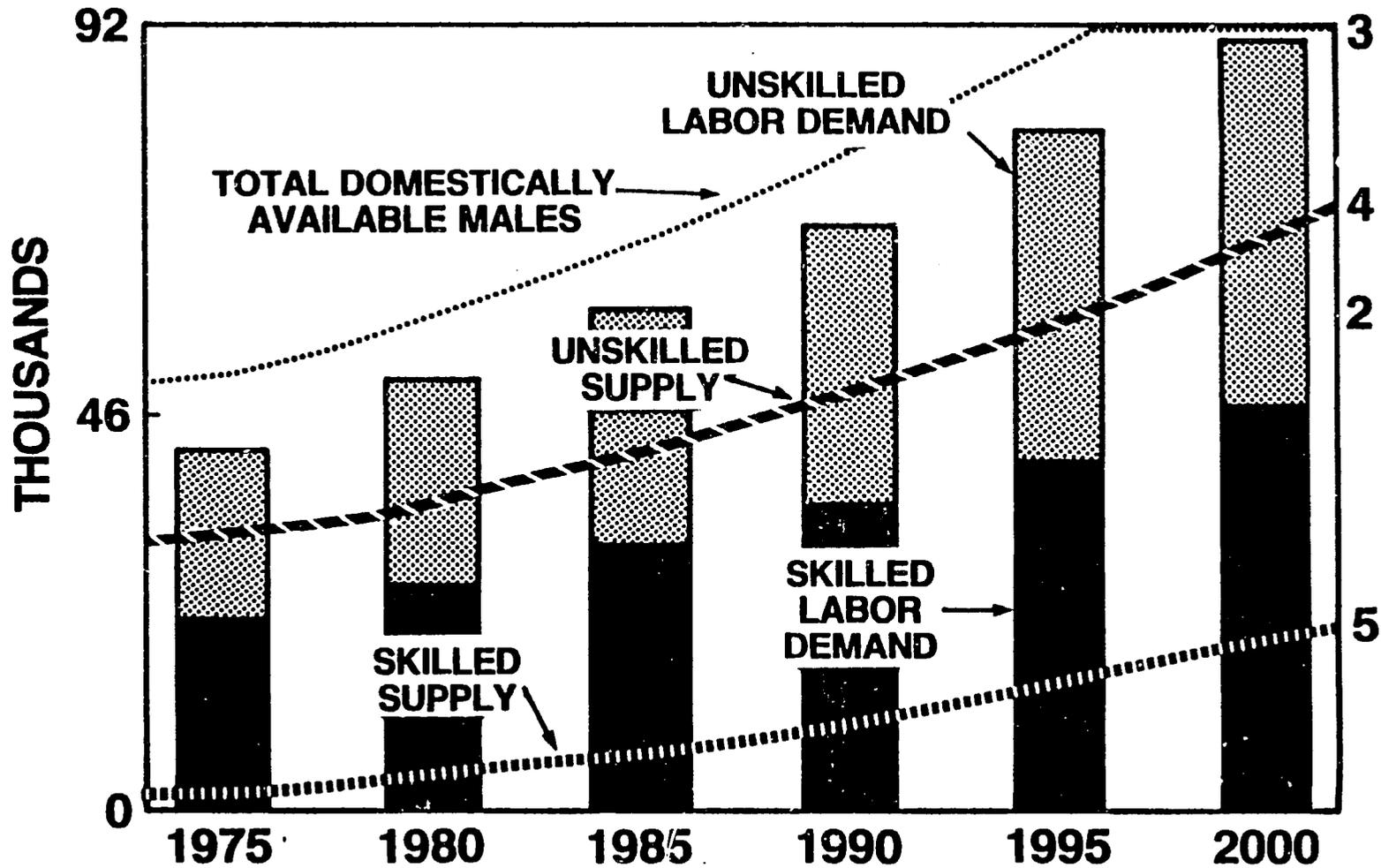
In three specific areas; agriculture, education, and health care it has been shown that the resources of female labor can be used to increase productive potential and reduce the outflow of foreign exchange. To conclude, let's examine how female labor might contribute to the modern sector labor supply overall.

On this series of displays we're going to look at the demand and supply for unskilled and skilled labor in Yemen to the year 2000. First, shown in the dotted bars, is the annual demand for unskilled laborers in the years 1975, 1980, 1985, 1990, 1995, and 2000. This, in effect, is the annual number of new unskilled jobs to be filled. The solid bars in front of the dotted bars are the annual demand for skilled laborers in the same manner.

The dotted line number 3 represents the total number of primary aged males that remain in the country. This represents the labor pool from which we can draw our laborers. However, not all of these men are available.

The other two lines represent the number of available unskilled (diagonal dashed line number 4) and skilled (small dashed line number 5) workers. The unskilled workers are estimated by the number of primary school graduates that do not continue into preparatory and secondary school. The skilled workers are represented by the number of secondary school graduates. It is important to remember that people who become skilled workers are no longer available as unskilled workers. The next display will demonstrate this interrelationship.

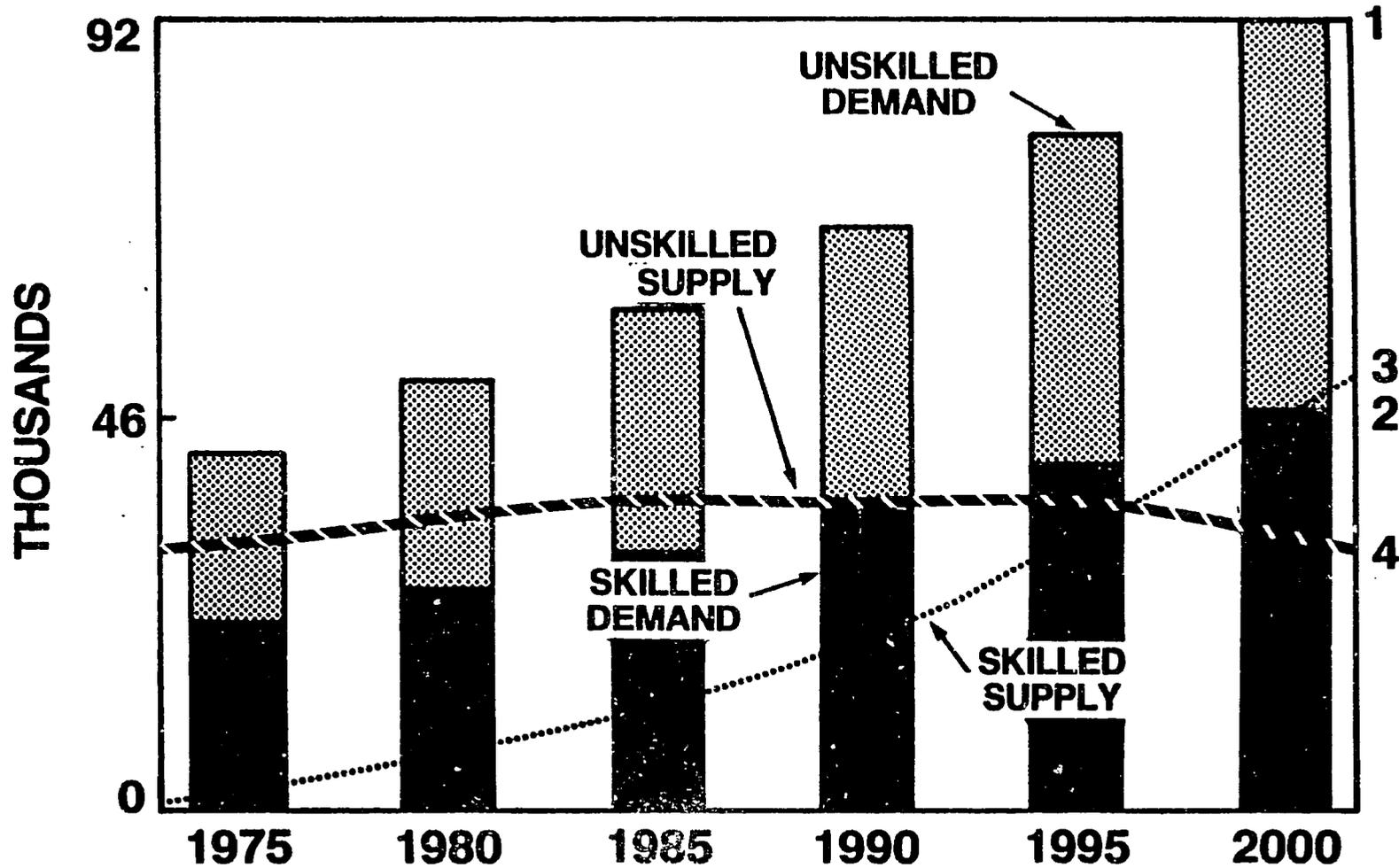
ANNUAL LABOR REQUIREMENT AND SUPPLY



In this display, shown by the new line number 3, we have assumed that in order to meet the requirement for skilled workers we have increased preparatory and secondary school enrollments. In fact, a secondary school enrollment of 70 percent would be required in the year 2000 to do this. However, as shown in line number 4, when the number of secondary school enrollees is increased, the number of unskilled workers available is reduced by the same amount. This is because we are working with a fixed labor pool that is very nearly the same size as our unskilled labor requirement.

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ANNUAL LABOR REQUIREMENT AND SUPPLY



On this one last display we can see how women might be used to ease this situation. Under the base condition, the enrollment rates for males were assumed to increase at the rate of 1 percentage point per year. On this display is shown what would happen if female enrollments were able to increase at the same rates

On the same labor supply and demand display we can see that the first thing that happens when we include women in the picture is that the available labor pool is completely off the scale. This is shown by the dotted line number 3 at the top of the page. The total labor pool has doubled, but since women don't emigrate, the available domestic labor pool has tripled.

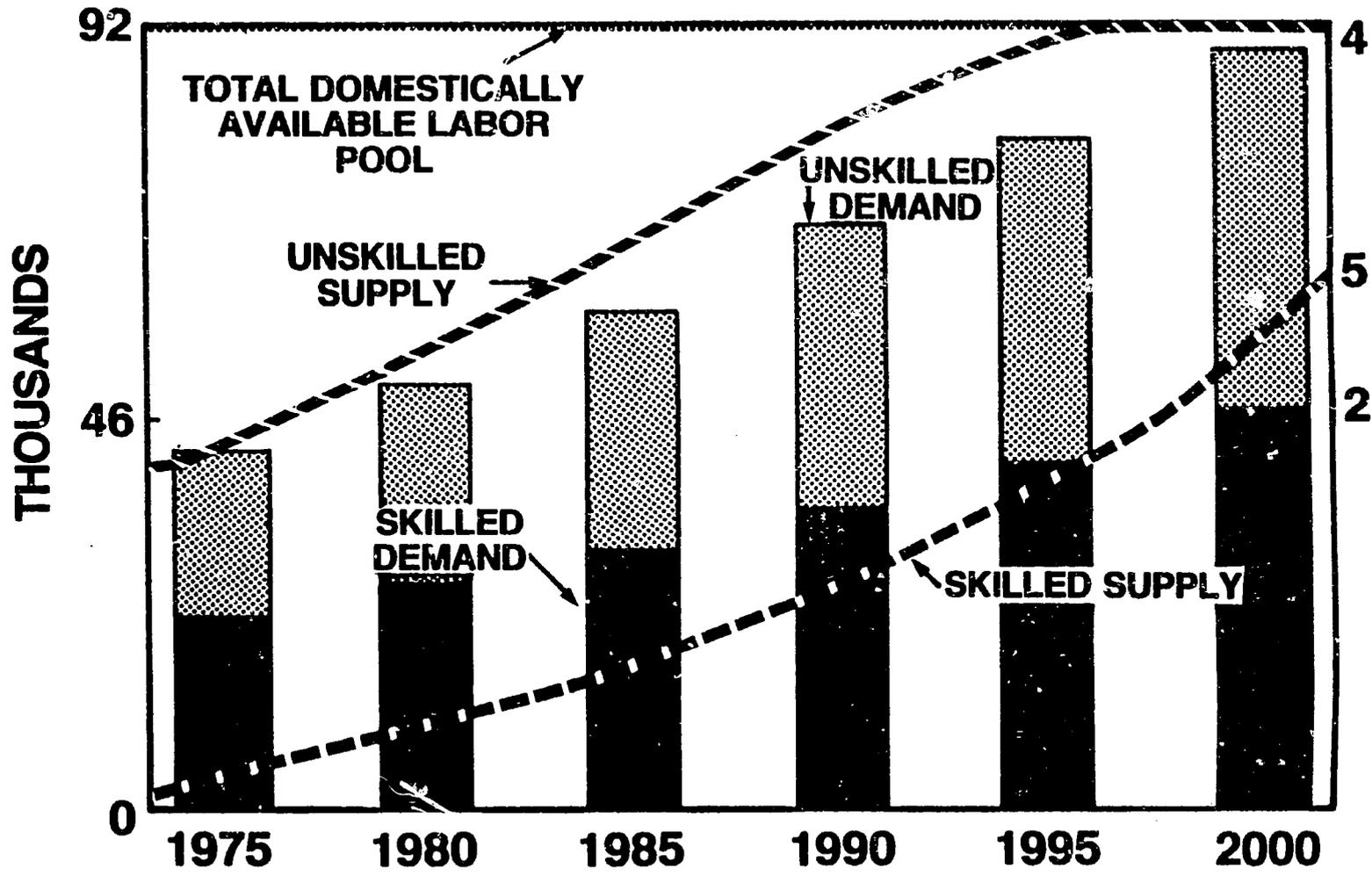
With the assumed female enrollment rate increases it can be seen that you can meet both the demand for unskilled labor as shown by diagonal dashed line number 4 and the demand for skilled labor as shown by dashed line number 5. The labor pool is so significantly larger than previously that both can increase simultaneously.

As a final note of summary, it bears repeating that the keys to increasing the labor potential in Yemen were:

One, increasing the availability of female labor time through technological improvements such as village water supply and use of commercial fuels and,

Two, increasing the productivity of that time through basic education and agricultural extension.

ANNUAL LABOR REQUIREMENT AND SUPPLY



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WOMEN'S PRODUCTIVITY IN AGRICULTURAL SYSTEMS:
CONSIDERATIONS FOR PROJECT DESIGN

Prepared by Kathleen Cloud

The analytic formulation of this paper is based on work undertaken collaboratively with Catherine Overholt in 1981-82 under funding from the Ford Foundation and the Agricultural Development Council. Our original paper was presented at the 1982 International Agricultural Economics Meetings in Jakarta. For invigorating discussions and helpful comments on that paper, and its subsequent transformation, I am grateful to Jim Austin, Mary Anderson, Elsa Chaney, Richard Goldman, Christine Jones, Jane Knowles, Martha Lewis, Peter Mook, Richard Meyer, Kathleen Staudt, Peter Timmer, Woods Thomas, Francille Firebaugh, and Abe Weisblatt.

I. INTRODUCTION

This paper is intended to help development professions think systematically about the work that women do in agricultural systems. Because increasing the productivity of agricultural systems is a key concern of developing countries and international development agencies, many development projects are directed to this end. Effective project design requires identification of the key economic actors and an understanding of their incentives and constraints. Failure to do so increases the risk of ineffective project interventions.

Evidence has mounted over the past decade that women are important actors in most agricultural production systems, that many responsibilities are gender specific, and that failure to address women's roles within a specific system undercuts the degree of project success. In some cases, such omission may contribute directly to project failure. Because women are so deeply involved in agricultural production, it is important to think systematically about factors that affect their functioning not only for equity reasons, but also for the sake of efficiency. The AID Women and Development policy paper notes that though there is not sufficient evidence of women's contribution to agriculture:

"There is equal proof that women are often farming without benefit of the improved inputs and services required for a more productive and remunerative agriculture. The paradox is most obvious in the African setting, where it is estimated females do 60-80 percent of all agricultural work. Yet these same females are rarely systematically targeted for training, extension, research, technology, or improved inputs. It is predictable, then, that efforts to improve access to resources and thereby to increase productivity in the agricultural sector will need to be better directed to the female population, if goals for growth are to be achieved." p. 3.

Gender-specific economic analysis of food production and distribution systems can contribute significantly to improving system performance. Such economic analysis also has strategic value. While many development professions are sensitive to cultural differences and unwilling to be accused of cultural imperialism for proposing change in the social relationships between the sexes, it is commonly accepted that development projects can appropriately attempt to intensify economic change and move it in desired directions. Shifting discussion of farm women's roles from social to economic terms has the advantage of permitting rational discussion using commonly accepted analytic tools and arguments. It pays to deliver resources to women in agricultural systems. This argument is easily understood, and, one hopes, persuasive. Under the pressure of increasing populations, agricultural systems throughout the world are changing for better or worse. As systems change, it is often possible to use efficiency arguments honestly for promoting productivity-enhancing changes in inequitable situations.

II. AN ANALYTIC FRAMEWORK FOR AGRICULTURAL PROJECTS

This paper will provide tools for improving the correspondence between current knowledge of women's roles in agricultural production and the programming designed to increase agricultural production. The framework for agricultural projects runs parallel to that outlined in "Women and Project Analysis: An Analytic Framework." The basic elements are:

- analysis of women's productive activities within the agricultural system
- identification of factors influencing women's productivity
- application of this knowledge to each stage in the project process

Each of these elements is addressed in turn by the paper. A discussion of the major patterns of activities undertaken by rural women is followed by a discussion of the factors influencing women's productivity in strength, their reproductive roles, their access to productive resources and the incentive structures they face. In the final section, the paper provides an agriculturally focused adaptation of the project cycle analysis.

III. IDENTIFYING WOMEN'S ACTIVITIES IN AGRICULTURAL PRODUCTION SYSTEMS

A. MACRO DATA ON WOMEN'S AGRICULTURAL ACTIVITIES

Although there is increasing recognition that women are involved in the world's agriculture, until recently it has been difficult to gain a clear picture of where, when, and under what circumstances women participate in farm work. Although the number of micro studies documenting the importance of women's roles has risen steadily, national statistics have tended to undercount women's agricultural labor due to their definition of economic activity, their sampling patterns and their interviewing procedures.

As the number of detailed empirical studies of women's roles in local production systems has grown, there has been increasing pressure for more accurate estimates of women's contributions to national production systems. A number of such efforts has been undertaken. The latest, largest and most reliable is that of Dixon (1982), who estimated female percentages of the agricultural labor force for 82 developing countries. She used regression analysis on three types of national data (the 1977 ILO labor force estimates and projections 1950-2000, FAO's 1970 agricultural censuses and national population census data) to arrive at the most reliable figures for each country. For the 82 countries combined, she found the proportion of women in the agricultural labor force to be 42%, for Sub Saharan Africa the regional average was 46%, for North Africa and the Middle East 31%; and for Asia 45%. Latin American data were not adequate for analysis. There were important differences between countries within each region, and indeed, within each country. Her comments on the differences between data sets are useful in considering data collection strategies for project purposes as well as for understanding patterns of women's participation.

"Of the three major sources of agricultural labor force data reviewed...the population censuses...generally yield the lowest proportions of female in the agricultural labor

force, whereas the censuses of agriculture conducted under the sponsorship of FAO yield the highest proportions. As unpaid family helpers and seasonal workers become progressively incorporated into definitions of the labor force, the sex composition changes. More specifically, contrasts between sources confirm that the total farm labor force is generally larger, and that women (and children) form a higher proportion of the total, when the definition of economic activity includes:

- farm production for subsistence only, as well as production intended in whole or in part for sale or exchange
- unpaid work by family helpers
- homestead-based crop processing, preparation of crops for storage, transport to markets, raising small animals and poultry, and cultivating kitchen gardens, in addition to field-based production and processing activities.

The proportion of females is also generally higher when:

- a low minimum of days or hours of work is specified as a criterion for inclusion in the labor force
- a longer reference period is defined during which economic activity is to be assessed, for example, during the preceding cropping season or year rather than the preceding day or week
- the survey is conducted during the peak season of agricultural activity, especially if the reference period is brief
- respondents are asked for a secondary activity or occupation as well as a main activity, and a usual activity as well as a current one
- the interviewer probes the specific activities, based on knowledge of the crops and animals raised, rather than accepting without question the woman's definition of herself as housewife, or her possible assumption that farm work refers only to wage-earning employment
- the interviewer questions women in the household directly rather than asking male household members to report women's activities

the work of children between the ages of 10 and 15 is routinely included." (pp. 561-562)

The picture that emerges from this comparison of macro data sets is not a complete description of women's agricultural work, but some inferences can be made. In addition to the substantial number of women documented in national agricultural labor force data, many additional women and girls work as unpaid family laborers. Many are primarily involved in production of the family food supply; many work intensively in the field only during the peak labor season; many girls between 10 and 15 do substantial amounts of agricultural labor, particularly in North Africa and the Middle East. Finally, many women consider their work in agricultural production to be subsidiary to other roles.

B. WOMEN'S ROLES IN AGRICULTURAL HOUSEHOLDS

Rural women do play multiple roles in the world's agricultural systems. They may be mothers, housekeepers, wage laborers, agricultural processors, market women, and entrepreneurs as well as agricultural producers. Most rural women make constant tradeoffs in allocating labor time and productive resources among their roles and obligations. Most farming systems display mixed patterns of women's agricultural responsibilities, combining production cycles where one sex is primarily responsible with crops where responsibility is shared.

Women are often responsible for the livestock, vegetables and tree crops cared for near their dwellings. They are more likely to be involved in cereal production in hoe cultures and irrigated rice systems than in extensive plow cultures. Studies in Bangladesh, Indonesia, and Peru all found that women in more affluent farm families devoted less time to field work and more time to cooking for hired laborers. Although in low technology systems poor women are likely to do more field work than more prosperous women, in highly mechanized systems, many women in prosperous farm households do substantial amounts of field work.¹

1. Agricultural Household Production Models

Few people live alone in rural societies. Agricultural production is intrinsically a collaborative endeavor, with the agricultural household as the most common unit of production and consumption. Because of this, we suggest that project analysis of women's productive work be undertaken within the household context, taking account of the activities and demands of household members of all ages. The agricultural household, as the term is used here, is a kinship-based group engaged in both production and consumption with corporate ownership of some resources and a degree of joint decision-making among members. Its boundaries are assumed to be permeable and to change over time, as well as under different macro-economic conditions. Such a definition can include monogamous, polygamous, and women-headed households, as well as compounds or extended families.

