



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

18894

Distr.
LIMITED

PPD.191(SPEC.)
3 April 1991

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

ORIGINAL: ENGLISH

20 244F
7/20/91
10/2/91

INTEGRATING WOMEN INTO FISHERIES
INDUSTRIAL SYSTEM

An Industrial Sector and
Planning Approach

Department for Programme and Project Development

Prepared by the Unit for the Integration of Women in Industrial Development.

The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers and boundaries. Mention of company names and commercial products does not imply the endorsement of UNIDO. This document has not been edited.

Preface

This document analyzes the participation and role of women in the Fisheries Industrial System (FIS) of three developing countries, Mexico, Senegal and Indonesia. The objective of the analysis was to test the viability and applicability of an integrated systems approach for industrial development to the integration of women into industrial planning and development strategies. The integrated systems approach is based upon a methodology for industrial sectoral planning/programming developed jointly by UNIDO and the Andean Pact Secretariat. Known as the Methodology for the Assessment, Programming and Management of Production and Consumption Systems (MEPS), the methodology previously had been applied to the grouping of developing countries according to the development patterns of their industrial sectors and programming sector-wide technical assistance strategies and measures. Results of research applying the methodology to the FIS of 64 developing country economies indicated that it could also be utilized successfully for considering the role of women in the planning process carried out for an industrial system and the programming of technical assistance strategies and measures. The current study illustrates the success and utility of applying an integrated systems approach to women's integration and provides operational guidelines for carrying-out similar analyses in other industrial systems.

This study has been executed under funding provided by the Government of Norway and conducted by UNIDO's Unit for the Integration of Women in Industrial Development. The study was initiated under UNIDO's Sectoral Studies Branch and based upon methodological and analytical research carried out by staff within the Branch. Three country case studies on the participation of women in fisheries industrial systems were prepared by UNIDO consultants, Lic. Blanca Lilia Garcia-Lopez (Mexico), Dr. Bernard C. Diop (Senegal) and Dr. Tapi Ihromi (Indonesia). Ms. Pavla Jeskova, UNIDO consultant, assisted in the preparation of this document.

Contents

Introduction	1
1. ANALYTICAL APPROACH OF STUDY.....	5
1.1. Analytical approach adopted in the study.....	5
1.2. Description of the fisheries industrial system (FIS) components.....	6
1.3. Advantages of a systems approach.....	7
2. WOMEN PARTICIPATION IN FIS-CASE STUDIES.....	11
2.1. Introduction.....	11
2.2. Mexico case study.....	12
2.2.1 Major characteristics of FIS.....	12
2.2.2 Women's involvement in FIS.....	14
2.3. Senegal case study.....	19
2.3.1 Major characteristics of FIS.....	19
2.3.2 Women's involvement in FIS.....	22
2.4. Indonesia case study.....	31
2.4.1 Major characteristics of FIS.....	31
2.4.2 Women's involvement in FIS.....	32
2.5. Summary of country case studies.....	39
2.5.1 Women's participation in FIS.....	39
2.5.2 Identified information gaps.....	42
2.5.3 Identified constraints.....	43
3. SUGGESTED POLICIES AND ACTIONS FOR BETTER INTEGRATION OF WOMEN IN THE FIS DEVELOPMENT STRATEGIES.....	74
3.1. Introduction.....	74
3.2. Development policies to enhance women's FIS participation - country case studies.....	75
3.2.1 Mexico case study.....	75
3.2.2 Senegal case study.....	79
3.2.3 Indonesia case study.....	81
3.3. Summary.....	85
3.3.1 Development policy indicators.....	85
3.3.2 Integration of women's needs in designing FIS development policies - general issues/themes.....	86
4. SUGGESTED GUIDELINES FOR BETTER INTEGRATION OF WOMEN IN THE FIS PLANNING, IMPLEMENTATION PROCESS.....	109
4.1. Introduction.....	109
4.2. Application of the systems approach (M&PS) methodology.....	110
4.2.1 General description of the operational sequence.....	110
4.2.2 Experience of systems approach application in this study.....	112

4.3.	Choice of women-specific variables and indicators.....	118
4.3.1	Defining objectives.....	118
4.3.2	Criteria for data collection.....	119
4.3.3	Considerations related to data collection.....	122
4.4	Conclusions.....	124

Annexes

Annex 3.2	Detailed component analysis of proposed FIS development objectives and actions on women's participation - Mexico, Senegal and Indonesia.....	154
Annex 3.2.A	Sample field assessment instruments for project identification and management.....	179
Annex 3.3.2	"Lessons of experience" from FIS-related project evaluation literature.....	191
Annex 4.1	Operational outline for analyzing women's position in FIS - general tasks and guidelines.....	216
	Bibliography.....	253

FIGURES

Figure 1.2	Base diagram for a FIS indicating the nine components and their linkage with the rest of the economy.....	10
Figure 2.1	Base diagram FIS Mexico 1984.....	45
Figure 2.3	Base diagram FIS Senegal 1983.....	46
Figure 2.4	Base diagram FIS Indonesia 1984.....	47
Figure 4.1	Application of MEPS methodology to an industrial system.....	127
Figure 4.2	Production and consumption system, base scheme.....	128

TABLES

Table 2.1	General fisheries data for the country case studies.....	48
Table 2.1.1	Mexico: Women's FIS involvement by state and local area.....	50
Table 2.2.2	Mexico: Number of women employed in the Fisheries Secretariat by occupation.....	55
Table 2.2.3	Mexico: Number of women at National Fisheries Research Institute.....	56
Table 2.2.4	Mexico. Female employment in processing: Sample of company-owned units.....	57
Table 2.2.5	Mexico: Female employment in processing: Sample of family-owned units.....	58
Table 2.2.6	Mexico: Estimate of the number of women in commercial positions in fishery communities.....	59
Table 2.3.1	Relative number of men and women at a fisheries product freezing and wholesale company in Dakar.....	60
Table 2.3.2	Distribution of employees by socio-occupational categories at a Dakar cannery.....	61

CHARTS

Chart 2.5.1	Summary of women's involvement in FIS components - Mexico, Senegal, and Indonesia.....	62
Chart 2.5.2	Summary of constraints experienced by women in FIS components - Mexico, Senegal and Indonesia.....	69
Chart 3.2.1	Mexico FIS: Summary system development objectives and constraints, enhancements and strategies by component.....	92
Chart 3.2.2	Senegal FIS: Summary system development objectives and constraints, enhancements and strategies by component.....	93
Chart 3.2.3	Indonesia FIS: Summary system development objectives and constraints, enhancements and strategies by component.....	94
Chart 3.3.1	Summary involvement, constraints and development strategies to enhance women's FIS integration by component - Mexico, Senegal and Indonesia.....	95
Chart 3.3.2	Sample illustrations of the impact of development actions and technological innovations on women in fisheries occupations.....	105
Chart 4.3	Use of MEPS methodology in present study.....	129
Chart 4.3.2	Examples of women-specific data for structural component disaggregation.....	130
Chart 4.4	Issues needing attention in applying MEPS methodology to analysis of women in fisheries sector.....	131
Chart 4.5	General sequence of MEPS methodology as applied to assessment of women.....	132
Chart 4.6	General sequence of MEPS methodology applied to the impact assessment of project design.....	133

Glossary and Abbreviations

Aquaculture	Activity which is performed in brackish coastal areas, irrigation reservoirs, canals, natural and man-made ponds, tanks, cages, pens and lagoons. It involves propagating and raising aquatic organisms under human control and manipulating at least one stage in their life cycle before harvesting.
Artisanal sector	This consists of activities typified by a low level of capital investment and which have developed from local fishing traditions which have been passed on through the family. These activities are generally small-scale, undertaken in a self-employed, family, or village co-operation organization including boat building fish catching and simple processing.
Base diagram	A schematic representation of an industrial system which depicts the main components of the system from demand for final products through to primary inputs. It also illustrates the linkages between each component as well as the area of impact of government policies.
Female Economically Active Population (FEAP)	Number of females comprising the supply of labour for the production of economic goods and services. Included are females who are employed, unemployed and underemployed.
Fisheries Industrial System (FiS)	A system where all industrial production and consumption components related to the fisheries sector in a given country and the policies that affect them interact in an integrated and interdependent manner.
Indicative programme	One of the three applications of the Programme Approach. This application comprises appropriate investments, technical assistance and policy prescriptions for a given industrial system.
Industrial system	The sum of productive capacities, supportive infrastructure and flows of goods and services resulting in the production of a given industrial output. Comprises one entire sector or several interlinked sectors or subsectors.
Industrial System Component	Unit of analysis representing production and consumption structure of an industrial system.

Integrated System Approach

An analytical approach to industrial sector programming that provides a framework for understanding the structure and performance of the sector.

Maximum sustainable yield (MSY)

The MSY is the largest catch or yield in terms of weight of fish caught per year that can be taken from a stock under existing environmental conditions and maintain it at current biomass levels year after year.

Methodology for the Assessment, Programming and Management of Production/Consumption Systems (MEPS)

A methodology developed jointly by UNIDO and the Junta del Acuerdo de Cartagena (JUNAC) for the practical assessment and programming of industrial production and consumption systems. It considers all economic, technological and policy variables that affect a given system, interlinkages among components and interdependence between macro and micro aspects of the system.

MEPS model

An accounting and engineering simulation model which is a principal tool of the MEPS methodology. It allows a quantitative assessment of different development strategies by estimating parameters relating to production, inputs, investments, manpower, imports etc.

Programme Approach

An approach to industrial development aiming to promote the integrated development of industrial systems. The programme approach makes use of integrated systems analysis applied for three different purposes involving various levels of a system's disaggregation: sectoral typology, indicative programming, and detailed country sectoral programming.

Sectoral Programming

A fully quantitative sectoral analysis of a given country making use of the MEPS model.

Sectoral Typology

The classification of countries according to the structure of the given industrial system within a country.

INTRODUCTION

Background

Women in developing countries, due to numbers alone, are potentially a significant source of productive labour. The female economically active population (FEAP) of all ages in developing countries increased from 270 million to 550 million between 1950 and 1985. From 1985 until the year 2025 an estimated 1,000 million women are expected to be in the labour force in developing countries. The FEAP for the entire 1950-2025 period is expected to increase by three and a half times almost doubling in the 1985-2025 period.¹

Although the number of younger female entrants is expected to decline, due to lower birth rates, the natural FEAP increase, when combined with long-standing problems of female unemployment and underemployment in developing countries, means that women will face stiff competition from men for jobs that are available and that large numbers of jobs or productive employment options will be needed.

What this means is that industrial sectors in developing countries need to be examined in terms of the gender-specific employment options they offer. In a similar vein, such information needs to be disseminated to policy-makers and administrators so that women can become more productive in the jobs which they occupy now and be prepared to enter those available in the future. This requires information about technology currently used or anticipated, occupational vacancies to be filled and skills being required.

As of 1981, there were estimated 15 million people directly employed in the fisheries sector of developing countries and likely a similar number indirectly employed in fishing-support areas such as processing, transportation, marketing and boat-building. Small-scale (artisanal) fishing activities may account for as much as 90% of the direct employment and harvest in the sector and about 33% of fish consumed world-side.² Trends show, for example, that in 12 low-income countries, fisheries employment represents more than 10% of the economically active population and that the number of small-scale fishermen in developing countries generally is increasing relative to the number employed in larger-scale, capital-intensive fishing.³

¹ E. Denti, and D. Yiry "The Participation of Women and Young Women in Economic Activity in the World and its Regions: Present Situation, Development between 1950 and 1985, and Prospects up to the Year 2025".; Women at Work, No.1, 1986, pp.8-16.

² Ben-Yami, M., "Community fisheries centres and the Transfer of Technology to small-scale fisheries". Proceedings of the 19th Session of the Indo-Pacific Fisheries Council, Kyoto, Japan, (21-30 May 1980), pp. 936-948, in Comer Bailey, Dean Lycon and Michael Morris "Fisheries Development in the Third World: the Role of International Agencies". World Development, v.14, no. 10/11, pp. 1296-1275, 1986. (p.1270).

³ Truman E. Becker. "Fisheries Play an Important Role in a Developing Nation's Economy". Asian Development Review, January/February 1986. (p.14).

The fisheries sector is of special importance where women are concerned. This is because a significant, albeit undocumented number of women are already involved in the sector, especially in artisanal fishing tasks, located mostly in smaller rural and semi-rural communities. These activities are often undertaken as part of normal household routines, and are mostly unremunerative for the women. As a result, in national census, and in public estimation, these women are considered as unpaid family workers. Men are usually the ones who are considered to perform productive work (while work performed by women is considered as secondary or even ignored)⁴ with the result that men are the ones perceived as contributing to fishing-related income.

Situations are similar in the urban environment or in large industrial-based processing establishments. Here, although women are a considerable proportion of the establishment's workforce and are counted numerically among the economically active population, women are employed at jobs on the lower end of the occupational spectrum, earn less than their male colleagues, have little advancement and are in working conditions that may be both unhygienic and unsafe. Although not undervalued in sheer numbers, from a sociological and an economic perspective, females' contribution to fishing activities still appears undervalued by employers and the general public.

In many locations of the world, the rate of fish catch has dropped sharply either due to over- or underexploitation of existing stock or to increasing costs of commercial fishing. In contrast, world demand for fish continues to rise and in developing countries, fish provide an important protein source for the population (for example in Asia fish supplies over 60% of the population with over 30% of its protein supply). Developing countries, consequently, are expected to account for over 60% of total world demand for fish.⁵

What is signified in these trends is that not all of the increased demand can be met by marine-based capture levels. Growth in product supply will have to come partly from new sources of inland, fresh water fishing and aquaculture and from improved processing and marketing/distributional practices. These are fisheries activities in which many women are already involved and in which women are the primary source of labour. Due to this fact, it is in the best interest of the government, employers and all who are concerned with fisheries' sector development, to enhance women's participation through recognition and support of their contributions, training, appropriate application of new technology and appropriate human resource policies at the workplace.

Objectives of the study

This study attempts to assess the role women play in the fisheries sector, the constraints they experience and ways in which their contribution can be more effectively integrated into the overall development strategies and plans of action considered for the sector, both at national and local levels. The study introduces a systems approach to the analysis and provides a practical

⁴ United Nations Food and Agricultural Organization. "The Role of Women in Small-Scale Fisheries", Informal Bulletin, FAO, 16 October 1986.

⁵ Truman E. Becker. "Fisheries Play an Important Role in Developing Nation's Economy". Asian Quarterly Review, January-February 1986 (pp.13-16).

demonstration of its application in three country case studies. Results and experience gained from this exercise are used to suggest possible ways for integrating women in sectoral planning using the systems approach. The objectives of this study can be thus summarized as follows:

- introduction of the systems approach to the analysis of women's role/contribution to the fisheries sector;
- providing a practical illustration of the systems approach application;
- presentation of a conceptual framework/guidelines for integration of women in sectoral development.

This study is in many ways exploratory and should be considered as an example of sectoral analysis of women's present situation. It is an attempt to view data presently available and delineate the major themes requiring attention from researchers, administrators and policy makers.

At the country-case study level in this report, the approach may appear to be prescriptive in that specific development strategies or actions are suggested. However, no attempt is being made to influence a particular country's choice of remedies or to say that these are the only measures to be taken if women's participation in the fisheries sector is to be enhanced and increased. As such, the conclusions and suggested actions, especially those in chapter 3, should be viewed from the perspective of possible actions resulting from examining simultaneously development strategies for the fisheries sector (national and local level) and the role women play in it. In this way it should be possible for women to become an integral part of the development process from the start rather than being considered separately as an afterthought by project planners and designers.

Format and content of the study

Chapter one outlines the methodology adopted in this study. A brief description of the intergrated systems approach is given and its usefulness demonstrated in the context of analysis of the fisheries sector. It is also explained how this study relates to an already-completed sectoral analysis of fisheries in 64 developing countries using the same methodology.

The following chapters, two and three, give a practical illustration of the applicability of the systems approach to fisheries sector's analysis with respect to women's involvement. Three countries, Mexico, Senegal and Indonesia were chosen as case studies. The particular objectives guiding the sectoral analysis in the three countries are as follows:

- (a) To identify the present role of women in the context of the fisheries industrial system;
- (b) To identify present constraints facing women in fisheries related activities;
- (c) To identify the potential for expanding women's role in relation to the industrial development strategies for the fisheries sector;

- (c) To identify points of convergence/divergence between general development policies/actions for the fisheries sector and those needed for better integration of women's participation.

Chapter 2 examines women's role in the identified components of the fisheries industrial system in the three countries and summarizes similarities among them in terms of the general type of work the women perform and the constraints that impede their more complete participation. Important results of the 3-country synthesis include a more precise idea of quantitative and qualitative data needed for assessing women's economic contribution to the sector and for formulating sectoral development policies which consider and account for women's role.

Chapter 3 focuses on two particular issues. The first one is concerned with development objectives, major constraints and enhancements and present and future plans of action in the fisheries sector and their impact on women's economic role in the sector. The second issue is concerned with development policies, strategies or actions that appear most appropriate for women in relation to the expected impact. The major input into the discussion is provided from the relevant material in the three country case studies, supplemented where appropriate by findings in other literature.

The fourth chapter draws together findings from chapters 2 and 3 and tries to present a more general conceptual framework for better integration of women specific issues into sectoral planning. The chapter concentrates upon practical application of the system approach in the context of human resource planning. The operational sequence of the methodology is discussed in light of issues identified in the analysis carried out in this study. Suggestions, regarding further development of the systems approach are put forward together with guidelines for practical application of the methodology to women specific analysis. The objective for this chapter is to highlight planning and implementation issues pertinent for women's endeavours in fisheries and to suggest some general guidelines to assist those who are responsible for designing such endeavours.

1. ANALYTICAL APPROACH OF STUDY¹

1.1 Analytical approach adopted in the study.

The analytical framework in this study is based on a methodology of integrated systems approach adapted for sectoral planning purposes. The methodology was originally developed in a context of designing an industrial simulation model capable of quantitative assessment of development strategies for a given industrial sector. This methodology, known as the Methodology for the Assessment, Programming and Management of Production/Consumption Systems (MEPS), is based on the notion of an integrated systems approach that recognizes and quantifies the interdependence of economic and social components within and outside a given sector.² In the context of this study the term integrated systems approach is used interchangeably with the term MEPS methodology and the term MEPS model refers to the computer model expressing in mathematical terms relations between identified system variables.

UNIDO's experience in applying MEPS methodology has later led to an enlargement of the methodological framework to embrace three important areas of systems approach applications. Programme Approach refers to three types of systems analysis applications resulting in producing typologies of industrial systems, designing indicative programmes and performing detailed quantitative analysis of a given industrial sector, making use of the MEPS model.^{3 4}

In this study the analysis is focused upon the fisheries industrial system (FIS), defined as a system where all industrial production and consumption components related to the fisheries sector in a given country and the policies that affect them interact in an integrated and interdependent manner. The FIS is disaggregated into components which help to describe the level of FIS development, its strength and weaknesses. The components chosen as most appropriate are described in the next section which is followed by a short evaluation of the usefulness of the systems approach in the context of

¹ All tables, figures and charts referenced in the chapter are found at the end of the chapter.

² The methodology comprising disaggregation, evaluation and programming of production/consumption systems components was originally developed by the Andean Pact Secretariat and completed with the co-operation of UNIDO's Sectoral Studies Branch. UNIDO documentation of MEPS consists of (1) Manual for applying the systems approach in collecting, disaggregating and systematizing information; (2) Accounting model of technical and behavioral micro-economic relationships; (3) Micro-computer programme of the accounting model.

³ The concept of a Programme Approach has been developed after the commencement of this study and it has thus not been used as a frame of reference. The terms of reference for the three countries case studies were based on terminology relevant to MEPS methodology. This is thus kept in line with the rest of the study.

⁴ For detailed description of the Programme Approach see "The application of the programme approach to technical assistance project identification and formulation", UNIDO/APP, October 1988.

the analysis in chapters two and three. More detailed description and guidelines for the practical application of the methodology are discussed in chapter four.

It is intended that this study should be viewed in close relation to UNIDO's sectoral analysis of fisheries industrial systems in 64 developing countries, published in April 1987 under the title "Industrial Development Strategies for Fishery Systems in Developing Countries".⁵ Both the methodology and results of this sectoral analysis (typology and basic indicative programmes) provided a useful framework for the present study. The concrete inputs to this paper are as follows:

- (a) Analytical guidance (MEPS methodology);
- (b) Established database for characterizing the fisheries industrial system in three countries chosen as case studies (FIS typology);
- (c) Summary analysis of economic and industrial variables characterizing the three countries' FIS;
- (d) Enhancements and constraints anticipated in the development process of the fisheries sector in the three countries;
- (e) Relevant strategies for further FIS development in the three countries (country indicative programmes);

1.2 Description of the fisheries industrial system (FIS) components

In this study, as in the UNIDO's main sectoral study on fisheries mentioned above, the fisheries industrial system is disaggregated into nine major components: resources, extraction/production, processing, distribution and marketing, consumption, industrial inputs, government policy, industrial organization, and the foreign sector. The analysis of the FIS is thus premised upon an analysis and evaluation of each of these components, using data/variables appropriately identified and disaggregated to explain the economic performance of each component and interdependent linkages with each other. Figure 1.3 is a graphical representation of a FIS with the 9 components and their linkages illustrated by name and component number. Such a diagram is henceforth referred to as a base diagram. The numbers in figure 1.3 refer to the FIS components as enumerated below.

(1) Resource

This component describes the fish and crustacean resources available to an industrial system - how rich they are, how well they are managed and how they are split among marine, freshwater and aquaculture sources.

(2) Extraction

Also sometimes referred to as production, this component describes the type, condition, management and utilization of the labour and capital (especially the vessels) used in the harvesting of the resource. Foreign participation is also an important consideration.

⁵ Industrial Development Strategies for Fishery Systems in Developing Countries, PPD.30, Sectoral Studies no.32, April 1987

(3) Processing

This component describes the type, condition, management, utilization and physical distribution of the labour, plant and equipment on the one hand, and their variable inputs and type of outputs on the other hand, used in the domestic processing of extracted fish and crustaceans.

(4) Distribution and marketing

These components describe the channels and methods used in the distribution of outputs from each FIS component to the next downstream component. Marketing intelligence is also considered.

(5) Consumption

The type, quantity, substitutability, price and income sensitivity, and desired nutritional requirements of the demand for domestic final goods of the system is described herein. Where appropriate, regional or other stratifications of the distribution of consumption (e.g. income) are also included.

(6) Industrial inputs

This component describes the extent to which intermediate and capital goods are domestically available to the FIS on the one hand, and the quality and state of domestic services and infrastructure (e.g. port facilities, roads, rail, etc.) on the other.

(7) Government policy

A description of the government's view towards the sector is included in this component. Hence, the existence of incentive schemes, subsidies, access to foreign exchange, and favourable macro-economic policies are noted.

(8) Ownership (industrial organization)

The industrial structure of the system is described with respect to vertical and horizontal integration and concentration on the one hand, and with respect to public, private and foreign ownership distribution on the other.

(9) Export orientation

Describes the balance between production for export and for local consumption.

1.3 Advantages of a systems approach

The question of why a systems approach is useful for analyzing women's participation in an industrial sector rightly can be asked. Similarly, a question can be raised regarding the advantages of such an approach. Both questions are valid and deserve a brief response.

One of the explanations of "why such an approach" is that it permits a systematic presentation and analysis of information showing the considerable variations that exist in relation to women's participation in fisheries related activities within a country and between countries. The systems approach is one that seeks to go beyond ones that are featured in most of the existing literature on women in the fishing industry. Among the many excellent case studies that have been completed, the focus is typically on one, or a series of fishing villages in a particular country; on women at work in a specialized aspect of the industry (e.g. canning factories, rural

processing sites or marketing and distribution activities); or on a series of constraints barring women's full participation (e.g. inadequate training, inadequate access to credit, lack of exposure to extension assistance, limited participation in project planning).

This study, in contrast to geographic - or project-based approaches, examines the fisheries sector from a systems perspective, looking at women's participation and roles across numerous fisheries related activities in an entire country. At the same time it allows for a detailed analysis examining the role of women in each of the identified activities (components). This type of horizontal and vertical examination of an industrial system is useful for identifying bottlenecks in the production flow and specific or common components' constraints. From this examination, the formulation of strategies dealing with issues such as appropriate technology, foreign investment and the use of human resources can occur more easily.

One of the major assets of the integrated systems approach is its concept of inter-relationships and interdependence among the components within a defined system, in this case, the fisheries industrial system of a particular country. The use of this approach permits the setting of objectives based on an assessment of available fisheries resources, existing technology and markets, national and local socio-economic conditions and the impact of other relevant factors (i.e., development objectives) such as raising nutrition levels, increasing income and generating employment.

Using this type of approach it will also become more apparent for example, how investments made in one component of the system can easily affect the role of women in other components. For example, increased investments in larger, mechanized boats (an extraction component activity) may diminish the importance of women in marketing (a marketing and distribution component activity) in rural fishing communities. The larger boats make it possible for fishermen to service larger markets in urban areas, directly bypassing the rural women as a result. Similarly, investments in mechanized processing equipment may render women in artisanal processing activities redundant.

For women specifically, this type of an analytical framework allows also for the design of strategies and development actions which are in tandem with those of the industry as a whole and facilitates assessment of development strategies on women across and within the sectoral components. Implicit is the idea that women both are affected by and affect a sector's ability to effectively expand and upgrade its productivity. In the case of human resource policies and actions, ones initiated on a combined knowledge of the economic/industrial system and identified women's needs, are likely to be more effective than ones based solely on women's needs.

The advantages of the integrated systems approach in analyzing the industrial sector and women's position in it can be summarized as follows:

(a) Areas of the system where women are strongly represented can be identified and depending on identified development objectives and strategies consideration of women's needs could be incorporated in a government's plan of action from the outset.

(b) Points of congruence or divergence can be noted between industrial development strategies, priorities and actions for the system as a whole and special women's needs. Once determined, special supportive measures

supplementing industrial actions to accommodate and enhance women's needs can be initiated.

(c) Constraints presently inhibiting women's participation in the FIS can be identified and put within the context of the sector's general constraints and where possible addressed jointly.

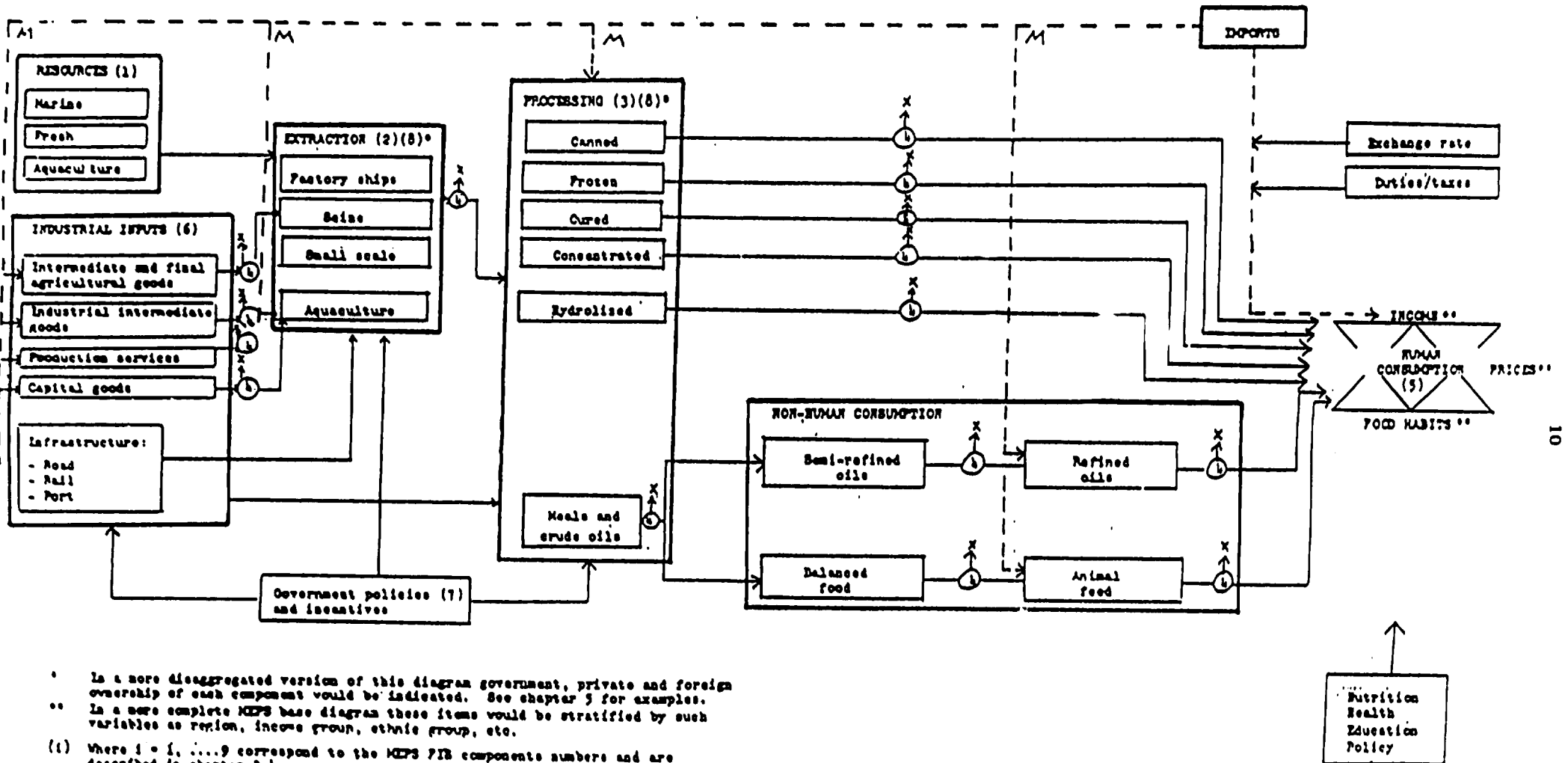
(d) Women's needs common across the system's components can be identified. Thus, remedial actions and interventions can be established on a comprehensive, system-wide basis rather than on one that is fragmented and isolated. This is especially valuable for the formation of national legislation, training programmes, data collection and research, and financial support and investment schemes.

(e) The anticipated impact of economic or industrial policies and actions taken for a particular component can be traced more easily throughout the system. Concurrently, the impact of industrial development policies and actions on women can be traced throughout the system.

(f) Differences in women's participation patterns throughout the country can be identified for geographical locations and fishing types (e.g. inland, artisanal, aquaculture). Policies and development measures can be tailored more specifically to reflect variations.

(g) Some distinctions can be made among initiatives that are immediate and those of a mid- to long-term nature. Women's initiatives therefore can be aligned more easily to broadly-defined implementation schedules.

Figure 1.3 Base diagram for a FIS indicating the nine components and their linkages with the rest of the economy



* In a more disaggregated version of this diagram government, private and foreign ownership of each component would be indicated. See chapter 5 for examples.
 ** In a more complete MEPS base diagram these items would be stratified by such variables as region, income group, ethnic group, etc.
 (1) Where $i = 1, \dots, 9$ correspond to the MEPS FIS components numbers and are described in chapter 3.4
 M = Imports X = exports

2. WOMEN PARTICIPATION IN FIS - CASE STUDIES¹

2.1 Introduction

Several generalizations could be made about the role and position of women in the fisheries sector of developing countries. It could be said with some certainty that women in rural fishing communities are married to fishermen, are involved in all types of fishing-related tasks from the moment the catch is to be unloaded to the final point of customer sale. Also, the women usually incorporate their productive tasks into their regular household routine. Often the women's work is not recognized as productive by the community, the men or themselves, with the result that women's work is uncompensated and their role and contribution is not considered seriously when new technology or innovations are introduced into the village or new development projects and actions initiated.

Similarly, for women in urban areas one could state with some validity that they are employed at low level occupations in processing and canning factories or in fish marketing. They often, especially in the factories, never move beyond lower-level jobs, earn minimal wages and may find themselves working in conditions that are both unsafe and unhygienic.

As is the case with almost all generalizations, however, if indiscriminately followed they lead to inappropriate or misguided assumptions. In this case the wrong conclusions would be drawn about the tasks women perform, their needs and ways in which they can be helped to assume a more productive role in the industry. As will become apparent from the following case study presentations, when the objective is to enhance women's integration in the FIS, detailed understanding and knowledge of women's participation is needed, at the local level, whether rural or urban. Also, this knowledge, to be both useful and effective, must be combined with a clear understanding of:

- The industrial/economic environment within which women operate;
- The overall direction that is anticipated for the sector's development; and;
- The particular policies, strategies and intervening actions likely to be taken by government, industry or donor agencies, in order to move the current FIS to its optimum development level.

The material found in this chapter and in chapter 3 provides this type of understanding of women's role in the FIS in three developing countries, Mexico, Senegal and Indonesia. The intention is to identify the FIS components in which women are most active, the specific tasks they perform (when possible, how the tasks are accomplished), the type of industrial climate in which the women are working, and ways of facilitating and enhancing their participation.

The three countries were chosen on the basis of: cross-continent comparison, different FIS pattern of development, and available information. The previously mentioned UNIDO study in chapter 2 has helped in the selection

¹ All tables, figures and charts referenced in the chapter are found at the end of the chapter.

by providing a useful reference to FIS development patterns and supplementary country specific information.

The case studies were undertaken by third party consultants familiar with a particular country's FIS and the position of women within it. Due to time and budget constraints only limited original survey work or data generation could be completed. Thus, the studies primarily were based on secondary data, government publications, primary data where possible and selective interviews with government officials or administrators. As a result of this approach to examining women's FIS participation the three case studies vary in terms of completeness and depth. For example, for one country, more information was available for women in processing while for another, more was known about women's role in national level research and technical administration. For this reason, the analysis should be viewed primarily in relation to the type of information presented and the approach used to conduct the analysis.

The chapter is divided into two parts. One is country specific, (2.2 - 2.4), the other more general (2.5). The first part contains for each country a brief discussion of the country's FIS development pattern and major characteristics of the components, based primarily on the analysis in the previously-mentioned UNIDO study. It includes a base diagram illustrating in a graphic form the FIS structure. This provides a setting for examining women's participation within each of the nine components. The second part summarizes under the nine FIS components findings from the country case studies and brings out commonly identified information gaps and system-wide constraints among the three countries.

2.2 Mexico case study

2.2.1 Major characteristics of FIS

Mexico is probably the most industrialized of the three countries included in this study. This is reflected in the volume of industrial fleet, share of industrial processing in total catch and availability of domestically produced industrial inputs. Mexico has a large fisheries sector incorporating, both marine and inland fisheries; resources are, however, unevenly distributed. At present only about 27% of the marine and 14% of the inland fisheries potential is utilized. For comparative data see table 2.1.

The high level of government support and priority assigned to the sector is evident by government involvement in all stages of the FIS. It provides research ships, training centres and mobile laboratories to assist in assessment and management of resources; the public sector accounts for about 5-8% of total catch and has about 20% share in processing activities; it plays the major role in domestic distribution of canned fish; and provides practical training courses in fisheries including aquaculture to improve production skills.

Government investment in infrastructure, production and marketing has been the major impetus for the sector development, especially after the establishment of the export processing zone EPZ in 1976. Including current expenditure, almost US\$ 5,600 million from the national budget were allocated to fisheries between 1979 and the first half of 1985. Until 1979, official credit policies were strongly biased towards promoting prawn co-operatives. These policies have been changed to include private entrepreneurs involved in

different fisheries activities and levels of production.

In terms of a general FIS overview the major characteristics are reflected in the FIS base diagram (Figure 2.1) and can be summarized as follows:

The extraction component employs 120,000 fishermen of whom 3/4 are small-scale fishermen and members of co-operatives responsible for 50% of total catch. In addition aquaculture provides employment for some 60,000 workers.

In the last 10 years the capacity of the processing component has increased substantially: 52% for freezing, 49% for canning and 70% for fish meal. About 70% of the total catch is industrially processed in 253 freezing plants (16%), 41 canneries (15.5%) and 49 fish meal factories (38%). Only about 0.5% of the catch is processed by traditional methods of drying, salting, and smoking. This small-scale industry has been on the decline. The capacity utilization of the industrial processing ranges between 39-60%, the lowest being in canning.

Marketing and distribution of fresh fish is done through private network of wholesalers and retailers while domestic distribution of canned fish is to a large extent controlled by the state as is the export of frozen prawns, lobsters and tuna.

Domestic per capita consumption, although it has almost tripled between 1974-1985, is still low. Consumption of fresh or chilled fish together with canned fish is the most common although frozen fish is beginning to spread from large to medium-size towns. The domestic consumption pattern is marked by geographical and income group differences. Fish provides about 30% of the animal protein supply.

Mexico is relatively well off concerning availability of domestically produced industrial inputs and provision of building maintenance and repair facilities to the fishery sector. The extraction component of the system is integrated upstream with vessel and small-boat building, production of fishing gear, nets, refrigeration, radio equipment and auxiliary motors. Main engines and all electronic equipment are imported as well as most spare parts. Maintenance services are satisfactory, although there is a need to upgrade the equipment in workshops. The processing sector is dependent on imports of cutting and filleting machines, equipment for large freezing and fishmeal plants, and can supply. Recently, domestic manufacture of parts for cutting machines has been established.

The importance of the fisheries industry is low measured in economic terms. It represents only 0.5% of GDP, 0.5% of the economically active population and brings in 8-9% of non-petroleum foreign exchange earnings (2% of total export income). However, its nutritional contribution is considered of strategic importance since it provides a third of the country's animal protein consumed. The FIS has the capacity to provide an increased supply of acceptably priced food for the immediate and mid-term future.

There are legal restrictions which reserve the exploitation rights of prawns, oysters and lobsters for co-operatives which are highly dependent on public credits. Government efforts to attract private participation in joint ventures and taking over government owned vessels and processing plants have

been adversely affected by the general economic crisis experienced since 1982 and imposed price regulations.

Production orientation is predominantly for domestic consumption. Exports, mainly prawns, account for 7.5% only of the total production. About 38% of the catch is reduced to fish meal.

2.2.2 Women's involvement in FIS

Women in fisheries in Mexico to some extent mirror the employment trends that are affecting the country's female population as a whole. Within the country, women, according to the official census, comprise 27.6% of the economically active population, (EAP), up from 4.6% in 1930. From 1970 to 1980, the population 12 years and over available for work increased by 53.5% at the same time that women's participation in the EAP grew by 84.6%. Most often, women work in order to supplement the family income and guarantee at least subsistence-level income. Increasingly, more married women are working, older women are reentering the work force when children leave home, and older women are working longer.

Women have had increased opportunities due to automation in industry. In industrial fish processing women represent about 70% of the total labour force. However, the opportunities are not necessarily at the upper levels. Women are most likely to be in demand because they work for lower wages and are characteristically more productive than males.

Six general observations can be made about women's FIS participation in Mexico:

- Women employed in technical, managerial and professional posts of government departments responsible for research and resource management have been responsible for much of the increase in number of women in the fisheries work force.
- In recent years there has been government support for, and growth in, women's co-operatives in aquaculture; the focus of co-operative work is oyster farming and women totally manage and staff the projects.
- The government's actions for addressing women's FIS participation have a co-ordinated approach involving several government departments and projects/programmes which incorporate both economic and social concerns.
- The government's plans for FIS development give ample support to aquaculture - an area that seems to offer increased and expanded productive roles for women, given the existence of appropriate geographic conditions.
- Even though the claim is made for Mexico that little data exist on women's FIS participation, the amount of information that is available is impressive, even though it is appended with cautionary notes that the numbers are preliminary estimates.

The government gives priorities to provision of field extension agents with primary responsibility for assisting women in training, technical assistance and resource management; female field agents are sent to rural areas to work with the entire community, a practice not undertaken often, at least as reflected in the literature.

Information from Mexico indicates that an estimated 40,000 women or 17% of a total workforce of 240,000 are women. However, there are no complete statistics and this total may be an underestimate, especially when considering rural areas where women, in any official census are classified as housewives and thus are not counted among the economically active population. Within the rural population, women are rarely seen to be actually fishing (versus the visibility they would be accorded in agricultural work), their work is undertaken as part of their household work, and they frequently receive no remuneration - thus their "work" is unrecorded and their official numbers are lower than an actual count. Additionally, the women in the rural fishing villages do not just confine themselves to one occupation or task where they could be counted easily as part of a documented workforce; instead, they are involved in all phases of post-harvest activity.

The government is attempting to get a more precise count of women in fisheries. In 1981 for the first time, data were collected by the Government's Fisheries Department; an estimated 6,646 women were involved in rural, post-harvest fisheries occupations. These women were concentrated primarily in the states of Veracruz, Sonora, Tabasco, Campeche and Sinaloa. To rectify the undercount of these statistics, a programme of "Visitas de Campo" was undertaken from 1983-1986, with the purpose of getting a firmer count of the number of women and the tasks they perform. Discrepancies between results of this programme and the official statistics have been pronounced enough to generate a call for more data-collection - not only for numbers but also for the type of qualitative information needed for effective industrial development planning.

The information shown in table 2.2.1 is primarily reflective of women's participation in rural fishing communities. The material is far from the specific data needed for development and policy planning; however, illustrated is the diversity of women's FIS involvement from one locality to another, the differences in numbers of women participating, the distinct types of tasks they perform, and, in a minimal way, the variety of productive organizational arrangements (e.g. co-operatives, productive work units) already in existence in various parts of the country.

Women's FIS participation in Mexico spans the entire sector; however, on a general level, the most active representation appears to be in industrial and artisanal processing, in distribution and marketing, in consumption and in the area of netmaking and making artistic artifacts. Prior to 1980, overall women's participation was decreasing, most likely in response to lowered government support for the FIS. After post-1980 increases in government support generally, women's participation appears to have increased. As an example, two co-operatives comprised exclusively of women were initiated in 1982 for oyster cultivation; these are found in Puerto Peñasco, in the state of Sonora.

Another FIS component where women's presence appears to be increasing is in resource management. Currently, approximately 21.9 % of the employees

(1,316 of 6,000) at the national fisheries department are women. While many of these are in secretarial positions, there are a significant number at the technical and managerial levels, especially in positions related to research. Table 2.2.2 shows that at the upper professional levels within the secretariat, there are 3 Federal Delegates, 3 Area Directors and 20 Department Heads. Table 2.2.3 showing women in technical/ applied administrative positions at the National Research Institute indicates a number of women as researchers (73), specialized analysts (23), and assistant analyst positions (25).

According to information provided, the work of these women has been instrumental in generating changes for women throughout the FIS, especially for those in rural communities. They have initiated special research efforts, offered administrative legal and technical assistance, extended help in community organizing, training, equipment maintenance and putting women in contact with government resources; women of this calibre have also been trained as professional facilitators to live in villages and specifically extend assistance to women.

Summaries of women's participation in FIS components are as follows:

Extraction. Women have almost no involvement in marine-based extraction except on rare occasions when the widow or daughter of a lead fisherman in a village is permitted involvement; even in such instances, she is likely to assume land-based leadership as opposed to going out in boats. For the urban woman, there is little extraction involvement. For the rural woman, there are essentially two types of extraction involvement - inland, coastal waters, lagoons and rivers, and aquaculture. For the former, women may fish from riverbanks using baskets and fish traps, or fish with lines from canoes or small motor-powered boats. If the extraction is of the type done by standing in shallow water the whole family - fisherman and children included- carry out the work. The exact way of conducting the work, along with the women's participation varies according to species. The family participation occurs when fishing along the coast and for shrimp in various parts, while dugouts may be used to collect snails, shells and other catch that may later be turned into artistic artifacts.

With aquaculture projects, women care for the young fish, take care of the tanks and gather the mature fish, usually oyster, carp, or trout. It is in this aspect of the FIS where women's involvement appears to be growing strongly and where women have the most management/organizational potential. There are currently 18 production units, each comprising more than 300 members in six states. Each is entirely operated by women, and was undertaken with assistance from a programme called United Agricultural Industries for Women. The objective is to widen the number of productive options for women, without disrupting the normal household routine or adding unduly to the women's household chores; additionally, in terms of economic development, the government sees this as a means for generating more jobs with small capital investment requirements.

Women who are involved in extraction activities do not receive a specific salary and their pay may be highly irregular. As with their husband's income (or with the general fishermen in the area, if the woman is single) the amount received depends upon the species, the geographic area of the country, whether sea-going or fresh water catch, and whether the fishermen are independent or organized into a co-operative.

Processing. Processing offers extensive involvement for both rural and urban women. In the rural areas the woman is likely to work at home and to involve younger children in peak periods. Or, she may work in small, family-owned units either as an employee, or having other women work with her in her family's unit. As occurs with the extraction component, intensity of involvement and types of tasks vary by region and by species. Generally, work in the home occurs when fish are dried and salted or smoked; in addition to salting/smoking tasks, the women sort, clean, peel, devein or dehead the catch, as is required for a particular species.

It should not be assumed that the home-based activity is solely for the benefit of the women's family. In communities where the fishermen themselves are in co-operatives, most of the catch may be unloaded and sorted at a larding reception/warehouse area (with women employed as sorters at the privately-owned warehouses). Contracts or credit arrangements are drawn up between warehouse owners and co-operatives, for women to take fish on consignment, complete the processing (or cleaning and shelling) at home and then return it to the warehouse. At this point, women at the warehouse may prepare the product for packing/freezing and transport to urban centres.

The women working in plants that are not under state control (predominantly those responsible for artisanal processing) are using outmoded equipment and in conditions that are crowded, perhaps unhealthy; usually the job is seasonal with no protection and no wage control.

In the larger processing factories, in less rural areas, the plants are often publicly owned/regulated. Women are most in evidence at shrimp-packing and freezing plants - here they devein, peel, clean, sort, weigh, select and pack the fish. Women also comprise much of the work force in tuna and sardine canning plants - where they are most valued for their dexterity. Women are more likely to have more modern equipment in these factories and to have wages and conditions covered by legislation.

The lack of data precludes definite conclusions about employment ratios between men and women in industrial processing plants, and so forth. On a general plane, calculations have been made of 7 women for every male employed. Most management and supervision positions are still reserved for the latter. A survey of Latin American fisheries² provides some illustrative data about the size, age structure and sex of the work force in Mexico in industrial vs. family-owned processing units (see Table 2.2.4 and Table 2.2.5). Data were not reported in a form generally permitting cross-tabulations. On the basis of data collected however the following points may be of interest:

- Generally the percentage of male employees is greater than females. The reverse occurred only in industrial shellfish and canning plants (where there is general agreement across women's employment literature suggesting that women are preferred for their dexterity); as no data are available about male's vs. female's occupations, no further conclusions can be drawn.

² Mullin, Roger, W.A. Latin American Fisheries Manpower Survey Report. Unpublished Consultant's Report, Scotland, 15 July 1984.

- The average ages in family-owned units is lower for males than females. It would be interesting to know whether the ownership structure for these units is male-dominated and what positions the males hold. Again, no firm conclusions can be drawn but inferences about male vs. female status etc., could be made with supplementary data.

Little more can be said about these data, except that this exemplifies the type of information needed for good policy/project planning. These begin to give the type of information about women's participation that has long been lacking.

Distribution and marketing. This is the FIS component where the largest numbers of women are found and the activity where women can earn the most income, aside from those who hold professional/technical/managerial jobs in either government or industry. Table 2.2.6 only gives an estimate of the number of women in fishing villages involved in the commercial aspects of fishing. The numbers shown are reported to be underestimates. Nevertheless, they illustrate for some of the villages at least, the position of commercial tasks in relation to all others.

In villages located near tourist areas or beaches, the women sell the products (often fresh fish) on foot along the beaches and to bars, hotels, restaurants and other places where tourists eat, or, local fishermen congregate for food. These same women may sell artistic artifacts that other women have made using shells or other sea-products. Also, women in such areas often prepare special fish-based dishes which they sell to tourists or others along beaches and to eating establishments.

In more urban areas, the women sell fish in the local markets and may work either for themselves or as employees for others. These women may also sell products to restaurants and hotels.

It is in the regional market areas where women are involved with both distributing and marketing of the catch. These women enjoy a special status and have a distinct job title that varies according to a particular region.

The commercial work force is made up of salaried workers - especially those who sell in local or regional markets. They receive wages the whole year and minimal fringe benefits. No data were available on their salaries, how the money is spent, or how the distribution and marketing tasks are related.

Consumption. Women are involved in consumption as an outgrowth of their role within the home. This is especially true for the rural woman. The woman is the one who chooses and prepares the food for the family. In this way, she is a participant who benefits from government or market forces that determine prices of respective food goods and from assistance or information about food selection, purchase and preparation. Some women who have developed regional dishes made from fish, may market food commercially, thus deriving some income. For the most part however, the woman is an active participant in determining internal demand levels for the domestic fish market.

Industrial inputs. Information on women's participation in industrial inputs was scant. In the fishing villages, women participated in manual activities such as net making and repair. Such activities appeared to

be ones incorporated into the overall household routine rather than ones undertaken for separate profit. Often, women engaged in such activities along with their husbands or the rest of the household.

The other area of women's involvement was the task of supplying material for the processing phase. If salt, wood, water, or ice were used as major ingredients for processing, the gathering, transporting and delivery of these become the woman's responsibility. Whether the same women working in the processing units gathered their own inputs, or whether these are separate tasks performed by other village women is not known.

Government policy. The actual involvement or participation of women in government policy is difficult to distinguish from resource management participation. There is impact on women throughout the system from government policies and actions; however, it is not possible to trace such actions to women's participation. The main participation of women has been the increased numbers of trained women in technical and professional positions, the programme of village visits conducted in the early 80s and the women trained to offer technical assistance, legal and social help, and training or community development aid to rural women.

Ownership structure. From the available information, it appears as though women in Mexico are only beginning to penetrate the ownership structure. They currently have sole management of the two co-operatives in oyster cultivation and at the village level where the household is the economic unit, the woman functions along with her husband as worker/decision maker; however her authority appears to extend more toward household duties and maintenance, especially in families where the husband often goes to sea.

Not enough information was available to make a definitive statement about women's ownership in the marketing/distribution aspect, but evidence suggests that only women in regional marketing areas hold much ownership authority - for the most part males dominate. Indications are available that in aquaculture generally women, especially those organized into production units may have some management/decision-making authority. In state-owned processing plants and government departments, there is some evidence that women are moving into mid-level management and lower-level senior professional/administrative posts.

2.3 Senegal case study

2.3.1 Major characteristics of FIS

Senegal's FIS is represented by the base diagram shown in Figure 2.3. In terms of catches Senegal is one of Africa's leading fishing countries and in terms of high value species potential is considered as one of the world's richest. However, compared to the other two countries included in the study, Senegal has the lowest volume of catch but largest resource utilization, representing over 50% of the estimated maximum sustainable yield (MSY). See Table 2.1 for comparative data.

The artisanal portion of the FIS is important in Senegal. Production-wise, it contributes 60% of volume and 40% of value to total marine production. It is estimated that the artisanal segment provides direct employment for about 90% of fishing manpower (33,000/jobs); when coupled with

indirect employment - making pirogues, distributing, marketing and so forth) artisanal-related employment may rise to 150,000.

Developing and promoting the FIS receives high priority from the government. However, reflecting the privatization policy, there is limited investment in production. Included in government assistance is: provision of infrastructure including harbours, roads, storage facilities and depots; marketing facilities; technical assistance/advisory services (marketing advice, negotiating assistance, guaranteeing and administering foreign loans/credits/funds); administration of internal and external fishing licenses; and provision of training and research facilities.

Summary comments of the FIS by component are as follows:

Resource management. The country still can expand its sustainable yield (currently at approximately 50%). However, some traditional stocks for export are currently overexploited. New species for export need to be identified, and requisite resource management techniques initiated (including regional co-operation); competitiveness between industrial and artisanal fisherpersons along the coast needs to be resolved, decisions made regarding the extent to which aquaculture should be supported, orientations toward joint ventures decided, and ways found to manage better the post-harvest handling of the resource to reduce product loss and spoilage.

Extraction. Industrial fishing is almost exclusively for export with 30% of the catch attributable to foreign owned vessels. Trawling is the most important activity in terms of catch value which is over 30% higher than the combined value of sardine and tunny fishing. Artisanal fishing, the main source of extraction employment is done primarily through pirogues; about half of the country's 9,100 are motorized. Until recently, artisanal fishing was the main supplier for domestic consumption. Increasingly, however, industrial fishing supplies the middle-grade of its product line to the domestic market while the artisanal sector produces increasingly for export. Manpower available for this phase of FIS work is both an enhancement and a constraint. A strong fishing tradition among the Senegalese means that most fishermen are efficiently skilled/trained. In contrast, operation of the fleet is sometimes jeopardized because of inadequately trained equipment operators.

Processing. About 60% of the total landings (including foreign fleets) is processed either traditionally (20%) or commercially into frozen (28%), canned (10%), fish meal (1%) or cured (less than 1%) products. About 40% of the total catch is marketed fresh for local consumption. About 15% of the artisanal catch goes to commercial processing (about 40% of the supply), mainly freezing and a further 25-30% goes to traditional curing. Industrial fishing provides supply almost exclusively for export processing although an increasing amount of middle quality range is being sold on the domestic market.

The freezing sector is the largest, contributing 70% to export earnings from fish and fishery products and employing 2/3 of the labour force in fish manufacturing. Value of canned fish accounts for 20-25% of fish and fish products exports with canned tuna being the most important product. Fish meal and oil is processed from the waste of canning and freezing plants as well as from fresh fish supplied from artisanal fishermen. Industrial curing (dried and smoke fish) relies primarily on supply from artisanal fishing.

The capacity utilization of industrial processing is between 33-38% with the exception of fish meal plants where capacity utilization is 4%. Main reasons for this are high operating costs and an unstable supply of raw material.

Distribution and marketing. Artisanal catch is predominantly marketed through fish dealers who act as wholesalers and are involved in buying, transportation and selling of fish to retailers (71%), semi-wholesalers (12%), factories (12%) or artisanal fish processors (5%). There are problems with hygiene as far as storage, transport and retail sales are concerned leading to high spoilage and causing a threat to public health. There is a strong urban oriented distribution.

Marketing of industrial catch for export is to a large extent vertically integrated with catch and processing especially for the high value fish and crustaceans. Links with transnational and multinational companies controlling the market for fisheries products, although restrictive, provide direct access to markets in developed countries (France, Japan, Spain).

Consumption. Among the Senegalese the main preference is for fresh fish (67% of total domestic supply) followed by cured fish (31%) and canned products (2%). On the average, fish contributes approximately 50% to the animal protein supply.

Average per capita consumption is 24.5 kg but is unevenly distributed between coastal and inland areas. Around Cape Verde (including Dakar) annual per capita consumption is almost 60 kg which represents over 45% of total consumption for less than 20% of the total population. In contrast, per capita consumption in Eastern Senegal is as low as 4 kg.

Industrial inputs. The artisanal fishing fleet consists of 9,100 pirogues of which over half are motorized. The industrial fleet consists of 20 sardine boats, 28 tunny boats (based in Dakar) and 145 trawlers. The average age of the domestic fleet is 27, 31 and 20 years respectively. Most of the inputs are produced locally except for boat engines which are imported. Also imported are all machinery and spare parts.

Supportive infrastructure consists of 1 autonomous port, 2 repair yards capable of building small ships, ice making plants, cold storage facilities and locally manufactured packaging material and cans. Energy cost for boat operation and industrial processing plants (which primarily use electric power exclusively) are high; the latter fact, when coupled with chronic undersupply (especially for cold storage and freezing plants) threatens the sector's profitability. Additionally, equipment in processing facilities is often outmoded and technology in use, outdated. This can result in increased product wastage and labour performing inefficiently.

Government policy. Reflecting its desire to emphasize artisanal fishing (including aquaculture) more strongly, the government has initiated a Priority Action Programme with 59% of funds going to projects focused on artisanal and aquaculture fishing. This is in contrast to the situation in 1981 where 77% of government financial assistance went to industrial fishing and 33% to artisanal.

The current situation has evolved at least in part, from the realization that the cost of creating one industrial job is 22 times more expensive than in an artisanal job. Additionally, the industrial sector, which traditionally has been greatly favoured by the government, is currently in need of expensive restructuring.¹ The building-up of artisanal fishing activities is beneficial to, and consistent with, the government's desire to increase local fish consumption, and expand the domestic market base.