Recent economic models of the agricultural household have made women's productive work much more visible, both because they have enlarged the definition of farm production and because they have viewed women's labor time as a rationally allocated productive resource. As it becomes increasingly clear that the home and the fields compete for allocations of capital resources and family labor, the definition of the "products" of the farm enterprise has expanded. Without a definition of output that includes all the productive uses of household time, it is impossible to understand correctly the opportunity costs of member's time, and the underlying rationality of the tradeoffs they make in allocating their time and other productive resources among activities. Fortunately, this research is increasingly convergent in its definition of the output of the family farm firm. Studies in Nepal, Java and the Philippines, Malaysia, Bangladesh, Kenya, Romania, and the United States have used somewhat different categories for classifying the goods and services produced by the agricultural household.² When the various categories are

integrated and rationalized, they include the following:³

- agricultural production: the output of crops and livestock for home consumption or market sale (cereals, vegetables, tree crops, livestock, dairy products, poultry)
- household production: goods and services produced within the household for home consumption or market sale (food processing and preparation, provision of household water and cooking fuels, laundry, cleaning, health care, house building and maintenance)
- human capital production: childbearing, child care and the transmission of skills and knowledge
- self-employment in the informal market sector: off-farm activities such as marketing and personal services
- wage labor: paid employment, whether in agriculture or other sections

Much of the recent farming system research also addresses interactions of production and consumption behaviors, as well as the trade-offs between on-farm and off-farm labor. However, this research has been much slower to explicitly incorporate household and human capital production in their analysis.

2. Household Resource Allocation Strategies

Several kinds of models have been developed to understand the resource allocation choices made by farm households. Small farmers are no longer viewed as ignorant, tradition bound and resistant to change. They are now seen to be allocating scarce resources of capital and labor rationally to achieve the greater benefit (utility) for the household. In this view they are "efficient by necessity," responsive to prices, and willing to adopt improved technology when it pays to do so. The most recent household models also acknowledge that because farm families consume part of what they produce, production and consumption behaviors are closely entwined and that distinctions between the two are

not always clear. Much farm household consumption could also be seen as productivity-increasing investments in the health, education and nutrition of the household's human capital. Allocative choices are constantly being made about the levels of time and resource that will be devoted to each area of household activity. Produce is processed and consumed by the household, or sold, and the profits used to purchase inputs or to pay school fees. Such choices are affected by the level of resources the household possesses, the size and age structure of the household, the availability and cost of technology, and the prices in local market as well as the cropping systems possible in the environment.

Most household models assume that farm households and the people within them, will do first the things that are necessary for survival. To provide their basic needs for food, water, shelter, and clothing, a kind of "safety first" strategy is used by most small farms in allocating their resources. Risk reduction strategies are used to assure the household a supply of the things necessary for survival. Many cropping strategies are chosen for their reliability rather than for maximum productivity. If it is necessary to walk long distances to obtain drinking water, or cooking fuel, hours of labor time may be taken from agricultural and household production and locked into these essential activities.

A second assumption is that work is organized and resources are deployed to give the maximum returns compatible with safety. Ben White, in his study of poor Javanese households, describes it this way:

"If we were to rank the various productive opportunities in order of their returns to labor...we would expect to find that households would, whenever possible, choose the available combination of activities with the highest total returns to labor.

Thus, for example women will often stop or reduce their trading or mat-weaving activity during harvest time to take advantage of the better returns in harvesting. Men may remain at home, cooking and babysitting to free their wives for the harvest; young children may herd livestock or cut fodder when there are wage-labor opportunities for their fathers, or they may cook and babysit while their father cuts fodder and their mother is planting rice. Each household survives on a basis of extreme occupational multiplicity and highly flexible division of labor among household members. Since the returns to labor in most occupations can scarcely support an adult, let alone an entire household, the burden of subsistence is shared by men, women and children together. Each household's income is derived from a great variety of sources which change constantly in response to available opportunities according to the season, the state of the market, and even the time of day."⁵

Although this description emphasizes the rationality of the household's labor allocation decisions, it is clear that such choices are also effected by the power relationships within the household and the community. Such a description ignores the question of how decisions are made within the households. Women and men may have different production priorities. One may wish to invest more resources in subsistence production while the other favors cash crops, or wishes to invest more in the nutrition or education of the children. Purchases of household production technology such as improved stoves may compete for capital with purchases of agricultural technology. The relative bargaining power of the two sexes within the household will influence the allocation of productive resources as much as purely economic considerations.

In many systems there are gender specific responsibilities for producing certain crops or supplying certain kinds of household income, as well as responsibilities for making certain kinds of household expenditures. Many rural households utilize both pooled and non-pooled income streams. Those familiar with

American farms will remember the discretionary power of women's butter and egg money, which often contributed substantially to the family's well being. In many developing countries, greater proportions of household income flows may be separate. According to AID's Women and Development policy paper:

"Research findings for Sub-Saharan Africa, the Carribean, South and South East Asia indicate...a pattern of separate and distinct income streams and expenditures, where males and females meet financial responsibilities to the family individually with little or no access to each other's cash or other resources." (p. 3)

In intervening in such systems it is important that projects address the reality of the income flows in project households and not undercut women's income sources, or lessen the base of their bargaining power in other ways.

The economic convention of assuming a household utility function in which a household acts in its own best interest given its resources, its economic environment and its technology, obscures the fact that what is in the best interests of the household may not be in the best interests of the particular members. The unpaid family labor of women or its younger members may increase the income, status and living standard of the household, yet they may not receive an equitable share of the benefits. In placing women within the household context, therefore, we must emphasize that although individuals in households have shared interests, they also have separate interests, and they may sometimes have opposing interests.

The separate and opposing interests of women and men may be either acknowledged and institutionalized within the community or they may be vigorously denied. In systems where public norms define women's role as that of economic dependent and restrict them to unpaid labor, women's defense of their own interests is likely to be subtle and difficult to perceive. Nevertheless it can generate profound impacts on the agricultural economy. Consider the consequence of dependent women's need for sons who will support them in their old age.

We would caution project analysts that while it is often a useful assumption that households act in a relatively rational and equit-

able manner to maximize benefits to their members, it is also important to be alert for situations of separate or conflicting interests within the household that may effect project functioning.

C. PATTERNS OF WOMEN'S PARTICIPATION IN AGRICULTURAL PRODUCTION

Possible arrangements of agricultural responsibilities and tasks are almost limitless. Fortunately for project analysis, there do seem to be patterns. During the past decade, one of the liveliest fields of research on women has centered on factors that influence these patterns of rural women's work. Economic rationality, culture, demography, colonialism, capitalism, capitalist exploitation, patriarchy, the physical safety of women and children, and the type of cropping system have all been cited as influences.

One of the most influential explanations was offered by Boserup in 1970. She noted that in sparsely populated areas such as Africa where shifting hoe cultivation is the rule, men take part in cultivation, primarily in land clearing, but women do most of it. Such areas were contrasted with more densely populated areas of Asia where the agricultural system is that of extensive plow cultivation. Here, men perform the farm tasks associated with the plow, and the hand operations--or some of them--are left for women to perform. In regions of intensive cultivation of irrigated lands, both men and women must work in the fields to support a family on small holdings. In linking population density and the consequent differences in modes of production to women's roles within the production system Boserup makes an implicitly evolutionary argument which identifies population pressure as the engine that propels agricultural intensification and technical change. The unfolding of this scenario removes women from control of land and other productive resources, thus marginalizing them, and constraining their productivity.

"As agriculture become less dependent on human muscular power, differences in productivity between the

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sexes might be expected to fall. In actual fact, this is far from the case. Men monopolize the use of new equipment and modern methods...In all developing countries, and most industrialized countries women perform simple manual tasks in agriculture while more efficient types of equipment, operated by animal or mechanical power, are used primarily by men. Often men apply modern scientific methods of cultivation to cash crops while wives continue to cultivate food crops by traditional methods. Thus, in the course of agricultural development, men's labor productivity tends to increase while women's remain more or less static...The tendency toward a widening gap is exacerbated by the fact that it is cash crops men are taught to cultivate...because men can use part of the earnings to invest in improvement of production, while women producing food crops for the family have no cash income for improving their farming techniques." (pp. 52-53)

This thesis has stimulated considerable debate. As more and better information becomes available, the picture seems more complex, with a larger number of factors at play. Traditional systems present more variation, and the dynamics of change are more variable than Boserup's arguments reflect. Nevertheless, there do seem to be systematic underlying regularities, although they are not yet well understood.

Because current generalizations are tentative and have numerous exceptions, it is important to understand the reality of the specific systems the project is intended to affect. Five common patterns of women's agricultural responsibilities are described briefly below.

1. Separate Crops. In this pattern women and men are responsible for production and disposal of different crops within the household production systems. Alternatively, women may specialize in certain crops as well as participating with men in the production of others. There may be a division between:
 - women's subsistence crops and men's cash crops
 - women's horticultural crops and men's cereal crops
 - between two cereal crops such as millet and rice

- women's swamp rice and men's irrigated rice
- between women's goats and men's cattle

Alternatively, women may specialize in:

- poultry
- vegetable or tree crops
- small ruminants
- gathering of wild crops
- beans, cowpeas and other legumes

2. Separate Fields. In this pattern, women produce the same crops as those controlled by men but in different fields. Such crops are usually for household consumption, but some may also be marketed. This pattern is found in West African systems, where women's fields are usually part of a larger system in which labor of both sexes is also contributed to the communal fields of the extended household. In these cases, there may be three interlocking production systems: the fields of each wife, the husband's field and the joint field of the extended family.

3. Separate Tasks. In this pattern, some or all of the tasks within a single cycle are assigned by gender. Common tasks assignments include the following:

- Men prepare the ground; women plant or transplant the crop. This pattern is particularly prevalent in rice production and in African hoe culture.
- Seed selection and storage is done by women in many systems.
- Plowing is done by men in most systems.
- Certain types of plant protection may be assigned to women.
- Certain kinds of harvesting tasks may be assigned by gender. Climbing trees to harvest crops is usually done by males.
- Post harvest processing and storage of cereals, vegetables, tree crops and dairy products are often women's tasks.

- Care of animals when they are young or sick is often women's work.
 - Men and boys often supervise grazing of herds far from home.
 - Milking is often assigned to one sex or the other. Sometimes this differs by animal. Among the Malian Tuareg, men milk camels, women milk goats, both may milk cattle.
4. Shared Tasks. In this pattern which overlaps with the other patterns to varying degrees, men and women undertake the same tasks on the same crops. Some systems are marked by jointness in most tasks; in other systems, only labor intensive tasks such as weeding and harvesting are shared.
5. Women-Managed Farms. These are two types, de facto and de jure. In de facto systems, men work away from the farms for days, weeks or even years, leaving the women to manage in their absence. In some situations, as in the Indonesian example, men work off-farm but return each evening. Kenyan and Japanese women manage farms during the week while their husbands work in the city. In Nepal, absences extend for several months. In Jamaica, Lesotho, Botswana, Yemen, Zimbabwe and the Senegal river basin, male migration abroad may last for years. While in some highly patriarchal systems, farm management and the investment of remittances may remain in the hands of older men, in many systems, women become the effective farm managers. Many of these farms command significant resources but women managers may lack legal authority to sign credit agreements and commit resources.

De jure women headed households are increasing on a world wide basis. Such women may be widowed, divorced, abandoned or simply never married. Such women-headed households may represent as much as one third of the households in some rural communities. They tend to be among the poorest farming households, underresourced and suffering serious labor constraints. Yet there are many who depend on them for survival.

In patterns of separate crops and separate fields, women are likely to be responsible for management, labor, and disposal of production. Often the produce is primarily for household consumption, but there may be significant surplus for sale. Labor exchange is common in these systems, paid labor less so. In patterns of separate tasks and shared tasks, women's labor may be either unpaid family labor or paid wage labor. On family farms, management of this labor is likely to be a shared household responsibility. Control of the proceeds is variable and usually complex. In cases of plantation agriculture or communal farms, management rests further afield and control of wages may rest either with the individual worker or the household head. For women-managed production systems, women are more likely to control proceeds and usually provide most of the labor, though they may also hire labor or supervise the labor of younger household males. Most agricultural households display mixed patterns of responsibility and control, combining production cycles for which one sex is primarily responsible with those where responsibility is shared or interlaced.

Systems vary both not only in the tasks they assign by gender, but also in the flexibility with which the tasks can be shifted. Children may take over tasks of the parents as they mature, sons replacing mothers in field work or milking. Seasonal shifts in the labor devoted to different kinds of production are often linked to the agricultural cycle. During seasonal labor bottlenecks such as harvesting, every able bodied person may be drawn into agricultural work while other work is put aside. Sometimes this means that everyone goes into the fields. In other systems, women work to process the harvest and prepare meals for field workers. Women's field labor may also be divided by class. Poorer women may work in the fields for pay while women in more prosperous households process and cook the food.

Figure 1 provides a particularly striking example of household time tradeoffs in Upper Volta. During the July peak agricultural labor period, the average mean hours of domestic labor per fortnight drops from 200 to 50 and then to 25 as the agricultural labor climbs from 250 to 550 hours. Later, as the agricultural labor hours drop back to 100, the average domestic labor returns to 200, with two sharp dips in October and November mirroring brief upswings in agricultural labor demand. Non-agricultural work-time is very low during the agricultural season and increases during the dry season, while livestock work continues steadily at a low level straight through the year.

Such a pattern clearly reflects women's transfer of labor time from household production to agricultural production during periods of peak labor demand, together with a burst of "catch up" household production time immediately after each agricultural peak subsides. Because the data is not disaggregated by sex, the other gender-related shifts in labor allocation patterns within the household are less visible, although certainly present.

D. WOMEN'S ROLES IN MANAGEMENT OF AGRICULTURAL PRODUCTION

Because increased productivity is related to management decisions, it is important to understand not only who is doing the work, but who is making the decisions about cropping patterns, seed selection, use of purchased inputs, use of family and hired labor and crop disposal. It is also important to understand who is implementing the decisions, with what resources and at what level of skill. Unfortunately, the burgeoning literature on farm management and farming systems has given scant attention to issues of gender influence on intra-household decision making and resource allocation.

By contrast, anthropological studies have consistently documented the patterns of women's responsibilities for management of their own

FIGURE 1

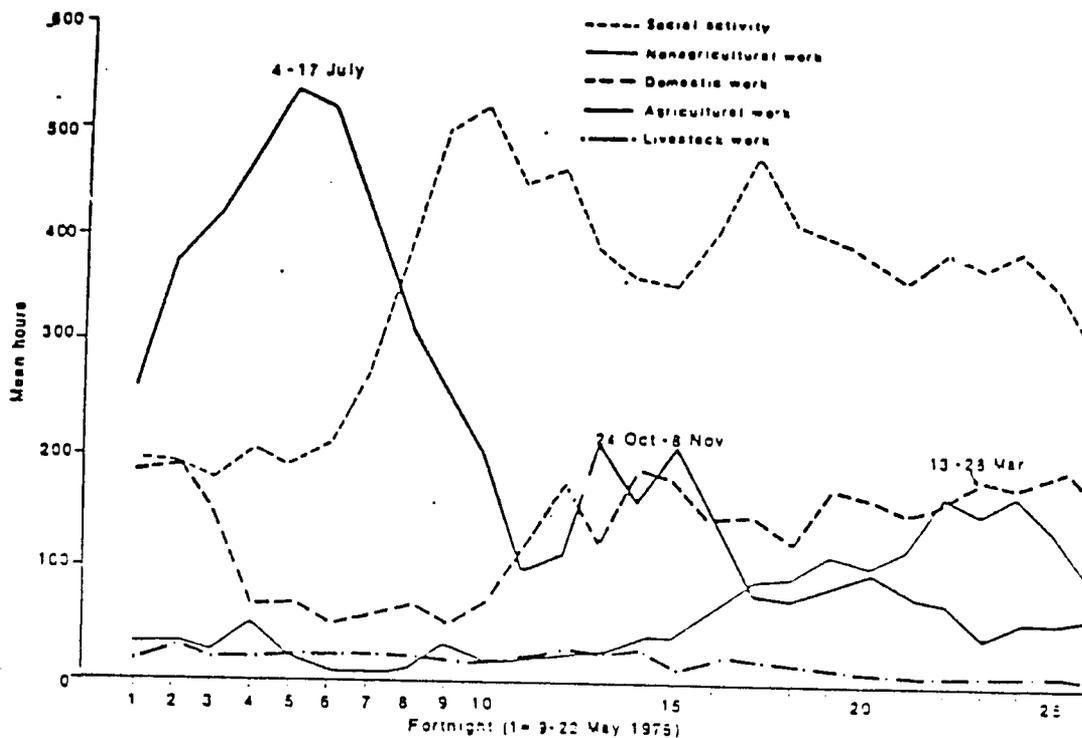


Figure 1. Mean total household labor hours each fortnight by category of work, Upper Volta.

From Norman, Farm and Village Production Systems in the Semi Arid Tropics of West Africa, ICRISAT, 1979.

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animals and crops as reflected in previous pages. Systematic studies of male and female influence on management decisions in integrated systems are increasing in a number of social science literatures. Acharya and Bennet, in an elegant study of women's time use and decision making in eight Nepalese villages, concluded that:

"Nepalese women are not just silent workers who take directions from men; on the contrary, their managerial role in the agricultural production appears to be commensurate with the level of their labor input into the family farm enterprise (which is 57% for all villages averaged)...In decisions..., about the disposal of what is produced, and the management of household assets, we find that in these later types of decisions women's labor input into subsistence production no longer seems to have a consistently positive effect across communities. Instead what appears to be more important is the degree to which women in a given community participate in the market economy...and the home production of crafts for sale...Moreover it appears that cultural factors affect both the structure of female economic participation and female input into the decision making process...there are, however, a number of other factors acting at the household and individual levels such as the economic status of the household, the individual woman's age, the availability of child care, which also affect the structure of female economic participation and decision making in the household." (pp. 21, 23).

White and Hatusi, in studying decision making in Javenese households, make the following observations:

"Women are often involved in production decisions, and, in significant number of cases they are the dominant influence in these decisions. Since we are dealing with households whose primary source of income is from agriculture, we find no confirmation of the notion that production decisions are firmly in the hands of 'male farmers.' Any researcher who carries out farm management surveys in rural Java quickly learns that men do not monopolize the details of production management. Normally, the interviewer sits in the front room and addresses questions to the (male) 'farmer' in implicit endorsement of the general norm that farming is 'men's business.' However, detailed questions on fertilizer or labor use, yields and so on, seem very often to require

prior consultation with the 'housewife' (who may be crouching modestly out of sight in the back room) before they can be answered: 'Mak (mother), how much fertilizer did we use? Where did we get the seed? How many laborers helped in the planting and how much did you pay them?' and so on." (pp. 32-33)

They also note that for some households the involvement of women on production decisions is a necessity because their husbands are physically absent. Either the men are working in the fields of others or in another type of wage labor.

E. IMPORTANCE OF IDENTIFYING THE GENDER RELATED RESPONSIBILITIES

Identifying the gender division of responsibility for labor, management, and disposal of all types of households production is crucial to project analysis because the segmentation of control and responsibility has practical effects. Technical assistance given to one family member does not assure its use in all the household's landholdings. Increasing household income will not necessarily make productivity increasing inputs available for all activities if household income is not completely pooled. Targeting improved technologies efficiently demands an understanding of who is likely to use the technology. When labor is segmented by gender, care must be taken in project analysis that labor supply estimates reflect this to avoid creating gender specific labor bottlenecks.

F. DEVELOPING ACTIVITY PROFILES OF AGRICULTURAL HOUSEHOLDS

Table I provides an outline for developing a gender specific profile of agricultural household activities. It should be recognized that although some farming systems projects are beginning to collect detailed micro-level data, existing data would seldom be sufficient to complete such a profile. Nonetheless, it is important to know what information is missing so that a decision can be reached whether to invest additional

resources in gathering data or to proceed with project design based on certain tentative assumptions regarding the missing data pieces. Perhaps the major value of an attempt to develop such a profile at the micro level is to make programmers aware of what they are assuming and somewhat more cautious in proceeding.

Such household level analysis is only useful to the degree that it is integrated into project level planning and implementation. The particular aspects of the household production system likely to be affected by the project should receive the most attention in data collection, and the findings should be explicitly related to project level analysis throughout the project cycle. For example, if household level analysis shows seed selection and preservation to be women's responsibility, then institutional interventions to develop or disseminate new seeds should take this into account. If household level analysis shows women to be responsible for production and marketing of poultry, dairy products or vegetables, interventions in these areas should address this reality.

Such attention does not demand that traditional roles are to be preserved at any costs. It does demand that the analysis of the costs and benefits of differing project strategies explicitly attend to gender roles, as well as to the gender differences in control over resources and benefits that will be addressed in the following section.

IV. FACTORS INFLUENCING WOMEN'S PRODUCTIVITY IN AGRICULTURAL SYSTEMS

There are a number of factors that influence rural women's productivity. They can be seen as three overlapping constellations; the physical factors associated with size, strength and production; the socio-cultural factors influencing role ascriptions and family incentive structures and the institutional structures which affect access to factors of production; and to public incentive structures. Although institutional factors are most amenable to project intervention, and will occupy the major share of this discussion, it is

useful to begin by discussing the influence of physical and social factors connected to women's size, strength, and nurturing responsibilities, since so many discussions not only begin, but end, there.

A. WOMEN'S RELATIVE SIZE AND STRENGTH

Women's relatively smaller size and strength are often cited as reasons for assuming their productivity is lower than men's in farm labor and off-farm employment. There is a tradition in farming systems work of weighing women's productivity at .75 or .8 of a man's. Recent empirical analysis of input-output data does not support these weights. In Kenya, women's overall productivity was found to be as high as men's in agricultural labor, while in Sri Lanka women's rice transplanting, in Upper Volta women's weeding and in West Africa women's cotton picking were all found to be as productive as men's labor in the same activity.

In Bangladesh, by contrast, women's productivity was lower than men's when carrying earth and rocks for road building. It seems likely that women's and men's productivity and differences based on size and strength vary by task and are greatest for tasks that demand the most body mass and strength in the upper torso. This view is reflected in a survey of Peruvian peasant farmers where over 70 percent of the respondents considered the time of men and women equally productive in planting, weeding and harvesting by hand, while only 33 percent felt women to be as productive in hoeing, digging with a pick or harvesting with a sickle, tasks that do require both tools and greater strength.⁶ The problem is of more than passing interest in farming systems research. Norman recommends more rigorous data collection and analysis to establish realistic weight ranges for tasks.