Ownership. There is a high degree of vertical integration between extraction, processing and marketing, especially in the case of foreign companies. However, there is a lack of horizontal integration especially among local export producers. Presence of joint ventures is relatively high throughout the FIS with a high dominance of foreign capital, technology and management. As mentioned previously, the government emphasis is on privatization - as a result, its direct investment in production is limited. A state owned company is responsible for repair and maintenance of the industrial fishing fleet; local companies provide marine painting and fleet services. The state provides fishermen with a system of subsidies for outboard motors, replacement parts, nets, fishing gear and fuel. The private sector has assumed responsibility for equipment and activities related to pirogues.

System orientation. Although fragmentation of Senegalese export producers leads to difficulties in finding new markets, obtaining high export prices, and reducing high freight and insurance costs, about 45% of the production is exported (on fresh fish weight basis). Fisheries exports contribute almost 25% to the country's total export earning. Major export markets in terms of value are in Europe (69%) of which France is the most important accounting alone for 56% of the total value.

Exports to African countries take 57% of the volume (tonnage) but account only for 26% of the total value. Côte d'Ivoire is the most important African market taking the largest proportion of the tonnage (37%) but contributes only 17% to the value. The industrial fishing, although originally producing only for export is increasingly getting involved in selling fish on the domestic market, mainly the middle quality range fish while the artisanal sector is producing increasingly for export.

2.3.2 Women's involvement in FIS

Although no specific and detailed census or occupational data are available regarding women's FIS participation in Senegal, unofficial estimates suggest that between 25,000-40,000 women are involved. Most of these live in rural zones with those in the urban areas migrants from rural areas - women who leave their homes to join a husband or close relatives; the reason for migrating is to supplement incomes in areas where land has been eroded from drought and population density. The average age of women who have migrated is 35; most are married and have four dependent children.

¹ The industrial segment of the industry, in extraction and processing has a strong export bias and strong foreign involvement. The government traditionally purchased vessels, provided fuel and export subsidies, maintained a generous investment code and established favourable terms for foreign fishing licenses in return for research and marketing services.

Most of the women are in small-scale processing of fish and fish-based products and are married to men who are fishermen. The majority of these women are illiterate and require appropriate training or skill development assistance, increased access to credit and sector resources, and often, social assistance in such areas as housing.

Briefly, the most apparent characteristics about women's FIS participation in Senegal are as follows:

(a) Women are not well-represented in mid-management and professional posts of either government departments or private industry.⁴ Evidence suggests that one of the reasons women may be under-represented in upper-level processing industry jobs is a lack of women with requisite fisheries-related training. There are, however, women possessing transferable skills who have been trained in other disciplines. While they would need some fisheries-related cross-training, the main problem appears to be one of a narrow recruitment focus on the employer's side.

(b) In many rural villages, the age of the female FIS workforce is high, due to the outmigration of younger girls and women to urban areas. There are a variety of side-effects caused by the exodus:

- (i) The areas suffer a shortage of labour generally; these shortages can affect the success of FIS-related projects or government strategies if not properly considered;
- (ii) Patterns of oyster-gathering have changed and at least in part may be due to the exodus of younger women. Previously, women as a group left home and travelled the countryside on oyster-gathering expeditions. The practice produced more income than can be earned by a woman who remains in one village. Now, the practice is rare because the girls who migrate are the ones who would have remained home to care for the household in the mother's absence.
- (iii) The absence of younger women increases the demands on the time of older women, and this can translate into lost income.
- (iv) The girls can create special problems in the urban areas and require more extensive government assistance. Already strained government resources are not always available to assist them.

⁴ It should be noted, this is not an isolated Senegalese situation - one result of a FAO-conducted survey of African fisheries manpower was the revelation of the small number of women employed in fishery departments across Africa. Of a total of 9,729 officers, only 213 (somewhat over 2%) were female.

(c) In the rural fishing villages, especially, family patterns include co-wives. Under this pattern, even though a woman may earn an income, the money does not automatically confer decision-making authority or status upon her.

(d) Among the oyster-gathering villages, about 70% of the women work in groups of 2, 3 or 4 women; these groups are called "companies" and are based on co-wife patterns, other kinship lines, age, or neighbourhood groups. These groups share both the work, costs encumbered in carrying out the work and post-harvest profits. Evidence indicates that these groups may form a natural organizational basis for implementing production-oriented development actions.

(e) The pattern of work and population in the rural villages appears to reinforce the need for an integrated approach to developing the local economies incorporating both fishing and agricultural-based actions. Many of the fishing families are also farmers during the off-season for fishery-related work.

(f) Across the fishing villages, in some areas of the country, there are distinct divisions of labour, not on the basis of sex as is often typical (although such distinctions do exist) but rather on the basis of ethnic background. In at least one instance, this occurs with oyster-gathering and in another in the processing of specific types of fish products.

(g) There are distinct patterns of male involvement in both processing and marketing. In processing, women predominate, especially in the lower-level jobs; men's typical role is limited to a small amount of processing they may do while on board the boats. However, in at least one area, all the producers of shark-based, smoked fish are Guinean, Malian or Ivorian men. There are 15 oven owners - they employ men for the shark processing and women, only for the cleaning of smoked sardinella.

(h) In marketing, the official number of women licensed as fishmongers (classified as traders dealing mostly with fresh fisheries products), indicates the number of women declining in comparison to that of men. However, the decline is occurring in the outlying areas and increasing within the Dakar area. In terms of retail trade in fisheries products processed by the small-scale sector, women have come to dominate. However, their products reach only the markets in the capital and occasionally the Baol area. It is men who supply these items to the hinterland.

A detailed profile of the current involvement of women in Senegal's FIS, on a component by component basis follows:

Resource management. Senegalese women, as yet, play a relatively minor role in the management of fisheries resources. In the government department responsible for fisheries research, of a staff totalling 89, including 17 researchers, only 5 are women. Three of the five are at advanced levels - 2 have taken post-graduate courses in biological oceanography and one has a Master of Science degree. The other 2 are in secretarial positions. All are married.

At the Marine Fisheries Development administration, there are 13 women out of a staff numbering 237. Five of these are in

professional/technical posts; the others are secretaries and typists. The 5 in professional/technical posts were trained at the Oceanography and Marine Fisheries Technical School and are employed either in desk jobs relating to the issuance of licenses for wholesale fishmongering permits or in extension work related to the management of women's processing co-operatives.

Extraction. Women's role in extraction varies according to species and location within the country. As in many other developing countries, the women do not go out on marine-based fishing expeditions. However, in the gathering of oysters and mollusks, the women are extremely active, even dominant.

In the country's Casamance Maritime region, oyster-gathering is an activity for women in 59 villages. On the average, about 70 women (about 15% of the economically active population) are involved per village. All gatherers are Diolas with the Diola Ram group specializing in raw oyster (arkshells). Ages of the women range from 24-75 (reflecting the rural exodus of young people generally), most are or have been married, and frequently they are the first among two, three or four co-wives. Their husbands are tillers - during the dry season they either fish or harvest palm wine. Most women have about 4 children.

Usually the women work in groups of 2-3, called companies. Organization is based on kinship, age, or neighbourhood groups. Tasks and profits are equally shared by all, with tasks ranging from simple shaming of the pirogue to joint post-harvest work and sale of dried oysters. Each woman gathers 4-5 basket loads of oysters per day which translates into 83 kg per woman.

Little investment is needed; the instruments are rudimentary and manufactured by the women. Some costs are incurred if the women move from one place to another, especially the renting of the pirogue, if a relative (male) does not have one that the women can borrow. Payment on rentals may be daily, monthly or for an entire season with the amount varying by village (a typical charge runs at 100 CFA francs a day to 2,500 CFA francs for the season, or an in-kind payment of a basket of dried oysters).

The Rame' women who specialize in arkshell collection, work usually for one month per year; these mollusks are then sold in order to purchase household commodities (e.g. soap, oil, rice, petroleum) when the women go to Ziguichor, the region's chief town.

In terms of income levels, the amount for the Diola women is difficult to estimate. Profits do not accrue to women who sell their gatherings daily; those who take part in expeditions and wait until the end of season to sell products, may earn 15,000-17,000 CFS francs annually.

In the Saloum area, women work mainly at gathering of mollusks and gastropods and are organized into a co-operative. These are gathered in the coastal basin located around the island of Dionewar. The women begin the gathering by hand with the onset of low tide and continuing with pirogues which they borrow. They harvest 2-3 half barrels (200 litre oil drums) per day.

In Thies regions, especially at the town of Joal, along the "Petite Côte", males raise the oysters. Females devote themselves to mollusc

collection, from an estuary bordering Joal to the south and surrounding the island of Fadiouth. All women on the island, occasionally assisted by their children, participate, during virtually the entire year. Activity slackens during the rainy season, becoming second to the tending of cereal and ground-nut crops. The mollusks are a cash commodity that can be used to satisfy the financial needs of the women's families.

Processing. The processing component of Senegal's FIS can be divided into two types of activity - small-scale, artisanal processing and commercial/industrial, large-scale processing. The artisanal aspect has been expanding rapidly as a form of employment for women, due primarily to improvements in other components of the sector (especially motorized fishing canoes) and the decline in agriculture⁵. The activity offers both permanent and temporary (including seasonal) employment; however, there are problems:

- Methods and equipment are rudimentary and the work is slow and tedious; unsanitary conditions are common causing health hazards and product losses.
- There is more production capacity than product supply. Outmoded equipment causes inefficiency and production slow downs.
- Once products are processed, they can only be stored for a limited time. This is due to inadequate moisture prevention facilities at storage areas and supplies of safe insecticides.
- Products must be disposed of rapidly, a situation of which middlemen or marketers frequently take advantage.
- Most processors are poor with little access to funds for purchasing sufficient quantities of fresh fish or adequate work facilities.

Estimates indicate that as many as 10,000 persons may be involved in the artisanal processing activity, but no specific data are available on the female workforce. There is some variation in small-scale processing as per region in terms of: volume of landed fish set-aside for processing, involvement of men and women in the production, and type of processing techniques employed. A survey taken of approximately 200 women at M'Bour showed that their average age was 41, about a half were married, they mostly chose the job because of family tradition, and almost all their income went for household maintenance. The work is seasonal, dependent on fluctuating fish supply.

In the case of industrial, large-scale processing, it is estimated that the age range of women working is from 17-58, the lower age reflecting the influx of younger women from the rural areas. A selected sample of 101 women employees at the DIEME Sea Food Co. Ltd., indicates that about 11 per cent of the women were single, 81 per cent married, 6 per cent widowed and 2 per cent divorced.

⁵ African Training and Research Centre for Women. Women in the Artisanal Fishing Industry in Senegal and Ghana. Addis Ababa, United Nations Economic Commission for Africa, 1984.

The female workforce is composed largely of women immigrating from rural areas to join a husband who has obtained remunerative employment or to supplement the work of a husband who cannot regularly send money back to the village. At times, the women may come to join another close relative. The main exception is groups of young girls from the South who are recruited as a group and live together while working at the factories. The quarters where the girls live are cramped and frequently unhealthy. Many of the women, including the girls, may live as far as 30 km. from their work and transportation is not adequate.

The women are found in low-level jobs where employers are said to prefer them because of their dexterity and cooking skills. They are preferred for tasks of washing, sorting, descaling, tinning and ancillary jobs at canneries and wholesale fish marketing establishments. Of the approximately 6,000 jobs available, 2,000 are permanent and reserved for men; women working in the remaining 4,000 jobs are temporary workers (with an additional 2,000 waiting for jobs) and are classified as "packer-finishers".

Women in upper level or executive level positions in Senegal's industrial processing factories are rare. Currently, six have been identified: two marketing directors, one production director, one financial director, one assistant personnel director and one administrative and financial officer. Table 2.3.1 shows that at a Dakar freezing and wholesale company, 4 out of 10 employees, overall, are women; males and females are almost equal in manual jobs (workers, weighers, mould-removers and drivers) but at mid and upper levels, men predominate.

Another example of a canning factory's workforce is given in Table 2.3.2. Although job categories are not detailed, case study information indicated that the women were packer-finishers and although the number of permanent women workers outnumber the males, the males, overall, are at a higher occupational level, and only women workers are on seasonal and contract work.

There is little employment security, with no guarantee of hire from day-to-day. Frequently working conditions are unsatisfactory (inadequate lighting, stand-up work stations, inadequate industrial hygiene). The work-day is eight hours but depends on the supply of raw materials at the plants. Most of the women are classified at the lowest occupational levels, wage-wise and receive hourly pay. Day-to-day work may vary and depends largely, on the extent to which an entire shift is able to meet its production quotas.

Distribution and Marketing. Women are moderately represented in this sector of the FIS and the participation differs somewhat for rural and urban areas. On a general level, in the rural areas, the fisherman's wife serves as an intermediary between the fisherman and the fishmonger (usually a man) who buys the fish for distribution and marketing. The women sort the landed fish and negotiate a sale price with the fishmonger or his representative. These fish are sold fresh through the country's internal trading network. These same women may in turn process a portion of their husband's catch which is then sold to both wholesalers and retailers.

The retail trade in the more rural areas is composed mainly of small-scale-processed fish, and is increasingly dominated by women. Yet, the

products they distribute reach only the capital and infrequently, the Baol area; men supply these products to the interior.

In the Casamance area, along the "Petite Côte" and toward the capital itself, there is a pattern of commercial fish trading in products processed directly by the women themselves or through intermediaries called "Bana-Bana". These are dried or fermented products and dried oysters.

Women's participation as traders of fresh fish products (fishmongers), has declined overall from 1985-1986 (in terms of the number of licenses for the activity). However, the decline occurred primarily in the more rural areas (decrease from 12-5); the number of licenses increased in Dakar, by 6. Male fishmongers deal with all species of fish; females, in contrast, concentrate on species of high value - "thiof" and spiny lobster - except in periods of shortages when small coastal pelagic species can be sold at attractive prices in Dakar. There are women, known as "irregulars", who market fresh products over short distances; the amounts do not exceed 200 kg. and include mainly species of limited market value - sardinella and horse mackerel.

The cultural constraints against mobility for rural women, combined with "natural" constraints such as a poor distributional infrastructure, lack of access to refrigerated vehicles and ice-making facilities, unhealthy market conditions and poor unloading and packaging facilities, limits their participation in the marketing - distribution FIS component. The women who are involved are the same ones who process fish or, in the case of oysters in Casamance, the ones who gather them. In the latter case, even these women seek to sell their products in the urban areas and it is not known whether they sell for themselves, or, sell to a fishmonger.

No information was available about the income of women or men in marketing and distribution. Also, information was not provided about the flow of the money from time of product purchase to point of sale; likewise data were not available about the allocation of women's income from this activity.

Consumption. As in other countries, women are most important in this component because of their responsibilities of choosing and preparing the family's food. They are also important for promoting fish consumption throughout the country. In Senegal, their role as consumers varies from urban to rural locations. Overall, the rural area, while having nearly 70 per cent of total population, accounts for only 38 per cent of fish consumption. In urban locations such as Dakar, daily fish consumption reaches 138 grams per day/inhabitant while at Linguere (in a rural area) levels fall to 44.3 grams daily per capita. Outside of Casamance, rural per capita consumption falls to 3.8 grams in the Diourbel area and 1.6 grams in eastern areas. Casamance appears to enjoy higher consumption levels because of the heavy subsistence fishing of oyster beds and general oversupply of stock, stemming from the region's relative inaccessibility to outside markets.

The low price of fish when compared to beef (1,000 - 2,000 CFA francs/kilo compared to sardinella at 200 francs) makes it a popular staple, at least in urban areas. However, product spoilage from processing coupled with inadequate distributional infrastructure, limit its availability in some rural locations.

Industrial inputs. As in the other two country case studies, almost no data were available on women's participation in, or preparation for, the industrial inputs component. This is an area that potentially could be of value for women, especially in terms of developing more productive options for the rural environment. More precise definition is needed of Senegal's FIS industrial inputs sector, the job opportunities available in this area, the current employment patterns (men and women) and areas of likely expansion. Also needed are information on constraints women may face to employment in such jobs and the type of preparation required; it is likely that these two informational elements might differ from those affecting direct participation in fishing-related activities. This is also the component for which primary, employment type of information is likely to come from other economic sectors - a broader-based economic analysis would likely be required, before policy actions or strategies could be developed.

Government policy. Based on provided information, activity in the area of FIS government policy is at the stage of requiring more information about the precise involvement of women and their needs. Quite a lot of information is available about women's needs; however, indications are that a translation has yet to be made from collecting information to formulating policies and strategies. A special understanding of rural women's situation is called for prior to suggesting changes in current extension practices. Also, many of the women's needs defined, appear to require broader policies or assistance than can be offered by the FIS alone. Appearances indicate that for the government policy component, a significant effort needs to occur in the following areas:

- (i) Better analysis of data currently available.
- (ii) Translation of analysis into FIS policy and policies requiring broader government assistance.
- (iii) Active co-ordination with other government departments, and with women themselves at both the local level and at the point of employment.

The government has made some attempts to provide technical assistance to women in the area of processing; however, the actions have not appeared to alter significantly the women's lives in the artisanal sector⁶. These actions have included the following:

- (i) The Senegalese Department of Oceanography and Sea Fishing, 20 years ago supplied fish dryers, smoking ovens, a workshop and washing basin for processors at Jaol and M'bour; processors' needs however, outran the amount of tools supplied, leaving the women little better off than previously.
- (ii) The government's office of Manpower Development has helped women form a producer's group which aims at rationalizing the production and marketing of processed goods; nearly 1,000 women have registered and

⁶ African Training and Research Centre for Women. Women in the Artisanal Fishing Industry in Senegal and Ghana. Addis Ababa, United Nations Economic Commission for Africa, 1984.

pay dues; the collected money becomes a loan fund from which members can borrow.

- (iii) A government project is attempting to transform the village of Baling into an industrial town. A sardine canning factory has been planned, an ice factory and facilities for drying, preserving, fermenting and storing fish have been included. The project has engendered resistance-fishermen claim offshore reefs hinder fishing and women processors, who must travel 4 km. for their work, claim that their income may not cover their travel and food costs and, as the area is a former leprosarium, the idea of working there does not appeal to the women.
- (iv) In 1980, the government's department set up a special section responsible for women's co-operatives. A viable co-operative with 300 members has been established at Joal but the fish dryers allocated to co-operative members have been overtaken by outside women; little protest was made because processing is still looked upon as a private or individual venture. Also, middlemen who have purchased fish from the co-operative often default on payments owed; such actions often elicit government action and undermine the co-operative's authority.

Ownership structure. From available information, women do not appear to be well represented in the FIS ownership structure. In extraction-related activities, the women do not own the pirogues they need for oyster-gathering - they must borrow or rent them. There is some evidence that women organize and manage the "companies" that characteristically operate in oyster-gathering but the extent to which these can be considered part of the ownership structure is not known. As indicated under government-policy women participate, to some extent collectively in the processing ownership. The degree to which individual women own or manage small processing establishments is not known; however, if a woman mainly processes her husband's catch for her own family, she works alone - whether this can be termed ownership, is not known. As seen under industrial processing, women are poorly represented at the higher/ownership levels.

In marketing and distribution, some women participate in what could be termed ownership levels, but the degree of participation is not known. Some women, especially legally-registered fishmongers, the independents, and the "Bana-Bana" undoubtedly have some ownership-type responsibilities. However, from the information available, neither their participation nor their particular roles or tasks could be defined.

System orientation. It appears that women are involved in both the domestic and the export aspects of Senegal's FIS. The majority of women appear to be involved in the artisanal sector and in the preparation and distribution of fish or fish-based products for the country's domestic market. This appears so, both from the type of processing women in the small-scale sector conduct, to the type of distribution and marketing in which they are involved. Women are clearly involved in jobs associated with the export sector. However, as was noted above, the jobs in this sector usually were of the lowest grade for women, offering them little hope for personal or familial betterment.

2.4 Indonesia case study

2.4.1 Major characteristics of FIS

Indonesia has decisively the largest fisheries resources and catch out of the three countries included in the study. It has also the largest artisanal fleet with 250,000 vessels, bringing in 95% of total catch. The fisheries sector employs, directly and indirectly, almost 5% of the national labour force but contributes about 1.7% to the GDP (1983 figure). For comparison see table 2.1.

The government's positive support for, and attention to, fisheries, is partially reflected in the structure of the department responsible for the fishing industry and the assistance it provides to the sector. The Directorate General of Fisheries is one of the largest fisheries departments in the world with six major divisions and staff in all of the country's twenty-eight provinces. There are five fishery development centres, five training centres, one fishery research institute and a national fisheries academy. Only limited government involvement is seen in the production phase of the FIS. Rather, government assistance is geared towards promoting supporting infrastructure e.g. fishing ports, landing and auction sides, credit facilities, research, resource management, training and extension services which are carried out by state fishery enterprises and village co-operatives. Joining the co-operatives (KUD) is not yet widely practiced. Outside of Central Java where about 48% of the fishermen have joined, about ten per cent of the fishing population, nationwide are members.

A summary of the situation in Indonesia for each of the FIS components is offered below and is illustrated in the base diagram in Figure 2.4.

Resource management. The government's resource management infrastructure has already been reviewed. Component enhancements include - 30% MSY (however caution is needed because critical overfishing has occurred in some areas), and established policies for resource management.

Extraction. Around 1.5 million fishermen are engaged in marine and inland fishing of which 1.2 million are in the artisanal sector. In addition, there are almost one million aquaculture farmers and workers. Marine fishing accounts for about 3/4 of all production; its average annual expansion rate is an estimated 5.2% and utilization of marine resources (msy/production) stands at about 35%. For inland fishing, about 50% stems from aquaculture and is increasing at a rate compatible with marine fishing, in contrast to inland capture fisheries which are showing annual decline of 0.7%. Commercial fishing concentrates primarily on tuna and shrimp for export while artisanal fishing is almost exclusively for local consumption.

Processing. About 50% of the total catch, 40% of the artisanal and 80% of commercial, is processed largely by traditional non-mechanised methods of curing (90%). This is done on the cottage-industry level providing full and part-time employment to a total of about 400,000 people. Over 8,000 traditional processing units are established in addition to households processing their own catch. Only 3% of the catch is frozen mainly for export and further 1% is canned or processed into fish meal. There are 58 cold storage enterprises and 13 canneries with attached fish meal plants, all privately owned. The average capacity utilization is 50% for cold stores and

18% for canneries and fish meal plants with the employment of about 5,000 and 23,000 respectively.

Distribution and marketing. Marketing and distribution is to a large extent affected by the archipelago character of the country, uneven density of population and location of fishing grounds. Java is the primary domestic market (70% of the total population) served by outlying islands supplementing Java's own production which is less than 30% of the country's total catch. The majority of fishermen's household sell their catch directly to middlemen, co-operatives or in the markets with some exceptions such as Central Java province where the majority of fishermen sell the catch at the auction place. The fresh fish marketing chain can involve many transactions between fishermen and consumers depending on the distance of the landings from auction sites and markets. The middleman still has a very strong position both in social and economic terms.

Consumption. Domestic consumption of fish accounts for 95% of the landings. The per capita fish consumption is highest near the coast or around fish landing places. The national average is 13.3 kg. There is a general preference for fresh and traditionally cured fish accounting for 60% and 40% of total domestic consumption respectively. Fish is traditionally the main source of animal protein in the local diet accounting on average for about 60% of total protein intake.

Industrial inputs. The artisanal fleet is by far the largest with an estimated 245,000 marine and 50,000 inland boats, compared with the commercial sector with 6,2000 vessels and fishermen's co-operatives with 600 vessels. Only about 17% of the local marine fleet was motorized in 1981. Availability of domestically produced industrial inputs is limited to vessel and small boat building and to some local assembling of outboard motors. All the machinery, equipment and spare parts are imported.

Government policy. In terms of overall FIS development policy, the government is placing priority on small-scale fisheries. The general goal in doing this is to increase complementarity and co-operation between artisanal and commercial activities and to foster more equitable participation in development and distribution of development benefits among the entire population.

System orientation. The production orientation (marine and inland) is overwhelmingly towards the domestic market and accounts for over 95% of total catch. The present population growth and local demand for fish will put pressure on production and employment opportunities of the sector to increase. Given active government support and the existence of still unexploited resources the sector is in a good position to meet the challenge.

2.4.2 Women's involvement in FIS

As has occurred with information from other countries, data and quantitative indicators on women's participation in Indonesia's FIS are not readily available. However, information is available to illustrate the general patterns of women's participation and to begin identifying some of the human resource and industry-related issues that must be addressed if women are to enjoy enhanced FIS participation.

From a national, policy level, Indonesia's government recognizes women as important participants in the development process and recognizes the need to involve them more fully. Legally, the constitution guarantees women equal status with men, both as participants in, and beneficiaries from, the development process. Similarly, the guidelines for State Policy (Cares garis besar habuan negara, JBHN) in 1978 and 1983 explicitly stated that women need to be integrated more fully into the development process. Additionally the REPELITA, Indonesia's five-year plan underscores the need to involve and integrate women in the development process.

At the local and development programme or project level, the complete translation of these principals into operational terms has yet to be achieved. There are two primary reasons for this; one is Indonesia's geographic and demographic diversity and the other is a lack of resources to meet all of the identified needs.

Due to the country's demographic and geographic diversity, it is difficult to portray accurately the involvement of women in the FIS. Participation may differ as per geographic location and species of fish. Additionally customary social traditions may influence involvement. There is, for example, no single body of adat (customary) law applicable to the entire population. Rather, certain adat law communities have been distinguished in which varying customs concerning marriage, inheritance, family rights and kinship structure both affect and determine the status of women. The population as a whole comprises about 300 ethnic groups, each with almost its own language and particular characteristics. In spite of such diversity, however, it is possible to sketch out the general parameters of women's involvement, and where possible, to draw attention to local variations.

According to the 1980 population census, 88,236 individuals were actively involved in Indonesia's fishery sector. This number comprises about 1.5% of the entire workforce, and only those for whom fishing is a primary occupation and source of income. Of this total number, about 6% are women and of these, 4% are engaged in trade enterprises related to fishing.

The agricultural census of 1983 provides a somewhat different view in terms of numbers of people related to the fishing industry. According to this census, 529,930 households were engaged in some income earning activity related to marine fishing, a figure which translates into almost 3 million household members; for about 80% of the households, fishing activities were the main source of income. For brackish water fishery occupations and inland fishery activities, the household numbers are reported as 60,000 and 5 million respectively. There is no way of knowing whether any of the households are double counted under more than one type of fishing activity or what percentage of the income is from fishing. However, such figures indicate that in-depth research might yield a much higher female workforce participation rate and subsequently, more recognition for the valuable economic role women do play already.

At the broadest level, women in the FIS probably participate more fully on the islands of Java and Bali than on Sumatra. In part, this is due to the existence of better, more integrated marketing networks and more of a tradition of trained, skilled manpower overall, i.e., there is more expertise among the general population in fishprocessing techniques, production of other

fish-based products, and in small-and medium sized enterprise management.

On the other islands, such as Sumatra, there are some areas in fishing villages where women are almost not involved in fishing-related activities and where men are more involved than women in marketing and distribution of fish. While some authorities suggest that this is due to cultural-religious reasons, at least one researcher, upon conducting a survey among local women, found their inactivity due mostly to a lack of productive options. According to the women themselves, they were able and willing to assist their husbands (and they were skilled in activities such as netmaking/netrepair, fish drying and salting, and in the preparation of snacks made from fish and shrimp). The women revealed however that the general lack of credit, the low level of fish and shrimp catch from the men and the lack of markets, along with the lack of agricultural lands and livestock, were the reasons for their un-productivity.⁷

The involvement of women in Indonesia's FIS varies in relation to the practices of local areas. In some local areas, on the North coast of Central Java, women are more active in marketing. Here also, women may be organized into groups with the aim of promoting women's activities in fish processing; at least in some instances, women have been able to assume ownerships of fish processing enterprises (through financing assistance from the General Directorate of Fisheries and the Association of Fisherwomen - Himpunan Wanita Relayan).

In spite of the various ways in which women participate, they are almost always found in low status jobs with low wages. This is true for both urban and rural areas and for commercial and artisanal sectors. As a general summary, the following are the typical types of FIS jobs that women hold:

- (a) Preparation of food for the fishermen to take to sea, or, snacks to sell to fishermen at landing and auction sites.
- (b) Netmaking/net repair.
- (c) Fish marketing.
- (d) Post-harvest processing, especially salting and drying and production of various fish-based commodities that enlarge the consumption of fish-based commodities that enlarge the consumption of fish products.
- (e) Collecting sea weed, fishtry, mussels, sea worms.
- (f) Financial management of the household, home-based processing/industry and credit management.
- (g) Preparation of fishfood, feeding of fish and assisting in the maintenance of fish ponds.

⁷ Hourihan, John J., Women-in-Development: Guidelines for the Fisheries Sector, Manila, Philippines, Asian Development Bank, Consultant's Report, August 1986

- (h) Working as labourers in modern fish factories, cold storage companies, and in home-based industry.
- (i) Working as labourers performing errands related to fisheries in the commercial sector.

Overall, within Indonesian society, the general perception of women in the FIS, especially in connection with the rural fishing villages, is that their most important contribution is that of enabling the fisherman to perform his work proficiently and to ensure the maintenance of the household. Of all the constraints identified in Indonesia, this one, i.e. of having as their main participation, the role of enabling others to do their jobs, is perhaps one of the most complicated. This is because it leads others to underestimate the real value of women's contribution (as evidenced in the absence of official statistics) and a misunderstanding or wrong definition of women's work and the division of labour in artisanal households (as evidenced by the lack of extension assistance directed to women and inadequate consideration of their position as participants in and beneficiaries from the development process).

The following comments illustrate and summarize for each of the nine components, the participation of women in Indonesia's FIS:

Resource management. At the national level, there appeared to be little information available about the participation of women in FIS government/policy positions or in professional, research and technical level posts. At the local level in artisanal villages, in certain areas, women are involved with resource management through their roles in co-operatives. While such instances were few, they do offer prototype examples that may be useful for initiating or expanding the involvement of other rural women in resource management.

Extraction. As in most other countries, women are not well represented in the extraction component: there are though a few areas of the country where women are the chief household earners and as such, catch fish and own prawns which they then utilize in daily fishing-related activities. Such instances however, are typical only in coastal waters.

There is some direct female participation in extraction-related activities, especially in association with aquaculture, breeding and, seaweed culture. A census conducted of fishing establishments in 1983 examined 64 establishments categorized as conducting capture-related business. For the 48 centralizing in marine-based capture, there were an average of 173 workers for each, with about 8 female employees per establishment. The particular tasks assigned to the females were not reported. Sixteen fresh water fisheries (mainly active in aquaculture) included in the same census had an average of 13 workers each with 1 or 2 of these women; again, tasks performed by women were not identified.

Other type of direct involvement for women in this component include:

- (i) In Southern Sumatra (in areas where transmigration has occurred) women are involved in aquaculture. Their tasks include preparing fish feed, feeding fish, inspecting and guarding the pond by day, caring for the animals, fertilizing ponds, collecting the fry if these are produced, assisting

their husbands in harvesting the ponds, and processing fish not sold to middlemen.

- (ii) In a community near Jepara, near Central Java, a women's group called "Nurita Bhakti" has existed for five years. These women operate a successful fishpond of 1,280 sq. meters, engage in chicken farming and conduct courses against illiteracy.
- (iii) In Ambon, and similar areas where seaweed is found, women gather the product. Their particular role is not clear; however there is a desire to enlarge the seaweed supply through formal cultivation - women's potential role in this activity is also unknown.
- (iv) In Ambon, near coastal areas, a certain type of sea worm appears on the surface water once per year; women gather the worms and prepare them so they can be stored, in the form of a pastry that is consumed with rice and sago (a local staple food).

Processing. About half of total fish production is processed into salted, canned, dried or frozen fish products. Available data indicate that of this amount, about 60% is dried or salted, 21% is smoked, 7% is steamed or spiced, and 5% is made into fishpaste or shrimp jelly. Different areas of the country specialize in particular types of processing (e.g., East Java, North Sulawesi and Moluccas - steaming, West Katimantan and Central Java - fish paste and shrimp jelly in addition to other types). Similarly, processing methods differ; traditional methods are used for salting, steaming, freezing, canning and fish powder production and modern technology, when used is reserved for canning and fish powder.

This is traditionally viewed as women's work and is a task of many fishermen's wives. The work is home or enterprise - based. In marine catch, often, the same household catches and processes the fish. In aquaculture and in fresh water fishing, the same household that catches or breeds the fish does not do the processing; similarly, the same enterprise does not own catch and processing operations.

The number of households processing their own fish varies from place to place - over the whole country the total is about 76,000 or 14.4% of all households. In Western Iria and Southern Sumatra the percentages rise to 61 and 35 respectively while in other areas the percentage is less.

Women working in the industry are hired as labourers when manual skill is required. According to employers in the industry they are preferred because they:

- (i) Are not demanding;
- (ii) Have manual dexterity;
- (iii) Are patient/industrious;
- (iv) Clean/meticulous in their work;
- (v) Obey orders with little resistance;
- (vi) Are willing to work for low wages.

Distribution and marketing. The distribution and marketing process is carried out in one of two primary ways and differs, depending on whether the product comes from an enterprise or a fisher household. Enterprises usually distribute fish through middlemen who in turn sell to consumers. Enterprises may also buy catch from fisher households and sell it along with their own. The fisher household may sell fish at landing sites either through a formal auction process or to middlemen or co-operatives, or they may sell directly to the local market. Data indicate that the majority of households (86%) prefer to sell and that about 77% do sell their catch outside of auction sites, directly to middlemen co-operatives or the market place. Only in Central Java is the trend different - there, only about 34% of the fishermen sell outside the auction place; this is in contrast to a location such as West Kalimantan where 92% sell away from the auctions. In cases where there is no auction place at a close enough distance to the landing sites, the load is bought by retailers and sold directly to local markets. Also, certain types of fish are allowed to bypass the auction place, such as jelly fish, squid, shell fish, seagrass and crustaceans.

Aquaculture products bypass the auction place. They are usually sold directly to the middleman by the owner or his representative. The owner may also sell before harvest or even earlier to receive immediate cash.

The role of the middlemen in Indonesia appears to be of primary importance. There are three levels of middlemen and women are found at the "small" level - those who buy small quantities of fish and distribute or sell in turn to larger middlepersons or consumers. Some women may be found at the "medium" level (these may purchase at auctions or from members of a boat's crew) but almost never among the ranks of the "large" level - those who have capital backing and work in inter-city trade. Those persons have the flexibility to purchase fish directly from boat crews or from the auction sites.

The exact role played by the women was not presented in detail. No information was available about profits made, or who the women are. Information did suggest that women in marketing are frequently wives of the fishermen's bosses, or wives and daughters of labourers (especially in Java). The role of the women is most important in villages located near large towns; in these areas, it appears that the integration of the trade and market network, along with the presence of processing activities, gives the women, generally, a more visible and integrated role. Mention was made of the fact that earnings go toward the support of the household, as supplement to the husband's income.

The women who are present in marketing are dependent upon the existence of a good transportation system, a good marketing system, a good supply of fresh ice for frozen fish and available consumers. One or all of these elements is lacking in Indonesia. Only in Java can all be found in relatively good supply. Another problem that women confront is the presence of the big, powerful traders/middlepersons who determine and set arbitrary price levels - these individuals also present problems for the fishermen.

Consumption. Traditionally, fish and fish products have been the most important source of animal protein in the Indonesian diet. Estimates of consumption levels stand at about 9.93 kg. per capita, annually and this covers about 6.6% of average total protein intake. According to the country's national socio-economic survey, about 50% of all money spent on protein is

spent on fish. Fresh marine fish is the type most commonly consumed and after that salted and dried fish with the latter types most common in the interior.

The role of the woman, as the one in charge of food selection and preparation is important in this component. Indications are however, that village women do not always understand the relationship between the selection of certain foods and the nutritional value it carries in health and fitness terms for the family. It is suggested that the women need training in food selection/preparation, health, hygiene, nutrition and sanitation.

Industrial inputs. Women in Indonesia do not appear to be involved heavily in the industrial inputs component. There are however two roles mentioned for them in the literature, one of which seems to be unique at least when compared to the other two case studies.

It is said that netmaking and net repair is a typical women's occupation in Indonesia. However, the type of involvement they have, where in the country this task is performed and how (i.e., whether manually or with industrial-type machinery) was not detailed.

The second type of involvement is one that may better be classified elsewhere. However, since the involvement focuses on the management and generation of income in fisher households, it is included here. The most striking involvement of the women is their role as managers of the household income, savings, and, when loans must be drawn, credit schedules and repayment. The woman, although not necessarily having decision-making responsibility or authority over the household money, is the one to whom money is frequently given, and the one who makes the budget. The woman's role is especially crucial when loans or credit payments are to be met.

The difficulty for the women however, is that the men are the ones who take out the money and to whom explanations are given about terms, and repayment.

Government policy. On a general level, it appears that at least in the rural/ artisanal fishing sector, the government is taking a household approach to enhancing FIS participation for men and women. The role of the woman is to some extent subsumed within this emphasis on the household. More detailed discussion about the possible measures for enhancement of women is included in chapter 3.

Ownership. Indonesia has a system of co-operatives (Koperasi Unit Desa - KUD) which are found in many villages and provide a variety of services, including guidelines for the adoption of new technology and the implementation of policies related to credit for artisanal fishermen. Eventually, it is hoped that they will become active in marketing and replace the role of middlemen who are often accused of corruption. Across the country, only 10% of fishermen are KUD members; however, in Central Java the number rises to 48%. About 58% of the fishermen say they do not join because there is no KUD near to them; 20% claim no interest. Non-member households can receive co-operative assistance, especially for marketing but only a small percentage seek these.

There is a tradition of fishpond culture in some places in Indonesia. These are attached to the yard, or at times, to somewhat larger ponds near ricefields and operated as fish farms. Information was not available about

the ownership of these larger ponds; however, there is a growing trend for local entrepreneurs to invest capital in these. The output of such projects is being increased by the assistance of extension workers who teach modern fish food technology.

System orientation. The majority of the women are most involved in the domestic portion of Indonesia's FIS and it is this aspect of the country's system that is expected to increase, given expected population growth and higher local demand. Success in widening women's participation depends at least partly on the actions taken by the government in creating better market and distribution networks and upgrading the processing capacity. From an economic perspective, more opportunities for women should be the outcome. Factors determining whether these in fact materialize may include socio-cultural constraints, existence of social support and infrastructure and the provision of extension, training and other human resource services.

2.5 Summary of country case studies

The work done here has not necessarily uncovered anything completely new about the condition or involvement of women in fisheries. If anything, one of the primary outcomes is the validation or confirmation of other studies that have been conducted. The primary difference with this exercise is that women's involvement has been examined systematically throughout the defined FIS and thus creating a better point of departure for considering women in sectoral development planning and project implementation.

2.5.1 Women's participation in FIS

The three countries chosen as case study sites, Mexico, Indonesia and Senegal have general similarities in relation to women's FIS participation, see a summary Chart 2.5.1. Among the more apparent commonalities are the following, summarized by component:

Resource management. There is limited participation of women in resource management activities. Only Mexican and Senegalese consultants provided information about specific numbers of women employed in such positions. Both of these countries still find the majority of women "employed" in resource management departments of governments, etc., in secretarial, administrative and clerk-type positions. Interestingly enough, the Mexican report indicated that the most striking change in women's FIS participation in recent years is the increase in the number of women in research and applied technical positions. In all three countries, there was an inadequate number of women in extension and field management positions. However, in Mexico, the government has undertaken special programs to redress this imbalance through intergovernmental coordination across two agencies.

Extraction. In marine and sea going extraction, there is very little participation for women in any of the three countries. Occasional exceptions may be made for widows or daughters of leading fishermen; these are also women especially known for their courage and skill. There is substantial participation of women in extraction related to inland waters, estuaries, lagoons, rivers and sheltered coastal areas. For women, extraction consists of fishing with lines, nets, dugouts and paddle canoes. In Mexico, some of this work may be carried out by women in cooperatives; in Senegal, women often work together along kinship/neighborhood/family patterns. The area of most pronounced extraction participation is in aquaculture and participation varies

by size of the project and type of species. Of the three countries, Mexico appears to have the most activity in terms of organizing women's participation; within the last two years, women's cooperatives for oyster farming have been developed.

Processing. This is where many women are involved and appears to be the main involvement for urban/formal-sector women who do not work for the national fisheries ministry. For rural women, processing activities may be carried out in the home (at times with younger children participating), or through cooperatives. The activity may involve curing, drying, salting, preparing of fish for the frozen food market or for use by local hotels, restaurants and tourist centers. When work in rural areas occurs in organized ways, the working conditions are often unhygienic/unsafe, equipment utilized is outmoded and there is little protection from government legislation covering minimum wages and so forth.

In large canneries and freezing plants, the women rarely work in mid-or upper-level positions and often are temporary workers - with permanent positions reserved more for men (especially in Senegal). The work is often seasonal and of the type that offers little hope of advancement. The most positive aspect of the larger, industrial plants, especially those that are state-owned, is that wages are often governed by minimum wage legislation and equipment may be more modern. For none of the countries was there good information about women working in plants where fish-related products were manufactured; Mexico and Indonesia did indicate women's involvement in making artistic objects or articles for tourists or other sale outlets.

In all three countries, women were preferred in industrial processing because of their dexterity, obedience, industriousness, and willingness to work for low wages.

Distribution and marketing. In all three countries next to processing women are most likely to be active in distribution and marketing. However, beyond the fact of this being an important component vis-à-vis women's participation, the commonality across the three countries, for the most part, ends. This is because ways of carrying out distribution/marketing tasks differ as per traditions of the locality and country, the species of catch, the type of product to be marketed (e.g. fresh vs. frozen or canned), condition/availability of equipment, geography or terrain of the locality and supportive infrastructure for transporting the product to the final point of sale.

This is also the component, in a variety of countries, including these three, where rural women likely face the greatest threat of job loss. The point should be made that job loss does not appear to stem from lack of women's skills or training - although this is a contributing factor. Rather, this seems to result from the cumulative effects of introducing larger boats, the goal of larger catch levels and improved infrastructure and transportation methods - the exact economic and industrial goals that most countries set for their FIS. What happens is that larger catch levels either (i) make it more possible and profitable for boats to unload at larger ports or (ii) make it more profitable for urban traders who are often males with capital backing to journey out to rural areas and buy the fish in quantity. Similar patterns evolve when ice trucks and better roads are constructed, making it easier for the urban traders to get out to the smaller, rural communities.

Especially for this component, when it comes to designing policies/actions, a system-wide analysis is needed; training in management/accounting, etc. should not be offered in isolation, without looking at what impact other component's improvements have on women's role in the rest of the FIS.

Consumption. In all three countries, women played an important role in the consumption component but the role is not related necessarily to productive employment; rather, the role relates directly to, and is part of, the women's household responsibilities. All three governments seem to realize the importance of fish as a source of available and affordable protein. The women's primary involvement is in selecting, preparing and serving fish-based products for family consumption. In at least one of the three countries (Mexico) women did prepare fish-based food for restaurants or places where the public ate - such women either prepared the food specialities at home and delivered it to these places or worked at the establishments preparing the food. The other productive-oriented involvement for women in this component appeared to be that of the extension agent who works directly with the women to develop effective/ efficient ways of using, preparing and serving fish-based products; this role required nutrition, education and communication skills and may have been filled by women considered as part of other industrial sectors' activity.

Industrial inputs. Across all three countries, this was the component for which the least data or information on women were available. Some data were available for tasks/roles such as net-making and repair, the manufacture of line, cord and so forth; also, in Mexico, some information was supplied on women's role in supplying inputs for processing. Not evident from the information supplied, but important for women's overall involvement, is the role of women in all phases of industrial input - in transportation and infrastructure, for harbour and port related maintenance and improvement, and boat/equipment manufacture and maintenance. While data may be available on women's involvement for these and similar activities, such information in terms of official data, may commonly be found under the categories classified commonly with other sectors. Activities considered as industrial inputs need to be defined more specifically before women's real role can be examined. Especially in medium-sized, to larger urban areas, the industrial inputs component may offer increased opportunities for women. Such activities, in relation to women, are considered to be net-making and repair; however, a broadened approach to identifying industrial inputs and specifying roles for women, may well open new options. The very lack of data for this component indicates a need for deeper examination.

Government policy. All three countries gave evidence of supporting and strengthening mechanisms to increase women's FIS involvement. One major obstacle to doing this, evidenced by all three, is a lack of data on, and about women's current involvement. It should be noted that the FIS is not singular for its lack of data about women; this situation applies to women's involvement, generally. From each country (as well as from supporting literature) came the statement that quantitative data alone were not adequate; qualitative, including socio-cultural information is also needed. The gathering of such information is being undertaken by all three countries, albeit at different rates and in different ways; it should be mentioned that this lack of information is not just characteristic of national governments but also of many international donor agencies responsible for financing and implementing development projects - a situation reflective of the overall

consideration accorded, until recently, of women's status/participation in such projects.

The most striking commonality among the countries, relating to government policy, is that the building of a social infrastructure for women in the FIS is called for, in addition to direct policy/action measures. This indicates that in order for direct policy actions to succeed, some type of supporting social policy measures may be required. Other commonalities included: the need to provide more extension assistance to women, the need to increase their direct access to government information/ services, and to involve women in project planning, design and implementation, and, attention to aquaculture, one of the more apparent growth areas for women's potential involvement. Attention was also accorded in each country to the need for increased skill training, entrepreneurial assistance, general literacy and labour legislation measures for women.

Ownership structure. Just as for the industrial inputs component, there was little data available on women's role in this one, similarly, the lack of data on women in ownership activities is not one that only faces the FIS, but rather, all industrial sectors within a country. Many of the women in the FIS, especially in rural areas, work in home-based settings. There are problems, with formal data sets, on how to classify and consider these settings (e.g. whether small-businesses or family-owned)⁴; also, there are the typical problems of even being able to gather accurate information on the incidences of small business ownership in rural, local-level areas.

What was evident from the ownership information provided across the three countries, is that: (a) women are not actively represented or involved in the ownership structure of larger processing factories, industrial inputs (especially) ownership of boats, and so forth; (b) women's ability to participate more fully in this component's activities, relates to measures undertaken in areas of access to finance, resources and government information, the availability of small business/entrepreneurial advisory services, training availability, and access of women to jobs in upper-level management. It should be noted that inadequate information and resources is not just a problem that affects women (males also need such assistance). However, from the information supplied here, it appears that women's historical inexperience in this area, may warrant some specialized services for them.

2.5.2 Identified information gaps

One of the outcomes from this practical demonstration of the system approach application is the revelation of common information gaps. Development of a refined, standardized database that permits cross-country comparisons is needed. As will be seen in chapter 3 the lack of quantitative data impedes formulation of more precise development policies and precludes any discussion about the scale and nature of needed resources for their implementation. The information generally lacking was found in the following areas:

⁴ Joanne H. Pratt "Methodological Problems in Surveying the Home-based Workforce" Technological Forecasting and Social Change V.31, no.1, March 1987 (49-60).

- More comprehensive quantitative assessment of women's occupational structure within the FIS as a whole and in the nine components, and how it compares in nature and numbers to that of men;
- Age differential and marital status information on women participating in rural and urban based fishing activities;
- Information about women's income/wages from fisheries activities in relation to the household budget and to women's decision-making status in the family;
- More precise information on women's time allocation to fisheries-related activities on a year-round basis and in relation to household work.

The question about adequate information base and suggestions about possible ways and means of collecting information is discussed in more detail in chapter 3.

2.5.3 Identified constraints

What has also resulted from the case studies work is a much clearer idea of the general constraints hindering more effective women's participation in the FIS. These can be more easily related to the development constraints of the system as a whole and thus dealt with in an integrated manner from the outset. This topic will be more fully discussed in chapter 3.

Detailed list of component's constraints identified for each of the three countries is presented in Chart 2.5.2. Commonly mentioned in the country studies are the following system-wide constraints:

- Traditional social/religious taboos and ideas about the sexual division of labour, the idea that only men's work is productive and deserves remuneration, and the very real duties/chores that women have to handle within the household;
- Lack of information about and access to resources provided by the government or donor agencies (financial assistance, credits, training etc.). This points to the inadequate number of field extension agents and inappropriate delivery of technical information, when it is available. Women at the village level may not know about the availability of some assistance, especially if related to social services, and if they know about it, they may need to travel some distance to take advantage of it. This may be impossible because of inadequate transportation or traditional bans on women's mobility.
- The need to view and understand women's FIS participation from a dual perspective. One is the woman within the context of village and household life; the second is the woman's productive role within the FIS, including both her current and potential involvement. For this second perspective, also needed is a clear understanding of the sector's development and the employment opportunities it will generate.
- Women often receive no/or minimum remuneration for their work; having

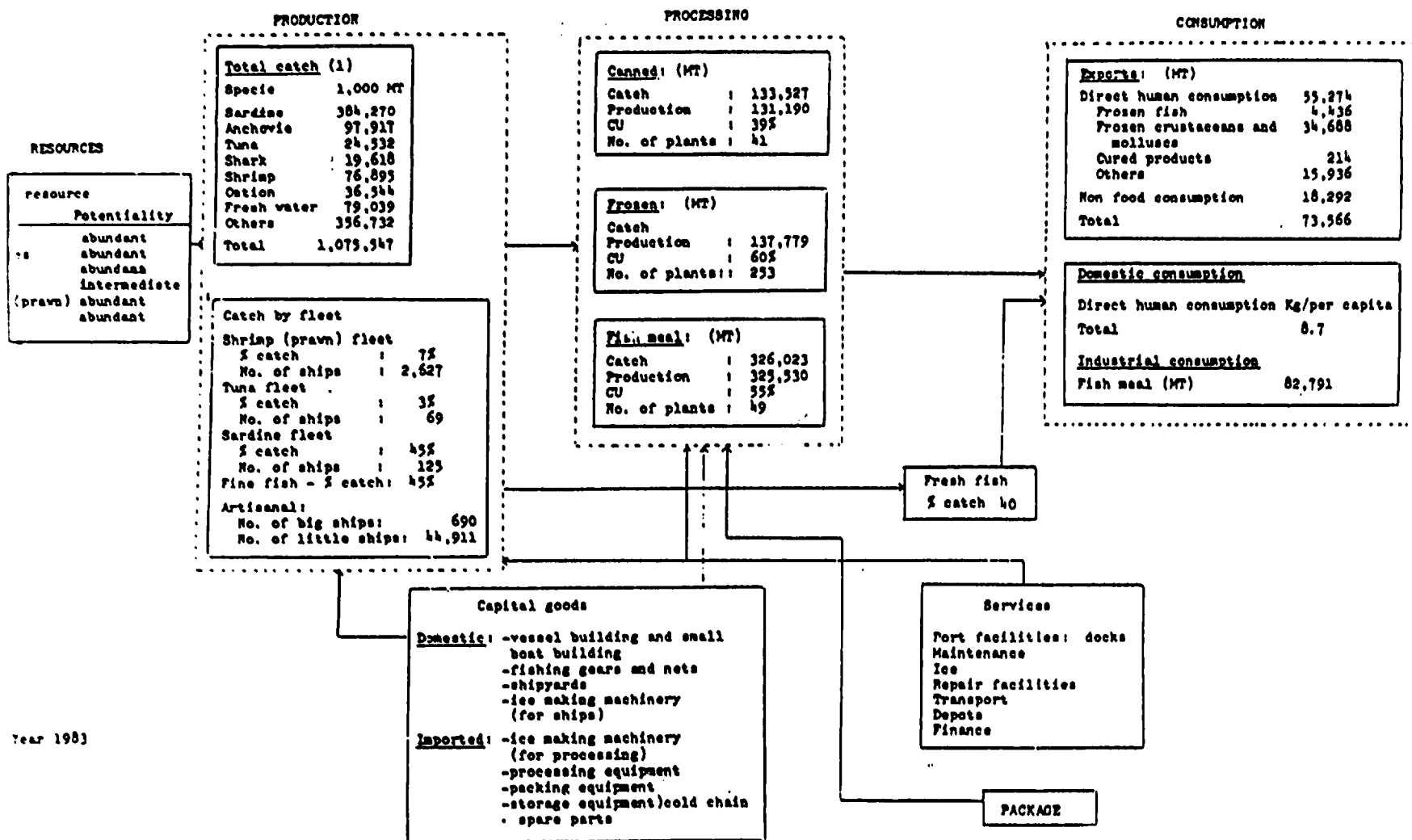
work that is seasonal at best, and conditions within workplaces that are out of reach of government legislation. This reveals lack of existence and/or enforcement of labour legislation.

- To further their productive roles and abilities, women need social, infrastructural type support, most notably in the field of literacy training, general education, and cost and accounting and basic management-type skills; for younger girls in urban-industrial processing factories, housing and health needs predominate.
- Inadequate and unhealthy conditions of the infrastructure/distribution facilities impede enhancement not only of women participating in this component, but also the FIS as a whole.
- Lack of choice and availability of appropriate equipment/ technology used in processing in rural and urban areas affects both women and the system as a whole.

The following chapter examines in more details the appropriate remedial steps which need to be taken to deal with these constraints within the overall sectoral development strategy.