"There is difficulty in measuring work by different family members and reducing it to a common denominator in terms of productivity. Different approaches to this problem have led to the actif concept in Francophone countries, and the male equivalent concept in Anglaphone Africa. The male equivalent approach is often used in situations where labor flow data is being collected...the

system need only reflect differences in productivity per unit of time of labor. Arbitrary weights by task is rarely done, an unfortunate fact which could result in spurious conclusions. The weighting systems employed are critical in determining the validity of the results. Unfortunately, it's not always clear what weighting system was employed, and why specific weights were chosen...Weights have been used that reflect differences in levels of consumption rather than in terms of work productivity. It is important to distinguish...between consumption units and work units since such weighting systems are useful for different purposes...Relevant weights are further complicated by the facts that productivity of individuals of different sex and age will vary according to the tasks and its urgency...This is a major problem and makes comparison of studies difficult." (p. 244)

B. WOMEN AND THE PRODUCTION OF HUMAN CAPITAL

Women have a clear comparative advantage in the production of human capital due to their unique capacity to produce new human beings through pregnancy. Without this capacity, societies could not continue to exist. In many cultures women achieve both power and status by exercising this capacity, while at the same time carrying out a great deal of other productive work. After childbirth, women continue to carry out this productive work while simultaneously attending to the needs of their children.

Although increasing amounts of child care can be delegated to others as children grow older, a stream of joint productive work is characteristic for many women in farm households, particularly during periods when they are pregnant and nursing. On the one hand, women's agricultural or market time may be shortened by the need to nurse a baby or the need to attend to children while working may increase the time needed to complete a task. Yet, at the same time, women are also producing human capital. In the past, such joint productivity seemed difficult for economists to handle. Now, despite the methodological problems, economists studying American farm households are beginning to develop models that reflect joint production, arguing:

"For farm households, the possibilities for joint production are much greater than for wage earning households...The wife's household time may simultaneously be spend preparing dinner and listening to farm market and weather information. Farm records can be prepared while supervising children, and farm and household inputs can be purchased on the same trip to town.

Much of women's work in agricultural households involves this kind of double or triple layer of simultaneous productive activities. It is characteristic of mother-child interactions that they are pulsed, occurring in brief bursts, separated by attention to other tasks on the part of both mother and child. Such an activity pattern demands both skill and judgement in coordinating a great variety of different activities. Mead Cain in his discussion of Asian households notes:

"The particular work activities of females are of shorter duration and are more integrally linked than those of males. Thus managerial skills must be applied more frequently and efficiency is best judged overall rather than for specific activities." (p. 243)

C. THE ISSUE OF TIME

Discussions of time and its relationship to women's productivity are threaded through this paper. We have alluded to short run, daily allocations of time, medium run seasonal cycles of time use, and long run effects of major changes in the economic, political or physical environments.

THE SHORT RUN

Because labor time is the primary productive resource for many of the rural poor, we have assumed that both sexes allocate it rationally, given the constraints they face. Women in most agricultural systems have different patterns of time use than men, both day by day and across the seasons. As noted above, women are more often engaged in joint production, managing two or three activities simultaneously, changing

activities more often in the course of the day. Across the world, rural as well as urban women work three to four hours a day more than men in the same society.⁸

At least three reasons have been advanced to account for this difference. Many household and human capital production tasks must be done repeatedly and consistently in order to sustain life at an acceptable level. Food processing and cooking, supplying fuel and water, caring for children and the sick are all activities that must be done daily no matter what other work is undertaken. These tasks, assigned overwhelmingly to women in rural societies, consume large amounts of time, and add to the length of the work day. A second explanation is that labor-reducing technology is less available to women in all areas of their production; therefore, women's labor hours are longer, though their total production may be no greater than that of men in their households. These two arguments are not mutually exclusive, and are often assumed to be interactive.

A third argument made by an interesting assortment of Chicago school economists and feminist scholars, argues that women's joint production is so valuable to the household that it is economically rational for women to work longer hours. Feminist scholars cite distortions in labor markets and incentive structures and women's constrained options as ways of reconciling the high value of joint production with women's relative lack of benefits from this value. The Chicago school argument begs the question of the intra-household distribution of benefits from women's work, submerging the issue in the household utility function. Whatever the explanation, the fact remains that women in rural households work very long hours, trading off the value of time used in one activity against the value in another. Women's time is a scarce resource, and its opportunity costs must be considered in project interventions.

There are a number of ways that the time constraint can be addressed in project design. Using the kind of Activity Analysis suggested in Table I,

it is possible to estimate how time is spent and to project how proposed changes may effect household time use. If changes in any part of the system are likely to increase the demand for women's time, several questions can be asked.

- What benefits will women gain from increasing their labor time: Direct? Indirect? Uncertain?
- What other activities are likely to be displaced by this increased time use? What effects will this have on the household in general? What effect on children?
- What kinds of technologies might be introduced to relieve the pressure on women's time? Will they lessen her paid labor time or her unpaid labor time?
- How might such technologies be funded? Credit to households or to women directly? Higher incomes? For whom? Government provision of public services such as wells and electricity?

Among the successful strategies to increase the productivity of women's time have been provision of closer water points, addressing the fuelwood problem with improved stoves or fuel sources, and introduction of household or community grain mills. Basic health and sanitation programs can also release time spent caring for the sick, and rural electrification can transform rural time use.

Aside from technological innovations, it is often possible to free up time for training or for regular health care by paying for it, directly or indirectly. Many poor people can release themselves for a morning, a day, or even a week, if they can pay someone else to assume their responsibilities. Many American poverty programs have used this strategy successfully. In developing countries, maternal/child health clinics often distribute a family flour allotment on the days the mothers come for appointments. In Upper Volta a female literacy program succeeded by purchasing a diesel grinding mill. Three days a week, lessons were held before the mill was turned on. In other places, mills have been combined with radio lessons to provide both flour and literacy in time previously devoted to hand pounding.

One final project intervention is support of child care arrangements which release the time of both women and girls, as well as assuring the safety of children. Often, traditional systems rely heavily on girls for child care. When education becomes available, the opportunity cost of their time rises sharply. In Tanzania, day care centers were organized in many villages, to release girls for school. In other places, older women, or nursing mothers have been informally assigned responsibility while mothers are in the fields. Otherwise, mothers may take the children along and tend to them as they work. Support of appropriate child care arrangements can contribute significantly to long term gains in the productivity of both women and girls.

THE MEDIUM AND LONG RUN

In the long run, women's activities and productivity will be influenced by the larger forces at work in the environment. Male migration, changes in technology and increase of production for market affect both the control and the allocation of household resources. Demand for women's agricultural labor may increase, decrease, or change in nature. Shifts in allocation may take place smoothly and swiftly, or slowly and with great difficulty. Control over resources of land, labor, capital, tools, and information may shift between the sexes, as new resources become available. Aside from Boserup's pathbreaking work, until recently there had been little attention paid by mainstream economists in the relationships between shifts in the macro context and shifts in the gender-related resource allocation patterns of agricultural households. Recently, however, forward and backward linkages between the national economy and decisions made within farm families are receiving more attention. For example, Marc Nerlove cites the effect of a shift in allocation of resources to human capital development:

"...demographic changes which accompany agricultural transformation...are a crucial element in agricultural supply response...Many demographic changes have their roots in individual decisions of farm people to make greater investment in human capital in the form of more

education and better nutrition...and to have fewer children...As labor markets improve and there is increased awareness of opportunities outside of the agricultural sector, such demographic changes alter the nature of agricultural production, leading to the increased use of non-traditional inputs and to a greater reliance on markets, and thus alter the nature of supply response to prices and other factors." (p. 885)

D. GENDER DIFFERENCES IN ACCESS TO PRODUCTIVE RESOURCES

One way that agricultural development proceeds is by making resources available for increasing farm productivity. The most common productivity-increasing resources are improved seeds, fertilizers, technology, credit and information. In some cases, land may also be redistributed or new land brought into production. Infrastructure such as irrigation systems, roads and rural health programs are often introduced, and rural industries may be encouraged. Such inputs are intended to increase the productivity of the entire system by increasing the productivity of farm households and the individuals within them. In land short systems efforts are generally directed toward increasing productivity per acre through the use of "soft" technologies such as improved seed, fertilizers and irrigation. In labor short systems, the efforts generally focus on increasing productivity per labor hour through the use of machinery and tools.

Systems differ in the degree of access to productive resources they permit to various groups. Often, those who control the greatest share of the current resources gain the largest share of the new. The hierarchical distribution of social power, income and productive resources by class has been extensively explored in development literature. There is a second system of stratification present in many societies, that of patriarchal social relations between sexes. Mead Cain defines patriarchy as:

"A set of social relations with a material base which enables men to dominate women. In Bangladesh, patriarchy describes a distribution of power and resources

within families where power and control of resources rests with men, and women are powerless and dependent on men. The material base of patriarchy is men's control of property, income and women's labor. The structural elements of patriarchal control are interlocking and include elements of the kinship system, political system and religion."

Systems vary greatly in the equity of their relationships. In many agricultural systems, household resource allocation decisions are relatively equitable. In other systems the strong exploit the weak for their own advantage. To the extent that class or patriarchal stratification characterizes an agricultural system, women's access to productivity increasing resources will be constrained either by their household's status, their gender, or both. Since women consistently contribute well over half the labor hours in rural households, constraints on women's access to resources systematically depress the productivity of half of the available rural labor. This seems shortsighted, yet there is substantial evidence that in many rural systems women have less access to land, capital, credit, technology, wage markets and training than men in the same system. Effective project design must identify which of these barriers to women's access are operative with the project and find ways to deal with them, either by removing them, passing them by, or adjusting project expectations to them.

1. Women's Access to Land

Women's access to land is generally greater in systems of low population density, such as Africa where use-rights to land are still in force. Even in such areas, women may lose access to good land as a growing population increases pressure on the land. Cleave's African studies show women walking further than men to their fields in areas where increased cash cropping makes land more valuable. Palmer in Indonesia, Smale in Mauritania and Hanger and Morris in Kenya all document women's loss of secure access to land when the introduction of irrigation increased the productivity of the land. Effective loss is often accompanied by

changes in the legal code that register all land in the name of the head of a household. Such legal changes have been documented recently in Kenya and Sri Lanka.

The 145 countries attending the 1979 FAO-sponsored World Conference of Agrarian Reform and Rural Development (WCARRD) recommended a different course of action. The program of action recommended that countries:

"Repeal those laws which discriminate against women in respect to rights of inheritance, ownership and control of property, and promote understanding of need for such measures...promote ownership and co-ownership of land to effectively give women with absentee husbands the legal right to make decisions on the land they manage (Section IV, A i,ii)."

The government of India has incorporated this recommendation into their sixth Five Year Plan, and AID is exploring with the Indian government possible arrangements for implementing co-registration of land title in the resettlement accompanying the Maharashtra Irrigation Project. Similiar discussions are underway between AID and the participating governments to assure women's access to land (and water) in the Senegal River Basin Development.¹⁰

2. Women's Access to Capital, Credit and Agricultural Technologies

Women's lack of access to cash assets, which results from their role as unpaid family laborers and subsistence producers, when combined with constraints on their access to paid labor markets limits their ability to invest in productivity-enhancing agricultural inputs. Compounding this problem is the reality that where women are responsible for separate crops, separate fields, or management of the total farm enterprise, it is often difficult for them to belong to the government sponsored cooperatives and

water users associations which control distribution of new seeds, production packages, water and credit. Not only is women's access to credit constrained by their lack of access to membership in farmers' associations and cooperatives, but their lack of secure title to property often cuts them off from other sources of credit. Henn cites this lack of access to capital as a major constraint on African women's use of agricultural inputs. Since African women are major agricultural producers, such a pattern is a serious constraint to increasing African food production.

Despite all these difficulties, women farmers often do surprisingly well with the resources they have. In one of the few empirical investigations of the relative productivity of men and women farmers, Moock did intensive input-output analysis of maize farms in a Kenyan district where 40% of the farm managers were women. He found women equally productive per hectare despite the fact that the women had less capital and used fewer purchased inputs. They substituted additional labor for other inputs and maintained productivity per hectare, though not per hour. However, in a nearby area with a higher level of government services (all directed to men), women's relative productivity was falling behind men's. Additional time could no longer compensate for improved technologies.¹¹

A complicating factor is that packages for improving productivity of "women's crops" often simply do not exist because such crops have low priority in government research and extension. It is noteworthy that when AID asked a panel of international experts to specify agricultural research priorities in areas that would be of greatest benefit to the world's poor, the top priority crops were small ruminants (sheep and goats), millet/sorghum and beans and cowpeas. All of these neglected crops are women's crops in much of the developing world. Collaborative research involving American and developing country institutions is now going forward on all these crops, with specific attention to women's

roles in their production.

Among project targeted specifically to "women's crops", there have been a number of successful vegetable production projects. The Gambian Ministry of Agriculture set up a project to train 30 women in production of onion crops for export. Fertilizer and seed were provided and the government purchased the crop at an agreed price. Within two years the project grew to involve 900 women in 32 different projects, providing women with income and opportunities to join cooperatives.¹² In Jamaica, USAID financed a women's vegetable production component as part of a larger integrated rural development project. Here, the intention was to improve the nutritional balance in the family food supply of poor hill farmers. The gardens were designed to produce year round with low labor inputs. Thirty young women high school graduates were trained as extension agents, and of these 20 were employed by the larger project. The gardens are rapidly spreading and visitors from a number of Caribbean countries have been trained there to develop similar projects.¹³

Common problems with agricultural projects for women are inadequate attention to crop preservation, and lack of markets for sale of excess production. Both of these problems have been successfully addressed in the Indian Project Flood, where women have been successfully integrated into the cooperatives that produce milk for sale in the city. Because women traditionally cared for the cows, they were involved in the decision of villages to join the cooperatives. They have received training about animal care and nutrition, and generally they receive payment for the milk because they are the one responsible for the care and feeding of the animals.¹⁴

3. Women's Access to Household Technology

If women's lack of capital and credit is a serious constraint to use of improved agricultural technology, it is an even more serious constraint to use of improved household technology. In developing countries, low levels of household technology for the provision of water, domestic fuel and the milling of grain are particular problems. Projects for provision of domestic water sources and social forestry are often justified because they release women's time for more productive activities. In labor-short African agricultural systems, when labor-saving household technology such as cooperative grinding mills have been introduced, women use them most intensely during peak agricultural periods, investing the saved time into cooking an evening meal after their field work or additional time in the fields. By contrast, in labor-surplus situations such as Indonesia, when mechanical milling replaced hand pounding by paid labor, the effect was to deprive poor women of a crucial source of income. Once again, it is important to understand the specific system before intervening.

4. Women's Access to Rural Labor Markets

In land-short situations, women's participation in rural labor markets may be necessary for family survival. In other cases, women may need wage labor to meet certain obligations or to purchase productivity increasing inputs. Studies of such markets show distinct male and female segments. Many tasks are assigned by gender, women's wages are generally lower, and their unemployment rates are higher. Binswanger, in citing ICRASAT's village studies in India, says:

"Males would hardly desire to participate in female sub-markets; male wages...are roughly 80% higher than female wages, and male possibilities of employment are much higher...The segmentation clearly works in favor of the males and at the expense of the females...Low wages are

attributed--by males and females--to the lack of physical strength and stamina of women. One need only see the loads carried by them, and the discipline of their paddy transplanting lines to realize that the large observed wage differentials can hardly be explained this way." (pp. 13-19)

Projects can and should be designed to provide employment at fair wages for women as well as men in areas such as forestry, seed multiplication facilities, professional and paraprofessional service delivery, agroindustries and other rural enterprises.

In some circumstances, women have also worked to improve their own employment opportunities. Many Kenyan women have organized themselves into self-help groups that exchange labor with one another, and also hire out as a group one or two days a week. They often use their wages as capital for group enterprises. In 1950, a small group of Sri Lankan women organized themselves into the Women's Transplanting Society. Every year since then, women in the group travel to paddy growing areas to transplant rice for 2-3 months, moving from farm to farm. Because they assure steady reliable work, they have been able to bargain for an agreed wage, nutritious free meals, free transport and a separate room for the group to lodge in. "By organizing themselves...the women are able to work with security in areas distant from their homes, to command reasonable working conditions, and to earn important income."¹⁵

5. Women's Access to Education and Training

A major factor influencing women's productivity is the extent to which they have access to education and training. There is general agreement that education increases productivity and a substantial literature exists documenting the positive effects of women's education on human capital development,¹⁶ paid labor force participation,¹⁷ and agricultural production.¹⁸ A recent comprehensive Indian study found that formal education of farm

wives enhances the productivity of all farm inputs, including a husband's time in farm production.¹⁹

Yet, according to UNESCO (1977), women compose less than one-third of the primary school students in the low income nations of every region except Latin America. According to Safillious-Rothschild:

"Rural women have consistently lower literacy than rural men, but also lower literacy than urban women...Educational wastage is higher in rural areas and for girl students...Although girl students show greater rates of educational wastage than boys, their wastage is more often due to repetition of grades...girls attrition from primary school seems, therefore, to be less due to a failure to be promoted than to withdrawing from school for non-scholastic reasons. The obstacles to rural women's access to elementary education can be grouped in the following categories: 1) competing household and childcare tasks and responsibilities; 2) competing involvement in productive economic activities; 3) parents', and especially fathers' negative attitudes toward daughters' education; 4) parents' limited financial and educational resources; 5) shortage of schools; 6) shortage of women elementary school teachers combined with male teachers' negative attitudes; 7) dropping out of school because of pregnancy or marriage." (pp. 2, 3, 8)

Remedies that have been suggested include rearranging the school schedule to accommodate cropping cycles, policies and programs to decrease the excessive time spent by rural women in household and agricultural work, development of day care and rotating child care arrangements to free girls' time for school, the increased training of women as teachers and assistant teachers, and increasing the number of paid professional and paraprofessional women in rural programs to establish the economic and social status pay-off of girls education.

Such efforts to increase the number of rural women with a primary education must be supplemented by systematic efforts to increase the number of women receiving higher education. According to AID's policy paper:

"Women who combine the skills provided by modern education with an understanding of traditional values and local realities affecting women contribute a great deal to successful development programming. Thus, AID must take measures to provide access for women to training programs and higher education, especially in management and administration of the sectors...in most countries it is the functional ministries that bear primary responsibility for integrating women into their programs and for insuring the relevance of their program to the particular needs of women and girls." (p. 8)

This concern with the integration of professionally trained women into all aspects of agricultural institutions is particularly relevant to institution-building projects that include participant training. Care must be taken that women are actively recruited and supported in a training for a range of professional roles in agriculture in order to assure that the needs of women in agricultural households will be adequately addressed by agricultural institutions.

E. ACCESS TO AND CONTROL OVER THE BENEFITS OF PRODUCTION:
THE PROBLEM OF INCENTIVE STRUCTURES

Much of women's productive work is unpaid. Women subsidize the world's economies through unpaid household and human capital production. Farm women also undertake significant amounts of agricultural labor without pay. What benefits do they receive from this work? How can their labor be accounted for in terms of women's economic rationality? Two explanations are possible. One is that women are altruists. They derive their utility from the satisfaction of others, from seeing their families healthy, well cared for and well fed. The other explan-

ation is that women have little choice. Societies are arranged in such a way that women's independent access to productive resources, to labor markets, to information, to political and legal rights are seriously constrained. Society permits them only limited control of their own reproductive capabilities. The obligations of childbearing and child raising are thrust upon them and they must labor within households to assure their children's survival as well as their own.

It is reasonable to assume that both explanations contain some truth, though their weight certainly varies between societies. In modern American society, where reproductive control is widespread, women devote significant amount of unpaid time to the care of families, apparently because they derive altruistic satisfaction from doing so. Their access to labor markets and productive resources is great enough so that most North American women also have independent cash incomes. Nevertheless, there are significant gender differences in access to the highest paying work and resources for the most productive investments, which makes women's relatively greater contribution to household production economically rational, at least while their children are young. In most rural societies in the developing world, women's alternatives are more sharply constrained and the benefits they receive more limited.

Whatever the range of available incentives, it is safe to say that people will exert more effort, will become more productive in an activity, if they can see benefits flowing from their increased effort. These benefits may be in cash, in-kind, in power, respect, or in the satisfaction of seeing others well cared for. Benefits may also include relief from difficult or unpleasant tasks or from feelings of guilt.

Recent research documents that in societies where women participate in the market economy in some way, where women have direct access to cash, their power is greater in intra-household decision making, and the status of women is higher in the communities.²⁰ The incidence of wife beating also seems to be lower in such societies.²¹ These are all bene-

fits, over and above the value of the cash, yet linked to cash income. Therefore, in analyzing agricultural systems for possible project intervention it is useful to think about intra-household income flows.

- which productive work is paid? unpaid?
- who receives the pay? all the family workers individually or the head of household for the whole family?
- who controls disposal of the different household products?
- who receives cash from the sales? the producer? someone else?

Intra-household disbursement patterns are also important. Women's income may all flow to purchase the household's basic needs, to food and clothing, although her husband may have disposable income to use for productive inputs as well as for consumer goods such as transistor radios and beer. Where this is the case, the targeting of additional income specifically to women may be necessary. Simply "raising family incomes" will not serve.

Project Flood presents one successful way to channel income directly to women. Women's producers are paid directly by the co-op. Although this income is channeled back into the family budget, the report notes that the contribution women make enhances their importance. The same effect was described by Cerna in Rumania:

"The organizational and economic structure of the producer co-op has had a particular impact...by institutionalizing women's participation and paying them directly for farm work...The previous pattern of the individual family farm prevented a wife's distinct contribution to its welfare from being measured: this favored and strengthened the position of the family head who was the owner of the fruit of the family's toil. Now, on the contrary, each cooperative farm member's output of work and corresponding forms of payment are computed on an individual basis, whatever a person's family status may be...This is a tremendous change which enhances the partnership status of the wife, favors more independent behavior of women and creates conditions which will promote, in the long run, their equal status within the house." (pp. 119-120)

Such payment structures have also been with success in an AID PVO resettlement project in Senegal where membership in the productive cooperative is by individual rather than by household.

In contrary cases where women are not paid directly for their work, productivity often suffers, especially in systems with little pooled income. Women with high levels of responsibility for the provision of the family's basic needs and little access to cash are forced to substitute their labor, and that of the children they create, for the productivity-increasing inputs they cannot afford.

F. DEVELOPING PROFILES OF GENDER ACCESS TO, AND CONTROL OVER, RESOURCES AND BENEFITS

Table 2 provides an outline for developing a gender specific profile of access to and control over resources and benefits. Such a profile by its very nature has both efficiency and equity implications. The kind and degree of women's access to productive resources conditions the productivity of their labor, as do the incentive structures they face. The degree of control they exercise over resources and benefits affect their ability to increase production and their ability to bargain to protect their own interests. Because each of these factors has implications for project design and implementation, developing such a profile is a useful exercise in clarifying assumptions. It also permits a clearer picture of possible areas of project intervention.

V. ADDRESSING WOMEN'S PRODUCTIVE ACTIVITIES IN AGRICULTURAL PROJECTS

Factors that influence women's productivity have been identified in the previous section to include women's differential access to land, capital, credit, agricultural and household technologies, education and training as well as to rural labor markets. Programmers should try to identify the nature and seriousness of the barriers to women's access to such productive resources and

relieve them wherever possible. We have also noted the importance of identifying distortions in the incentive structures facing women not only for reasons of equity, but also because they influence the kinds of activities women undertake and the levels of productivity they can attain. Such analyses provide focal points for project interventions.

Straightforward economic analysis, when disaggregated by sex, often provides convincing efficiency arguments for removing institutional barriers to women's productivity; but, in order to make efficiency arguments, it is necessary to have data. The first step is specification of the productive activities women engage in within agricultural households. It is also necessary to understand the level of resources women command and the incentives structures that influence their behavior. This understanding can then be applied to each step in the project process. An outline of questions for addressing women's roles throughout the project cycle is included as Table 3.

Such a project cycle analysis requires a dynamic view of changes over time. Because projecting changes accurately with the present limited knowledge base is a risky business, the analysis emphasizes the need for regular monitoring of project effects and flexibility in project implementation. It also emphasizes the need to evaluate projects in such a way that the lessons learned can be accumulated and that, over time, we can increase our ability to design equitable and efficient agricultural projects.

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TABLE 1

ACTIVITY PROFILE OF AN AGRICULTURAL HOUSEHOLD

<u>% of Total Household Time</u>	<u>Type of Production</u>	<u>Who Acquires Inputs</u>	<u>Who Manages Production</u>	<u>With What Labor</u>	<u>With What Resources²</u>	<u>Who Controls Disposal</u>
	<u>AGRICULTURAL</u>					
	<u>Separate Crops*</u>					
	Crop 1					
	Crop 2					
	<u>Separate Fields</u>					
	Crop 1					
	Crop 2					
	<u>Separate Tasks</u>					
	*Crop					
	Task 1					
	Task 2					
	*Crop					
	Task 1					
	<u>Shared Tasks</u>					
	Crop					
	Task 1					
	Task 2					
	<u>Women Managed Farm</u>					
	*Crop 1					
	*Crop 2					
	<u>HOUSEHOLD</u>					
	Product 1					
	Product 2					
	Product 3					
	<u>HUMAN CAPITAL</u>					
	Task 1					
	Task 2					
	<u>INFORMAL MARKET</u>					
	<u>SECTOR</u>					
	Task 1					
	Task 2					
	<u>WAGE LABOR</u>					
	Task 1					
	Task 2					

1) FA=Female Adult, MA=Male Adult, FC=Female Child, MC=Male Child

2) land, water, fuel, capital, credit, technology, information, reproductive rights

* Crops include agricultural, horticultural and animal products

TABLE 2

GENDER PROFILE OF ACCESS TO, AND CONTROL OVER, RESOURCES AND BENEFITS
IN AGRICULTURAL SYSTEMS

	Sources of ¹ Access		Degree of ² Control	
	M	F	M	F
I. RESOURCES				
Land				
Technology				
Labor				
Production				
Reproduction				
Capital				
Education/Training				
Rural Labor Markets				
Entrepreneurial/Marketing Resources				
<hr/>				
II. BENEFITS				
Outside Income				
Assets Ownership				
In-kind Goods				
Food, Clothing, Shelter				
Information/Knowledge				
Offspring--Reproduction of the Group				
Social Insurance				
Care in Disaster and Old Age				
Political Power/Prestige				
Other				

1) I=Inheritance, U=Use Rights, SP=Sale of Produce, WL=Wage Labor, GP=Government Programs, HT=Household Transfers, CI=Community Institutions, CT=Community Transfers

2) H=High, M=Medium, L=Low, N=None

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TABLE 3
PROJECT CYCLE ANALYSIS: AGRICULTURE

- I. WOMEN'S DIMENSION IN PROJECT IDENTIFICATION
 - A. DEFINING GENERAL PROJECT OBJECTIVES
 1. Are the project objectives explicitly related to women's economic and social roles?
 2. Do these objectives adequately reflect women's needs?
 3. Have women participated in setting those objectives?
 - B. ASSESSING WOMEN'S NEEDS AND OPPORTUNITIES
 1. What needs and opportunities exist for increasing women's productivity and/or production?
 - a. In agriculture?
 - b. In household production?
 - c. In human capital production?
 - d. In the informal sector?
 - e. In wage labor?
 2. What needs and opportunities exist for increasing women's access to and control over resources?
 3. What needs and opportunities exist for increasing women's access to and control over benefits?
 4. How do these needs and opportunities relate to the country's other general and sectoral development needs and opportunities?
 5. Have women been directly consulted in identifying such needs and opportunities?
 - C. IDENTIFYING POSSIBLE NEGATIVE EFFECTS
 1. Might the project reduce women's access to or control of resources and benefits?
 2. Might it adversely affect women's situation in some other way?
 3. What are the potential effects on women in the short run? the longer run?
- II. WOMEN'S DIMENSION IN PROJECT DESIGN
 - A. PROJECT IMPACT ON WOMEN'S ACTIVITIES
 1. Which activities will the project affect in:
 - a. agricultural production?
 - b. household production?
 - c. human capital production?

- d. informal sector production?
 - e. wage labor production?
 - 2. Is the planned component consistent with the current gender denomination for these activities?
 - 3. If it plans to change women's performance of activities, is this feasible, and what positive or negative effects would it have on women?
 - 4. Where there are no planned changes in activities, is there a missed opportunity for improving women's roles in the development process?
- B. PROJECT IMPACT ON WOMEN'S ACCESS AND CONTROL
- 1. How will each of the project components affect women's access to and control over productive resources such as:
 - a. land
 - b. water (domestic and agricultural)
 - c. capital
 - d. credit
 - e. agricultural technology
 - f. household technology
 - g. firewood and other fuels
 - h. information
 - i. rural wage markets
 - j. resources in the informal sector
 - k. their own labor
 - l. the labor of others
 - 2. How will each project component effect women's access to and control over benefits such as:
 - a. wages
 - b. revenue from sale of goods
 - c. revenue from sale of services
 - d. subsistence goods
 - e. social insurance (care in sickness, old age, etc.)
 - 3. How can project design be adjusted to increase positive effects and eliminate or reduce negative ones?

III. WOMEN'S DIMENSION IN PROJECT IMPLEMENTATION

A. ORGANIZATIONAL STRUCTURES

- 1. Does the organizational form enhance women's access to resources?

2. Does the organization have adequate power to obtain resources needed by women from other organizations?
3. Does the organization have the institutional capability to support and protect women during the change process?

B. OPERATIONS AND LOGISTICS

1. Are the organization's delivery channels accessible to women in terms of personnel, location and timing?
2. Do control procedures exist to ensure dependable delivery of the goods and services?
3. Are there mechanisms to ensure that the project resources or benefits are not usurped by males?

C. FINANCES

1. Are funding levels adequate for proposed tasks?
2. Is preferential access to resources by males avoided?
3. Is it possible to trace funds for women from allocation to delivery with a fair degree of accuracy?
4. Do funding mechanisms exist to ensure program continuity?

D. PERSONNEL

1. Are project personnel sufficiently aware of women's productive activities and sympathetic toward women's needs for resources and benefits? If not, is it possible to increase staff responsiveness through incentives and training?
2. Do personnel have the skills necessary to provide the specific inputs required by women in the project area? If not, are training and/or additional staff possible?
3. Are there appropriate opportunities for female participation in project management positions?

E. FLEXIBILITY

1. Does the project have a management information system which will allow it to detect the effects of the operation on women?
2. Does the organization have enough flexibility to adapt its structures and operations as changes occur and new information is processed?

IV. WOMEN'S DIMENSIONS IN FORMATIVE AND SUMMATIVE EVALUATION

A. DATA REQUIREMENTS

1. Does the project's monitoring and evaluation system explicitly measure the project's on-going and end-of-project effects on women?
2. Are women involved in designating the data requirements?

B. DATA COLLECTION AND ANALYSIS

1. Are the data collected with sufficient frequency so that necessary adjustments could be made during the project?

2. Are the data fed back to project personnel and beneficiaries in an understandable form and on a timely basis to allow project adjustments?
3. Are women involved in the collection and interpretation of data?
4. Are data analyzed so as to provide guidance to the design of other projects?
5. Are key areas for further research on women's roles in agricultural systems identified?

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SMALL-SCALE ENTERPRISE AND WOMEN

Maryanne Dulansey and James Austin, important
initial research for paper was carried out
by Mary Beth Wertime

I. INTRODUCTION

Small-scale enterprises (SSEs) represent an important means of earning income for women in developing countries. SSEs typically constitute a significant sector of the economy in such countries, and women play a major role within SSEs.

The purpose of this paper is to provide guidance for the analysis of SSE projects, with the hope that they can be designed so as to encourage the participation of women and to improve their welfare.

II. WOMEN AND SSE

A. SIGNIFICANCE OF THE SSE SECTOR FOR DEVELOPMENT

The SSE sector is important to the economy of developing countries. It provides employment and income for many people while supplying needed products and services.¹ The sector has become more important as experience has proven large-scale enterprise incapable of providing large shares of employment in developing countries, as employment in agriculture declines, and as migration from the countryside swells urban populations.²

Agriculture is of paramount importance to economic development and to women. (See "Women's Productivity in Agricultural Systems: Considerations for Project Design.") Nonfarm income also plays a critical role; however, both for those who share in the returns from agricultural development and for those who do not. With economic growth, agriculture inevitably comes to represent a smaller part of total output, income, and employment.³ Enterprises unrelated to agricultural production account for an increasingly large share, until output, income, and

employment from nonfarm enterprises surpass those derived from farming.

As subsistence farming gives way to marketed production, there is more need for specialized marketing, transport, processing, and packaging. In the industrialized economics, these activities produce more value added and employment than does agriculture itself. In countries or regions where the majority of the population is still in rural areas, and where transport of raw materials and/or products is costly and difficult, small-scale enterprise is often more efficient than large-scale operations, and thrives particularly under conditions of agricultural prosperity.⁴

Small-scale enterprise is an even more important provider of income, products, and services under less favorable economic conditions. The very poor, the landless, and women who live in rural areas but fail to share in the returns from agricultural development are dependent on nonfarm enterprises, as are those who live in urban areas. "Nonfarm income is particularly important for the very poor," the World Bank has reported. "In countries as different as India, Republic of Korea, and Sierra Leone, landless or nearly landless households earn about half their income from nonfarm sources."⁵

The importance of SSEs increases as the size of the locality decreases. In Haiti, the percentage of the population "directly employed" by SSEs rises from 2.2 percent in the capital, Port-au-Prince, to 8.4 percent in the localities with population between 1,000 and 2,000. The SSE contribution to total Haitian employment would loom much larger if the extremely small localities could be considered.⁷

If poverty is chronic in rural areas (over 90 percent of the world's poor, estimated at 1 billion, are rural people), it is becoming acute in urban areas where the need for income is growing rapidly.⁷ It is estimated that the Third World will need 782 million new jobs between 1980 and the end of the century. Since city populations are growing, often by more than 5 percent per year, an increasing proportion of these new jobs

must be created in urban areas. Currently, 20-50 percent of those working in cities are employed in the urban informal sector in businesses ranging from street vending to tailoring to furniture making. A growing share are working in the informal sector because large-scale businesses have not expanded rapidly enough to provide the jobs.⁸

B. SIGNIFICANCE OF THE SSE SECTOR FOR WOMEN

Small-scale enterprise is particularly important for women who need to earn income. It is more flexible and less restrictive than employment in larger enterprises, which may require education, training, and/or experience that women lack; such jobs may also require that work be done at times and in places that are culturally unacceptable or difficult for women with family responsibilities. SSEs can be built upon knowledge and skills women acquire in the family, can be engaged in part-time and within the household if desired, and can facilitate the transition from agricultural employment as it begins to decline.

Although women's economic activities in both agricultural⁹ and nonagricultural production are undoubtedly underreported, data compiled from the Yearbook of Labor Statistics for 1970, 1974, and 1977 show that, for Latin America and Asia, the percentage of the economically active population that is female is higher in nonagricultural production than in agriculture; in the Middle East it is equal and in Africa it is lower.¹⁰

Migration of women to urban areas has risen recently. In Tanzania, female participation in agriculture is strong, migration is traditionally male-dominated, and the percentage of population living in urban areas is smaller than in other regions. Nonetheless, women in growing numbers are migrating to the cities, many in search of income. A World Bank study found "a sharp increase in the proportion of female urban migrants" during the 1960's in Africa. "In Tanzania, the proportion of migrants who are women rose from 33 percent of all those migrating before 1950 to 54 percent by 1971. The analysis indicates that, while the proportion of female migrants who came as economic dependents

remained high, the pull of the city as a source of employment and education contributed to the increase in the number of female migrants... (with) great implications for labor utilization."¹¹

Small-scale enterprise is difficult for people newly arrived in the city. With all its demands and challenges to someone who does not know the ropes, however, it still provides greater access for women than other sectors, which often require educational qualifications beyond those held by women. In the Tanzania case, women represented 53 percent of the SSE sector in urban areas, with street trading and small plot cultivation the most common occupations.¹² The PISCES studies, covering urban microenterprise projects in several countries of Africa, Asia, and Latin America, came to a general conclusion that such "projects mostly assist women entrepreneurs. In general, the smaller the size of the business reached, the larger the proportion of women business owners."¹³

III. PROJECT IDENTIFICATION: THE CRITICAL STARTING POINT

The starting point of the project process is the identification of an opportunity for development, or of a problem or block to be solved or removed. The two cardinal rules of project design, as applied to women, are:

1. Do not harm: do not worsen the situation of women by virtue of the project intervention;
2. Assist the chosen development process in appropriate ways: help women with the totality of tasks and concerns, and do so in their way.

To follow these rules requires information about women and their roles. This paper proposes a twofold methodology for collecting and considering this information at the project identification stage, when it can be most valuable in shaping the project. The Small-Scale Enterprise Participation Profile, as described below, specifies the relevant data and provides a useful means of arraying them. In addition, we suggest that preliminary project analysis give explicit attention to the barriers to women's participation in SSEs.

The use of the SSE participation profile and barriers analysis will help in small-scale enterprise project design. The participation profile should be used, not only to identify numbers and types of SSEs, but also to assess the level of experience and skill in the various management categories (organization, personnel, production, marketing, finance). It then serves as an early indicator of project feasibility, which can help prevent waste of resources. In particular, the profile can help overcome the common tendency to neglect marketing considerations at the first stage of the project process. Deficiencies and problems in other management categories may be addressed by selected project interventions, but it is very difficult to improve demand, particularly in the populations targeted for development assistance. There is widespread consensus that "marketing proves to be one of the most difficult obstacles to creating viable economic enterprises based on the small-scale production of most rural women's projects."¹⁴

Used in conjunction with general indicators (for example, criteria on participation, access, control, status and indicators of physical, economic, and social well-being) the participation profile and barriers analysis can make it easier to identify and design projects that are not specifically SSE interventions, but may affect women's economic interest. Small-scale enterprise is a major mode of income generation for women, especially women with limited financial and human capital. For virtually any project with economic ramifications, the SSE participation profile and barriers analysis can be useful in determining the conditions under which women are least likely to be disadvantaged, either absolutely or relative to men.¹⁵

Because project identification usually follows a broader country or sectoral development strategy, the intended beneficiaries are often not defined in terms of gender. Women within the beneficiaries group (e.g., small-scale entrepreneurs) may be invisible and, as women, may actually be hurt by the project intervention.

A few common project goals that vitally affect women's economic interests are:

1. Increasing GNP; increasing foreign exchange; accelerating economic growth; decreasing poverty
2. Increasing employment
3. Increasing family income
4. Decreasing rural-urban migration

The interventions chosen for the first goal set often harm women's economic interests by affecting them as producers of basic necessities (food, clothing, household utensils, and furnishings). Interventions that favor large industries, products for export, and modernization requiring capital, land, and human resources tend to exclude women from participation. Since women are producers, often very efficient producers, of basic necessities, projects that do not include them and their productive functions, or even create competition that may drive women out of the market, will not achieve their maximum potential macroeconomic impact. The projects may increase income, but if the returns are not channeled to the producers of society's basic needs, the long-run effect will be to widen the economic gap within the population.

Small-scale enterprise interventions are gaining favor among planners as a means of increasing employment. Women's employment, in terms of time spent in producing goods and services, can hardly be increased. Poor women cannot afford to be unemployed. Their time is already fully occupied; the issue is not occupation but compensation, the returns to them from their investment of time and effort.

Planners have learned that interventions aimed at increasing family income tend to fall short of the goal if they fail to take into account women's major responsibility to support their children. Projects that channel resources only to men and/or perpetuate constraints on women's access to inputs and earning have often failed to improve the income and the quality of life for women and children. Because women entrepreneurs are well represented among the poor, assistance to them will ameliorate poverty—both for the women as individuals, and for their children.

Efforts to improve rural life in hopes of decreasing migration to urban areas must include women, in their role of primary producers of basic goods and services. The increase in numbers of women migrants indicates their difficulties in meeting increasing economic responsibilities in a rural setting.

Other commonly cited project goals may signal women's participation, yet their economic interests may be overlooked as a factor, for example, in goals to:

1. Improve nutritional status and health of at-risk groups
2. Decrease population growth rates, increasing family planning practice, or
3. Increase literacy and/or education level

The importance of women's earnings to the attainment of these goals is increasingly being recognized. They need additional income to purchase nutritional foods, to boil or filter water, and to acquire medicine and health care. Population/family planning project experience indicates that income-generating activities are "the most effective type of intervention when trying to reach the poor."¹⁶ Literacy and education for females are important for development; but women who are already fully occupied with the daily struggle to subsist frequently do not see literacy or education projects as immediately productive investments of time and energy. Thus, for example, the beneficiaries of the Upper Volta Equal Access to Education for Women and Young Girls program modified the project to give priority to their basic tasks.¹⁷

It is precisely at the project identification stage that determined steps must be taken to correct for women's invisibility. If their roles and interests are not explicitly considered as an intrinsic part of the project process at the early stages, an adverse impact on women is more likely. The project identification stage must also include attention to social norms that may act as formidable barriers to women in their economic roles. Philip Coom's observation about rural development projects is equally applicable to projects affecting women's economic activities.

"One of the clearest lessons to emerge from ICED's case studies is that the impact and continuity of any rural development project are strongly influenced by deep-rooted social, cultural, and political factors in the project's environment, and these differ considerably from one locality to another. Failure to give adequate attention to such factors before designing the project has often led to disappointing results."¹⁸

As we have seen, women are already involved in small-scale enterprises, and for each woman visible, there may well be others who have not been picked up in the employment statistics, SSE censuses, and project data. For each woman engaged in an SSE, there are others who need income and would like to be involved. To estimate numbers and types of existing women's SSEs, and to assess need and feasibility for new ventures, one can base projections on whatever data are available, then spot-check them by interviews with women from the targeted beneficiary population. Reliability of community group interviews can be high, as AITEC discovered in Costa Rica.¹⁹

The crucial first step was the perception of the conditions, problems, and solutions to problems as defined by the people who lived in the regions. Comprehensive interviews with key groups (select men in town government, farmers, local club members and agency personnel, teachers, businessmen, unemployed laborers) were conducted, in which topics ranging from migration to employment to production and community services were discussed.²⁰ (As was commonplace some ten years ago, the participatory methods of this project identification did not quite extend to women.)

If such a comprehensive program is not feasible at the project identification stage, attempts should be made to interview the most knowledgeable persons accessible—for example, female home economics, agricultural, or health extension agents, members of women's organizations, or personnel from the host country government, development assistance agencies, or local research and educational institutions. There is no substitute for asking the women themselves.

Within any relatively poor group that would be the clientele of development assistance efforts, it is safe to assume that women are involved in productive activities and have economic interests and responsibilities. The challenge is

to find them (for women in their economic roles are sometimes invisible even to themselves) and to discover how their interests and roles contribute to and are affected by the chosen project goals and interventions--to see and support women within the family, the community, and the economy.

A. PARTICIPATION PROFILE

Women in small-scale enterprise suffer from a double invisibility. Although the importance of SSEs to development has recently received greater recognition, most such businesses are very small indeed, and it is very difficult to "see" the smallest "microenterprises," especially in rural areas. It is even more difficult to see women in SSEs: (1) often neither they nor men think of women as businesspeople; (2) the habit of working without remuneration renders women's participation in small-scale enterprise less visible; and (3) women's enterprises are often on the borderline with their subsistence occupations.

The first step toward assessing women's participation in SSEs is thus to specify the activities they engage in and where, when, and how they perform them. These activities should not be identified in isolation, but rather examined relative to male counterparts within the sector.

Thus, it is necessary to define the SSE sector and its role within the larger economy. Much of the literature defining SSEs has used an "informal-formal sector" dichotomy. Although this has been useful in drawing attention to the neglected SSE portion of the economy, Wertime suggests that a more useful conceptual approach for project analysis is to analyze the SSEs in terms of several descriptive parameters describing their positions along a continuum or within segments. Enterprises are heterogeneous, and project design must take this diversity into account. Within this sectoral profile, the women's position can then be explicitly identified.

A useful way to capture the diversity of SSEs is to relate a set of common descriptive characteristics to two parameters that will signifi-

cantly shape project design: enterprise size (in terms of human resources) and type of good or service produced. The descriptive characteristics can be categorized into the main functional areas of management: organization, personnel, production, marketing, and finance.