Figure 2.1 Base Diagram FIS Mexico 1984

Base Diagram FIS Mexico 1984



Year 1983

Figure 2.3 Base Diagram FIS Senegal 1983
Base Diagram FIS Senegal 1983

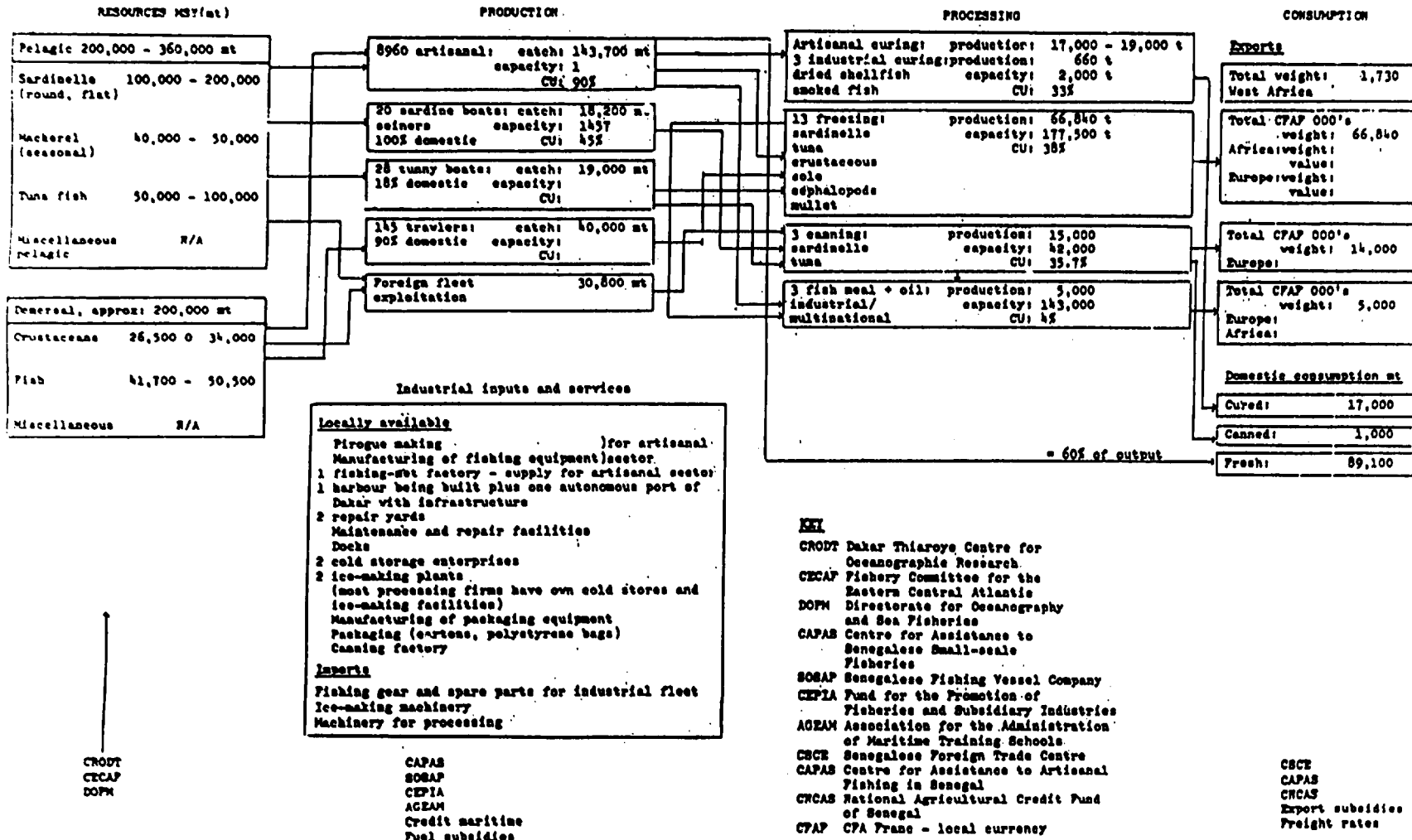


Figure 2.4
Base Diagram FIS Indonesia 1984

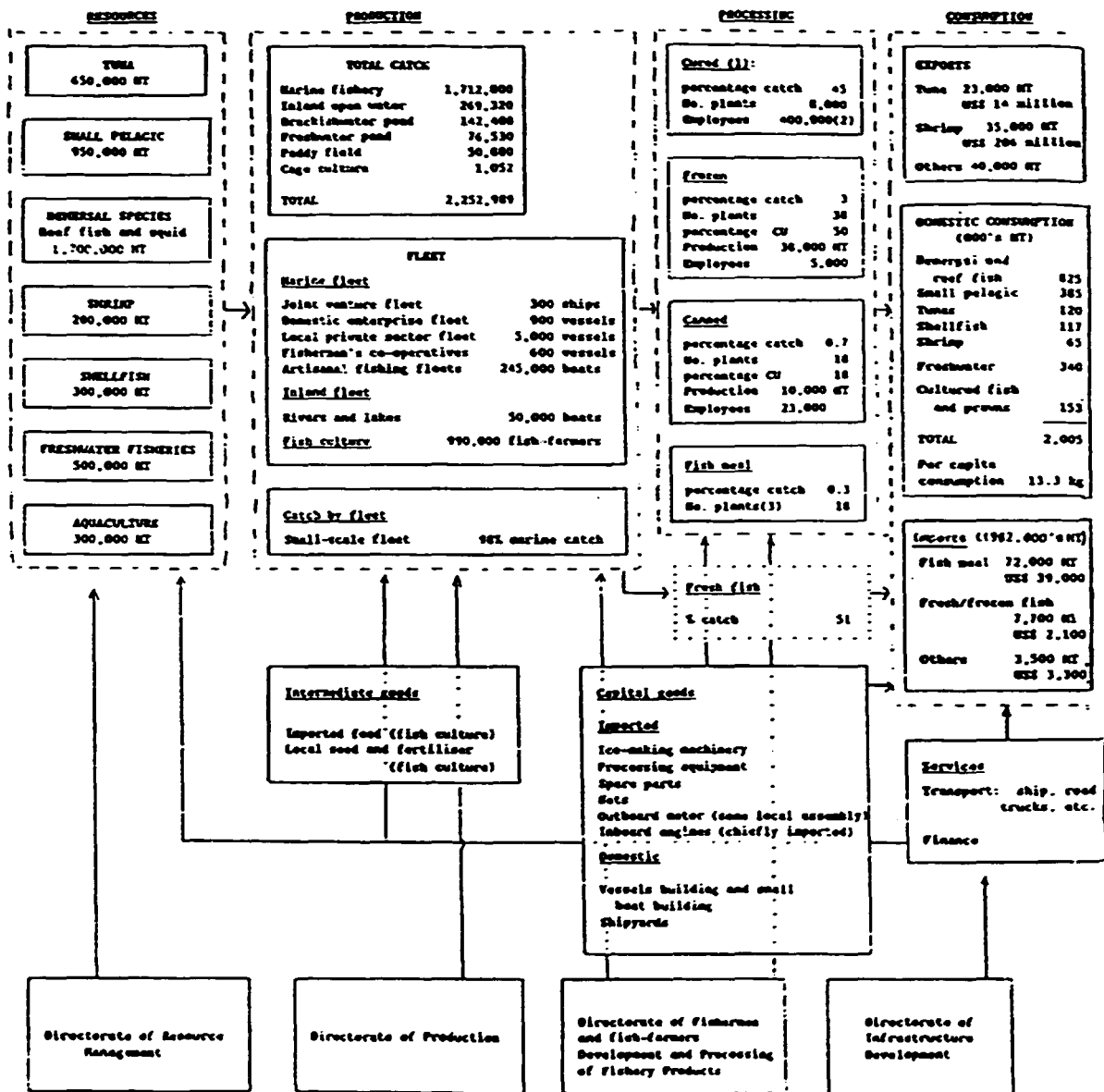


Table 2.1 General fisheries data for the country case studies

Type of data	Indicators	Countries:		
		Mexico 1984	Senegal 1983	Indonesia 1984
		Groups: 2	9	4
		Population (thousands): 77,040	6,352	157,495
I.				
Areas	1. EEZ area (thousand km ²)			2,700
	2. Inland waters (thousand km ²)	4,951	419	13,700
	3. Length of coastline (km)	9,219	550	30,000
	4. Shelf area (to 200 metres)	388	23.8	775
	5. Islands			13,000
II.				
Resources (MSY)	1. Marine (thousand mt)	3,673	474	4,200
	2. Fresh water and culture (000' MT)	1,000	n/a	1,400
III.				
	1. Marine total	990.5	251.7 _a /	1,713
	2. Marine resource utilization (%)	27	53	35
	3. Fresh water and culture (thousand mt)	144	-	540.2
	4. Fresh and culture resource utilization (%)	14	-	37
	5. Total industrial (thousands mt/%)	573.5/50	108/60	112.7/5
	6. Total artisanal (thousand mt/%)	561/50	70.7/40	1,870/83
	7. Aquaculture			270.4/12
IV.				
Processing	1. Share of industrially processed fish in total catch (%)	70	37	80
	2. Share of artisanally processed fish in total catch (%)	0.6	23	40
V.				
Employment	0. Total fisheries (thousand)	83.1	n/a	3,000
	1. Share in total employment (%)	0.4	-	5
	2. Extraction (thousand)	54.8	36 _b /	1,400
	3. Processing (thousand)	28.2	n/a	500
	4. Post-harvest culture (thousand)			990
VI.				
Consumption	1. Per capita consumption (kg/yr)	8.7	24.5	13.5
	2. Share of fresh fish in total consumption (%)	40	40	50
	3. Contribution to animal protein supply (%)	30	30-80	60

2637r

Table 2.1 continued

Type of data	Indicators	Countries:	Mexico	Senegal	Indonesia
			1984	1983	1984
		Groups:	2	9	4
Population (thousands):			77,040	6,352	157,495
VII.	1. % Contribution to GDP		0.5	3.1	1.7
GDP					
VIII.	1. Exports net (thousand mt)		73.6	93.99	65.4
Exports-	2. Exports (million US \$)		453	52.3 _{c/}	229.2
imports	3. Export share in total production (%)		7.5	44	3.3
	4. Share in total exports (%)		1.8	25	1.2
	5. Important export markets		USA, Japan	France, Côte d' Ivoire, Spain	Japan, Thailand Singapore
	6. Imports (thousand MT)		613	30.8 _{d/}	50.4
	7. Fish imports (million US \$)		-	-	28,324
IX.	1. Government investment in fisheries (million US \$)		757.1	200 _{c/}	1.4 _{e/}
	2. Allocation as percentage of total budget		1.1	0.86	13

a/ The catch with foreign fleet was 251.7 in 1983.

b/ Source: FAO Yearbook of Fishery Statistics, 1984.

c/ Values are in millions of (current) CFA francs.

d/ Landed fish (tuna) by foreign fleet.

e/ Includes expenditure in agriculture.

Table 2.1.1 Mexico: Women's FIS involvement by state and local area

State/locality	Involvement	Numbers
<u>Aguascalientes</u>		
San Jose de Garcia	Sell fish along beach	6
<u>Campeche</u>		
Lerma	Peel and clean shrimp.	850
Ciudad del Carmen	Freeze and pack shrimp in privately/ publicly owned industrial firms. Design and craft artistic products from fish-related resources.	
Isla Aguada	Design and craft artistic products from fish-related resources - jewelry, pictures, lamps, ashtrays, etc.	
<u>Coahuila</u>		
Don Martín	Extract lonja de carpa Fillet lobina Some involvement with fish-farming for tanks.	35 fisher- wives
<u>Colima</u> - state wide		
	Involved in special government programme for rural women - integrated development project, fish farming; 3 industrial agriculture production units; work with species tilapia, carp and lobster.	40 divided into various production units
Laguna de Cuyutlán	Women capture shrimp. Freezing shrimp - work for private company.	47 organized into 2 co- operative societies 15
<u>Chiapas</u>		
Arriaga	Marketing and selling fish. Responsible for financing all commercial related endeavours. Work with children (from age of 5 and older) on processing shrimp raised in tanks.	
<u>Chihuahua</u>		
	Fish processing	10 women in co-operative
<u>Durango</u>		
Victoria	Processing fish products	6 women in fishermen's union

State/locality	Involvement	Numbers
Tecama	Processing fish products	2 women members of fishermen co-operative
	Netmaking	Women in co-operatives.
Gómez Palacio	Processing in private firm.	15
	Distribution centre for private firm.	1
<u>Mexico State</u>	Marketing Assist with capture-related tasks.	150 Exact number unknown.
<u>Guerrero</u> State wide	Commercial and marketing tasks - species escama, lobster and shrimp, 30-40 kg per day per capita	Unorganized fishermen's wives, number unknown.
Costa Chica	Using nets, capture species such as bagre, escama and charal	-
	Owners of dugouts, but men do the work. Work in restaurants of the fishing and tourist zones.	-
<u>Hidalgo</u>	Aquaculture, extraction with assistance from men.	17 women in a production unit
	Fish with lines and sell catch fresh at market	35
	Fish at water's edge and resell at markets.	10
<u>Michoacán</u> Presa Adolfo Lopez Mateos	Mixture of FIS-related tasks.	800
	Marketing and selling	600
	Filleting fish	150
	Aquaculture	25
	Capture tilapia	25
	Fishfarming for carp	5 women's production units.
<u>Morelos</u>	Fishfarming - tilapia and carp; women totally responsible from raising to processing to selling	30 formed into a production unit.
	Prepare food from fish and sell directly	-

State/locality	Involvement	Numbers
<u>Nayarit</u>	Select and prepare shrimp; seasonal, low-paid work; species is chilapa.	300, are members of co-operative
Santiago, Tuxpan, Rosamorada	Women sell small amounts of shrimp, each one independently.	800
State-wide	Several women in shrimp extraction, work alongside men.	6, widows of former fishermen, members of fishermen's co-operative.
<u>Nuevo León</u>		
Monterrey	Women in programme of upgrading use of fish nutritionally; women received training.	100
<u>Oaxaca</u>		
Salina Cruz	Work in shrimp freezing plant, seasonal work.	500
	Work in shrimp and fish processing plant, state-owned.	29
San Mateo	Market/sell husband's catch	45
Puerto Angel	Process turtle meat and fillet/clean other species.	20
Juchitán	Sell fresh fish and shrimp	30
	Smoke barrilete and tuna.	15
<u>Puebla</u>		
Buenavista and Tetela	Net manufacturing - make thread and sew product, make atarrayas Prepare nets on request for individual fishermen or for small distributors who supply women with threads.	100 organized into a co-operative in 1984 - purpose of seeking wider market for product.
<u>Quintana Roo</u>		
	Women located in 5 packing plants throughout state; clean, classify, weigh and pack shrimp.	-
<u>San Luis Potosí</u>		
	Work in national net producing plant.	120 permanent workers 54 contractual
	Work in restaurants in fishing localities and "expendios" of fish	173

State/locality	Involvement	Numbers
<u>Sonora</u>		
Estuary of Morua, river area	Cultivation and selling of oysters and clams.	118 organized into a co-operative.
Estuary of San Agustín (projected)	River area cultivation/selling of clams and oysters.	women organized into a co-operative.
<u>Tabasco</u>		
	Large industrial plants, women as:	
	- reception area/clerical	8
	- drying/salting	49
	- freezing	39
	- capture	2
	- quality control	2
Frontera	State-owned plant, women as:	
	- filleting	11
	- shrimp processing	45
Jaulas	Aquaculture	48
Jonuta y Centla	Netmaking	23
State-wide	Aquaculture	Production units, 47 in number
<u>Tamaulipas</u>		
Tampico	Labourers in 3 shrimp freezing plants, classify and pack.	60
	Labourers who clean and boil the product	60
Matamoros	Packers in plants.	150 - 200
San Fernando	Packers in plants.	20 - 30
Laguna Madre	Packers, April to June and occasionally in summer.	-
<u>Tlaxcala</u>		
State-wide	Women in processing	176 in production units, 2 in co-operatives
	Aquaculture, multivarieties of carp	60 in production units
	Aquaculture, one type of carp.	44 women in 4 production units.
<u>Veracruz</u>		
State-wide	Women in all phases of industries related to fisheries (service, commercial industries, etc.)	843
Alvarado	Processing plant, public-owned: - permanent workers	581

State/locality	Involvement	Numbers
Tuxpan	Collect shrimp	3
	Warehouse owners	3
	Restaurant work related to fisheries	75
	Retail sale of clams	25
Poza Rica	Restaurant work related to fisheries	20
	Retail sale of clams	60
Alamo Cuahtémoc	Restaurant and ostiaries	20
	Seasonal work, collect shrimp	120
Veracruz	Restaurants and oyster bars	42
	Restaurants and oyster bars	210
	Processing plants	55 as eventual workers
Catemaco	Permissionarias	4
	Restaurants	124
	Permissionarias	2
<u>Yucatán</u>		
State-wide	Work at fattening of jaiba	Women in association of rural collective integration
	In processing plants:	
	- packing	56
	- administrative personnel	34
	- kitchen	3
<u>Zacatecas</u>		
State-wide	Filleting and marketing fish	20
	Washing nets	-
	Permissionarias	2

Source: Programme of Government, sponsored Rural Visits to Fishing Communities: 1983-1985.

Table 2.2.2 Mexico: Number of Women employed in the Fisheries Secretariat by Occupation

Post	Number of women
Total	47
Major Officer	1
Director General	1
Federal Delegate	3
Area Director	3
Co-ordinator of Consultants	1
Consultant	3
Special Secretary	3
Private Secretary	1
Underdirector	5
Department Head	20
Federal Office Head	6
Office Head	2
Section Head	78
Chief	15
Analyst of administrative systems	64
Assistant analyst of administrative systems	25
Assistant administrators	28
Archivist	13
Secretary of Director General	12
Assistant Secretary of Director General	13
Secretary of Area Director	24
Bilingual Secretary	12
Secretary of Area Underdirector	148
Secretary of Department Head	95
Secretary of Office Head	191
Shorthand typist	73
Information officer	5
Operator of commutator	6
Operator of reproduction machines	5
Head Cook	3
Assistant cook	1
Assistance Maintenance person	3
Assistant Intendant	40
Total	1,316

Source: Fisheries Secretariat, Roster of Occupations, Mexico, November 1986.

Table 2.2.3 Mexico: Number of women at National Fisheries Research Institute

Post	Number of women
Researchers	73
Lawyer	7
Specialized Analyst	23
Analyst of computer systems	2
Technical analyst	66
Programmer analyst	1
Programmer	2
Laboratory/Biologist	3
Instructor	27
Librarian	4
Nurse	4
Artist	3
Piscicultivator	1
Assistant accountant	10
Assistant judicial	5
Assistant technical analyst	25
Assistant technician	21
Assistant for projects	8
Technical associates	8
Assistant for programmes	6
Assistant - rural	2

Source: Fisheries Secretariat, Roster of Occupations, Mexico, November 1986.

Table 2.2.4 Mexico: Female employment in processing
Sample of company-owned processing units

Type of processing unit	Number of units	Mean number of employee	Male (percentage)	Female (percentage)	Average age	Age structure (percentage)			
						Under 20	20-30	30-50	Over
Shellfish	17	132.6	48.7	51.3	26.2	27.5	52.8	18.3	1.4
Freezing and packing finfish	7	134 (939 total)	90.5	9.5	27.8	23.7	55.6	11.6	9.1
Freezing and canning mixed fish	23	287.5 per plant (6,613 total)	72.2	27.8	29.2	20.3	47.7	26.4	5.5
Canning	6	96.3 per plant (578 total)	46.2	53.8	31.1	14.9	46	30.4	8.7
Fishmeal	17	474.6 per plant (8,098 total)	75.2	24.8	35.9	6.9	35.9	38.2	19

57

Source: Latin American Fisheries Manpower Survey Report. W.A. Roger Mullin. Unpublished Consultant's Report, Scotland, 15 July 1984.

Table 2.2.5 Mexico: Female employment in processing
Sample of family-owned processing units

Type of processing unit	Number of units	Employment range	Male %	Female %	Average age	
					Male	Female
Fresh fish	32	1 - 9	56	44	29	42.7
Shellfish	6	1 - 4	53	47	28	30.4
Salting, drying and smoking	5	1 - 15	83	17	29	34

Source: Latin American Fisheries Manpower Survey Report, W.A. Roger Mullin. Unpublished Consultant's Report, Scotland, 15 July 1984

Table 2.2.6 Mexico: Estimate of the number of women in commercial positions in fishery communities

State	Commercial activities (number of women)	Other activities (number of women)	Total
Veracruz	777	6,335	7,112
Sonora	1	2,923	2,924
Tabasco		2,780	2,780
Campeche		2,200	2,200
Tamaulipas	15	1,742	1,757
Sinaloa	45	1,490	1,535
Baja California		1,501	1,501
Michoacán	544	542	1,086
Guerrero	1,074	201	1,275
Chiapas	572	412	984
Baja California Sur	4	515	519
Yucatán		382	382
Oaxaca	248	72	320
Nayarit	97	114	211
Total	3,377	21,209	24,597

Source: Census of fishing communities, Department of Fisheries, Mexico, 1981.

Table 2.3. Relative number of men and women at a fisheries product freezing and wholesale company in Dakar

Positions (socio- occupational)	Personnel	Male	Female	Relative proportion (%) in the category	
				of women	of men
Supervisory staff	11	8	3	27.3	72.7
Middle-level staff	14	12	2	14.3	85.7
Subordinate personnel	221	125	96	43.4	56.6
Total	246	145	101	41.06	58.94

Source: Senegal Ministry of Rural Development; State Secretariat of Annual Resources, 1987

Table 2.3. Distribution of employees by socio-occupational categories at a Dakar cannery

Positions (socio-occupational categories)	Strength	Percentage
Expatriate staff	3	1
Foremen	11	3.6
Service Employees	8	2.7
Men, permanent	52	17.2
Women, permanent	142	46.8
Women on contract	24	7.9
Women, seasonal	54	17.8
Guards and domestics	9	3
Total	304	100

Source: Senegal Ministry of Rural Development; State Secretariat of Annual Resources, 1987

Chart 2.5.1. Summary of women's involvement in FIS components - Mexico, Senegal and Indonesia

Component	Mexico	Senegal	Indonesia
Resource management (1)	<ul style="list-style-type: none"> - Of a 6,000 workforce, 1,316 in Government Secretary of Fisheries are women, many in research and technical development posts - 1/3 of professional and technical staff of National Fisheries Institute are women - Women's participation is increasing in research positions related to aquaculture and applied technology - Women professionals from national administration involved with fishing communities - conduct training and community organization to generate better resource management and social well-being 	<ul style="list-style-type: none"> - Women occupy relatively minor role - National level staff of 89 - 5 women (2 advanced research positions) - Fisheries Development Administration, 13 of 237 are women (5 technical or upper level positions - trained at Oceanography and Marine Fisheries Technical School) - Women with technical training employed in desk jobs; involved with extension work relating to management of women's co-operatives, and fish processing tasks 	
Extraction (2)			
(a) Marine and sea-going	<ul style="list-style-type: none"> - Very little, if any involvement, exceptions of influential fishermen widows, women known for courage/skill 	<ul style="list-style-type: none"> - Participation differs according to region and type of catch extracted, especially active in oyster-gathering - Work is seasonal, usually from January to June, July; frequency of work depends on product supply and other activities of women - In <u>Casamance</u> region, 2,000-4,000 women involved from 59 villages - 	<ul style="list-style-type: none"> (a) direct - Almost nil in offshore sea-fishing - Minimal in aquaculture and in sea weed, mussels and sea worm gathering

Component	Mexico	Senegal	Indonesia
(b) Inland and coastal waters, lagoons and rivers	<ul style="list-style-type: none"> - Depending on location/species women are primary workers - small-scale fishing activities - Women collect molluscs or algae, fish with baskets, fish traps, or lines from canoes - Shrimp gathering - Collect small shells, snails, starfish and sand dollars 	<ul style="list-style-type: none"> represents 15% of economically active women - Ages from 24-75 with 44 about average; older women work because younger girls migrate to work in processing factories - Women work individually (35% of time) or groups of 2-4 called "companies", based on kinship, age or neighbourhood; may share a dugout, post-harvest work, sales, tasks and profits - Must usually borrow/rent dugout repay by cash and small in-kind gifts - end of day, month or season - Diola Rame women specialize in raw oysters - In <u>Saloum</u> area women in co-operative involved with harvest of yest and pagne; gather by hand at low tide - Women gather mollusks in the Casamance Maritime but this only marginal activity - one month/year - In <u>Thiès</u> region - males raise oysters but women harvest pagne - On island of Fadiouth all women (15,000) and some children participate in harvest of pagne; year-round activity but slackens in rainy season when becomes 2nd place to cereal/ground-nut crops 	<ul style="list-style-type: none"> (b) Indirect - Preparation and selling of food to fisherman -- Household economy
(c) Aquaculture	<ul style="list-style-type: none"> - Raising of oyster, carp and trout cultivating via fish tanks - 1983 established 18 production units operated totally by women - Women raise food for fish, take care of the tanks, feed and raise fish, extract fish and prepare for processing - Involvement varies as per production scale - Small-scale production, women involved in all phases, production processing and distribution - Large-scale production, size of tank increases, men are mostly utilized 		

Component	Mexico	Senegal	Indonesia
Processing (3)			
(a) Home-based fishing communities	<ul style="list-style-type: none"> - Involvement varies by location species - Women and children involved - tasks include unloading incoming boats, selecting, dry/curing, smoking, preparing fish for market - Family itself functions as economic unit - role assigned accordingly 	<p>(a) Small-scale</p> <ul style="list-style-type: none"> - Women typically predominate mostly fishermen's wives - The involvement of women may differ as per type of species and village; some species and some locations have tradition of employing only men - Sample of women show average age 41, most married, must work to supplement family income - Profits may be realized but vary as per species and whether paid on piecework basis or by fixed price per unit 	<p>(a) Artisanal sector</p> <ul style="list-style-type: none"> - Mainly women's work - Household industry for curing fish (salting, drying and smoking) for retail - Cottage industry for cleaning and sorting shrimp linked to the commercial export sector (cold storage companies) - Fish products, crispies, gelatin from sea weeds
(b) Rural/artisanal non-home based	<ul style="list-style-type: none"> - Plants or workplaces employ mainly women - Women responsible for cleaning fish, filleting fish, selecting fish and packaging and any preparation needed for distribution marketing phase, especially for shrimp and sardine - Where processing includes preparing food material, fish paste and clam paste women almost comprise total workforce - In some rural areas women/children work together at the privately-owned sites, may do cleaning/shelling at home, then take products to warehouse for icing/packing/distribution, women may work on own or on co-operative basis. 	<ul style="list-style-type: none"> - Women may be involved in permanent or seasonal work and may work individually or on a family basis at prescribed workplace or in home - home-based products used for family and for sale (semi-preserved products) - Same women may be involved in both processing and marketing 	<p>(b) Commercial</p> <ul style="list-style-type: none"> - Working as labourers in fish processing factories
		<p>(b) Industrial scale</p> <p>Women predominate, are preferred for washing, sorting, discarding tinning, and related jobs at canneries and at fish marketing establishments .</p>	

Component	Mexico	Senegal	Indonesia
(c) Industrial/ commercial	<ul style="list-style-type: none"> - Women predominate at freezing and canning plants - Women are mostly labourers; management/ownership almost always male - In state-owned plant, women have moved into technical research positions and administration 	<ul style="list-style-type: none"> - Of about 6,000 jobs, 2,000 are permanent - these reserved for men - Women usually occupy temporary positions and are classified as "packer-finishers"; of 1,000 classified - about 2,000 women on waiting list for employment - Women do work of forepersons/mid-level positions but always under directors or production head who is male - Women in executive processing jobs are rare - Women age range 17-58 with average at 35; indicative of massive exodus of young girls/married women from rural - Most women emigrants join a husband who has left rural, found remunerative employment or, to supplement husband's income; only from Casamance area do young girls migrate together, end up living together - Typically work eight-hour day, depends on product supply 	
(d) Making of crafts/ jewelry/ related articles from fish catch	<ul style="list-style-type: none"> - Women participate in gathering/extracting materials for craft-making - Women design and make artistic objects - Work may be done in groups or individually, on family basis in the home 	<ul style="list-style-type: none"> - Women's involvement differs by area of country and product (Casamance area, women more predominant) - Typically, women are modestly represented; involvement has declined in some places in relation to men - In fishing families, the wife automatically is involved in marketing and distribution; deals with fishmonger - negotiates 	
Distribution and marketing (4)	<ul style="list-style-type: none"> - Women's role in fisheries most concentrated - Rural communities marketing is a primary income source for women - In regional market areas sell food products made from fish along with fish - In urban settings, women sell in local markets and to restaurants and other tourist centres, usually salaried, minimum wage 	<ul style="list-style-type: none"> - Women's involvement differs by area of country and product (Casamance area, women more predominant) - Typically, women are modestly represented; involvement has declined in some places in relation to men - In fishing families, the wife automatically is involved in marketing and distribution; deals with fishmonger - negotiates 	<ul style="list-style-type: none"> - 2/3 of women engaged in fishery related activities are involved in trade - Small middlepersons - Headload vendors

Component	Mexico	Senegal	Indonesia
<ul style="list-style-type: none"> - In all market areas, women also sell artistic articles made from fish 	<ul style="list-style-type: none"> purchase, etc.; women unload/sort fish; when dealing with retailers women also process fish - markets supplied directly from unloading sites - Retail trade in small-scale processed catch increasingly women-dominated, especially in capital area; men typically supply hinterland area - In Casamance and along the "Petite Côte", commercial trading is conducted by the women who process the fish, or, through intermediaries; these trade flows involve dried, fermented products - Some women do become fishmongers, deal in fresh fish; however, number of women declined in 1986 and in contrast to men, who deal in all species, women tend to specialize in species bringing highest market prices - There are other women called "irregulars" who unlike official fishmongers, market over short distances, quantities not exceeding 200 kg 	<ul style="list-style-type: none"> - Purchase, preparation and consumption - Financial management of household income/expenditure 	
Consumption (5)	<ul style="list-style-type: none"> - Women involved in food preparation, main decision makers for food choice - In some regions of the country women have made certain fish dishes into specialty 	<ul style="list-style-type: none"> - Women play important role in choosing/promoting fish as dietary element - Less consumption in rural areas - 70% of population but consume only 38% of fish product 	