The format for an SSE participation profile combining these descriptive characteristics with the enterprise size parameter is shown in Table 1. Table 2 shows the analogous profile with the goods and services parameter. Seldom, if ever, would existing data be sufficient to fill out such matrices completely. Nonetheless, it is very important for an analyst to know what information is missing so that a decision can be made either to gather the data or to proceed with project design on the basis of certain assumptions regarding the missing data.

Three principle sources of data are useful in assessing the role of women in providing labor to small-scale enterprises and/or deriving income from them:

1. Labor statistics compiled by the International Labor Organization (ILO) from national data
2. Census or research data on employment or small-scale enterprises, and
3. Project data

None of these sources provides much information disaggregated by sex. Since it is difficult to "see" small-scale enterprises and particularly the women within them, available data have to be used creatively. Approximations may be derived from whatever disaggregated data may be available on nonagricultural economic activity. Breakdowns for status categories are then compared with data from census and project sources.

Women in nonagricultural labor are represented in all status categories of the ILO International Classification: as employers, own-account workers, employees, unpaid family workers, and members of producers' cooperatives.²¹

The available data suggests that the various roles women play in the SSE sector are influenced by the skills and experiences they have garnered, primarily in the family. Other factors shaping their role are the practices and traditions of the society, which may result in women's domination of a particular industry. The roles may differ from place to place and may change over time. Garment-making is an example. In Jamaica, all the dress making is done by women.²² Conversely, in Sierra Leone men dominate tailoring, the industry that accounts for the greatest share of employment and value added.²³ Men also predominate in carpentry, blacksmith, baking, goldsmith, and watch repair. However, over 80 percent of the owners of tie-dye (gara) SSEs in Sierra Leone are women.²⁴

Women's participation in particular types of SSE may change over time, influenced by the level of development and the conditions of the economy. In the Philippines, women are moving from household-based to establishment-based textile/wearing apparel manufacture and are shifting out of manufacturing into commerce and services.²⁵

The following pages illustrate the variety of roles played by women in SSEs. The information is organized in the Participation Profile framework.

1. Organization

- a. Number of Units—This statistic reveals the degree of fragmentation and the number of contact points that would be needed to ensure adequate outreach and coverage for the project. Gender-specific analysis would then show how many units were owned by women.

In countries where a census of SSEs has been made or SSE data have been derived from analysis of employment data,²⁶ there has been a tendency to concentrate on manufacturing (or industry). Anderson identifies three overlapping phases in the development of a country's manufacturers:

- (1) A phase in which household manufacturing is predominant, accounting for one-half to three-quarters or more of total manufacturing employment;
- (2) A phase in which small workshops and factories emerge at a comparatively rapid rate, displacing household manufacturing in several sectors; and
- (3) A phase in which large-scale production becomes predominant, displacing the remaining household manufacturing activities and much of the production of workshops and small factories.²⁷

The number of SSE units cannot be determined through analysis of labor force data unless the average number of workers in SSEs and the SSE share of the labor force are known. A census may tend to undercount household manufacturing and SSEs located in rural areas. It seems likely, however, that if other factors are equal, the number of SSE units is likely to be highest in the household and small workshop phases of development. In the Philippines and perhaps in many countries, manufacturing outside the household employs mostly men;²⁸ as a result, women have a comparatively larger share of employment in household manufacturing. (See "Production Location" below.)

The existence of many relatively small SSE industrial units, in both the household and the small workshop phases, may be economically and socially rational, even though problems arise in:

- meeting volume requirements in export and some local markets
- getting the price advantages from bulk purchases of raw materials

- covering the costs of specialized technical, managerial, design, or R&D staff, and
- affording necessary equipment²⁹

Small units are a more efficient alternative when labor, raw materials, and markets are dispersed in rural areas; transport and infrastructure are poor; work is irregular or the job cannot be standardized; and products have low scale economies and serve small markets.³⁰ The convenience and flexibility of household units are highly valued by some women. In a Chilean cooperative, for example, women who knitted in production groups in their homes were asked whether they would be interested in doing the same work "at four times the pay, but in a nine-to-five factory setting. Not one of them considered the alternative feasible, giving as a reason the primary importance of their family responsibilities."³¹

- b. Number of Female Employees—This information is needed to determine which types of SSE are the main sources of income for women. Certain types of SSE may be significant employers of women even if not owned by them.

Four categories of workers are found in SSEs—entrepreneur, family, apprentice, and hired.³² Usually only the hired worker is paid wages, either in cash or in kind. The apprentice may provide labor in exchange for learning or may be required to pay. In Sierra Leone, the gara industry requires an average of 1.7 years of apprenticeship, and an average fee of 15.5 Leones, with higher fees in rural areas.³³ The ratio of employed to owners of SSEs is very low in Kenya³⁴ and other countries for which data are available; many SSEs are one-person businesses.

Hired workers seem to be more important than family workers in Jamaican and Haitian SSEs. A survey of Jamaican nonfarm SSEs found hired workers the second largest category (after entrepreneurs). Hired workers' share ranged from a high of 77.3 percent of the work force in food enterprises to a low of 5.4 percent in craft, which is dominated by women and also has the highest proportion of family workers, 35.9 percent. In Haiti apprentices represented 35 percent of small manufacturing and repair SSE employment, hired workers 31 percent. Jamaican hired workers and trainees, in contrast, together make up only 42.6 percent of the manufacturing SSE work force.³⁵

The amount of employment for women afforded by small-scale enterprises in a particular service or product seems to depend on the extent of female ownership. For example, in Haitian small manufacturing enterprises, women dominate the pastry and candy-making businesses and are well represented in tailoring, straw products, and baking. Female workers make up two-thirds of the employees of Haitian women entrepreneurs, but only six percent of those employed by men entrepreneurs.³⁶ In Jamaica, women are predominantly found in craft and dressmaking enterprises; employment opportunities for unskilled females are very poor except in those categories.³⁷

The incidence of paid employment for women in SSEs is difficult to determine without conducting micro studies. Sometimes it can be approximated if labor force breakdowns are available for male/female and family/hired. From the Ilocos (Philippines) cottage industries data cited in a World Bank study,³⁸ for example, one can draw the conclusion that garmentcraft,

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loom-weaving, and needlecraft provide employment for women. However, these SSEs are very small, almost one-person enterprises, and thus provide little, if any paid employment to nonowners.

Comparing data from various sources may raise more questions than it answers. The ILO figures for Haiti on paid employment in manufacturing show more women than men. Yet the census shows women with only a 16 percent share in manufacturing and repair SSEs. Is there significant large-scale manufacturing that employ mostly women? The census covered SSEs employing fewer than 50 persons; data on larger firms are either nonexistent or not comparable. Or is women's share of employment in SSEs underreported? The census was not able to gather data in localities below 1,000 in population, which account for 80% of the population in Haiti.³⁹

The national-level, detailed data disaggregated by sex from the Jamaica and Haiti SSE surveys indicate that women do not have much of a share in the relatively small amount of wage employment in SSEs. While women owners of SSEs were 49.3 percent of the total in Jamaica, women were only one-third of workers in all categories.⁴⁰ In Haiti, women were 18 percent of owners and 16 percent of workers.⁴¹ As the PISCES studies⁴² and other project data indicate, women in SSEs are primarily owner-operators, predominantly in commerce, services, and "traditional" manufacturing activities. In both countries, the SSEs clustered at the 1-5 worker-size category.

- c. Legal Status--Different legal statuses (e.g., sole proprietorship, partnership, corporation, cooperative, other, or none) may call for different administrative responses.

Census data indicates that sole proprietorships are the dominant ownership form, constituting 94.3 percent of the SSEs surveyed in Jamaica.⁴³ Information on legal status or form of ownership is not included in the very useful sample questionnaire Allal and Chuta append to their work on cottage industries.⁴⁴ It is probably not needed in the case of very small enterprises; it is usually neither necessary nor advantageous to define their status formally, nor are the resources available to do so.

When forms of organizations, such as cooperatives and corporations, or business functions, such as credit and marketing, are subject to legal regulation, women often find it difficult to deal with the legalities.

Little information on the sex of SSE owners is readily available, even in studies of SSEs. Two censuses, for Jamaica and Haiti, provide some of this information, however. The Jamaica census of small-scale manufacturing enterprises finds that "an equal number of men and women are owner/operators (proprietors) of small scale enterprises."⁴⁵ In Haiti, women are owners or managers of 18 percent of the small manufacturing and repair enterprises surveyed.⁴⁶ In both cases, the proportions of women undoubtedly would have been higher had nonmanufacturing SSEs been included. This category includes commerce and service occupations, in which women are strong and which usually dominate manufacturing. In Jamaica, for example, nonmanufacturing SSEs account for 63 percent of all workers and

roughly the same percentage of establishments.⁴⁷

Some indications can be garnered from labor data. The categories with the highest numbers of women, according to the most recent ILO statistics, are own-account workers and employees.⁴⁸ Own-account or self-employed workers may be considered the same as owner-operators of small-scale enterprises. Approximately one-third as many women as men are found in this category in the countries providing data in the 1982 ILO Yearbook of Labour Statistics.

Differences among data collectors in the definition of self-employment make it difficult to identify many female owner-operators in small-scale enterprises. Census definitions used in three African countries illustrate the problem. In Zāmbia (1969), the self-employed are defined as having their own place of business and determining their own hours of work and work program; in Ghana (1970), a person working for two or more individuals is self-employed; and in Swaziland, a person is self-employed if he or she is paid for the job done or goods sold, as opposed to receiving a stable salary.⁴⁹ A further difficulty in compiling an accurate picture is that many women fail to identify their activities as work.

Dixon has documented regional differences in the percentage of women among self-employed workers in the 1970's. "Sub-Saharan Africa shows the highest median at 43 percent; South/Southeast Asia and Central/South America (are) considerably lower at 22 and 16 percent; and North Africa/Middle East the lowest at four percent. The extremely low figures are not all in North Africa or the Middle East, however, for ten

percent or fewer of the self-employed are female in Sri Lanka, Pakistan, Panama, Costa Rica, and Cuba. The highest figures for women entrepreneurs (40 to 63 percent) are in Botswana, Tanzania, Ghana, and Malaysia."⁵⁰

2. Personnel

- a. Literacy, Training, and Formal Education--These are factors that affect productivity and income, and that differ by sex. Fewer women than men have achieved functional literacy and numerical ability, which are very useful, if not essential, skills in SSEs. Participation in job-related training may differ between men and women, in terms of both types of skills (e.g., machine repair versus food processing) and access to training, especially on-the-job training (e.g., apprenticeships). Vocational and basic education are also significant factors.

Whereas many employers require workers to meet certain formal education requirements, 77 percent of the proprietors of small-scale industry in Sierra Leone had no formal education at all; the figure is 87 percent within the predominantly female gara industry.⁵¹ Thirty-nine percent of the market women in a Honduras project had never been to school and were presumed to be illiterate.⁵² In Tanzania, 65.7 percent of all women in the informal sector have no formal education.⁵³ The owner of the largest tie-dye business in The Gambia reported that she could not "do sums."⁵⁴ Success in the SSE sector seems to depend on factors other than education, such as entrepreneurial ability and experience.

Women in the SSE sector earn relatively little, both in absolute terms and in comparison with men in SSEs.

Some evidence indicates that this effect is linked to women's relative lack of education and experience, which in turn is conditioned by their sex; other data, however, indicate that women may do better than men in realizing an economic return on their education. In a study of women in the urban labor market in Tanzania, regression analyses indicated that women with relatively high education and experience made more money than men at the same level. Furthermore, there was no sex discrimination in the job market when the number of years of schooling was controlled for, and experience (especially for illiterate women) was positively related to earnings.⁵⁵ Skills needed in small-scale enterprise are usually acquired through on-the-job experience, within the family or as an apprentice.

- b. Marital Status--People's needs depend in part on their marital situation. Distinct patterns for men and women are likely. Single, married, and head of household are relevant categories.

Most female small-scale entrepreneurs are married or in a nonlegalized union. In a project for Honduran market women, 19 percent were legally married, 50 percent were in nonlegalized unions, 29 percent were single mothers, and two percent were widows.⁵⁶ In a sample of 25 borrowers in the Self-Employed Women's Association--SEWA--of Ahmedabad (India), 76 percent were married, 20 percent widowed, and four percent single.⁵⁷

- c. Household Size--An SSEs viability may depend on how many household members on income from it and contribute labor, support services, or other income to it.

A small-scale enterprise usually provides only a portion

of the entrepreneur's total income. SSE earnings may be reinvested in that or another business, or may go toward personal or family consumption. Because women tend to devote income to family consumption, the number of dependents they must support is a factor in gauging both economic necessity and the viability of an SSE, which may depend on reinvestment of earnings.

Household size may be relatively large, and women often contribute half to nearly all of the resources required. Assumptions about women's economic dependency on men have been substantially modified by research showing a significant and growing number of women-headed households.⁵⁸ It has been estimated that women represent 20 percent of heads of households in Ecuador; a study of 159 women SSE candidates for credit in Quito found 30.2 percent.⁵⁹ Almost half of the families of the Philippine vendors had seven or more members, but 70 percent had only one or two income earners.⁶⁰ A study of SEWA borrowers estimates that at least one-fourth of them were household heads, 12 percent were widows, and 26 percent contributed more than the husband to household income.⁶¹

- d. Age—There are likely to be significant differences in the average ages of women and men in SSEs. This reveals constraints to participation at earlier ages and may also suggest special needs related to age.

Women in SSEs are older than men, probably because they become active when the needs of their growing children call for additional resources and because they are less culturally constrained from operating in public as they grow older. Women in SSEs Colombo, Sri Lanka, were concentrated in the 40-49 age group, men in the 20-29

age group.⁶²

Households in San Salvador, El Salvador, are heavily involved in small-scale enterprise, with 85 percent engaged in businesses, mostly run by women, that provide half or more of the family income. The women in a SSE credit project in San Salvador were fairly evenly distributed in age categories: 29 percent in their 20's, 35 percent in their 30's, and 24 percent 40 or older.⁶³

- e. Time Commitment—Whether the workers are full-time or part-time or seasonal workers is quite important for project design. This issue is particularly relevant for women, given their significant household responsibilities. It is also important to ascertain whether limitations on time arise from the SSE (e.g., seasonal demand or marginal and uncertain return) or from the worker (time required for agricultural pursuits and/or family duties).

Women, like men, engage part-time in SSEs as one of a mix of income-generating activities; because of their household and family responsibilities, women can devote less of their total time to business than men. When the men are absent from the household, women must also assume their responsibilities. Male migration from rural to urban areas leaves women to head the household and take responsibility for operating and maintaining the smallholding.⁶⁴ In Kenya, estimates based on the 1969 census indicate that about 25,000 rural households did not have a male head, with another 400,000 effectively headed by women whose husbands were away in the town.⁶⁵

3. Production

- a. Geographical Location--Knowing whether the SSE is located in a rural, semi-urban, or urban area or concentrated in certain regions of a country is an essential input to project design. Infrastructure and delivery system requirements can vary considerably. Collecting this information on a gender-specific basis may reveal concentrations of female-owned SSEs.

Small-scale enterprises are found in both rural and urban settings. The only census of SSEs that adequately covers both urban and rural areas and provides data disaggregated for sex is that of Jamaican small-scale manufacturing. That census found that women are more often engaged in SSEs in rural than in urban areas, which may be because small SSEs, in which women are most likely to participate, are more common in rural areas. It may also indicate that SSEs at the owner-operator, self-employment level provide "last resort" income for women in rural areas, while those in urban areas have access to other income-generating opportunities. In Jamaica, women represented a much higher percentage of female proprietors--64.7 percent--in the Enumeration Districts with fewer than 2,000 people than in any of the other three size categories. In the capital city, women accounted for 14.3 percent, in major towns (20,000-100,000) for 7.0 percent, and in rural towns (2,000-20,000) for 6.7 percent.⁶⁶

The Haitian study was unable to cover localities with population below 1,000, which account for 80 percent of total population; thus the finding of fairly uniform employment of women across locality sizes holds true only for "urban" areas.⁶⁷

The urban-focused PISCES studies of SSE assistance projects in several countries of Africa, Asia, and Latin America found that "projects most commonly assisted women entrepreneurs...in general, the smaller the size of the business reached by a project, the larger the proportion of women business owners."⁶⁸

- b. Operating Location--It is important to note, by gender, where the goods or services are produced. The main categories would be purchased or rental locale, donated locale, household, street (fixed or shifting), and mobile.

Women in SSEs are more likely to be found engaged in commerce as street or market vendors, or in household-based manufacturing or service occupations, rather than in a factory or workshop setting. Although household-based enterprises eventually give way to the next phases of industrial development, they persist over long periods of time, even growing in relative and absolute terms when industrialization is rapid.⁶⁹

Household-based SSEs have both advantages and disadvantages for women. They may be more convenient and economical, but it may be difficult for women in household SSEs to receive compensation for their productive efforts. Home enterprise tends to be seen as "women's work," and devalued accordingly. Men generally do not consider the activities of women "real work," as a Togolese farmer put it. And even women think that their household, family, and agricultural activities, and their petty commerce as well, are not "work."⁷⁰ Although women do much of the work in home enterprise, the returns may be controlled by male family members. Thus, removing production from the home can ensure that women are paid for their economic activities

directly, rather than working as a part of a labor unit in which the husband or father is the employer handling negotiations with the outside world, marketing the product, and controlling the household income.⁷¹

- c. Technology- Information on the level of technology of the SSE, again recorded by gender, will reveal both constraints and opportunities relevant to project design. (See "Technology Transfer: Implications for Women.")

The productivity of small-scale enterprises can often be increased through improvements in technology, either machinery ("hardware") or methods of working ("software"). The availability of new power sources in rural areas carries a potential for significant technological change and an increase in productivity. Household manufacturing is particularly important in rural areas. About three-quarters of household manufacturing is located in rural areas in East Africa, West Africa, and India; the rural share is one-half in Columbia and the Philippines, and two-fifths in Korea. Thus the availability of electric- or petroleum-powered equipment suitable for small-scale manufacture of food, clothing, implements, and utensils can have a substantial impact on employment and earnings.⁷² However, improvements in technology have sometimes harmed rather than helped women in small-scale food processing enterprises. The introduction of petroleum- or electric-powered mills and presses for processing major food grains, tubers, and oils in various parts of the world has not always increased women's productivity. In fact, it has sometimes displaced them from the industry and even increased their household expenses.

In Upper Volta, for example, women have traditionally been responsible for processing millet flour. "It takes four to six hours to prepare for a hot meal and most of this is the pounding of millet," an AID study found. "When technical help is devised, the process usually becomes the domain of men. This means that something that used to be laborious and time-consuming but which cost nothing and sometimes was a source of income for women, is taken over by machines run by men. Women now have to pay for the service... If women wish to buy modern products, this new demand for money comes at the very time their source of money from traditional products is declining."⁷³ On the other hand, the time saved might be used for more productive activities.

The choice of appropriate production technologies, both hardware and software, is crucial to productivity, profitability, and the best use of relatively scarce capital and relatively abundant labor in small-scale industries. Allal and Chuta indicate that "technologies that are neither the most labor-intensive nor the most capital-intensive have proved to be optimal at the given opportunity cost of resources," citing a case of the bread industry in Sierra Leone. An "obsolete technology," the rotary peel oven, was the most profitable, combining "the advantages of high-quality bread and considerable turnover of the modern bakery with much less capital-intensity." The traditional peel brick or mud oven was the next most profitable overall and was considered appropriate for smaller markets, while the most advanced technology was the least profitable.⁷⁴

In terms of ratios of output to capital, output to labor, and labor to capital, traditional technologies may sometimes be the most rational. In the female-

dominated gara industry in Sierra Leone, enterprises using traditional technology (natural indigo versus imported synthetic dye) had the highest average capital productivity, an output-to-capital ratio of 82.7, as well as the highest labor-to-capital ratio, 98. The lowest output-to-capital ratio industry using traditional technology was tailoring, with 7.5. The high and low for modern processes were 72 for gara and 0.5 for blacksmithing.⁷⁵

- d. Productive Activity--The small-scale entrepreneur's activities in the production/marketing cycle potentially include acquisition of raw materials, financing, processing/ production, stocking/storing, transportation, and sale to an intermediate market channel or the final customer. Some SSEs cover a broad range of activities, others are more focused. Where the SSE is located within the production cycle will influence the nature of the project.

Women in SSEs are active in the production of both services and goods. In urban areas they seem to be found more often in services, particularly vending, than in production of goods. Yet in Tanzania, urban women were concentrated in food production.

A sample of 26 entrepreneurs in the Manila Community Services, Inc. (MCSI) program, 90 percent of whom were women, were engaged in the following productive activities in an urban setting:

Eighteen in selling (buying and selling bottles, fruit, vegetables, cooked food, comic books, magazines, ready-made dresses, peanuts, used clothes, cooked corn, sweepstakes tickets, costume jewelry, bread, toys, candy, and the running of sari-sari stores which usually

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involved selling of kerosene, soft drinks, cigarettes and rice, plus other necessities); seven in manufacturing (toy making, box making, welding cement molds, candy making, fancy crafts, tailoring); and one in service (shoe repair).⁷⁶

Small-scale sellers represented 48 percent of a sample of SEWA (India) borrowers, while 40 percent were home-based producers.⁷⁷ Urban informal workers in Tanzania were classified as service (transport, porter, street trading, shopkeeper hotel/bar, and house rental) and goods-producing (craft manufacture, contractor, shamba (gardening) and fishing). Women were concentrated in shamba and street trading, where they were 50.3 and 34.3 percent of the total workers. Other categories in which women had high percentages of participation were hotel/bar (47.5 percent), house rental (38.3 percent), transport (37.2 percent), and craft manufacture (37.2 percent).⁷⁸

Rural women seem to concentrate on production, primarily of food and clothing, and to engage to a lesser extent in services such as vending, although it is not uncommon for rural women also to sell their produce at market. Work by home economists has found that rural women from Latin America and Caribbean countries seem to concentrate of small-scale food production:

Eleven of sixteen reports were of agriculturally-oriented projects where women were involved in the production of food... Only in Panama were women involved in a large production enterprise: they had acquired 20 hectares of land for rice production and were able to supply the local independent mills and the Agricultural Marketing Institute... In three of the

sixteen reports, women worked in handcrafts, clothing, embroidery, and fish selling... 79

In Cameroon, food production is also important for rural women:

Agriculture and the related areas of livestock raising, fishing, and exploitation of forest resources were the occupations of 94 percent of the economically active rural women--90 percent were in food crop production, two percent in industrial and export crops...less than one percent...are involved in trading activities... Other important areas for rural women were manufacturing--primarily dress making and tailoring... 80

4. Marketing

- a. Market Destination--An SSEs production can be primarily for the producer's own household or for rural, urban, or export markets. It may or may not be directed to a market segment in which competition from large industry is a factor. These patterns may differ by gender.

Small-scale entrepreneurs often identify marketing as their most serious problem. They have trouble selling their goods or services, perhaps because of lack of demand, competition, or factors they cannot identify. When owners of small-scale manufacturing enterprises in Jamaica were asked to indicate the relative importance of demand, finance, raw materials, import license, spare parts/machinery, utilities, fuel, and transportation as business problems, 38 percent selected inadequate demand as the most important problem facing them; two-thirds named demand as one of the top three problems.

In the rural Enumeration Districts, demand problems were cited as most important by 46 percent and as among the top three by 77.6 percent of proprietors, compared with 49.3 percent nationally.⁸¹

Small-scale entrepreneurs' primary markets are nearby and small, defined not only by local demand but also by the entrepreneurs' ability to reach the market: to know the needs and preferences of the market segment to which they target their product, to know about market channels and competition, and to be physically able to deliver the goods or services. Nearby markets have the advantage of being more easily researched and serviced by small-scale entrepreneurs, but they often have disadvantages as well: low effective demand due to relative poverty, and saturation due to commonality of raw materials and skills, and therefore, products in the area. Among beneficiaries of the MCSI program in urban Manila, almost all of whom were women, 80 percent did both purchasing and marketing in their own neighborhoods. Of those interviewed from another Manila-based program, 85 percent "sell their products either to individuals, usually neighbors, or to small local stores." That program, run by the Ministry of Industry, has learned that "institutional markets, in spite of the 'clout' of government agencies, are difficult to penetrate. Products produced the client groups do not meet high quality requirements."⁸²

In effect, markets are divided according to sex. The men are in official markets where export crops (peanuts, cotton) are sold; the women are in traditional markets, which are held every week in important villages and serve as intervillage exchanges.

It is in these markets that women sell their production (both agricultural and livestock). Even more often, women sell some processed products, to which their labor has added value, as in the oil they make from peanuts harvested from their personal fields. They also offer a whole range of cooked dishes, and some sell crafted objects such as decorated calabashes and water jugs.

Undoubtedly, these transactions do not bring them large sums of money. But the traditional markets function all year long, whereas the official markets are open only two or three months a year. The fact that women can receive cash income more regularly is an important point in the financing of all development operations. No matter how modest, it is evident that women may have a steadier cash flow than men.⁸³

People usually try to improve their markets. An example is the predominantly female beneficiaries of the PRIDECO program, most of whom reside in the slums of San Salvador:

Fifty-three percent of the businesses are located outside the owner's community, indicating that they are providing goods and services to the generally wealthier surrounding communities. Almost 41 percent of these businesses belong to street vendors.⁸⁴

- b. Sale Value—Larger enterprises are likely to have higher sales, but there may be significant variation by product type. Again, the gender delineation might point to patterns.

Figures on sales are difficult to obtain; the majority of SSEs do not keep books, and entrepreneurs are generally not willing to divulge sales figures when they are available. Income data from loan projects can be used as an indicator in the absence of sales figures.

For the smallest enterprises, and those in which women operate, the sales or income from services may be quite small, yet still constitute an important part of the family budget. Among 286 borrowers from the SEWA bank, women's monthly earnings average 234 Rs. (about \$30 at an exchange rate of 8:1) and represented 46 percent of the combined family earnings. Women in SEWA had income about 50 percent higher than the 157 Rs. average monthly income of self-employed women in Ahmedabad.⁸⁵ (See also "Earnings" below.)

5. Finance

- a. Capital—Lack of capital is a major problem for very small entrepreneurs. More than 80 percent of the participants in the Manila Community Services, Inc. program said it was their critical constraint.⁸⁶ It is generally regarded as a sector-wide problem.⁸⁷ Studies of closures of small firms in the Philippines, however, suggest that "access to finance for fixed or working capital seems not to be a 'barrier to entry,' though it may well place more of a restriction on expansion or the maintenance of output when the firms are larger."⁸⁸

The amount of capital used to start up a SSE may be very small, especially for what PISCES defines as micro-enterprises, "the smallest-scale economic enterprises of the poor. They are normally run by a single owner-manager, and employees, if any, average less than two. Capital

required for start-up is minimal, anywhere from a few dollars to one or two hundred dollars."⁸⁹ Women are generally concentrated in SSEs that require little capital, such as selling.

Low capital investment, however, usually means low profits. Interviews of SSE project beneficiaries carried out by PISCES in the Philippines indicate that investments in service are higher than in selling. Absolute profits were also higher for services but percentage returns on investment were greater for selling.⁹⁰

- b. Financial Sources—The lending sources could be institutions (e.g., banks, credit unions), professional money lenders, traditional "savings" groups, friends, or relatives. The equity sources could be retained earnings, family, private investors, or government. Distinct patterns by gender might emerge.

The small-scale enterprise sector is generally self-financed. Whether because of exclusion from commercial and governmental financing or because of personal preferences, small-scale entrepreneurs use their own and their families' and friends' resources to start their businesses. This is true in middle-income, more industrialized countries such as Korea and Taiwan as well as in low-income countries such as Haiti and Sierra Leone. Personal savings accounted for 72 percent of initial capital in Haitian SSEs and 60 percent in Sierra Leone; money lenders, credit unions, and banks accounted for less than six percent in Haiti and two percent in Sierra Leone. Recurring expenditures follow the same pattern.⁹¹

Women in SSEs, like men, have most often drawn on personal or family resources for financing. The great demand for credit by a majority of women in very small urban enterprises studied in the PISCES cases strongly suggests, however, that those women were not able to self-finance their businesses adequately.

In some places, particularly Africa, women have developed strong traditional savings organizations from which they may finance SSEs. In Cameroon, for example:

Groups usually meet regularly e.g., weekly, biweekly or monthly. If it is a mutual aid group, a small fixed sum is paid which is held by the organization until it is needed by some member to meet the costs of an illness or a funeral. There is no reciprocity in these hand outs and the criterion for receiving the fund is simply that of need. A second payment may be made which goes to cover the expense involved in holding the meeting. Finally, a third payment may be made which is for savings purposes (in some groups, this is the only payment made). Many different descriptions were found of how this function might be organized. Members might simply put whatever amount they wished in at each meeting and the amounts contributed by members would be kept in a box or in a joint bank account. Periodically, usually once a year just before Christmas, the fund would be shared out and each member would receive back the amount she had put in, plus interest if a bank had been used.⁹²

Some form of rotating share-out is the more usual form found in rural areas (and in many urban groups as well). In this case, no use is made of banks or other formal financial institutions. Instead, one member in turn

receives the amounts contributed by all other members of the association. The order in which members receive the share-out is determined in a variety of ways—it may be fixed in advance, lots may be drawn, it may be auctioned off, or it may be given to a member who has an emergency need. (However, each member can receive the share-out only once in each round.) Obviously, the members who receive the share-out early in a round are the debtors of other members of the group, who have their turn later. Accordingly, elaborate arrangements are sometimes made to even out the benefits received, for example, by paying more to those who receive their shares late in the round.⁹³

Guy Bélloncle observes that in Niger, "there seems to exist among the women a capacity for self-organization and self-financing superior to that of the men. One cannot but be struck by the importance of the sums which the 'Local Women's Unions'—which themselves seem to be supported by the most traditional organizations—are capable of collecting."⁹⁴

- c. Financial Management—To gain access to formal credit systems, SSEs must keep written financial accounts. Women may be disadvantaged in this area.

Keeping books is important, not only for the immediate success of the business, but also for its potential improvement and expansion through institutional credit. Small firms in the Philippines that went bankrupt showed a "noticeably lower...tendency to keep books and records, to separate business and family accounts, and to use the services of professional accountants."⁹⁵ In fact, small-scale entrepreneurs seldom keep books, particularly in very small SSEs and in rural areas. In rural Bangladesh,

only six percent kept books, and in Sierra Leone, the national rate was 17 percent.⁹⁶ About ten percent of Jamaican small-scale manufacturing enterprises overall kept books, with the rate ranging from four percent in the smallest Enumeration Districts to 29 percent in the capital city. The size of the enterprise was apparently the most important factor determining whether records were kept.⁹⁷

The female-dominated gara industry in Sierra Leone, by contrast, showed the highest industry rate of record keeping, 50 percent. It should be noted that the sample was the smallest of all the industries, comprising only eight cases, and that none was located in the smallest locality.⁹⁸ In Jamaica, the industries dominated by women, dressmaking and crafts, have only a 1.9 and one percent rate of record keeping, respectively.⁹⁹

How can women compensate for a lack of bookkeeping skills? Togolese borrowers from the African Enterprises Program, part of the Entente Fund in West Africa, assisted by the Agency for International Development, agreed to use the part-time services of an accountant. Thirty-nine percent of these borrowers were women, mostly the famous cloth sellers who, though illiterate, "can figure into millions of francs and keep their records entirely in their heads. The legend of their ability to calculate mentally is probably quite accurate: she who counts wrong gets out of business quickly. Bankers being less charmed by mental bookkeeping than are tourists, the lack of accounting is one factor which has kept the market women ineligible for credit."¹⁰⁰

- d. Earnings--Inadequate financial management often makes it difficult to ascertain an SSEs earnings or profit. Some entrepreneurs have only marginal earnings, while others make more than the prevalent wage. Many SSEs, that are not profitable in themselves have other kinds of utility, both economic and social. For example, the SSE may provide cash during an off-period in another occupation, often agriculture. It may provide occupation for a family member, have value in the portfolio of enterprises, or offer the entrepreneur an improved social status or a preferred work style. A woman selling crafts in The Gambia found it difficult, time-consuming, and costly to make other arrangements to handle her family and household tasks; still, she explained, "I like to be in the market much better than to work at home."¹⁰¹ The independence afforded by self-employment is valued by many, including 46 percent of interviewees in Philippines SSEs, of whom over three-fourths were women.¹⁰²

Women who could make more money elsewhere may nevertheless opt for their preferred work style and location. Women of a small Honduran village, for example, sought assistance in increasing their income from the production and sale of rosquillas, biscuits made of corn and cheese. With a loan from the Save the Children, they purchased a motor-driven mill, which saved time and energy grinding the corn and permitted them to increase sales. The loan was repaid, and, encouraged by their success, the women decided to form a baking cooperative to produce rosquillas more efficiently. It soon became apparent, however, that women really preferred to work in their own home as they always had. For whatever reasons of individual differences or family demands, the women of this community were not inclined toward a cooperative

project. The mill continues to serve the community and the women appreciate their additional income and time.¹⁰³

In many cases, people engage in a marginally profitable SSE simply because there are no better alternatives. The PISCES studies found that "many of the poorer artisans and traders in squatter settlements engage in entrepreneurial activity as a matter of survival rather than choice and, in many instances, would prefer secure wage employment if it were available."¹⁰⁴

This is probably the case for many women. They earn less than men and are concentrated in types of SSEs with lower earnings. In urban Tanzania, 47 percent of the self-employed women (compared with four percent of the men) had labor incomes of not more than 100 shillings.¹⁰⁵ The predominant activity of women entering SSEs in the Philippines is selling, but two-thirds of those in this type of SSE earned below \$1.40 per day (slightly more than the minimum wage).¹⁰⁶

6. Size of SSE

Women are found predominantly in very small "micro-enterprises" (one to five workers), especially in the group of owner-operated enterprises that employ one other worker on average. Some data indicate that more women are found in the smallest SSEs, and as size increases, women's participation decreases. The PISCES study found that, in projects examined in Africa, Latin America, the Philippines, and India, the entrepreneurs most commonly assisted were women, and they were at the bottom of the scale. "In general, the smaller the size of the business reached by a project, the larger the proportion of women business owners."¹⁰⁷

7. Type of Product or Service

Women are concentrated in certain occupations, both as owners and as employees. In a particular country, women may predominate in either services or products, depending on the level of development and the range of occupations open to them. They usually concentrate in businesses in which they have skills and access to raw materials.

Sexual division of labor in a particular culture may also influence the choice of SSEs. For example, in Haitian small manufacturing enterprises, women dominate the pastry and candy-making businesses and are well represented in tailoring, straw products, and baking. Women account for only one to three percent of the employees in metal working and the repair of shoes, cars, and machines, and are not represented in leather working, watch repair, tire repair, or mattress making, either as proprietors or employees. In Jamaica, all the dressmaking and most of the straw work are done by women.¹⁰⁹ In rural small-scale enterprises in Guatemala, women contribute 65 percent of the work force in commercial services, 50 percent in textiles, 47 percent in food processing and baking, and 17 percent in leather working.¹¹⁰

B. BARRIERS ANALYSIS

Our description of women in small-scale enterprise has not considered those who might wish to be active but for one reason or another cannot. As Anderson aptly points out in his overview issue paper on small industry in developing countries, researchers have skewed the sample by neglecting those who have not been able to enter or to remain in SSEs.¹¹¹

People in small business often rank finances, markets, and raw materials as critical problems. Women participants at the International Women's Year Seminar on Third World Craftswomen and Development

unanimously chose money (for raw materials), markets, and management as the priority needs of developing country craftswomen.¹¹² Women in SSEs have problems similar to those of men and face similar constraints. Yet women's situation is exacerbated by their gender. In addition to the normal difficulties of small business--marketing, undercapitalization, lack of credit--women's businesses face some obstacles that are specific to their being run by women.¹¹³ Difficulties and constraints become barriers, sometimes to entry into business, sometimes to the types of SSEs that provide more income, and sometimes to increases in size, efficiency, and profitability.

Women in SSEs may encounter difficulties in any of the functional management areas: in getting organized, for example, or in acquiring adequately trained personnel, producing appropriate quality, finding markets for their goods, or obtaining sufficient credit. One should first try to identify the nature and seriousness of the problems in the functional areas. They will vary from situation to situation, but similarities across areas will emerge. This analysis provides focal points for project design.

A second step is to specify the causes of these problems. Project design can then attempt to address causes rather than symptoms. Problems may stem from women's inadequate access to the control of key external resources (including inputs such as capital and training, as well as markets). But it is important then to identify the access barriers, which fall into five interrelated categories: societal norms, institutional structures, legal aspects, economic factors, and political factors.

Availability of information will be a problem in barriers analysis. Micro studies are needed for problem identification. Furthermore, establishing casual relationships is a slippery affair. Nonetheless, one should attempt these tasks because they are important inputs to the project design process.

I. Societal Norms

Religious, historical, familial, and cultural factors create attitudes that may act as barriers to women's participation in SSEs (though some may facilitate access).

Social attitudes concerning women's value, abilities, and proper roles, often internalized by women themselves, are the single most serious barrier to women's entry and success in small-scale enterprises. The combination of these negative attitudes with women's commitments to raising a family further intensifies and strengthens the barrier.

A task is devalued when it becomes "women's work" in a given society, and even financially successful women are held in low esteem. Planners and policy makers reflect societal attitudes, often regarding women and their productive activities as non-existent, unproductive, or critically limited by women's child-bearing and childrearing roles, all contrary to evidence.

These attitudes have little basis in objective reality. As we have seen, women already play a considerable role in small-scale industries, especially when some correction is made for the "invisibility." Nor are women unproductive. They create goods and services that produce wealth and value; but because of societal constraints on women, the wealth and value does not always accrue to the producers in full measure. An AID study noted that women are "not an 'underutilized' human resource, as the planners are fond of referring to them, but 'overutilized' in a very basic way. They work hard, all day, with few visible benefits from their labors."¹⁴ Some evidence indicates that women, though comparatively disadvantaged with regard to both financial capital and human capital, make comparatively more efficient use of investments (for example, in the gara industry in Sierra Leone).

Attitudes of society toward women act directly, reflexively, and indirectly to impede women in business. Disapproval may directly keep women out of SSEs; women may reflect society's attitudes and regard business as unattainable for them; and society's views influence the institutions, laws, economy, and policies to discriminate against women.

Notions of impropriety and inability are used to keep women out of business in general and certain businesses in particular. Restrictive concepts of impropriety are particularly strong in Muslim and Hindu societies, although their effect is eroded by the necessity to work brought on by poverty. An AiD study found in Bangladesh, Pakistan, India, and Nepal, "the girls and women defined as being economically active are drawn disproportionately from the non-Hindu and non-Muslim minorities (especially Christians and Buddhists), from low-caste and scheduled-caste groups in the Hindu community, and from the lowest socioeconomic ranks among the Muslims."¹¹⁵

The notion of women's inability in certain areas is particularly strong with regard to machinery. This widespread idea may have arisen from the need to assign a domain to men, particularly as their traditional roles as hunters and protectors declined over time while women's roles remained constant. Perhaps not only outsiders bearing technology but also overburdened women saw men as the group to be concerned with machines. At the International Women's Decade midpoint meeting in Copenhagen, leaders of women's organizations in Francophone Africa argued that the point of rural development was to decrease women's work and free up some of their time. Women could not do everything, so in the case of a grain mill in Senegal partly donated by UNICEF, "the mill was operated by a man who had been employed (and had to be paid a salary that the milling fees could not support)...Why was it a man who was running the mill? To give the men a feeling that they participate, to keep their cooperation. We should not be overly

concerned to feminize everything." In another case, women "refused to sew because men are already doing it and women have plenty to do."¹¹⁶

Both men and women devalue women's economic production. "In many traditional rural settings," one report noted, "female respondents are not conscious of themselves as economic beings, despite the fact that they are de facto involved in productive-market production. The self-perception of women, who though economically active, continue to 'declare themselves' as 'only housewives' is a crucial factor in the underestimation of the female work force."¹¹⁷

The family is a powerful focus of male disapproval of women's economic activities. Disapproval may be turned to acquiescence, especially if the human relations are handled well and the economic contribution women make to the family is needed. The Inter-American Foundation observed that "Many women's projects have foundered because of (husbands', fathers', and brothers') opposition--which often can only be alleviated by time and the women's persistence. In many instances, however, these problems can be minimized by efforts of a supporting organization to explain to the men the purposes of the project, to discuss with them the benefits to be derived, and to enlist their support."¹¹⁸

A representative of the National Union of Malian Women noted that "The liberation of women cannot take place against men because the structure demands that men agree. Women who participate in meetings have to report back to the husband and if he is not agreeing, he can forbid her to participate--he can threaten divorce and send her back home."¹¹⁹ Nevertheless, male family members may be persuaded by economic necessity to change their views. Women participating in a YMCA handicraft training program in Dacca, for example, "contribute so heavily to the family income, husbands soon find their initial objections appeased by the extra money."¹²⁰

2. Institutional Structures--Institutions reflect societal norms and so may create administrative and organizational barriers.

Schools, banks, and businesses may create institutional barriers to women's entry and advancement in small-scale enterprise. These institutional barriers may affect both human and financial capital formation required for SSE success. Furthermore, the effect of institutional structures that discriminate against women may be cumulative. As a World Bank researcher notes, "Cumulative discrimination occurs whenever a worker has low productivity and therefore low wages because of past discrimination. For example, when choices concerning the type of training and levels of education of younger women are affected by job patterns of older women who have been victims of past discrimination in jobs or education."¹²¹

3. Legal Aspects--Laws may impede women's access to or control over key resources, intentionally or unintentionally.

Although many nations have subscribed to the United Nations Convention on the Elimination of All Forms of Discrimination against Women, many retain laws that treat women as minors, without legal power. Women often have no legal person of their own and must depend on male relatives for legal status. Legal barriers to organizing a business and obtaining credit are common. In parts of Latin America, for example, "businesses owned by women cannot obtain legal status and must be registered either in their husband's names or operate within a larger organization. Indian women, many of whom do not speak Spanish, are particularly dependent on men for outside business dealings. Sometimes organizations that help establish businesses have been unwilling to subsequently relinquish authority to the women owners... Even successful women-owned businesses have been denied commercial credit when husbands or other males were unwilling to co-sign guarantee loans."¹²²

4. Economic Factors--Macroeconomic conditions may exacerbate other barriers (e.g., credit availability) or make it easier to overcome them (e.g., societal restrictions on role behavior may give way to economic necessity).

Changes created by modernization, urbanization, and industrialization have increased the need for monetary transaction. Women must have money to get things they need for themselves and their families--things that can only be acquired in exchange for money (such as transportation or schooling); things that require too much work and time to produce at home; and things that could be produced at home but which seem to be better, have more appeal, or carry more status value because of the way they are produced or and packaged.¹²³

Women also need money because social changes have left them increasingly responsible for the economic support of the family. An estimated 15-22 percent of women are heads of households, depending on the region.¹²⁴

Self-employment in personal service occupations or in trade and marketing is feasible for some, but is not very productive economically. Dixon argues that the "single most important factor retarding rural development is the lack of money in poor households and the lack of control over what money exists contributes to the low status of women and increases their motivation for frequent childbearing." She reports that a woman member of the Provincial Assembly in Punjab, India, decided in 1966 that "the key to women's problems was their lack of control over money" and remarks on "how rarely people have come to this particular conclusion regarding the needs of rural women."¹²⁵

The traditional small-scale enterprises engaged in by women, such as food processing and the making of household utensils, are giving way to competition from industrialized products that have status

value and are competitively priced. In India, for example, the absolute number of women in nonagricultural jobs dropped between 1911 and 1971. Particularly sharp declines appear in the economic activities traditionally employing large numbers of rural women--cottage industries, including spinning and weaving; paper making; jute handicrafts; bidi (cigarette) making; rice processing and oil processing; and trade commerce. Women in these occupations have been increasingly forced into competition with factory producers in the expanding industrial sector and with wholesalers and intermediaries in marketing. The control over income that many women had derived from marketing their own food or handicrafts has largely been lost.¹²⁶

Women are invariably found at the bottom of the economic scale, as indicated by the project experience of the Inter-American Foundation. Even within their own communities, women are generally at the bottom of the ladder. If Peruvian Indians are poor, Peruvian Indian women are poorer. If Honduran children have few schooling opportunities, Honduran girls have fewer. If laws discriminate against Ecuadorian blacks, they discriminate more against Ecuadorian black women.¹²⁷ Since there is basis in experience for the truism that the rich get richer and the poor poorer, economically disadvantaged women have every expectation of remaining so.