Component	Mexico	Senegal	Indonesia
Industrial inputs (6)	<ul style="list-style-type: none"> - Women are involved in netmaking and repair and teaching the young on the job, in skills - Women are active in gathering the salt that is used for rural fish preparation - Water used for cleaning fish is carried and transported to work-site by women - Wood used for drying/smoking fish is gathered/transported by women - Women responsible for chopping or cutting the ice needed for freezing fish 	<ul style="list-style-type: none"> - Little data or information available on women's involvement. 	
Government policy (7)	<ul style="list-style-type: none"> - Government interest in defining numbers of women and their role more precisely - 1983-1986 Programme of Village Visits undertaken to estimate role/tasks of women - Fisheries Secretariat at national level conducted diagnostic survey of women in fisheries, concluded women are underestimated - Government undertook a survey of fishing communities, gives first-ever detail on numbers of women, male/female division of labour - Women's role decreasing pre-1980, government policy has reversed trend - overall increased support of fishing, more women's opportunities in processing, 	<ul style="list-style-type: none"> - Want better understanding of fish sector's potential, conditions for exploitation/valorization of potential through co-ordinating with women involved at local/employment level 	<ul style="list-style-type: none"> - Ministry of Women Affairs - Equal opportunities explicitly recognized in state policy guidelines (GRHM) - Emphasis on integration of women in development - From government sponsored women's project (KWM, P2WN)

Component	Mexico	Senegal	Indonesia
Ownership structure (8)	<p>women's co-operatives formed, center on oyster cultivation (1982)</p> <ul style="list-style-type: none"> - Women trained as professionals offering administrative, legal, technical and equipment maintenance assistance to fishing villages - Women trained as professional facilitators to live in villages and assist women's groups specifically 		<ul style="list-style-type: none"> - Co-operatives (few examples of women's enterprises in processing and fish farming) - Vertical integration of catch processing and trade within fishermen households - Integration via boat owner or trader (middlemen)
System orientation (9) (export/local consumption)	<ul style="list-style-type: none"> - Women becoming involved in ownership/management of oyster cultivation projects, run by women's co-operatives - At village level entire family functions as economic unit with roles assigned accordingly - Processing, marketing, distribution largely under male ownership - State-owned plants, women moving into management - Government level, women moving into management/supervisory positions - Women own, manage, work in fish farming production units - selected areas of country 		<ul style="list-style-type: none"> - Primarily in production for local consumption (processing, trade) - Limited in export sector (shrimp cleaning and sorting)

Chart 2.5.2. Summary of constraints experienced by women in FIS components - Mexico, Senegal and Indonesia

Component	Mexico	Senegal	Indonesia
Extraction (2)	<p>(a) Marine and sea going</p> <ul style="list-style-type: none"> - Traditional social taboos - women bring bad luck - Traditional division of labour - Need for long absences from home - Household responsibilities and childcare - Physical strength required for work <p>(b) Inland and coastal waters</p> <ul style="list-style-type: none"> - Work may be seasonal - Social attitudes/traditions - Lack of equipment - Idea that only men's work is productive - Competition from household duties <p>(c) Aquaculture</p> <ul style="list-style-type: none"> - Size of project and tanks must be monitored, large tanks mean male domination - Traditional beliefs about division of labour - Household duties of women 	<ul style="list-style-type: none"> - Rural exodus of young girls means older women cannot engage in expeditions for oyster-gathering - Droughts and decline in rice-growing may impede access to product, interfere with harvesting ability - Work is inadequately remunerated - Facilities deficient - women are dependent on one vessel that shuttles from Dakar to capital of oyster-gathering region - With mollusks, there has been unrestrained exploitation and specimens decreasing in size - Competition for time from household activities and children - Women's activities may yield income/profit due to husband often being polygamous, bestow no decision-making power on women - Women typically do not own dugouts - must rent/borrow and pay for use - Traditional ideas about division of labour between sexes 	<p>(a) Direct</p> <ul style="list-style-type: none"> - Cultural religious values - Physically demanding work - Lack of appropriate technology (training, equipment) - Overexploitation, pollution of inshore waters <p>(b) Indirect</p> <ul style="list-style-type: none"> - Lack of permanent structure premises - Low wholesale prices - Time factor
Processing (3)	<p>(a) Home-based</p> <ul style="list-style-type: none"> - Idea that only men's work is productive, worth remuneration - Competing tasks for women's time in the household 	<p>(a) Small-scale</p> <ul style="list-style-type: none"> - Women may make profit; however, in polygamous households, gives women no decision-making power in family - Work is not constant; depends on 	<p>(a) Artisanal</p> <ul style="list-style-type: none"> - Cultural and religious obstacles (regional) - Access to investment and working capital

Component	Mexico	Senegal	Indonesia
	<ul style="list-style-type: none"> - Traditional division of labour between men and women - Cultural/social constraints against wives/women being mobile to take more productive jobs elsewhere - Women not paid for much of their work 	<ul style="list-style-type: none"> availability of fish - Environmental factors and processing usually occurs in dry season - Processors often do not calculate profits correctly - do not allow for risks - There is shortage of equipment/facilities for adequate processing - Not enough resources devoted to researching new/better processing techniques - Impacts unfavourably on tourist trade along the "Petite Côte" because of smoke and odors - Price disparities among processing locations - Reflection of how well centers are or are not integrated with the market - Traditional ideas about division of labour 	<ul style="list-style-type: none"> - Hygiene (clean water) wastage - Technologies in processing - Security of supplies of raw material - Low remuneration for fish products
	(b) Artisanal, semi-industrial	(b) Industrial-scale	(b) Commercial
	<ul style="list-style-type: none"> - Work is seasonal and temporary, often on contract basis - Women preferred for manual dexterity, little precedent/opportunity for advancement/management post - Equipment and techniques frequently antiquated, poor repair - Conditions at workplace unhygienic, crowded, unhealthy - Shift work is typical - Wages vary as per season and supply of product, species processed, location and ownership of enterprise - Women's dual responsibilities as homemakers - Pricing politics of different fisheries (where located, type of ownership, species processed) - Wage payment on piecework basis - Social benefits are minimal or non-existent, no life insurance, medical coverage, etc., only when women are co-operative members they receive minimal coverage 	<ul style="list-style-type: none"> - Most work is contractual and seasonal - Technological innovations and mechanization of work (in canneries especially) bind women to their machines - No room in jobs for individual initiative - Workshifts are held responsible for specific labour-material output - yet individual's chance of being rehired each morning as part of temporary workforce, depends on 	<ul style="list-style-type: none"> - Cultural and religious values - Low wages/poor working conditions (legislation) - Access to credit facilities - Lack of training in management and finance

Component	Mexico	Senegal	Indonesia
<ul style="list-style-type: none"> - Deprives women of productive source of income - Work is potentially seasonal, dependent on supply and species - Inadequate access to markets that are oriented frequently toward men - Inadequate access to extension and technical assistance for training in marketing techniques, etc. - Success often determined by condition of distributional infrastructure - Access to credit - Competition for women's time, along with household responsibilities - Inability of women to be more mobile, to market product in other areas 	<p>from serving the interior</p> <ul style="list-style-type: none"> - An absence of credit arrangements enabling fish traders to equip selves with temperature-controlled containers for shipping product to market - Women may gain some profit; polygamous family setting, however, means women receive no decision-making power with income 	<ul style="list-style-type: none"> - General income level low - Lack of knowledge of nutritionally balance diet (diversification) - Seasonality of fish harvesting effects prices (substitutability) - Access to fish in rural areas (uneven distribution) 	
Consumption (5)	<ul style="list-style-type: none"> - Inadequate access to extension agents, sources of technical assistance related to nutrition/ consumption/preparation of food - General socio-economic conditions - Ability to purchase adequate food - Access to food supply - depends on harvest and species available 		
Industrial inputs (6)	<ul style="list-style-type: none"> - Introduction of mechanization to fabrication of nets, ropes, and mesh has reduced women's opportunities - Inadequate access to extension workers, other sources of technical assistance 		

Component	Mexico	Senegal	Indonesia
	<ul style="list-style-type: none"> - Traditional division of labour between men and women (c) Industrial/commercial <ul style="list-style-type: none"> - Work is on contract basis, is seasonal and temporary - Employment and wages unstable, likely on piecework - Little upward mobility for women - Inadequate training/education for more productive work on gainful employment in off-season (d) Arts artifacts <ul style="list-style-type: none"> - Traditional attitude about male/female division of labour - Demand for women due to willingness to work for lower salary and for their greater productivity/adeptness; not reflected in comparative pay scales - State-owned plants, governed by labour laws, has some effect on hygiene and general workplace conditions 	<p>group's production</p> <ul style="list-style-type: none"> - Work unsteady from day-to-day - Poor working condition in factories; failure to provide employers with adequate equipment to achieve designated output - Insufficient lighting, stand-up work stations, inadequate industrial hygiene - Work mostly seasonal/temporary; women in least prestigious, most poorly paid jobs 	
Distribution and marketing (4)	<ul style="list-style-type: none"> - Indirect constraint from modernization of the extraction process, larger boats/stronger motors - Larger catch can be sold directly to distant markets, excludes women's involvement in marketing and processing 	<ul style="list-style-type: none"> - There is a high transport cost to women involved if they want to take their product to communities for best prices - In interior, there is inadequate transportation/distribution infrastructure - discourages fishmongers 	<ul style="list-style-type: none"> - Lack of knowledge of efficient marketing techniques - Lack of transport roads - Lack of appropriate storage facilities - waste of catch - Competition with big middlemen - Seasonality

Component	Mexico	Senegal	Indonesia
	<ul style="list-style-type: none"> - Types of resources and inputs available determine type of work/ division of labour - Inadequate exposure to experience with latest technological methods - Traditional division of labour - Competition with women's traditional household duties 		
Government	<ul style="list-style-type: none"> - Women in rural fishing villages having inadequate access to technical assistance and extension work - Lack of information and research about where women are, what they are doing, and what their needs are - Inadequate communication and information dissemination channels for women in villages to technical information/government assistance - Inadequate funds to implement full range of needed extension and technical assistance programmes throughout the country - Inadequate access of women to training and employment for management and technical positions throughout the fisheries system 	<ul style="list-style-type: none"> - Lack of clear operational steps - Lack of gender-specific data and surveys - Lack of understanding of the division of labour in fisheries (household level) - Cultural and religious values not properly understood - Underrepresentation in leadership and decision making 	73
Ownership (8) (industrial organization)	<ul style="list-style-type: none"> - Traditional division of labour - Inadequate access to credit, equity and training - Inability to have government projects in all areas of country where needed - Inadequate access to extension workers/technical assistance - At village level, competing demands of household duties 	<ul style="list-style-type: none"> - Unrecognized potential of women in adopting new technologies in processing, marketing and management 	

3. SUGGESTED POLICIES AND ACTIONS FOR BETTER INTEGRATION OF WOMEN IN THE FIS DEVELOPMENT STRATEGIES ¹

3.1 Introduction

Women, according to examples from the literature, and illustrations from the country case studies presented in chapter 2, represent a valuable and productive resource for all stages and components of the FIS. However, as has been noted in the introductory section to chapter 2, their participation has frequently been overlooked or disregarded, both by country governments and international donor agencies. Increasingly, the wisdom of including women in FIS-related development projects is recognized and, even more, the wisdom of considering women equally, along with men as participants in and beneficiaries of the development process is apparent.

"...(Women) are economically productive and development assistance granted to women as part of any development project will normally enhance that project's success in increasing income and improving the beneficiary family's well-being. To ignore the fisherwomen is to utilize only half of the available human resources. This is so since, despite the variations that can be found, it should be apparent that women should be considered in any donor agency efforts to increase fishing production and raise household incomes, given their roles as economic producers, financial managers and economic decision-makers. This is especially true since fishery development projects frequently have increased labour demands (as for example, with fingerling care in aquaculture projects) and credit components (for example, for purchasing boats and gear or constructing fish ponds). More likely than not, some if not much of the labour demand must be supplied by already occupied females; and the financial management of the credit component will be handled by the women." ²

It is one thing to say that women are recognized and their productive contribution considered. It is a other, however, to take the steps necessary to incorporate them as active participants in the development process and to implement the necessary measures that facilitate and enhance their participation. Actively incorporating women into the industrial development process does, at first, require a wider body of data and information for policy and project planning, potentially a different set of guidelines covering investment decisions and the implementation and evaluation phases of project management, and stricter consideration about the human impact of changes in technology, productive practices and development policies.

However, the results of the increased efforts that may be required initially, should be of benefit to all participants in the development process.

¹ All tables, figures and charts referenced in the chapter are found at the end of the chapter.

² John. J. Hourihan, Women in Development: Guidelines for the Fisheries Sector. Manila, Philippines, Asian Development Bank, Consultant's report, August, 1986

The structure of this chapter is similar to that of chapter 2, starting with examination of the three countries' experiences and moving on to a discussion of more general themes and issues arising from the case studies, supplemented by findings from other relevant literature. Section 3.2 applies the system's approach both to examine the impact of FIS development actions on women and to suggest measures to enhance women's FIS integration for each of the three case study countries. Section 3.3 summarizes common planning indicators with reference to the three case studies and explores general themes and issues related to policy and decision-making that are important for enhancing women's FIS participation.

As mentioned in the introductory material in chapter 1, the discussion in this chapter should be viewed from an illustrative rather than a prescriptive viewpoint. The emphasis throughout this chapter is on positioning women related development policies within the context of the overall FIS development strategies and plan of action. It is important to stress that the objective is not to draw women out of the main stream of sectoral development with a separate line of development programmes/project, but to integrate them more effectively into the on-going process. However, no attempt is being made to advise countries as to the best or only course of action to take for enhancing women's FIS participation. Rather the intention is to suggest potential actions that may be helpful, given a particular sectoral development path.

3.2 Development policies to enhance women's FIS participation country case studies

In this section an overview is given of the likely influence on women of sector-wide development goals, objectives and policies. The overview is based on a discussion of specific actions or initiatives which may be helpful for enhancing women's participation in each of the nine FIS components. This detailed component analysis is presented in Annex 3.2. Included also are summary charts showing FIS development policies, strategies and actions, and tables showing component-level development actions addressing constraints related to women for each country.

3.2.1 Mexico case study

There are several aspects of Mexico's FIS that can signify positive, long-term impacts on women's FIS participation. Most important is the high level of government priority and financial assistance accorded to the sector. In a country like Mexico where much of the fishing sector is state-owned or controlled, the government can be a decisive instrument in upgrading and enhancing women's participation. This fact when combined with overall government commitment to fisheries, can assure a place for women in accordance with the sector's development. See Chart 3.2.1.

The system's development should be assured over the long-term by a large percentage of unexploited marine potential and good potential in the aquaculture area. The unexploited marine reserves can well translate into more activity and options in processing, marketing and consumption, areas where women are represented most heavily. The aquacultural potential can open more opportunities for women, depending on the geographical location of projects and the type of technology used in their implementation.

Other enhancing features of the system - domestically available energy supply and local production of intermediate and capital inputs - help to ensure long-term development for the FIS and potentially, more opportunities for women. A domestic supply of available energy to some extent, ensures the functioning of extraction and processing operations and accessibility to intermediate and capital inputs underscores the productive capability of the overall system, including operations in those components where women most often are found. While there is no guarantee that an energy supply and access to intermediate inputs will directly benefit women, they do signify strength for the FIS as a whole.

In contrast to the longer-term outlook, there are several constraining situations within the FIS that can threaten or erode women's participation in the short-to-medium-term. Two primary ones are a concentration of resources mainly in two regions of the country and the policy of reserving for co-operatives species commanding high market value. The combination of these two factors may constrict the distribution of investments and capital. The result, if not monitored, could bring benefits to women in some areas of the country to the neglect of women in others. This aspect ought to be taken into account if balanced regional development involving women is considered.

The situation with co-operatives and higher-valued species may be especially important for the potential impact exercised on women. One is that co-operatives require, often, public investments that may restrict available capital for other projects or operations; some of these investments could well be more suited to women's needs. A second impact is on women's role in aquaculture. If aquaculture projects involving higher-valued species are reserved for co-operatives, it is most likely that men will be the primary beneficiaries and women may be confined to projects with species of lesser value. The continuation of the reserving practice may need to be coupled with special assistance to develop other types of equally profitable co-operatives for women or to secure women's participation in existing co-operatives which deal with higher-income species.

The overall system strategies being recommended for the FIS are of the type that on the surface at least, could redress most of the constraints and establish a positive groundwork for women's integration both for the immediate and longer-term future. Basically, the strategies fall into three categories: one is the diversification of species to be caught and the creation of new fish-based products for the domestic market; a second is the upgrading of processing capacity and the distribution and marketing infrastructure; a third is attention to improving the FIS infrastructure and industrial inputs - including both modernization of the fishing fleet for all-sized vessels and upgrading fishermen's operating skills. Briefly, the positive impact on women for each category could be as follows:

- Species diversification and creating new products for the domestic market. Actions taken to meet these objectives can affect the overall number of employment opportunities for women and the amount of training and technical assistance they may need. Species diversification is likely to affect women in aquaculture, industrial processing and marketing and distribution. The creation of new products for the domestic market is more likely to affect women in industrial and artisanal processing and in marketing and distribution.

Upgrading of processing capacity and the distribution and marketing infrastructure. Development strategies for the system can have a mixed impact on women. A positive effect can be anticipated but expected outcomes would need to be monitored carefully. For upgrading the processing capacity, at least two types of actions could be expected. New equipment and technology could be applied to current processing practices. Also, for species diversification and new product development, both new technology and new processing procedures may be required. Without knowing more about the specific technology and new species that might be chosen, the point of impact (e.g., home-based, small-scale or industrial processing and specific occupational levels in each processing area) cannot be predicted. However, some concern is needed if the upgrading results in an increase in mid-level or higher jobs, or, if new technology is viewed as too complex for women to grasp. In such cases, women might experience restricted or only low-level employment options.

In terms of upgrading the distribution and marketing infrastructure, there might be several positive impacts upon women. Insuring a more even and consistent supply of fish throughout the country could result in more opportunities for women who cannot leave their home villages for marketing opportunities, either because of cultural or familial constraints. As one specific recommended action is the creation of more wholesale and retail outlets throughout the country where fish are sold, it may be possible for more women to earn profits in their home villages from an increased fish supply. Similarly, if diversified or new products are introduced, more or different ways of involving women may arise.

Yet another aspect for women is the impact upon the consumption component. A steadier supply of inexpensive fish would be beneficial for both the women's household and for those women who prepare fish and fish-based food for fishermen on boats, restaurants, hotels, and other retail centres. The main concern associated with this category of development action is that better distribution flows do not make it possible to bypass women in local villages by making it easier for more mobile urban, male trade persons with access to credit and capital to dominate local marketing activity.

Improving FIS infrastructure and industrial inputs. This category of suggested development strategies can likely have both direct and indirect positive impacts upon women's integration. The direct impact is difficult to specify because of inadequate data. However, as discussed in greater detail in Annex 3.2, local manufacture, maintenance and repair of FIS-related equipment is being suggested. This fact, along with the emphasis on harbour improvements, port construction, service and maintenance centres at larger harbours, and so forth, might well provide expanded employment-related options for women. The indirect impact would be the effect of modernized boats and gear and better-trained fishermen on overall catch sizes. An increase in catch sizes or types of species could translate into increased processing and marketing activity for women. This could be especially true for rural areas, when combined with an integrated FIS project approach that established catch sizes in relation to processing and marketing capacity. The primary concern for the indirect impact is that in the process of modernization, the catch sizes do not become so

big that it becomes necessary to bypass completely smaller, rural villages. When this happens, both men and women may become displaced; alternative productive options would need to be explored in such cases.

In the case of Mexico, where women's FIS participation is concerned, it may not be as necessary to ask whether a particular impact will affect women positively or negatively. This is because there is already a type of policy infrastructure in place to begin dealing with problems of women's participation. A far more important type of question is one concerning the identification of areas of the country most needing a particular action, how best to deliver the necessary services and the means to secure needed funds for the life of a project action or programme. The country, at the national level, has already underway, a programme of data collection and information gathering about women in the FIS, what they are doing and what their needs are. Also underway is an effort to deliver more help and assistance to women via field extension agents, to offer local women assistance in forming co-operatives and to extend training opportunities.

Additionally, in some areas, a co-ordination is evident among various government departments offering services at the local level. None of these actions has been implemented as extensively as needed, however, and in several instances, only demonstration efforts have been initiated. Still, the initiatives indicate that women's integration is being considered seriously and is a priority for the government, along with the development of the economic and industrial aspects of the system; the translation of these initiatives into identified priorities and from there into specific goals and objectives for the various local areas of the country is perhaps one of the more important immediate tasks needing attention.

From a broad development policy-action perspective there appear to be at least four areas needing consideration for women's integration. One is, as just indicated, the continuation and expansion of several types of actions already underway, especially in the areas of gathering quantitative and qualitative data, providing more extension assistance, enabling women to be properly trained (whether FIS or non-FIS related), and assistance in planning and undertaking productive initiatives (e.g. having access to credit, to business development assistance) and in building a co-ordinated inter-governmental approach to local-level service delivery.

A second area needing special attention is the question of aquaculture in Mexico and the potential role for women. The system's recommended development actions include the initiation of "high-technology" aquaculture programmes. As yet, data are only beginning to be accumulated to indicate the role that women can occupy in aquaculture, especially for tasks that go beyond cage-tending, cleaning fish tanks, and other routine tasks. Certain positions with aquacultural work can require specialized training and experience. If traditional patterns hold, it is often males who are either perceived as more able to be trained or more capable of handling complex tasks and technology. In Mexico already, evidence indicates that for larger-scale aquacultural projects, men take over the major tasks. Consequently, if women's participation is to be enhanced at least partially via aquaculture, some assurances need to be taken regarding access to training for women, delivering training in such a way, that women can participate easily, the geographical location of the projects, and the type of species to be raised. If the practice remains of reserving higher-valued species for co-operatives and the co-operatives are male-dominated, the role and preparation given to

women must be carefully evaluated with perhaps some adjustments made in the practice of reserving specific species.

A third area warranting attention is the level of communication that exists between those making resource management decisions and those planning and implementing particular local-level initiatives. This would seem to be important for the medium- to longer-term outlook, especially with emphasis being placed on species diversification, the introduction of new fish-based products and on the introduction/ implementation of new processing methods and technology. These developments could have implications for women in fish handling, fish processing, marketing and consumption. Similarly, there may be implications for training, for the organization of productive work groups and for types of other technical assistance that may be needed by women. One of the primary objectives for adopting a systems-approach to examining women's FIS participation is to develop strategies/actions for women that are aligned with the development direction of overall industry. In the case of diversification anticipated in the capture component of Mexico's FIS, it is important that appropriate training and technical assistance give women the background they need to participate fully in resultant changes that may occur in processing, distribution and marketing.

A fourth area to consider is the impact that the diversity of Mexico's FIS signifies for women. This would be especially important if a more comprehensive type of assistance were to be developed for the women in more rural, isolated villages. Women, especially wives of fishermen, who are involved from the point of extraction (in inland waters and lagoons, and in fishfarming) to the point of consumer sale, may well need different assistance depending on whether they are in marine-based, industrial fishing regions or in artisanal or inland fishing areas. It is in connection with this, and similar types of diversity, that the need for more precise baseline data and information is most apparent.

3.2.2 Senegal case study

Overall, the anticipated development objectives, policies, strategies and actions for Senegal's FIS (refer to Chart 3.2.2) should be beneficial for women. For example, the overall objectives of increasing local consumption and employment and income, when combined with policy targets of more support for artisanal fishing and integrated fleet development with on land handling and processing, could well lead to strategies and action initiatives resulting in increased opportunities for women, especially in rural areas. Similarly, the macro-level development objective of increasing production for export could lead to increased opportunities for women in urban-based processing.

Given the enhancing features of Senegal's FIS overall expansion of the FIS would seem possible. There is a large unmet domestic demand for fish and potential markets in Africa, in addition to traditional European markets, indicating room for some expansion in export activity. At the same time, there appears to be an excess of processing capacity, especially in freezing plants, and a high degree of wastage or spoilage in artisanal processing. What this situation seems to signify is that expansion is possible but at least some of it can be met by maintaining a more balanced industrial processing capability and upgrading the artisanal capability. At least on this front (necessary at least in part because certain of the traditional export species have reached maximum exploitation levels), it is in the

system's best interest to enhance and facilitate women's participation; this is also in the interest of women because at present this is the FIS component in which they are most active.

There is evidence that the government is taking steps to manage Senegal's fishing resources in an integrated manner and to align more closely extraction activity with processing capacity; the end result of such an approach could be beneficial to women and provide them with enhanced opportunities. The summary chart shows that investment incentives and financing assistance are being developed for the artisanal sector at the same time that fleet overhaul and improvement is encouraged. Stocks and resources are being assessed and researched, indicating that product diversification is perhaps being examined in relation to processing and market needs. Also, measures are suggested for upgrading fishermen's skills, both in terms of fishing techniques and for marine-based regular, sea-going personnel.

At the same time that these measures are being suggested to rationalize and streamline extraction operations, measures are suggested for diversifying the system's industrial processing capacity, for offering preferential electricity charges to reduce industrial processing expenses, and for providing export subsidies to increase competitiveness in the export market. Also, the development of new artisanal processing methods and upgrading current ones are cited as priorities.

The picture that emerges from the combination of these suggested actions, at least at a macro level, is the creation of increased catch levels, a product that is more efficiently processed or prepared, and a higher-quality commodity for distribution and marketing.

The success of these measures however, and the extent to which women may benefit from them, is particularly dependent on the existence of good harbours and port facilities and an effective distribution and marketing system. The latter is especially important because sales of the final product furnish much of the necessary investment capital to generate improvements throughout the rest of the system. Indications are that Senegal plans to initiate action on both fronts - infrastructural improvement and the distribution and marketing infrastructure. However, the timing of these measures in relation to those anticipated for the extraction and processing actions will be crucial, both for the health of the system and for a potential, positive impact on women.

Government priority for the FIS is high and there is a high degree of indirect involvement. While most of the government priorities and actions should benefit women, especially in the long-run, there are several constraining factors within the FIS that could dampen positive effects. These include the overall high fuel costs, competition between industrial and artisanal fishing near the coast, inadequate investment financing levels, artisanal fishing methods that currently outpace processing techniques and capacity, inadequate domestic distribution channels, ancillary services that are costly and inefficient, and the low income levels of the rural population. It would be difficult for the government to be able to redress these constraints immediately (especially those associated with low income levels of the rural population). Consequently, benefits to women from any of the system-level strategies will be influenced, and perhaps mitigated by the government's priorities in dealing with these constraints.

The FIS actions generally hold the promise of a positive impact for the country's women. However, the impact may be strongly influenced by the degree to which the government can include, or build, a supportive social infrastructure or incorporate some specialized project components into anticipated system strategies and actions. For example, various system-level strategies and actions are directed toward upgrading artisanal and industrial processing and improving the distribution and marketing processes. In the case of industrial processing, any expanded opportunities opening for women may actually be detrimental unless accompanied by enhanced workplace changes and attention to living conditions, especially for younger girls recruited from the South; similarly, an improvement in artisanal extraction levels and upgraded processing capacities, without giving women direct access to extension assistance and technical information might work to the detriment of women. Also, improved distribution and marketing infrastructure without some attention to surrounding socio-cultural constraints and current male/female divisions of labour, could work to the detriment of women.

These illustrations are not offered in order to make a case against implementing suggested system strategies. Rather, they are cited in order to suggest to policy-makers or planners that depending on circumstances, either supportive measures for women be implemented or women be assisted in locating non-FIS related employment. Women, as seen from discussion in chapter 2, are already important participants in Senegal's FIS, and active in strategic positions needed for healthy growth and expansion of the sector. It would seem prudent and beneficial for the government, sectoral employers, and for the population generally, to find ways of enhancing women's position. The more in-depth discussion examining component-level activities presented in Annex 3.2 explores ways in which this may occur. While from a macro-level, the processing and marketing functions seem to hold the most potential for women, attention to actions throughout the system, especially ones such as opening mid-to-higher level positions to women and providing more extension assistance to rural women, may uncover healthy opportunities in other components.

3.2.3 Indonesia case study

Indonesia appears to have a FIS that, if properly developed, could offer more effective women's participation and involvement. The artisanal sector, where most women are already found, is large and overall, present production levels stand at 30% of maximum sustainable yields (MSY) (except in certain cases where critical overfishing has resulted). There is an effort to initiate good resource management, there is room for growth in processing of artisanal catch (present levels stand at 40%) and there is good potential for aquaculture, a potentially suited activity for women. Underpinning these factors is a large domestic market (fish production has to date been able to keep up with population growth) and an adequate local energy supply (necessary for both extraction and processing activities). Additionally, the Government accords high priority to the fisheries sector, provides high levels of assistance and maintains a positive attitude toward foreign investment, thus potentially generating needed capital for the domestic market and assistance with technology transfer.

What these indicators suggest is that several of the components where women are found could potentially experience expansion, thereby creating more opportunity for involvement. Of course, there is no guarantee that expansion

will favour women's position; indeed, in terms of women's involvement, the quality of the opportunities created may be as important as quantity. As a result, until some of these positive conditions are translated into fact, exact impact on women, whether positive or negative cannot be determined. If the FIS develops in a way that optimizes these factors, see Chart 3.2.3, the result for women could be increased activity in extraction--with aquaculture--in processing, in marketing/distribution and in consumption. Lack of data preclude general comments about industrial inputs and ownership.

Two main categories of constraining factors of Indonesia's FIS can block optimal development and result in negative benefits not only to women but also the men and fishing communities as well. One set of factors relates to technology and infrastructure, the other to social conditions. The first set is represented by an inadequate transportation network to join markets to distant fishing grounds (given Indonesia's geography), inadequate technology and training for the capture, fishfarming and artisanal processing, inadequate storage and handling facilities and lack of distributional/marketing infrastructure in rural areas. The factors relating to social conditions are represented by the low income levels and poverty found in many fishing villages, evidenced in terms of education levels, poor housing and inadequate health and nutrition levels.

The Government is attempting to optimize the system's development in its choice of development objectives and policies. It has established for itself goals of increasing national fish production and employment, fish consumption, resource management capabilities, incomes and standard of living of small fishermen and fishfarmers and providing for a more equitable participation in development and in the distribution of its benefits. In the overall government policy, women do not appear to be singled out for particular attention. Rather, they are included as part of the overall fishing community that is to receive assistance and part of the population to benefit from increased employment, fish consumption and more equitable distribution of developments' benefits.

This is not to say that the Government does not accord attention to women's position in its policies and priorities. As the discussion under government policy in chapter 2 points out, there are several special efforts underway for women. However, at the macro level, the focus is on the fishing household and community. As shown in the discussion of specific components in Annex 3.2, the approach can have positive impacts for women, both directly and indirectly, providing that women's participation is recognized and given adequate support via government strategies and actions.

Of the four primary strategies that are being suggested (see Chart 3.2.3) for advancing the FIS, the potential impact on women may be as follows:

(a) Increased use of artisanal fishermen and intermediate technology vessels in offshore fisheries. This strategy potentially can have a positive and a negative impact on women's participation, with the final result depending on the type of technology used and what the use of the technology signifies for the role of males in the fishing communities. The positive impact for women would simply be that their husbands could perhaps be able to purchase or operate motorized boats, thus catching larger loads, earning more money and having more fish to be processed and sold, especially if those fish are of the higher-priced species. However, qualitative information from Indonesia indicates that unless the artisanal fisherman is the owner of the

motorized craft, he may be harmed by the new equipment. As a crewmember on a motorized boat, his percentage of overall profit appears to diminish with the size of the operational scale, in large part because the operational expenses of the motorized vessels increase.

Other potential factors can arise, although their applicability to Indonesia is not necessarily documented. One instance would be if, due to larger catch loads, decisions were made to build or choose new landing sites. If imposed on fishermen without consultation, such sites might be boycotted by the fishermen, simply because they would be separated from their traditional landing sites, money lenders and fish buyers and also from their homes. In this way, the household and larger community are deprived of a valuable income source. And women especially, where they are active in landing/unloading the fish catch, processing and selling would of course be deprived of economically productive activity.

A second impact could occur in cases where the increased catch sizes were of species destined for industrial processing and commercial marketing, or, where larger scales of processing operations had to be established to take care of the larger loads. In such instances, it is conceivable that a larger workforce would be needed in the processing factory. With the motorized boats, fewer men might be needed as crew, thus freeing more labour to work in the factories. The implications of this action are two-fold--one is that the "better" jobs might automatically go to the men, thus displacing women.

The second that could happen is that once independent fishermen could find themselves as labourers, working under a different set of constraints, expectations and social standards. The ultimate change in social structure, family income and patterns, both for households and across the community is not known. However, the change could be disruptive with implications for men and women, and should be monitored by planners or administrators if decisions are made to motorize the artisanal fleet. In a similar vein, the very introduction of motorized vessels might have a detrimental effect because of their being seen among villagers as a status symbol. Unless means are found for establishing credit and ownership, hardships could be imposed for fishermen unable to achieve the new "status" of owning a motorized vessel.

(b) Development of small-scale fisheries should be part of integrated rural development programmes. Depending on the definition given to "integrated rural development programmes", this strategy can have a beneficial impact on women. This strategy can be examined from an FIS perspective and from a broader agricultural perspective. From an FIS perspective, especially at the artisanal/community level, it could be positive if programmes of assistance took an integrated systems approach to the fishing industry, looking across all component activities when programmes are planned and implemented. This would mean considering extraction levels/patterns when processing-related or distributional/marketing measures are undertaken, and so forth. Such a perspective, when combined with an understanding of women's involvement and roles, could result in more appropriate choices of technology, training and financing.

When examined from a broader agricultural perspective, this approach might result in more aquaculture development or integrated fishing/farming projects. A knowledge of women's role and involvement would be especially important since aquaculture projects, if not implemented with the appropriate technology, could result in undue time burdens for wives who are married to

fishermen. Also, the system of village land ownership and credit would need special attention. At present, in some locations in Indonesia, women are not involved in productive activities, not because of social constraints or inadequate skill levels but because of an absence of alternative productive options. An integrated rural development programme, implemented after proper attention has been given to women's role and involvement, could have a very positive impact for women, the fishing household, and general community.

(c) Effective enforcement of policies or resource allocation to different fishing groups. This could have a positive impact on women, especially in or near areas where serious overfishing may have occurred. For example, setting aside a portion of catch bringing higher prices, for artisanal fishermen may indirectly benefit fishermen's wives or communities. Similarly, if processing capacity and procedures are examined in relation to species and catch levels expected in certain areas, human resource and technical assistance measures can prepare women for maximum participation. Also, if marketing practices are examined and distributional infrastructure considered, in relation to allocated species or resources, one factor guiding allocations could be those which favour women's marketing patterns and offer them options for the most productive involvement.

(d) Creation of new employment possibilities in mariculture and seafarming. This strategy holds positive implications for women. Women are already involved in some aspects of fishfarming and seaweed harvest and cultivation. There do not appear, at a general level at least, socio-cultural constraints against women's involvement. The primary points of attention in generating mariculture and seafarming options for women would be assurance that they and not their husbands would benefit directly from training and technical assistance initiatives. Also, the type of technology utilized in such projects (those which include appropriate labour-saving devices to be preferred) and the linkages and divisions between male and female labour would need to be examined and understood. These factors need to be examined so that the men are not automatically given the choices or most remunerative roles without also considering women's capabilities.

In summary, Indonesia's approach to overall FIS development is aimed at improving the situation of the artisanal fisherman and the rural fishing communities, in addition to furthering export business to generate additional foreign capital. Within the approach to artisanal and fishing community development is focused most of the current concern about women and their FIS participation. Across the Government, special emphasis is given to the need for bringing women more equitably into the development process and several government departments have already initiated projects or programme efforts. What appears necessary from data provided is for the national fisheries body to work together with some of the ongoing programmes as well as undertaking some initiatives of its own.

From Indonesian information provided, it appears that the women in the FIS need to be given more recognition for the productive but often unremunerated work they perform and more assistance provided to them via the work of extension agents, either women agents, or men who have been especially trained to assess and address the situation of women in the fishing villages. For women in more urban areas, assistance might come from sources other than extension agents, more might be delivered at the worksite or through social service means. Whether rural or urban, indications are that there needs to be substantial attention given to the manner in which initiatives to enhance

women's participation are implemented. The discussion of the individual component approaches to women's participation in Annex 3.2 touches upon this topic.

3.3 Summary

What has been shown in the case studies can be summarized as three different approaches to address women's issues in the fisheries development efforts. Mexico has demonstrated the highest government awareness and commitment to enhance women's role in the sector. The present efforts, however, can be interpreted as pointing towards rather isolated examples of projects specially designed for women which are outside of, or parallel to, the main stream of policies and actions for the sector as a whole.

The second example of government policies is the case of Indonesia where although women's status is upheld by the constitution their economic role in fisheries is not singled out from their traditional role in the context of a household. This approach is, to a large degree, rooted in strong socio-cultural traditions which may require modification in the context of a changing economic/industrial environment.

The Senegal country case study reveals that at present government does not have a definite stand and/or policies regarding women's role in the fisheries. This may be due to a lack of data and understanding where women are within the system, what they do, and what their needs are.

Summary Chart 3.3.1 provides a more detailed overview for each country of suggested development actions to enhance women's participation in the nine FIS components.

3.3.1 Development policy indicators

There are three major conclusions which can be drawn from the country-specific examination of development policies concerning women's integration and enhancement in the FIS:

1. Development strategies have a definite need for women's involvement;
2. FIS constraints are generally in line with those experienced by women;
3. Plans of action to deal with FIS constraints have a potential to enhance women, provided that consideration of women's special needs is taken into account in the detailed project/programme planning and implementation stage.

What has been revealed from the case studies is that women's established presence in the FIS casts a definite role for them in the future development of the sector. The fact that their strongest contribution is in the processing, distribution/marketing, and consumption components, and potentially in aquaculture production should make them an important target group for development policies and plan of action.

From the three countries' examples, which are by no means isolated, the government objectives for development of fisheries sector can be summarized in the following general terms:

- increase fish production
- increase domestic consumption
- increase export revenues
- increase employment and incomes

When these objectives are translated into development strategies and policies they tend to focus on the following priority areas:

- better resource management practices
- diversification of fish catch and processing
- improve distribution/marketing structure
- development of artisanal fishing

As has been shown these are the areas where women already play a large, although not often quantified role. It has also been demonstrated that government efforts to deal with the identified constraints in these priority areas do not necessarily consider women as an identified recipient group with special needs when it comes to the design, content, delivery and impact of planned measures. It is possible to group these measures into four broad categories:

- financial assistance
- technological development
- institutional and supportive back-up
- and regulatory measures

Most of these types of measures would also address the system-wide constraints experienced by women and identified in chapter 2. Thus, it is a question of modifying these measures in such a way that they also deal with the needs of women rather than concentrating effort on designing separate policies specifically for women. The next section discusses in more general terms the issues which have to be taken into account when addressing FIS constraints, if they are to have a desirable impact on women's participation in the FIS development process.

3.3.2 Integration of women's needs in designing FIS development policies - general issues/themes

In the past, many development projects designed for women have not accomplished successfully their intended objectives. Similarly, many projects that were designed without intended biases for males or females, resulted in reduced or negative benefits for women. Increasingly there is agreement that alterations are needed in the way projects or programmes are planned, in the way that new technology, equipment or productive procedures are introduced, and in the way that criteria are established for monitoring/evaluating development actions and investment.

A number of common themes have emerged that need attention if FIS development actions are to effectively capitalize on women's present and potential role in the sector. Among themes which concern the form, content

and delivery side of development programmes/projects are those presented below. The major input into formulation of these themes was provided by the three country case studies, supplemented by findings from relevant literature material. It will be apparent that many of the presented issues are common for other industrial sectors and present in both, developing and industrialized countries. The intention is to make sectoral planners (national and international) aware of special issues pertinent to women's involvement, thus taking them into account from the outset in sectoral programme/project planning.

a) Evaluation of development policies and choice of appropriate technology.

Sample illustrations of the impact of development actions and technical innovations on women in fisheries occupations are summarized in Chart 3.3.2. The information presented in the chart is designed to provide component-level analysis of particular policy impact, positive or negative, on women; and their repercussion in other components of FIS. The examples have been excerpted from the case studies and supplemented from literature collected throughout this study. It provides some useful indications on possible implications of economic and industrial/technological actions for women. If this impact is known, or anticipated ahead of time modifications can be made from the start to lessen the impact or to provide alternative production options.

The assessment approach presented in the chart is based on the concept of "social feasibility" analysis which has received growing acceptance as a part of a planning process, especially for community based projects. A more comprehensive framework for conducting social feasibility studies related to fisheries is illustrated in the Annex 3.2.A, where two examples are presented. The first is a sample of suggested terms of reference for determining social impact of technology, innovations and development strategies developed by the Asian Development Bank. The second example consists of suggested guidelines for project planning and assessment developed by the FAO. Both instruments are based on a multi-disciplinary type of questionnaire which seeks to cover the present information gaps in areas of possible impact of development actions on community environment with gender-specific orientation.

b) Database on projects experience.

In the Annex 3.3.2 lessons of experience based on 10 project profiles or abstracts are presented. The information was derived from case studies and project reports collected during the research phase of this study. The projects represent cross-country examples and include a variety of approaches (e.g. training, change in equipment/technology, participatory planning processes, technical assistance delivery patterns, credit provisions, etc.), project objectives, activities and outcomes.

The projects were not selected according to specific criteria; as a result, their inclusion does not imply that these were the only, or, the best, project reports available. Rather, the emphasis primarily was on portraying the diversity apparent among women's FIS projects and on demonstrating both positive outcomes and lessons of experience. The objective was to present information in as complete, yet as brief a form possible so that project

planners could know quickly the relevance of a particular project to their needs. If so, then they could either trace the source document or approach the sponsoring agency for consultation and assistance.

Information of this type, as well as the type of indicators mentioned under point a), needs to be collected and disseminated on a wider basis to enable project planners to benefit from other projects successes and lessons learnt of both socio-cultural and technological varieties. It would be desirable if a clearing house could be established as a repository and disseminator of such information.

c) Gender specific database

One of the preconditions for applying the integrated system approach to planning, implementation and evaluation of sectoral programmes/projects is to define long-term and short-term objectives for the sector, whether at the local or national level. In order to set realistic goals quantitative and qualitative planning information about the sector and its components is needed. Definitions for formal census and data sets in developing countries traditionally exclude women from the count of the economically active population and of formal employment. There is common acknowledgement that women make valuable contributions to the fishery industry but the majority are in, what is classified as an "informal sector", for which statistical data are even harder to get.

Until women's contribution in both, formal and informal sector is identified and quantified, women's special needs are likely to be omitted in designing development policies and actions. In an example of planning technical assistance or training, the way of delivering the assistance, the content of the assistance, and the determination of the overall need for the assistance can only be carried out successfully when based on an adequate gender-specific information base, both at national and local level, if women and men are to benefit equally.

d) Local participation in project planning, implementation and evaluation

There is a growing awareness that successful projects for women (and consequently for men and communities) need to be based in so far as possible, on both country and local-level situations. In the case of women, as has been illustrated in the country case studies, and as is evident in the literature, there are multiple local-level variations, of both an economic and a social nature, that, if not accounted for adequately, can mar the success of either a formal project or programme initiative, or even the introduction of new practices or technology.

As appropriate, men and women in fishing villages should participate in planning, implementing and evaluating projects and technical assistance programmes designed to assist them. Ways should be developed to elicit the participation of fisherfolk in all aspects of project/technical assistance, planning, implementation and development. The success of a project is frequently enhanced when developed along with, rather than imposed upon the communities. Examples of such measures can include training community residents to administer their own projects, providing leadership training for men and women, and surveying/interviewing community residents to determine needs, strengths, perceptions, and so forth.

e) The trade-off between skill training and general education.

Much of the literature on women in fisheries calls for more skill training, skill upgrade training, or training in everything from elementary book-keeping to mid-level management. The literature also states a need for adult literacy and basic education assistance. More detailed work needs to be done regarding occupations within the sector for which training is genuinely needed, versus, job skills which can be taught quickly, on the job. Course content for the training needs to be carefully studied so that the type of materials, level of difficulty, and presentation methods accurately reflect the ability of the target population.

Many women in the fisheries sector undoubtedly need literacy and adult basic education. As such, the development and administration of general education might best be undertaken by the national government and administered at the village level, for all women. In all events, before education and skill-training programmes are implemented, solid answers should be provided to the question of "How much training, for how long, for what end and for whom?"

The other aspect of the trade-off between skill training and general education is the need to give attention to longer-term preparation of boys and girls for FIS activities. In both rural and urban areas, FIS policies need to focus on both the current and future source of trained manpower. This means that some attention is needed to ensure that children and adolescents of both sexes receive a good overall education. In rural fishing villages, care should be taken to ensure that familial/economic necessities do not disrupt formal education. Also, for adolescents, preparation for a productive future should be ensured. In training for FIS activities, potential linkages and relationships between basic education and special training should be examined and linkages within and across FIS components as well as across sectors should be viewed at the outset of planning training courses.

f) Influence of socio-cultural traditions

Socio-cultural traditions heavily influence the current structure of women's work and need attention from government planners, project staff and similar individuals. Attention to socio-cultural traditions in terms of attitudes, beliefs and behaviour underlies the success or failure of many programmes and projects. Such traditions should not signify that various projects designed to foster change should be discarded. Rather, what is needed is that such traditions be identified and then accounted for or addressed during project planning and implementation. These traditions are what ultimately will influence the acceptance or rejection of the local people towards new innovations and practices. Attention to these is extremely important in areas where enhancement of women is considered.

g) Legislative measures

Legislative initiatives necessary for improving the status and role of women need to be researched and identified. In a variety of situations, government-sponsored legislative initiatives may be the best way of enhancing women's status and role. This is especially true in relation to jobs in large-scale processing factories. Legislation may cover wages, training, promotability, shift-work, health and safety practices in the work place. Legislative measures in rural area need to include/protect and/or augment women's rights to land, water and resources whether individually or jointly owned. Other types of measures need to address health and safety practices at the rural processing worksite and participation in the ownership structure.

As already mentioned under other themes, the need for the initiatives needs to be identified carefully on the basis of information about the women's needs and implemented in accordance with socio-cultural conditions. Consideration of a marital status is especially important in this context. Single female household heads with children are a growing group in many developing countries and current laws governing finance, credit, right to property, inheritance laws, and so forth, place these women at a distinct, long-term disadvantage.

h) Financial assistance

Attention is needed to determine the most effective way to provide women with credit, financing and banking support. Easier access to and availability of credit and financial support to women is crucial to creating equal opportunities for women to take advantage of development measures. However, the manner in which women are given access to such assistance needs to be examined. Access for women may require legislative changes, lower interest rates, longer repayment schedules, waivers of equity for receiving loans, the forming of co-operatives, and simplified application procedures. The most appropriate measures will differ from country to country and can only be determined on the basis of information about women's needs in that context.

Closely related to this theme is that of the ownership structure throughout the FIS. The position of women probably assumes more importance in proportion to their representation in the ownership structure. However, providing women with ownership rights needs to occur within the context of the same factors mentioned in the preceding paragraph.

i) Extension services

Extension services play a vital role in development of the artisanal sector which has become more and more the priority area for increasing fishery production and consumption. Extension services provide a vehicle for spreading information about government services and policies, assistance with adapting to structural and technological innovations, and help with tasks such as forming co-operatives, obtaining credit and improving skills. In the past, and even now, women, because of socio-cultural traditions and/or due to the form and method of service delivery, have been denied access to extension and technical assistance. It is important in view of women's present and potential economic contribution, especially in development of aquaculture, that these barriers are overcome. Extension services can play an important role also in this context.

For extension assistance to be effective in addressing both general and women specific needs in the fishing communities the method of delivery, what type of service is offered to whom and how it is offered, all need serious consideration. The following is by no means an exhaustive list of elements which require attention:

- Recipients of training and information should directly participate, especially in localities where contact has traditionally been with husbands
- Interpersonal and communication skills and socio-cultural sensitivity appear to be as important as technical and research skills of extension workers. The expectations, tasks and responsibilities of the agent need to be defined and understood, both for the agent-in-training and one already stationed in the field.

- Documented project experience reveals that either males or females with proper training and support, can successfully work in local areas. Additionally, experience also indicates that male/female teams can be effective, given an appropriate training in conjunction with locally selected and trained "link workers".
- Choices need to be made as to whether specific skill training is needed and to be offered or whether integrated skill training plus training that encompasses leadership, entrepreneurial, marketing, accounting, and general education skills is to be offered.
- The experience shows that fisheries development policies, specially in relation to the artisanal sector, need to be planned and delivered as part of an overall, integrated rural development programme incorporating all agro- industry based projects. Consequently, it would be more efficient to consider establishment of multi-purpose extension centres at strategic locations in rural areas, to handle a variety of project activities, to deliver multiple types of assistance and to serve as clearing houses for the collection, retention and dissemination of relevant information or data. The complimentary idea of teaming the multi-purpose centres with mobile vans or other appropriate means of reaching local areas is often advocated.

The particular form of delivering extension assistance will depend on a country's needs, resources and population. However, the primary consideration here is that extension assistance appears to be one of the major ways of making women more productive participants in the development process.

Chart 3.2.1

Mexico FIS: Summary system development objectives and constraints, enhancements and strategies by component

Development objectives	Present constraints (component)	Enhancement for further development (component)	Strategies (component)
Objectives			
1. Increase production with emphasis on generating more jobs 2. Increase domestic consumption 3. Increase exports	<ul style="list-style-type: none"> - Concentration of main resources in two regions (1) - High value species reserved to co-operatives which are short of investment and working capital (1,2) - Aging fleet in need of replacement (2) 	<ul style="list-style-type: none"> - Large percentage of unexploited marine potential (1,2) - Good aquaculture potential (1,2) - Domestically available energy supply (6) - High government priority and financial assistance provided to the sector (7) - Local production of intermediate and capital inputs (6) 	<ul style="list-style-type: none"> - Intensify exploitation of deep sea resources and diversify catch of medium-depth waters (2) - Give emphasis to the capitalization of co-operatives (2,3,4,6) - Provide training to improve operations of coastal fishermen (2) - Promote high technology in aquaculture and fish farming (2) - Diversify processing and preservation of fish (3,5) - Establish cold storage chain (4,5) - Co-ordination of national and regional distribution to increase fish supply throughout the country (4) - Promotion of new products on domestic markets (5) - Improve infrastructure of fishing ports (6) - Increase catch and processing productivity of species with export demand (2,9) - Promotion of joint-venture enterprises (8,9) - Simplify and decentralize administration (7)
Development goals			
1. Double the present catch to 2 million tons including 400,000 tons from aquaculture 2. Generate 145,000 new jobs 3. Industrialize 60% of traditional form of fishing 4. Direct 90% of production to domestic market to increase per capita consumption (15 kg direct and 9 kg indirect) 5. Generate US\$ 687 million from exports of prawns, tuna and argasee	<ul style="list-style-type: none"> - Increase in running cost (maintenance, fuel) (2,3,6) - Lack of inputs for aquaculture (2,6) - Lack of repair and maintenance facilities for the fishing fleet on land and handling facilities on-board (2,6) - Lack of market organization (4) - Lack of cold storage network (4) - Low income level and lack of low cost species available (3) - Lack of co-ordination between government, co-operatives and private producers in the sector (7,8) - Lack of credit finance (2,4) 		
Development policies			
<ul style="list-style-type: none"> - Modernization of artisanal fishing with more emphasis on co-operatives - State participation in large-scale projects (joint ventures) - Stimulation of domestic private investment 			

* Component numbers refer to listing in Chapter 1, pp. 6-7

Chart J.2.2 Senegal FIS: Summary system development objectives and constraints, enhancements, strategies and actions by component

Development objectives	Present constraints (component)	Enhancements for further development (component)	Strategies (component)	Plan of action (component)
<p>1. Increase of local consumption (food security)</p> <p>2. Increase of production for export</p> <p>3. Increase employment and income</p> <p>4. Reserving exploitation of stocks exclusively for Senegalese nationals.</p> <p><u>Development policies</u></p> <p>1. Privatize commercial fishing</p> <p>2. More emphasis on supporting artisanal fishing "Priority action programme" (CIVAC, CAPAS)</p> <p>3. Integration of fleet development with on land handling and processing facilities: Country and programme structural readjustment</p>	<p>- Traditional target species for export have reached optimum level of exploitation (1,2)</p> <p>- Migratory nature of tunny fish (need for regional co-operation) (1,2)</p> <p>- Competition between industrial and artisanal fishing for stocks nearest the coast (1,2)</p> <p>- Age of industrial fleet is high and technology used inefficient generating high operating cost (fuel maintenance) (2,8)</p> <p>- High operating costs and below 30% capacity utilization in industrial processing. Maintenance of excess labour force expensive/government regulations. Excess capacity is not in relation to quantity and type of present catch. Old processing equipment (3,6)</p> <p>- High electricity and fuel costs (2,3,6)</p> <p>- Lack of investment finance hinders modernisation (2,3)</p> <p>- Artisanal processing has not undergone technological development corresponding to artisanal fishing. Rather primitive methods of fish preservation lacking in hygiene and quality control leading to high spoilage (2,4,3)</p> <p>- Lack of organizational structure (fragmentation) and expertise for both domestic distribution and export (4,3,7)</p> <p>- No links between landing sites and cold stores/facilities in interior (4,3,7)</p> <p>- Low and uneven distribution of income of domestic consumers (concentration on urban markets) (4,3)</p> <p>- Total dependency on export demand ignores the need for low cost fish as source of protein (3)</p> <p>- High cost and inferior quality of ancillary services (4)</p>	<p>- Large resources of pelagic and unexploited potential of deep sea demersal species (1,2)</p> <p>- Large domestic demand which is not satisfied especially in inland areas (3)</p> <p>- Potentially large export markets in Africa in addition to established markets in Europe (9)</p> <p>- Long fishing tradition (good fishermen skills) (2)</p> <p>- Availability of industrial services and infrastructure facilities (6)</p> <p>- Up-stream and down-stream economic integration of the artisanal sector (8)</p> <p>- High government priority and indirect involvement (7,8)</p>	<p>- Increase utilization of deep sea demersal stocks and increase catch of small pelagic (2)</p> <p>- Replacement and modernisation of fishing fleet to cut operating costs (2)</p> <p>- Improve fishing techniques (2)</p> <p>- Streamline processing capacity and diversify production (increase in quality and value added) (3,3,9)</p> <p>- Organize and improve ancillary services (6)</p> <p>- Improve marketing organization and infrastructure facilities (4,3)</p>	<p>Addressing especially exploitation, processing and marketing</p> <p>1. <u>Financial assistance</u></p> <ul style="list-style-type: none"> - Credit maritime - provision of credit to modernize and re-structure commercial fleet (2) - Central Economic Co-operation Fund (CCEC) - assistance in establishment of privately operated Senegalese fleet of rod fishing tunny boats ensuring continuous supply to 3 tunny fish canning factories (2,3) - National Agricultural Credit Fund (CVCA) - provide credit facilities to small traders to improve equipment for preservation and transport of fish to inland markets. Two regional projects (4,3) - Fund for the Promotion of Fisheries and Subsidiary Industries (CFPIA) - provides support to companies in financial difficulties (2,3) - Fuel subsidies for commercial fishing (2,6,9) - Preferential charges for electricity for processing plants (2,6,9) - Export subsidies - reduces the cost price and increases the export competitiveness of fish and fish products (15% FOB value) (2,9) - Investment legislation - tax exemptions on equipment purchases, sales, profits (6) - Provision of infrastructure, ports, markets with cold stores, roads, etc. <p>2. <u>Technological development</u></p> <ul style="list-style-type: none"> - Centre for assistance to artisanal fishing in Senegal (CAPAS) - supply of motors and fishing equipment to artisanal fishermen (2), assistance in marketing (4) - Diversify industrial fish processing (3,9) - Upgrade and develop new methods of artisanal processing (3,4,5) - Maritime training, school training of sea-going personnel (2) <p>3. <u>Institutional and supporting back-up</u></p> <ul style="list-style-type: none"> - Fishing agreements with foreign companies include clauses of facilitating access to foreign markets and research of stocks - Group of Fishing Ship Owners and Industrialists in Senegal (OASPS) assist in consolidation of individual exporters to take advantage of transport and marketing services offered by the Senegalese Foreign Trade Centre (CSCC) (4,9) <p>4. <u>Regulatory measures</u></p> <ul style="list-style-type: none"> - Fishing rights are regarded as property of the state. Fishing areas have been designated to the advantage of Senegalese nationals - Legislation lays down the boundaries of various fishing zones according to the fishing methods used (1,2) - Oceanographic research institute - assessment of stocks (1) - Surveillance of fishing zones (PSPS) (1)