5. Political Factors--Changes in political leadership may bring either greater repression or greater equality to women.

Politics govern life at all levels, and men most frequently control politics. Women are accustomed to dealing with male power and may be able to chart a successful course through the political currents. But when politically powerful men realize that their position may be affected by women, they often act against women's interest.

Many of the organizations seeking to help women in SSEs have had political difficulties. One of the most interesting cases is to be found in SEWA, a trade union of 5,000 poor women workers in Ahmedabad, India. Emerging from the activities of the Women's Wing of the Textile Labor Association, SEWA was established as a union in 1972, achieved a notable success, and after efforts to extend the protection of existing labor laws to self-employed women, became independent in 1981. It was forced into independence because neither the Textile Labor Association (TLA) nor the National Labor Organization (NLO), of which it was an affiliate, felt the political advantages outweighed the disadvantages of women activists in their ranks. At the session during which SEWA was expelled, the NLO's president commented, "I built SEWA during the emergency days to protect TLA against Indiraji's (Indira Ghandi's) attacks. I built a wall of poor women around TLA. Now I am expelling SEWA because it is dangerous for TLA."¹²⁸

IV. PLANNING, DESIGN, AND IMPLEMENTATION

The considerations we have noted as relevant to project identification are even more important in the actual design of the project. Steps must be taken to correct for "the invisible women" within the project population. Searching out, collecting, and producing disaggregated data; using women designers; collecting data on women's roles (using the SSE Participation Profile for economic roles); using local organizations and individuals; exploring women's needs with them, especially at the village level; translating working documents into the language of the host country and distributing them to collaborating organizations—all have been suggested as means to bring women into the planning process, guard against negative impact, and provide an intervention that will assist them.¹²⁹

All planners agree that investments made during planning will pay off in the implementation state. Yet because relatively little importance is attributed to women's economic activities, planning resources are seldom allocated to

assessing women's participation, which often requires more time, effort, and consequently more than "established" types of data.¹³⁰

A recent AID evaluation study on SSEs recommended the development of a diagnostic profile to capture "knowledge of local production technologies and of firm profitability, by type, as well as of employment patterns and skill levels, particularly of women and the poorest generally." The Participation Profile advocated in this paper is an attempt to meet that need. "The more comprehensive the profile and participatory process of developing it," notes the AID study, "the more complete the picture it provides of the commercial sector and its social setting, the more likely the eventual attainment of project goals...it is possible to argue that an accurate pre-analysis may give more scope for knowledgeable, shared decisions later—in the implementation phase."¹³¹

Certain design elements—simplicity, flexibility, appropriateness to the project milieu, and ownership and control by the intended beneficiaries—are likely to prove crucial in implementation. At this stage, projects are likely to stray inadvertently from their goal of benefiting women, focusing rather on other goals.¹³² Women's participation needs to be monitored on an ongoing basis, and project administrators must have the authority to make needed adjustments. The barriers analysis may be particularly useful, since psychosocial difficulties may well impede implementation. The following brief notes suggest how the participation profile and barriers analysis can be related to stages of the project process.

1. Avoid Negative Impact—Channeling resources to other parties often hurts women in SSEs by creating competition at all levels, from raw materials to markets. Women are also often hurt by regulations intended to improve business or industry, such as licensing of SSEs, standardization, or purity regulations (e.g., in the food industry).¹³³ Improvements in the marketing system may also exclude women by making it too costly for them to participate or removing control over pricing.

2. Foster Positive Impact--Women can be assisted in their economic function by giving them time to engage in small-scale enterprise. This was the accomplishment of the mabati movement in Kenya. With tin roofs, rainwater can be saved and stored, releasing women from the daily chore of fetching water, which normally takes two to ten hours per household. The women used the traditional rotating societies to accumulate cash to buy the tin roofs. Each woman contributes money to a communal pool, which was distributed to members in turn, with the order determined by lot. With the time saved because rainwater was available, and often with cash earned by selling some of the water, the women increased their production of vegetables, chickens, and pigs for sale in the urban markets.¹³³

Projects will be more helpful to women if they take into account the totality of women's activities and the meeting of priority needs. Day care is an obvious example, but sometimes the needs are even more basic. Women of the most arid and remote part of Upper Volta, for example, were in favor of the AID-sponsored Training Women in the Sahel Project, with its emphasis on appropriate technology and income generation, but wanted to know if it would help them get water.

The information gathered about barriers occasioned by social norms will indicate how production and marketing in the SSE might be best organized and carried out to suit the particular women participants. Experience has shown the wisdom of not attempting too great a departure from social norms. Dixon finds that "women have more direct access to project benefits when planners explicitly recognize the prevailing sexual division of labor and design activities that build on women's work and enable them to control their earnings."¹³⁵

Women need help in overcoming the problem of low social esteem, which may impede their SSE activities. Hunt finds the

psychosocial obstacle to enterprise creation and success of "surpassing importance to entrepreneurs in general."¹³⁶ Surely, it is still more important for women, and must be explicitly considered in any project attempting to assist women to enter SSEs.

The PISCES study divided projects into those that aim to assist existing SSEs and those that create new ones. Projects were studied on the basis of their objectives (ranging from the narrow "assistance to existing business" to the broad "diversifying the economic base of the community by encouraging self-sufficiency and linkages to nearby rural areas"). Interventions were made at three levels: community, group, and individual. The study found that community and group interventions seem to fit better with projects having comprehensive objectives and those aimed at new businesses. "In general, the needier the population, the more long-term, intensive, and comprehensive is the program." Credit is the most sought input among urban clients, many of whom are women in the very smallest enterprises. "In general, the smaller the size of the businesses reached, the larger proportion of women business owners."¹³⁷

Small-scale enterprises will continue to play for many decades a significant role in Third World economies. The importance of women's roles in SSEs make gender an important variable in enhancing SSE project performance and the benefits accruing for women. The Participation Profile and Barriers Analysis provided one means of more systematically carrying out gender-based analysis for project identification, design, and implementation.

TABLE I
ENTERPRISE SIZE

<u>Number of Workers Per Unit</u>				
<u>1</u>	<u>2-5</u>	<u>6-10</u>	<u>11-20</u>	<u>21-50</u>

Organization

- 1) Number of Units:
 - Male owned
 - Female owned
- 2) Number of Workers:
 - Male
 - Female
- 3) Legal Status (number):
 - Sole proprietorships
 - Partnerships
 - Corporations
 - Cooperatives
 - Other
 - None

Personnel

- 4) Levels of Literacy, Training
Formal Education:
 - Male
 - Female
- 5) Marital Status:
 - Married
 - M
 - F
 - Single
 - M
 - F
 - Head of Household
 - M
 - F
- 6) Household Size and Female
Economic Contribution (%):
- 7) Age:
 - M
 - F

TABLE I (continued)

	<u>Number of Workers Per Unit</u>				
	<u>1</u>	<u>2-5</u>	<u>6-10</u>	<u>11-20</u>	<u>21-50</u>
8) Time Commitment:					
- Full Time					
M					
F					
- Part Time					
M					
F					
- Seasonal					
M					
F					

Production

9) Geographical Location:					
- Rural					
M					
F					
- Semi-Urban					
M					
F					
- Urban					
M					
F					
- Regional Concentration					
M					
F					
10) Operating Locations:					
- Household					
M					
F					
- Donated Locale					
M					
F					
- Rented/Purchased Locale					
M					
F					
- Mobile					
M					
F					

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TABLE I (continued)

	<u>Number of Workers Per Unit</u>				
	<u>1</u>	<u>2-5</u>	<u>6-10</u>	<u>11-20</u>	<u>21-50</u>
11) Technology:					
- Traditional					
	M				
	F				
- Semi-Modern					
	M				
	F				
- Modern					
	M				
	F				
12) Productive Activity:					
- Physical Production					
	M				
	F				
- Processing					
	M				
	F				
- Wholesaling					
	M				
	F				
- Retailing					
	M				
	F				
- Financing					
	M				
	F				
- Transporting					
	M				
	F				
- Storing					
	M				
	F				

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TABLE I (continued)

	<u>Number of Workers Per Unit</u>				
	<u>1</u>	<u>2-5</u>	<u>6-10</u>	<u>11-20</u>	<u>21-50</u>
<u>Marketing</u>					
13) Market Destination:					
- Household					
	M				
	F				
- Rural					
	M				
	F				
- Urban					
	M				
	F				
- Export					
	M				
	F				
14) Sales value:					
- M SSCs					
- F SSEs					
<u>Finance</u>					
15) Capital:					
- Debt					
	M				
	F				
- Equity					
	M				
	F				
16) Financing Sources:					
- Personal, Family, Friends					
	M				
	F				
- Savings Associations					
	M				
	F				
- Money Lenders					
	M				
	F				
- Cooperatives					
	M				
	F				
- Banks					
	M				
	F				

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TABLE I (continued)

		<u>Number of Workers Per Unit</u>				
		<u>1</u>	<u>2-5</u>	<u>6-10</u>	<u>11-20</u>	<u>21-50</u>
17) Financial Management:						
	M					
	F					
18) Earnings:						
	M					
	F					

TABLE 2
TYPE OF GOODS OR SERVICES

Services			Goods		
Vending	Household	Personal	Products	Clothing	Other

Organization

- 1) Number of Units:
 - Male owned
 - Female owned
- 2) Number of Workers:
 - Male
 - Female
- 3) Legal Status (number):
 - Sole proprietorships
 - Partnerships
 - Corporations
 - Cooperatives
 - Other
 - None

Personnel

- 4) Levels of Literacy, Training, Formal Education:
 - Male
 - Female
- 5) Marital Status:
 - Married
 - M
 - F
 - Single
 - M
 - F
 - Head of Household
 - M
 - F
- 6) Household size and Female Economic Contribution (%):

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TABLE 2 (continued)

	Services			Goods		
	<u>Vending</u>	<u>Household</u>	<u>Personal</u>	<u>Products</u>	<u>Clotning</u>	<u>Other</u>
7) Age:						
M						
F						
8) Time Commitment:						
-Full Time						
M						
F						
- Part Time						
M						
F						
- Seasonal						
M						
F						

Production

- 9) Geographical Location:
- Rural
 - M
 - F
 - Semi-urban
 - M
 - F
 - Urban
 - M
 - F
 - Regional Concentration
 - M
 - F
- 10) Operating Locations:
- Household
 - M
 - F
 - Donated Locale
 - M
 - F
 - Rented/Purchased Locale
 - M
 - F
 - Mobile
 - M
 - F

TABLE 2 (continued)

	<u>Services</u>			<u>Goods</u>		
	<u>Vending</u>	<u>Household</u>	<u>Personal</u>	<u>Products</u>	<u>Clothing</u>	<u>Other</u>
11) Technology:						
- Traditional						
M						
F						
- Semi-Modern						
M						
F						
- Modern						
M						
F						
12) Productive Activity:						
- Physical Production						
M						
F						
- Processing						
M						
F						
- Wholesaling						
M						
F						
- Retailing						
M						
F						
- Financing						
M						
F						
- Transporting						
M						
F						
- Storing						
M						
F						

TABLE 2 (continued)

Services			Goods		
<u>Vending</u>	<u>Household</u>	<u>Personal</u>	<u>Products</u>	<u>Clothing</u>	<u>Other</u>

Marketing

13) Market Destination:

- Household

M

F

- Rural

M

F

- Urban

M

F

- Export

M

F

14) Sales Value:

M

F

Finance

15) Capital:

- Debt

M

F

- Equity

M

F

16) Financing Sources:

- Personal, Family, Friends

M

F

- Savings Associations

M

F

- Money Lenders

M

F

- Cooperatives

M

F

- Banks

M

F

TABLE 2 (continued)

	<u>Services</u>			<u>Goods</u>		
	<u>Vending</u>	<u>Household</u>	<u>Personal</u>	<u>Products</u>	<u>Clothing</u>	<u>Other</u>
17) Financial Management:						
M						
F						
18) Earnings:						
M						
F						

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TECHNOLOGY TRANSFER:
IMPLICATIONS FOR WOMEN

Prepared by Mary Anderson

I. INTRODUCTION

Much of the literature on technology transfer now acknowledges that technologies are not value free or value neutral. Two important volumes by Stewart and Goulet¹ which came out in 1977 represent a turning point in this recognition. Technologies are seen to be embedded in and to carry social values, institutional forms, and culture--even as they also reflect resource endowments and the organization of production.

It is also true, though less often acknowledged, that technologies are not gender neutral. Because in every society there is a gender-based division of labor (or, as it is called in the industrialized countries, occupational segregation), technologies have different and differential impacts on men and women. Technologies as techniques affect the ways in which people do things; technologies as systems of knowledge affect the ways in which people think about what they do. If men and women do different things, then any particular technology will affect the roles of men and women differently. When technologies are transferred across boundaries where the roles of men and women differ from those in the originating country, the impact on men and women will be different in the receiving country from that in the sending country. As technologies affect the ways in which people think about what they do, the transfer of a technique from an area with one set of norms affecting work roles to another with different expectations, beliefs, and norms will often bring about surprising (and sometimes unfortunate) outcomes.

A.K.N. Reddy,² in his effort to devise an appropriate science and technology policy for India, cautions any recipient country regarding the impact of an imported technology. He writes, "Technology can be considered to resemble genetic material which carries the code of the society which conceived and nurtured it and which, given a favorable milieu, tries to replicate that society." In technology transfer it is not enough either to determine the terms

of trade by which one country may purchase another's technology or to ensure that a given imported technology utilizes the recipient country's resource base appropriately. The cultural, social and political "codes" carried by technologies must be considered if unexpected, and often negative, impacts in the receiving countries are to be avoided.

How can we understand the socio-political biases and gender implications of technologies? What are the most useful ways of thinking about transfers of technology from one area to another to ensure the best possible outcomes? How can we ensure desired economic results while maximizing beneficial social/political impacts and minimizing negative effects on people and the environment? This paper will examine the issues of technology transfer and will provide a framework for understanding the relationships between technology transfer and women's involvement in development. We shall address specifically those issues which are most important in designing projects that are effective both in engaging women in the development process and in assuring women's participation in project benefits to the greatest possible degree.

Transfers of technologies involve both a sender and a receiver. Two underlying assumptions about technology and economic development have emerged historically. It is useful to make these assumptions explicit before proceeding.

The experience of Europe and North America during the Industrial Revolution as well as the unprecedented material abundance produced by coupling scientific discovery, technological innovation, and industrial production, have shaped the very definitions of modernity which influence today's attempts at development. Progress has been equated with the emergence of a technological capacity for transforming resources into material abundance and, even more important, with a mind set that holds that nature can and should be controlled through science and technique to serve human ends.

The success of this period in producing wealth brought with it an optimism that all problems were amenable to scientific/technological solution. In 1934, Richie Calder proposed that the British House of Lords be replaced by a Senate

of Scientists because, he claimed, such a body would have the knowledge and technique to solve all the problems then confronting England. Science could solve not only scientific and material problems, he and others claimed, but also any social, political or human problem as well. There was no better exemplar of this belief than Buckminster Fuller who expressed it this way: "...for every human problem there is a technical solution...You may...ask me how we are going to resolve the ever-accelerating dangerous impasse of world-opposed politicians and ideological dogmas. I answer, it will be resolved by the computer...all politicians can and will yield enthusiastically to the computer's safe flight-controlling capabilities in bringing all of humanity in for a happy landing."³

Even as the experience of the Third World has not substantiated this optimism, the basic assumption persists that technical solutions can be found for any problem. Efforts to develop Science Policy Institutes in many developing countries, to negotiate systems for the equitable transfer of technical knowledge, to develop international journals for the publication and dissemination of discoveries--even the appropriate technology movement--all rest on the assumption that a technological "fix" may be found. If we can only get the technology "right," then the assumption is that progress and development in the Third World will be inevitable. Many advocates of women's involvement in development are now searching for the "right" technologies for women to assure their participation in and benefit from development.

What is behind this? Again, from the history of the development of science and technology in Europe and North America emerges another strongly held and influencing belief about science. This belief is that science and technology, because based in nature, are separate from all normative and political influence and free from cultural or class bias. In fact, there is evidence to the contrary. Among scientists there is an increasing acknowledgement of the interactions of their discoveries and knowledge with their social experience. In attempts to transfer technological know-how from the cultures of the North and those of the South, experience has shown that the history of colonialism, existing power and wealth disparities, and ideological differences affect and influence the transfer process.

These two assumptions--that all things are possible through science and technology, and that the affairs of these fields are free from political bias--should be recognized. Once both the senders and receivers of technologies understand the force of these assumptions and distinguish the realistic elements within them from the unrealistic, they will be able to analyze the interactions of technology transfers in context. They may also assess the linkages between the access to and control of knowledge and the effective application of technologies in development.

II. A FRAMEWORK FOR UNDERSTANDING TECHNOLOGY TRANSFER AND WOMEN

This technology framework will bring together three strands. First, we shall look at the ways in which technologies affect and alter productive activities. Second, we shall examine the characteristics of technologies which reflect the context of their origin as these influence and work through technological impacts. Third, we shall discuss the systems or mechanisms for technology transfer and the way in which these shape the impact of technology transfers.

The three parts of this framework for understanding technology transfer and women relate directly to the analysis of productive activities and of access to and control over resources presented in the initial paper of this volume, "Women in Development: A Framework for Project Analysis." The relation arises from the fact that technologies affect the ways in which people work and the ways in which they think about their work. The Analytical Framework shows that every society has a recognized set of productive roles for men and women. The rigidity or flexibility of these roles for controlling and using resources is historically, pragmatically, culturally and/or religiously based. The effect of technical innovation on gender-based roles is of great importance in project design and implementation.

A. THE EFFECTS OF TECHNOLOGIES ON PRODUCTION

There are five basic categories of impacts through which technologies may have an effect on production. In each of these, the potential for different and differential impacts on women and men is important.

- i. The Doer of a Productive Activity. The first and most obvious impact of any technology is to change the doer of an activity, the producer. The introduction of any device, technique or organizational arrangement which alters the role assignments of men and women in production may have a number of ramifications in status, in access to and control over resources and income, and in the opportunity for leisure.

In technology transfers from industrialized to Third World countries, the changes in the gender of a producer induced by the introduction of technology arise in one of two interrelated ways. The first is through an implicit expectation that the operator or manager of a technology in the originating country will be replicated in the receiving country. Second, as new technologies are introduced into an area, the ability to handle them is usually associated with relatively high status. Thus, when a technology is introduced, those who either already enjoy higher status or who are in a position to corner it may move into tasks that were previously low status when done without the benefit of the new technology.

An ILO study conducted for the United Nations Commission on the Status of Women in 1967 provides illustrations of these shifts. The study analyzed the impact of scientific and technological progress on employment and work conditions in the metal trades; textiles, clothing, leather and footwear trades; food and drink industry; and printing and allied trades. In every case where machinery was introduced in activities traditionally done by women, men either completely replaced women or the activity became sub-divided and men took over the tasks that used the technology and required greater skill while women were relegated to the less skilled, menial tasks. These shifts were accompanied by loss of income earning opportunities or marginalization and lower income for women.

In Java, when rice mills were introduced, women who had traditionally earned their only monetary income from hand milling were displaced as men assumed the positions in the factories.⁴ In Korea, when the government installed rice mills, men in the mills did jobs previously done by women.⁵

In the Ivory Coast, women were traditionally responsible for growing and spinning cotton which men then wove into cloth. Women, however, controlled the cloth production and gained wealth, status and power from it. With the change of cotton into a cash crop resulting from the colonizer's need for increased supplies, technological innovations were introduced to increase cotton output. Extension agents and technologists worked with men, and male heads of households were required to pay a cash head tax for family members. Thus, cotton growing became the domain of men. However, because women were displaced from their primary role in cotton production, they were subsequently hired into newly built textile mills as weavers using machinery. In this example, technological innovations induced a series of changes in gender assignments in the tasks associated with cloth production.⁶

In addition, a technology may alter the components of a productive task, breaking it into separate functions in a way that alters the gender roles in the separate, changed parts of an activity. A technology may focus on a single component of a job rather than the entire task and, by doing so, alter productive relations between men and women. In Upper Volta, an AID/NASA project installed a solar pump to save women the work of lifting water. As it turned out, lifting the water was the least time consuming and least difficult part of the water collection task of women; they spent most time and energy in carrying buckets of water from the well to their homes. The pump, in fact, aided male cattle herders far more than women in that the women only used a few buckets of water a day in home consumption while herders used many buckets for watering their cattle. For a technology to ease the work of women, it should have been concentrated on piping water rather than on pumping it.⁷

Technologies affect doers of activities by saving labor or generating employment. In certain circumstances, a decision to employ a labor-intensive technology may draw women into the labor force to tasks not previously and traditionally theirs. Sometimes, status is increased in this process. The period of the Chinese Revolution from the 1950's through the mid-60's provides a good example. Decisions to employ low-capital techniques to construct water irrigation and storage technologies resulted in increased demand for women, as well as men, to be mobilized in large numbers for construction. Because the status of the worker was high in that revolution, women gained as they adopted the worker role alongside men. In Java, the massive involvement of labor in building irrigation systems and the mobilization of large amounts of female labor produced a similar result.⁸

As technologies of production influence who does what, technologies of marketing and trade can also have this effect. In colonial India, the importation of cotton from England displaced many Indian workers, primarily women, from the jobs of spinning and weaving on which they previously depended. The English production and transportation technologies were sufficiently inexpensive and effective to make this a viable economic alternative to Indian production.

In cultures where women and men both engage in trade but there are distinctions as to quantities and types of products traded by each, the introduction of carts, roads, or trucks can alter these distinctions. Transportation technologies may either favor the trader of larger goods or they may open opportunities for traders who were previously limited in their ability to carry produce.

Finally, technologies may introduce processes which, because of social or cultural restraints, make them inaccessible for use by a certain group. For example, when bicycle pumps have been introduced in some societies, women have been prevented from using them because of taboos that prohibit women sitting astride the bicycle.

Thus, technologies may change the doer of a productive activity by changing the production process itself. The effects may be employment-generating or labor-saving. The impact on women relative to men can only be analyzed in context when the division of labor and its social/cultural basis is known.

2. The Location of the Productive Activity. Technologies may affect production by relocating activities. In many societies, women have different patterns of mobility from those of men. In some they are confined to certain private, "female" places, such as the household compound, by social or religious traditions. They may be required to travel in pairs or groups, or always with a spouse or a father, or only in certain kinds of conveyances. Women may also be restricted in their movements by their other productive and household obligations such as child care, food preparation, or livestock care.

When technologies change the location of any task, they may result either in the exclusion of women from the work or in changes in traditional work patterns. Some women limited by purdah may not accept employment in a situation where both men and women work; nor may they work outside their compounds. A rice mill, located in a central area for ease of access, may not provide employment opportunities for Bangladeshi women who formerly were responsible for all rice processing because they are not free to accept work in such a location. When a technology centralizes productive activities and women may not go to this location, men move into productive activities where women previously held sway. Such a process tends to reinforce the belief that men work with technologies and women do not, or that men do "modern" work while women only work in subsistence sectors. The real issue, however, is only where the technology is located.

Changes in the location of production in situations where women are not restricted by religion or tradition but only by their home-based

productive obligations may cause women to move out of traditional patterns and undertake new activities. When the owners of the wool mills of western New England wanted to attract cheap female labor in the 19th century, they built dormitories (and installed chaperones!) to house the young girls who took employment. In China, as women moved into factory labor, nurseries and child care centers were built in the factories to allow women to meet their nursing obligations and to provide substitute child care. Electronics factories in southeast Asia and others in Mexico have recruited mainly young, unmarried women in order to avoid having to provide these services. In West Africa, urban women who have undertaken economic activities outside their homes have worked out a variety of alternative systems for providing food to their families, including rotating the responsibility for food preparation among members of a neighborhood group. Food street vendors clearly help meet this need as well.

3. The Timing of Production. A technology may eliminate or lessen the time it takes to accomplish a job, may change the time of day or year when a job must or may be done, or may lessen the time spent on some aspect of a job while increasing the requirements for other aspects.

A recent publication on women and technology shows a photograph of two sweating and miserable women in southern Africa using a solar stove designed by an expatriate technician. The purpose of the technology was to eliminate the need for women to walk for as much as six hours a day to gather decreasingly available firewood. The technician, however, did not know that these women traditionally cook in the early morning or late afternoon precisely in order to avoid the heat of midday. Utilizing solar energy involved a significant rescheduling of the daily activities by the users. Although the technician understood resource endowments, he did not consider the time requirements of his innovation relative to other uses of time in the recipient society.⁹

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A technology designed to increase output/acre through applications of fertilizers or insecticides may force increased labor applications over that acre, changing the time allocations of workers. If those laborers who are responsible for the fertilizer or insecticide applications are already overburdened, as is the case with many African women agriculturalists, the technology will have a differential impact on different workers. In much of the world, women are carriers of water and water is necessary in backpack insecticide sprayers. Women often weed, the requirements for which increase with fertilizers. If tractors plow more land, the cultivators, weeders, harvesters and food processors--often women--have more work.

The impact of a technology on one part of a productive process will be felt not only on that component, but also on related processes. When various parts of a productive chain are assigned by gender, it is important to know this in order to understand labor constraints, opportunities, and characteristics. When a technology saves labor on one aspect of production but increases it on another, planners have assumed that the labor freed from the former will be available to the latter. When gender determines functions, this is not the case.

Even within the jobs that are women's, a technology may save labor in one aspect while increasing it in another. A new cooking stove may, for example, reduce the quantity of wood a woman must collect and thus save time. It may also require wood of a shorter length or smaller diameter, thereby increasing the time spent on chopping wood. Enclosing the flame of a fire inside a fuel-efficient stove may force women to cook and/or serve meals during daylight hours because of the loss of firelight. A stove and its chimney or flue requires maintenance for efficient performance and this takes time.

Linkages, attendant activities, and gender roles complicate the introduction of technologies. To assess accurately a gain in time savings, one must consider shifts in time of day when a task must be done, shifts in amounts of time spent on an activity and all its attendant

activities, and shifts among workers (and genders) of time allocations in the processes affected by the technology.

4. Skills Needed for Productive Activity. A technology may alter the skills needed for doing a particular job. Skills are required both in production with a technology and in its maintenance and repair. Access to and control over the knowledge required to acquire a technology and to use it may determine who does a particular job and who gains from that production. Gender biases are built into the systems of training, education, and skills acquisition which often comprise a part of technology transfers. Educational systems shape access to and knowledge of technologies in several ways. First, in most societies more male children go to school than female, and fewer males drop out of school than females. The ability to read, exposure to a broader world and the options it contains, and training in science and mathematics all support a subsequent ability to understand, respond to, use, and control technologies which have originated elsewhere. Advanced training follows basic training, so the chain is reinforcing; those who lose out early are virtually prohibited from later involvement.

In most rural areas of the world, schooling provides the only way for children to learn to speak a more widely used language beyond that of their village, tribe, or cultural group. The ability to communicate with outsiders is an essential part of gaining access to knowledge and technique which come from outside.

Schooling also transmits and reinforces expectations about who does what in "modern" society. Gender roles, as they have emerged in the technology-creating societies, are taught even as information about these societies and their modernization process is taught.

5. Related Attributes of Activities of a Productive Task. Many productive activities are associated with some ceremonial, social or familial activity which, if the production is changed, is also changed. This

effect may occur in home-based production more than elsewhere and, therefore, may be a more important consideration to women than to others. The Loreno stove, by enclosing the fire, utilizes wood efficiently, but at the same time deprives the household of firelight around which, in many parts of the world, the family traditionally gathers in the evening for conversation and decision-making. At an even more practical level, the same stoves that have reduced smoke and incidence of respiratory disease have also been associated with increases in malaria and other insect borne disease because the smoke had been effective in killing insects. Smoke also is thought by some women to be helpful in making thatch roofs more resistant to rain.

Women have traditionally used the time of long walks to fetch water and firewood for social organization, conversation and interchange. Technologies which alter these functions eliminate these opportunities, so that other social forms have to be found. Technologies which gather women in certain areas, such as grain mills, can have the opposite effect. They can facilitate social activity and opportunities for education. For example, women in Asia have received literacy training while they wait for their rice to be ground at mills and women in Africa have received nutrition training while waiting in line at clinics.

The cotton weaving in the Ivory Coast, discussed above, traditionally involved an important element of aesthetics. Prestige was derived from the beauty and patterns of the weaving more than from the income produced. The changes in production that resulted from cash cropping undermined this prestige value, and other means for satisfying it have had to be found.

By their nature, technologies are disruptive of old patterns precisely because these old patterns have not been sufficiently productive. People look for and adopt technologies in order to increase economic output and security. However, for a technology to be effectively adopted, the gains to recipients must outweigh losses. Some of these

gains and losses are noneconomic. Marilyn Hoskins, summarizing a range of case studies on the transference of household technologies to women in many countries, notes that "...costs appear to be a relatively less important consideration than many implementers had expected and that of aesthetics relatively more important."

Projects which are designed on the assumption that the suitability of technology transfers can be assessed by economic criteria alone are, therefore, likely to result in unexpected failure. Experience has shown that economic rationality is not the only, or even the primary, motivator of all decisions in many parts of the world. This is particularly true in the spheres of activity which are not entirely within the market. Because many of women's productive activities fall outside the market sphere, such a caution might be especially relevant to understanding potential technological impacts on women or to developing any predictive capability regarding these impacts.

B. THE EFFECTS OF TECHNOLOGIES ON CONSUMPTION

Related to the division of labor in production, but requiring additional empirical research and analysis, is the division of labor in consumption. Some aspects of consumption seem to have gender implications. Partly, this division is related to production in that who produces what determines who consumes what. Partly, it is the result of traditional role divisions.

Some consumption technologies would seem to be entirely gender-neutral. In practice, they may have gender implications. For example, a radio provides access to information on a broad and unlimited scale. A radio may be listened to, a television may be watched, a telephone may be used equally by male and female ears, eyes and voices. However, if a radio is placed in a traditional gathering place for men, such as a beer hall or the village council, and if women are restricted socially from access to this place, then men will gain access to additional information not available on an equal basis to women. The technology itself becomes a reinforcer of patterns of access and control which already exist in the society.

A technology may alter consumption patterns in relation to the goods and services it is designed to produce. The solar water pump, referred to above, was designed to facilitate women's access to water but, in fact, benefitted cattle herders more. Whereas the herders had traditionally moved away from the watering place when the rainy season came, the pump made water access so much easier for them that they remained close at hand all year round. This forced the women to wait in line for water each time they came. Also, the cattle in the area began to feed on small, new plant growth which women had previously used for food, handicrafts and medicines. Utilization of the water supply increased markedly, straining it beyond its capacity. Women had to wait in line longer, walk farther for the plant growth, and risk periodic loss of this resource as a result of the technological innovation. This technology had a productive intent, but in practice changed women's consumption patterns for the worse.

In some areas of Africa, women note that because they now grind their meal at a mill only a few times a week, rather than grinding the family ration at home daily, their children use the meal for snacks. This may improve nutrition. It may also put stress on food supplies if the productive process of daily pounding at home had operated as a rationing system for consumption.

In Ghana, a project that had apparently been successful in getting women to use a fuel efficient stove was later found to have failed to sustain this use. The women explained that the new stoves did not accommodate the large cooking pots necessary for the Ghanaian type of cooking. In this case, a refusal to change consumption patterns caused the productive technology to be abandoned.¹⁰

Table I shows a scheme for tabulating the effects of technologies on production and on consumption which we have discussed and for noting the implications of each of these impacts on women in particular. With this part of our three part framework in place, we shall turn now to examine the characteristics of technologies and of transfer processes which form the other cornerstones of this analysis.

C. TECHNOLOGY CHARACTERISTICS

Technologies may be small or large, simple or complex, cheap or expensive, labor-saving or employment-generating, locally-based or imported, etc. That is, any technology has a series of definable characteristics which influence its transfer from one context to another and, specifically, through the analysis of effects above, the impact of its transfer on women in the development process. These characteristics are both material and nonmaterial.

The "appropriate technology" movement, which stressed the importance of fitting a technology's resource requirements to local resource endowments grew out of a recognition of the misfit of physical characteristics of imported technologies to recipient environments. E.F. Schumacher's Small is Beautiful subsequently led many people to believe that an appropriate technology is always small, simple, cheap and labor-intensive. Much effort has been put into the invention and development of such "appropriate" technologies to be disseminated around the world. In fact, the characteristics of technologies are more complicated than this. Appropriateness implies a link to some external factor and a judgment about correctness in relation to something else such as resources, goals or values. Furthermore, scale, complexity and expense are not always positively correlated. It is possible for a large machine to be both simple and cheap and for a small one to be highly complex and expensive. The characteristics of technologies can be combined in a number of different ways and these combinations incorporate both physical and nonphysical elements.

TABLE I

TECHNOLOGY TRANSFER AND WOMEN: A FRAMEWORK FOR ANALYSIS

I. EFFECTS OF TECHNOLOGY ON PRODUCTIVE ACTIVITIES

A. ON DOER

1. Traditional Doer
2. Doer with Technology
3. Implications for Women

B. ON LOCATION

1. Location of Traditional Production
2. Location of Production w/Technology
3. Implications for Women

C. ON TIMING

1. How Long Activity Traditionally Took
2. How Long Activity Takes with Technology
3. Implications for Women
4. Time of day/week/month/year Activity Traditionally Done
5. Time of day/week/month/year Activity Done with Technology
6. Implications for Women
7. Segmentation of Time as Activity Traditionally Done
8. Segmentation of Time as Activity Done with Technology
9. Implications for Women

D. ON SKILLS NEEDED FOR ACTIVITY

1. Skills Used to Do Activity Traditionally
 - a. Where Acquired
 - b. How Acquired
2. Skills Used to Do Activity with Technology
 - a. Where Acquired
 - b. How Acquired
3. Implications for Women

E. ATTENDANT BENEFITS OR ACTIVITIES

1. Linked Benefits/Activities When Done Traditionally
2. Linked Benefits/Activities When Done With Technology
3. Implications for Women

II. EFFECTS OF TECHNOLOGY ON CONSUMPTION ACTIVITIES

A. THROUGH TECHNOLOGY ITSELF

B. THROUGH PRODUCTS OF TECHNOLOGY

Thomas P. Hughes writes about these combinations as technological "style." He notes that mechanical technologies were primarily developed in the United States where energy was abundant and labor short while Europe, with the opposite resource endowments, relied more heavily on chemical technologies.¹¹ Biological technologies emerged in the 19th century Europe but were elaborated in America through the application of genetic science to large-scale agriculture. Because climatic conditions, disease vectors and crop types vary widely among geographic areas, it is obvious that biologically-based technologies require more adaptation for effective transference than do mechanically and chemically-based technologies. With all three types, however, adaptations have not been adequate because even when they have occurred, they have usually taken account only of the physical resource base characteristics of technologies and not of the nonphysical characteristics.

Technological style requires more exploration. Hughes illustrates the concept by comparing the development of the Volkswagen with the oversized American car. While one is energy efficient and the other is not, these styles also embody and reflect generalized cultural style, including a set of explicit values (grandeur versus utilitarianism), class attitudes (conspicuous consumption versus a "people's" car), and intended use (to spend a lot of time, to travel long distances, to go to drive-in movies versus to get around town and through narrow streets conveniently). Hughes writes about the transfer of technology from Britain to colonial America which was striving for its independent technology, "British engineers transferring technology would have used iron and steam because they knew it; Americans used wood and water because they had it."¹² But the development of the Mississippi river boat in one country and the shipbuilding industry in another reflects not only these resources, but also the fact that the British required a means for moving beyond their small island to explore distant lands while the Americans wanted to navigate the large rivers of their continent and had little desire to cross any oceans. Technological styles are composites of many factors.

What difference might technological style make to gender? What should we understand about it in order to design projects that engage women as effectively as possible in development? Table II provides a system for tabulating the importance of technologies' characteristics, which make up this "style" on projects' impacts on women.

We look first at the physical requirements of technologies in the originating environment. These include the factors of production--land, labor, and capital. When the use of these resources in the original technology are identified, then two questions, related to its transfer, should be asked. First, are these resources available in sufficient quantity and quality in the recipient country? Second, who in the recipient country owns, or controls, these resources? Men and women, by virtue of tradition and tasks, frequently have different access to and control over resources, and the patterns of this gender-based division vary from country to country and from context within countries. Often patterns of resource control are changing. In Kenya, for example, new land ownership laws are transferring title to land almost exclusively to men. Under traditional systems, women enjoyed assurance of access to land, and this access was central to their roles as primary subsistence producers. As land laws change, women's abilities to farm are changing. Technologies which affect farming patterns will have differential impacts on men and women with their different access to and control over land.

In all societies, it is important in technology transfer to determine who has access to adequate capital to buy and maintain a technology. Also, men and women have differential access to and control over labor. Women may command the labor only of their children or they may form interchangeable labor units among kinship groups. Men may hire men, but in some societies women may not. Women may work for wages, but in others they are restricted from wage activity by tradition. Resource inputs to effective technology usage are among the most important factors for analysis in understanding the impacts of technology transfer.

The physical characteristics of technologies and their gender implications in Table II include mechanical, chemical, and biological purposes. It is important that the purposes behind the development of the technology where it originated be made explicit. What questions or problems was the technology originally designed to answer? Who decided? How were the priorities set regarding which problems to solve? In all three areas a number of technological developments have been made in response to productivity needs in the market sphere. Returns to research and development have been calculated to determine the profit rate of investment.

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TABLE II
CHARACTERISTICS OF TECHNOLOGIES

Physical Characteristics

Requirements Originating Country	Availability in Recipient Country	Control in Recipient Country
Land		
Labor		
Capital		
Implications for Women		

Purpose in Originating Country	Suitability in Recipient Country
Mechanical	
Chemical	
Biological	
Implications for Women	

Nonphysical
Characteristics

Originating Country	Recipient Country
Skills	
Organization	
Discipline	
Cooperation	
Scale	
Implications for Women	

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In the Third World there are a number of areas where profits can be realized through technological innovation. New questions based in Third World experience are being posed to the mechanical, chemical and biological technologies, but these tend still to be concentrated in certain types of activities like those found in industrialized countries. Women are not often included in the decision-making to determine priority areas for research. There are two reasons for their absence. First men have more access to and control over traditional decision-making and capital resources. Second, women's work is disproportionately concentrated in the non-monetized or small scale enterprises sectors of the economy. These areas are not seen as those which are most likely to produce profits on a scale to justify technological innovation. While this calculation may be correct, it is also true that women's productive sectors are increasingly recognized as central to many countries' overall productivity. Subsistence agriculture feeds the majority of people and produces the majority of food in many lands. Understanding the basis on which technologies have been developed in the originating countries is an essential first step to determining what other considerations should be included in the decisions about where to focus them in developing countries.

Nonphysical characteristics of technologies are also important in their potential differential impacts on women and their roles. These include such things as organization, level of skills required, type of discipline required, degree of cooperation and scale of operation. A technology originated in an area where production is organized hierarchically will not necessarily be suitable where production is carried out cooperatively. In situations where women's productive work is organized differently from that of men, as is the case where women's mobility is restricted, a technology which meets the organizational settings of the one will not necessarily suit the other. The connection of the analysis of the nonphysical characteristics of technologies with the related attributes or activities of any productive activity is obvious. When a technology provides water to women individually at their homes, they may, as we saw, lose an opportunity for interaction which was important in the ways they had previously organized their water-gathering work. The purpose of this analysis is to make explicit the variety of characteristics of different technologies which will affect their successful transfer and to relate this to the definable separate roles of men and women so that the differing impacts may be seen at early stages in project design.

D. MECHANISMS FOR TECHNOLOGY TRANSFER

There are three basic mechanisms by which technologies are transferred in assistance programs.¹⁴ These are 1) through direct projects or programs 2) through personnel and 3) through education and training programs. Usually the three are combined in a project. A project will introduce a new technology making it available physically to project participants. Personnel will bring it, assemble it, demonstrate its use and maintenance. Training systems for its use will complete the transfer as project beneficiaries learn to use and maintain the technology. Personnel also, of course, do the training.

Much of the previous discussion was concerned with elements which define the technology (the equipment or technique) itself. To complete the analysis, more discussion is in order here regarding the personnel in charge of transfer.

The person who transmits a technique or knowledge of it can affect or determine who finds out about it and who can have access to using it. There is growing documentation of the problems which have emerged as a result of the fact that, in many societies, male extension agents or teachers and instructors do not have access to women who may be potential or actual users of technologies.

The effect of the agent in technology transfers is more important and more subtle than direct gender access implies. The characteristics of the possessor of knowledge about a technology or of the person who controls a technology communicate a message about who may have technological knowledge or control. This occurs in two ways that usually reinforce each other. The possessor/controller may believe that only people like himself can manage technologies. Thus, he looks for people like himself to be the recipients of his efforts to disseminate, sell, give or demonstrate a technology. Others who observe that men handle technologies will make the assumption that this is inevitable. In agriculture, there is an additional, insidious, related belief which follows. Because women have, in

many parts of the world, been responsible for subsistence agriculture, there is a sense that the modernization of agriculture through the application of technologies requires, at the same time, the masculinization of agriculture.¹⁵ This same process is found in industry and the belief that it is inevitable follows. As rice milling became industrialized in Indonesia, men ran the mills. The modernization of milling brought also its masculinization.

Technologies that originated in Europe and North America often carry this message. In the history of the development of technologies in these societies, for a variety of reasons not necessarily replicated in other cultures and places, technologies have been for the most part invented, developed, controlled and used by men. Ironically, many technologies obviate gender differentiations based on size, weight, strength or speed. Anyone, for example, can push a button or drive a power steering tractor. It becomes impossible to claim that women are too weak or fragile to do certain tasks when a technology overcomes physiological differences. The gender-based division of labor has not disappeared, however. As physical differences between men and women have been obviated by technologies, we have substituted limits believed to be imposed by mental capacity, talents, acumen, and inclination. We developed the belief that women "don't do" math and that women "don't like" to work with machines. Women tinker with a machine with a hairpin; men repair a machine with tools. As western assistance agencies approach development projects and programs in which they transmit a technology, the staffs of these agencies often carry these attitudes and preconceptions and assume that the more complex the technology, the more inevitable it is that they will need to locate men to whom to transfer it.

Even those concerned with broader access to technique are often trapped into these gender-based expectations. One US agency, which is designed to transfer appropriate technologies to all askers from any area of the world, quite recently still carried photographs in its major publicity pieces which showed only men working with technologies. A line drawing showing women washing clothing on rocks was the only pictorial representation of

women. Its technical assistance experts are predominantly male, as is true for most such agencies. Thus, in a subtle way even this organization devoted to increasing technological access conveys the message that technologies are more for males than females.

For project design purposes, consideration of the messages represented by the agents of technology transfer, as well as by the systems of transfer, it is important to increasing women's involvement in and benefit from technologies.

III. CONCLUSION

In the discussion above, we have presented categories for analyzing the impacts of technologies on production and consumption and for thinking about the characteristics which may affect these impacts. We have also noted the central importance of the transmitting agent. The discussion should have made it clear that there is no simple, technological solution to the problems of development or to the problems of technology transfer.

Simply having smaller technologies will not bring development. Simply recruiting women to work as instructors of technology use will no more solve problems of development for women than the corresponding process has done for men.

What is needed is the development of systems for transference of technologies in their broadest sense, including know-how and technique, in a manner which promotes the recipient's own ability to become, him or herself, a technologist (Anderson and Buck, 1980). How does one develop the capacity to invent? Familiarity with existing technologies is certainly one part of the answer. This is why issues of access to both knowledge and use of technologies is so crucial for longer term development. Those who do not have access to technological knowledge or experience are never as likely to become developers of their own technological solution as those who do.

Technological familiarity does several things. It instills the idea that some things can be done better, with less effort, with more favorable results, or with less cost. It also teaches that a person can make this occur by control over a technique. It teaches various mechanical, chemical and biological processes which form the basis for new discoveries, inventions and adaptations. It gives people the ability and power to solve their own problems of production. Thus, the marginalization of any group in relation to technology development and use not only leaves them out of current benefits to be derived from technology, but also consigns them to an inferior position in relation to future developments. It limits, if not prohibits, their ability to participate in self-sustaining development based on the invention and application of techniques and technological systems.

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