* Component numbers refer to listing in Chapter 1, pp. 6-7

Chart 3.2.3

Indonesia FIS: Summary system development objectives and constraints, enhancements, strategies, and actions by component

Development objectives	Present constraints * (component)	Enhancements for further development (component)	Strategies * (component)	Plan of action (component) *
1. To raise the income and standard of living of the small fisherman and fishfarmers	- Some major fishing grounds located far from markets and population centres (2)	- Present production 50% of MSY (critical overfishing in certain areas) (1,2)	- Increase use of artisanal fishermen and intermediate technology vessels in offshore fisheries (2)	1. Essential assistants a) BKMS credit (fishermen and fishfarmers credit) for improvement of fishing vessels and gear and intensification of fish ponds. No collateral requirements, interest of 12% per year. Maximum loan equivalent value of 10 GT vessel or operation of 2 ha fish pond (1)
2. To increase the productivity of fishing efforts and boost the national fish production and employment	- Lack of incentives to move in offshore fishing (2)	- Large artisanal sector (2)	- Development of small-scale fisheries should be part of integrated rural development programmes (2,3,4)	b) Small investment credit - similar to BKMS credit but requires collateral (2)
3. To increase fish consumption of the people	- Lack of appropriate technology/training in capture, processing (2,3)	- Only 40% of artisanal catch is being processed (3)	- Effective enforcement of policies of resource allocation to different fishing groups (1,2)	c) Working capital credit for supplementing small investment credit that can be applied for separately. Maximum loan Rp 10 million and interest of 12% per year (2)
4. To increase exports of fishery products	- Lack of finance (2,3)	- Good potential for aquaculture (2,3)	- Creation of new employment possibilities in aquaculture and sea farming (2,3)	d) Mini credit - for both investment and working capital provided by State banks at the village level. Loans range from Rp 10,000-20,000 (2)
5. To have better control of the utilization and management of fishery resources.	- Inadequate storage and handling facilities (2,3,4)	- Large domestic market (4)		e) Mini credit - similar to mini credit, provided at district level. Loans range from Rp 200,000-500,000 (2)
6. To increase complementarity and co-operation between artisanal and commercial activities	- Lack of distribution/marketing infrastructure in rural areas (4,5)	- Adequate local supply of energy (3)		f) Credit facilities for structural and operational modification of trawlers (2)
7. More equitable participation in development and distribution of benefits	- Fishing communities belong to the poorer section of the population (education, housing, health, nutrition)	- Positive attitude to foreign investment (4)		g) Loans to medium-scale operators (co-operators or entrepreneurs) to encourage offshore and deep sea fishing (2)
				h) Subsidized prices of fuel, fishing materials, fertilizers and pesticides (2,3)
				i) Provision of infrastructure (ports, port facilities, distribution/marketing)
				2. <u>Technological development</u> Through research, pilot projects, training and extension work. a) Marine fishing. - Construction and operation of training vessels (2) - Assistance to small-scale fishermen (nucleus-estate smallholder (NES) concept) (2,4) - Research on waste fish utilisation (2,3)
				b) Aquaculture (intensification, atomisation, diversification) - Brackishwater pond culture - assistance to small-scale shrimp (2), processing (3), marketing (4) - Freshwater culture - assistance in production of fish and shrimp (1,7) - Rice-cum-fishculture - assistance in supply of fish (7) - Mariculture
				3. <u>Institutional and operational matters</u> - Assistance to co-operatives (production, processing, marketing) - Extension services to assist in harvesting (2), handling of catch (3), processing (3), marketing (4) - Newly established directorate for fisheries extension - Government fisheries enterprises agents of extension services - Compilation of statistics, surveys
				4. <u>Regulatory measures</u> Re-allocation of fishing areas and limitation of fishing efforts in favour of the small-scale operators

* Component numbers refer to listing in Chapter 1, pp. 6-7

Chart 3.3.1

Summary involvement, constraints and development strategies to enhance women's FIS integration, by component - Mexico, Senegal and Indonesia

Mexico

Component	Present involvement of women	Constraints	Development strategies/recommendations/action
Resource management (1)	<ul style="list-style-type: none"> - Of a 6,000 workforce, 1,316 in Government Secretary of Fisheries are women, many in research and technical development posts - 2/3 of professional and technical staff of National Fisheries Institute are women - Women's participation is increasing in research positions related to aquaculture and applied technology - Women professionals from national administration involved with fishing communities - conduct training and community organization to generate better resource management and social well-being 	<ul style="list-style-type: none"> - Women in rural fishing villages, having inadequate access to technical assistance and extension work - Lack of information and research about where women are, what they are doing, and what their needs are - Inadequate communication and information dissemination channels for women in villages to technical information/government assistance - Inadequate funds to implement full range of needed extension and technical assistance programmes throughout the country - Inadequate access of women to training and employment for management and technical positions throughout the fisheries system 	<ul style="list-style-type: none"> - Increasing availability of extension work - Increase availability of extension and technical assistance services - Increase access of upper level resource management posts to women - Generate solid information base on which to plan policies, projects and decisions
Extraction (2)			
a) Marine and sea-going	<ul style="list-style-type: none"> - Very little, if any involvement, exceptions of influential fishermen widows, women known for courage/skill 	<ul style="list-style-type: none"> - Traditional social taboos - women bring bad luck - Traditional division of labour - Need for long absences from home - Household responsibilities and childcare - Physical strength required for work 	
b) Inland and coastal waters, lagoons and rivers	<ul style="list-style-type: none"> - Depending on location/species women are primary workers - small-scale fishing activities - Women collect molluscs or algae, fish with baskets, fish traps, or lines from canoes - Shrimp gathering - Collect small shells, snails, starfish and sand dollars 	<ul style="list-style-type: none"> - Work may be seasonal - Social attitudes/traditions - Lack of equipment - Idea that only men's work is productive - Competition from household duties 	
c) Aquaculture	<ul style="list-style-type: none"> - Raising of oyster, carp and trout cultivating via fish tanks - 1983 established 18 production units operated totally by women - Women raise food for fish, take care of the tanks, feed and raise fish, extract fish and prepare for processing - Involvement varies as per production scale - Small-scale production, women involved in all phases, production processing and distribution - Large-scale production, size of tank increases, men are mostly utilized 	<ul style="list-style-type: none"> - Size of project and tanks must be monitored, large tanks mean male domination - Traditional beliefs about division of labour - Household duties of women 	<ul style="list-style-type: none"> - Government sponsored programs under group known as United Agricultural Industries for Women - Currently incorporates 300 women per site, in 6 states, 54,000 total - Purpose is to incorporate women productively in rural areas without threatening traditional home base
Processing (3)			
a) Home-based fishing communities	<ul style="list-style-type: none"> - Involvement varies by location species - Women and children involved - tasks include unloading incoming boats, selecting, dry/curing, smoking, preparing fish for market - Family itself functions as economic unit - role assigned accordingly 	<ul style="list-style-type: none"> - Idea that only men's work is productive, worth remuneration - Competing tasks for woman's time in the household - Traditional division of labour between men and women - Cultural/social constraints against wives/women being mobile to take more productive jobs elsewhere - Women not paid for much of their work 	<ul style="list-style-type: none"> - Expand centres of artisanal training now found in two states - Provide special training for all tasks undertaken by women (artisanal processing) - In those areas where women dominate, provide courses in leadership training

Mexico (continuation)

Component	Present involvement of women	Constraints	Development strategies/ recommendations/action
b) Rural/ artisanal non-home based	<ul style="list-style-type: none"> - Plants or workplaces employ mainly women - Women responsible for cleaning fish, filleting fish, selecting fish and packaging and any preparation needed for distribution marketing phase, especially for shrimp and sardines - Where processing includes preparing food material, fish paste and clam paste women almost comprise total workforce - In some rural areas women/children work together at the privately-owned sites, may do cleaning/shelling at home, then take products to warehouse for icing/packing/distribution, women may work on own or on co-operative basis. 	<ul style="list-style-type: none"> - Work is seasonal and temporary, often on contract basis - Women preferred for manual dexterity, little precedent/opportunity for advancement/management post - Equipment and techniques frequently antiquated, poor repair - Conditions at workplace unhygienic, crowded, unhealthy - Shift work is typical - Wages vary as per season and supply of product, species processed, location and ownership of enterprise - Women's dual responsibilities as homemakers - Pricing politics of different fisheries (where located, type of ownership, species processed) - Wage payment on piecework basis - Social benefits are minimal or non-existent, no life insurance, medical coverage, etc., only when women are co-operative members they receive minimal coverage - Traditional division of labour between men and women 	<ul style="list-style-type: none"> - Usher women in co-operatives, encourage banks to provide backing and financing - Train women in better processing techniques, supervision and management - Provide better processing techniques and equipment - Improve workplace conditions - Provide women with access to opportunities in management and supervisory responsibilities
c) Industrial/ commercial	<ul style="list-style-type: none"> - Women predominate at freezing and canning plants - Women are mostly labourers; management/ownership almost always male - In state-owned plant, women have moved into technical research positions and administration 	<ul style="list-style-type: none"> - Work is on contract basis, is seasonal and temporary - Employment and wages unstable, likely on piecework - Little upward mobility for women - Inadequate training/education for more productive work on gainful employment in off-season - Traditional attitude about male/female division of labour - Demand for women due to willingness to work for lower salary and for their greater productivity/adeptness; not reflected in comparative pay scales - State-owned plants, governed by labour laws, has some effect on hygiene and general workplace conditions 	<ul style="list-style-type: none"> - Train women for management - Train women for supervisory position in industrial plants - Institute better lab. laws governing hygienic standards and security and female work force utilization - Provide women access to jobs at supervisory and management levels
d) Making of crafts/ jewelry/ related articles from fish catch	<ul style="list-style-type: none"> - Women participate in gathering/extracting materials for craft-making - Women design and make artistic objects - Work may be done in groups or individually, on family basis in the home 		<ul style="list-style-type: none"> - Centro de Artes C'ficio in the Fisheries Secretariat gives training to women in marine art and design - Increase centres of artisanal training that are now located in 7 states, include marine design training, especially in areas of tourist activity - Encourage banks to provide backing and finance for co-operatives or societies established for such work

Mexico (continuation)

Component	Present involvement of women	Constraints	Development strategies/ recommendations/action
<u>Distribution and marketing</u> (4)	<ul style="list-style-type: none"> - Women's role in fisheries most concentrated - Rural communities marketing is a primary income source for women - In regional market areas sell food products made from fish along with fish - In urban settings, women sell in local markets and to restaurants and other tourist centres, usually salaried, minimum wage - In all market areas, women also sell artistic articles made from fish 	<ul style="list-style-type: none"> - Indirect constraint from modernization of the extraction process, larger boats/stronger motors - Larger catch can be sold directly to distant markets, excludes women's involvement in marketing and processing - Deprives women of productive source of income - Work is potentially seasonal, dependent on supply and species - Inadequate access to markets that are oriented frequently toward men - Inadequate access to extension and technical assistance for training in marketing techniques, etc. - Success often determined by condition of distributional infrastructure - Access to credit - Competition for women's time, along with household responsibilities - Inability of women to be more mobile, to market product in other areas 	<ul style="list-style-type: none"> - Introduction of refrigerated transportation and objective of enlarging catch volumes has increased opportunities for women in marketing - Develop appropriate technology if modernization of extraction process is pursued - Prepare women for alternative employment if strategies of modernization reduce their productive roles, will also impact on policies toward training, co-operative extension and credit financing - Promote the organization and training of women to manage, conserve and prepare foods - Hold courses at women's workplace on how to unload boats, pack and sell products on the beach and in regional markets - In tourist zones, offer marketing - type training in conjunction with restaurants, hotels and worker unions - programme to be jointly administered by Secretaries of Fisheries and Work and Social Welfare (government policy) - Give women training to market/distribute arts and handicraft items made from fish - related resources, especially in tourist areas
<u>Consumption</u> (5)	<ul style="list-style-type: none"> - Women involved in food preparation, main decision makers for food choice - In some regions of the country women have made certain fish dishes into specialty 	<ul style="list-style-type: none"> - Inadequate access to extension agents, sources of technical assistance related to nutrition/consumption/preparation of food - General socio-economic conditions - Ability to purchase adequate food - Access to food supply - depend on harvest and species available 	
<u>Industrial inputs</u> (6)	<ul style="list-style-type: none"> - Women are involved in netmaking and repair and teaching the young on the job, in skills - Women are active in gathering the salt that is used for rural fish preparation - Water used for cleaning fish is carried and transported to work-site by women - Wood used for drying/cooking fish is gathered/transported by women - Women responsible for chopping or cutting the ice needed for freezing fish 	<ul style="list-style-type: none"> - Introduction of mechanization to fabrication of nets, ropes, and mesh has reduced women's opportunities - Inadequate access to extension workers, other sources of technical assistance - Types of resources and inputs available determine type of work/division of labour - Inadequate exposure to experience with latest technological methods - Traditional division of labour - Competition with women's traditional household duties 	

Mexico (continuation)

Component	Present involvement of women	Constraints	Development strategies/ recommendations/action
<u>Government policy (7)</u>	<ul style="list-style-type: none"> - Government interest in defining numbers of women and their role more precisely - 1983-1986 Programme of Village Visits undertaken to estimate role/tasks of women - Fisheries Secretariat at national level conducted diagnostic survey of women in fisheries, concluded women are underestimated - Government undertook a survey of fishing communities, gives first - ever detail on numbers of women, male/female division of labour - Women's role decreasing pre-1980, government policy has reversed trend - overall increased support of fishing, more women's opportunities in process women's co-operatives formed, center on oyster cultivation (1982) - Women trained as professionals offering administrative, legal, technical and equipment maintenance assistance to fishing villages - Women trained as professional facilitators to live in villages and assist women's groups specifically 	<ul style="list-style-type: none"> - Inadequate resources to conduct needed programmes in all places of country at once - Lack of good data on women's role in fisheries 	<p><u>General women development objectives for fisheries</u></p> <ul style="list-style-type: none"> - Organize/train groups of women to improve ability for fishing tasks - Promote aquaculture production units for peasant women - Improve/upgrade women's working conditions - women - Improve living conditions and family standards - Promote artisan-type activities. - Provide basic education to women <p><u>Specific women development policy</u></p> <ul style="list-style-type: none"> - Women professionals trained as facilitators specifically to assist women and to live in rural fishing villages, technical assistance/social service, organizational support and upgrading production aspect of women's involvement - Women professionals trained for overall village extension work, dedicated to aquaculture, equipment repair and maintenance, some also to legal and administrative affairs - Training grants and loans for both sons/daughter of fisher families - 2-year course, co-operative administration/management, 15% female enrollment - Strengthen aquaculture - to provide employment and upgrade rural diet - National Peasant Confederation, training rural women for more productive fishery roles, and increase general fish consumption in country - Training for interior water cultivation of oysters - Facilitate ways to obtain financing and credit - Channel more resources into strengthening women's organized groups - Channel investment into aquaculture projects and into infrastructure needed to support aquaculture - Promote/expand/upgrade system's extraction/management of species that bring more money, shrimp, abalone and lobster, oyster and trout - Construction of rustic tanks and mixed farming/fishing activities for women in various communities, regional development programmes: Unidades Agrícolas Industriales Para la Mujer, 1984, sponsor
<u>Ownership structure (8)</u>	<ul style="list-style-type: none"> - Women becoming involved in ownership/management of oyster cultivation projects, run by women's co-operatives - At village level entire family functions as economic unit with roles assigned accordingly - Processing, marketing, distribution largely under male ownership - State-owned plants, women moving into management - Government level, women moving into management/supervisory positions - Women own, manage, work in fish farming production units - selected areas of country 	<ul style="list-style-type: none"> - Traditional division of labour - Inadequate access to credit, equity and training - Inability to have government projects in all areas of country where needed - Inadequate access to extension workers/technical assistance - At village level, competing demands of household duties 	<ul style="list-style-type: none"> - Provide women with more access to credit and financing - Access to women for training in management, bookkeeping, accounting - Where appropriate, extension or technical assistance in co-operative development, and in leadership training for women - Access for women to jobs in upper level management - Business development advisory and consultant services for women

Senegal

Component	Present involvement of women	Constraints	Development strategies/ recommendations/action
<u>Resource management (1)</u>	<ul style="list-style-type: none"> - Women occupy relatively minor role - National level staff of 89 - 5 women (2 advanced research positions) - Fisheries Development Administration, 13 of 237 are women (5 technical or upper level positions—trained at Oceanography and Marine Fisheries Technical School) - Women with technical training employed in desk jobs; involved with extension work relating to management of women's co-operatives, and fish processing tasks 		<ul style="list-style-type: none"> - Evaluation needs to be made of potential oyster and mollusk reserves; develop better approach to exploiting and managing reserves; important impact on women's involvement - Involve women more in oyster farming; indicates need for training in literacy, and requisite breeding/management techniques - In Casamance area - introduce oyster culture and shrimp farming; maintain integrated focus to projects - incorporate exploitation, processing, and marketing; strengthen geographical and seasonal management already occurring - Strengthen extension services available to women; allow women to be involved in management of own projects; train local women in project management techniques - Raise level of training for women fishery technicians; include in courses, training in pedagogy and project management - Provide training and technical assistance for women that improves conservation techniques - Train more technicians for local areas to deal with socio-economic problems of women employed in fisheries
<u>Extraction (2)</u>	<ul style="list-style-type: none"> - Participation differs according to region and type of catch extracted, especially active in oyster-gathering - Work is seasonal, usually from January to June, July; frequency of work depends on product supply and other activities of women - In Casamance region, 2,000-4,000 women involved from 59 villages - represent 15% of economically active women - Ages from 24-75 with 44 about average; older women work because younger girls migrate to work in processing factories - Women work individually (35% of time) or groups of 2-4 called "companies", based on kinship, age or neighbourhood; may share a dugout, post-harvest work, sales, tasks and profits - Must usually borrow/rent dugout ropes by cash and small in-kind gifts - end of day, month or season - Diola Sane women specialize in raw oysters - In Fatick area women in co-operative involved with harvest of yout and pagne; gather by hand at low tide - Women gather mollusks in the Casamance Maritime but is only marginal activity - one month/year - In Thiès region - sales cruise oysters but women harvest pagne - On island of Fadiouth all women (15,000) and some children participate in harvest of pagne; year-round activity but slackens in rainy season when becomes 2nd place to cereal/ground-nut crops 	<ul style="list-style-type: none"> - Rural exodus of young girls means older women cannot engage in expeditions for oyster-gathering - Droughts and declines in rice-growing may impede access to product, interfere with harvesting ability - Work is inadequately remunerated - Facilities deficient - women are dependent on one vessel that shuttles from Dakar to capital of oyster-gathering region - With mollusks, there has been unrestricted exploitation and specimen decreasing in size - Competition for time from household activities and children - Women's activities may yield income/profit due to husband often being polygamous, bestow no decision-making power on women - Women typically do not own dugouts - must rent/borrow and pay for use - Traditional ideas about division of labour between sexes 	<ul style="list-style-type: none"> - Introduce oyster culture and shrimp raising - Focus on integrated development approaches and integrated project approaches encompassing resource exploitation, processing and marketing - Involve young girls in project planning especially when they return from the city during rainy season to help with fish-related tasks - Try to address causes of rural young women's outmigration through project and development approaches

Senegal (continuation)

Component	Present involvement of women	Constraints	Development strategies/ recommendations/action
Processing (3)			
(a) Small-scale	<ul style="list-style-type: none"> - Women typically predominate - mostly fishermen's wives - The involvement of women may differ as per type of species and village; some species and some locations have tradition of employing only men - Sample of women show average age 41, most married, must work to supplement family income - Profits may be realized but vary as per species and whether paid on piecework basis or by fixed price per unit - Women may be involved in permanent or seasonal work and may work individually or on a family basis at prescribed workplace or in home-based products used for family and for sale (seal-preserved products) - Some women may be involved in both processing and marketing 	<ul style="list-style-type: none"> - Women may make profit; however, in polygamous households, gives women no decision-making power in family - Work is not constant; depends on availability of fish - Environmental factors and processing usually occurs in dry season - Processors often do not calculate profits correctly - do not allow for risks - There is shortage of equipment/facilities for adequate processing - Not enough resources devoted to researching new/better processing techniques - Impacts unfavourably on tourist trade along the "Petite Côte" because of smoke and odors - Price disparities among processing locations - Reflection of how well centers are or are not integrated with the market - Traditional ideas about division of labour 	<ul style="list-style-type: none"> - Eliminate pollution as side-effect in areas where processing can be a nuisance; must involve women - if not they may boycott processing centre as has already happened - Equip processing centers with adequate infrastructural facilities, permitting production of long-lasting high-quality seal-preserved product to supply hinterland and neighbouring countries - Provide women with literacy instruction and training in preparation of product for export - Provide hygienic standards, improve overall workplace conditions - Need to provide adequate number of infrastructural facilities - smoke-curing chambers, cemented drying areas, drying, salting tanks, warehouses - Need to initiate research into new techniques, experiment with new techniques
(b) Industrial-scale	<ul style="list-style-type: none"> - Women predominate, are preferred for washing, sorting, discarding tanning, and related jobs at canneries and at fish marketing establishments - Of about 6,000 jobs, 2,000 are permanent - these reserved for men - Women usually occupy temporary positions and are classified as "pecker-fishers"; of 1,000 classified - about 2,000 women on waiting list for employment - Women do work of forepersons/mid-level positions but always under directors or production head who is male - Women in executive processing jobs are rare - Women age range 17-58 with average at 35; indicative of massive exodus of young girls/married women from rural - Most women emigrants join a husband who has left rural, found remunerative employment, or, to supplement husband's income; only from Casamance area do young girls migrate together, end-up living together - Typically work eight-hour day, depends on product supply 	<ul style="list-style-type: none"> - Most work is contractual and seasonal - Technological innovations and mechanization of work (in canneries especially) bind women to their machines - No room in jobs for individual initiative - Workshifts are held responsible for specific labour-material output - yet individual's chance of being rehired each morning as part of temporary workforce, depends on group's production - Work unsteady from day-to-day - Poor working condition in factories; failure to provide employers with adequate equipment to achieve designated output - Insufficient lighting, stand-up work stations, inadequate industrial hygiene - Work mostly seasonal/temporary; women in least prestigious, most poorly-paid jobs 	<ul style="list-style-type: none"> - Provide women with literacy training in the national languages - helps ensure that safety/industrial hygiene standards followed - Most women recruited are young girls from south; need training in hygiene, general health, child care, family planning; need adequate housing - Need to prepare more women for forewoman and production manager position; training needed not available locally - may need to recruit from non-fishing related technical training courses

Senegal (continuation)

Component	Present involvement of women	Constraints	Development strategies/ recommendations/action
<u>Distribution and marketing</u> (4)	<ul style="list-style-type: none"> - Women's involvement differs by area of country and product (Casamance area, women were predominant) - Typically, women are modestly represented; involvement has declined in some places in relation to men - In fishing families, the wife automatically is involved in marketing and distribution; deals with the fishmonger - negotiates purchase, etc.; women unload/sort fish; when dealing with retailers women also process fish - markets supplied directly from unloading sites - Retail trade in small-scale processed catch increasingly women-dominated, especially in capital area; men typically supply hinterland area - In Casamance and along the "Petite Côte", commercial trading is conducted by the women who process the fish, or, through intermediaries; these trade flows involve dried, fermented products - Some women do become fishmongers, deal in fresh fish; however, number of women declined in 1986 and in contrast to men, who deal in all species, women tend to specialize in species bringing highest market prices - There are other women called "irregulars" who unlike official fishmongers, market over short distances, quantities not exceeding 200 kg 	<ul style="list-style-type: none"> - There is a high transport cost to women involved if they want to take their product to communities for best prices - In interior, there is inadequate transportation/distribution infrastructure - discourages fishmongers from serving the interior - An absence of credit arrangements enabling fish traders to equip selves with temperature-controlled containers for shipping product to market - Women may gain some profit; polygamous family setting, however, means women receive no decision-making power with income 	<ul style="list-style-type: none"> - Organize women into economic "fish-trader" groups; enable them to provide guarantee if eligible for bank loans; make possible equipment purchase under policy of National Agricultural Credit Fund - Provide women with training in book-keeping and business management methods - Women with university degrees who enter fisheries sector with aid from Senegal Government/West African Development Bank require training in food and health sanitation and in marketing techniques - Increase distributional infrastructure to upgrade quantities reaching markets; demand for fish should increase as stock-raising declines due to worsening environmental conditions in Sahel - Upgrade quality of fishtraders' equipment and unhealthy market place conditions and facilities for unloading/packaging fish - conditions lead to sizeable losses, which discourage women from becoming fishmongers, especially to serve the interior
<u>Consumption</u> (5)	<ul style="list-style-type: none"> - Women play important role in choosing/promoting fish as dietary element - Less consumption in rural areas - 70% of population but consume only 36% of fish product 		<ul style="list-style-type: none"> - Prepare nutritional campaigns, dietary programmes to increase fish consumption especially in rural areas - Improve distributional infrastructure and conservation methods so that more fish are available for consumption especially in the interior - Provide training/extension workers capable of giving advice, technical assistance to women regarding consumption/preparation of fish for family
<u>Industrial inputs</u> (6)	<ul style="list-style-type: none"> - Little data or information available on women's involvement 		<ul style="list-style-type: none"> - Gather data and information on women's involvement; develop policy/strategies on basis of information - Gather information about availability of jobs and probable barriers that women may face in acquiring employment for jobs related to industrial inputs; train women for jobs in appropriate occupations/industries/sectors

Senegal (continuation)

Component	Present involvement of women	Constraints	Development strategies/ recommendations/action
<u>Government</u> <u>policy (?)</u>	- Want better understanding of fish sector's potential, conditions for exploitation/valorization of potential through co-ordinating with women involved at local/employment level		<ul style="list-style-type: none"> - Take steps to provide productive preparation and opportunities for young women - Develop better understanding of social and economic problems facing women; identify priority areas and personnel/technicians needed to address; provide needed training - Integrate women into overall fisheries development approach as opposed to isolating through special projects - Provide appropriate training/basic education to enhance women's integration - Provide proper/adequate credit and financing arrangements to enhance women's integration - Provide more extension assistance, women agents aware of women's issues/conditions along with own technical expertise; agents capable of both training and technical assistance extension work - Upgrade workplace conditions and supporting infrastructure for women - Adopt integrated development approach in rural areas, both for projects within fisheries sector and for agriculture; in fisheries sector, enhance women's ability to undertake multiple roles of harvesting, processing, distributing and marketing - Take steps to not strain rural areas labour force that suffers from urban migration, integrate young girls when they return from city in rainy season, involve them in project planning; address action to stem rural exodus by incorporating: <ul style="list-style-type: none"> - need for women to earn money - offer greater variety of consumer goods - redress imbalance between population levels and land acreage suitable for growing rice - redress general inadequacies of school system that favours boys - strengthen transportation facilities (distribution and marketing) - reduce excessive number of middlemen in marketing (distribution and marketing) - Take general measures to enhance the integration of women and other least advantaged segments of population

Indonesia

Component	Present involvement of women	Further/enlarged opportunities for women	Constraints	Development strategies/recommendations/actions
Extraction (2)				
a) direct	<ul style="list-style-type: none"> - Almost all in offshore sea-fishing - Minimal in aquaculture and in sea weed, molluscs and sea worm gathering 	<ul style="list-style-type: none"> - In fishfarming (enterprises) - Sea weed culture - Collecting fishfry, molluscs, and sea worms 	<ul style="list-style-type: none"> - Cultural religious values - Physically demanding work - Lack of appropriate technology (training, equipment) - Overexploitation, pollution of inshore waters 	<ul style="list-style-type: none"> - Training in fishfarming techniques - Provision of credits (co-operatives) - General education to overcome culture barriers (extension workers) directed to men and women
b) indirect	<ul style="list-style-type: none"> - Preparation and selling of food to fishermen - Household economy 	<ul style="list-style-type: none"> - Catering services on and offshore (commercial fishing) 	<ul style="list-style-type: none"> - Lack of permanent structure premises - Low wholesale prices - Time factor 	<ul style="list-style-type: none"> - Provision of stalls - Provision of rural infrastructure (water, sanitation, health, transport) - Training in nutrition and household economics (extension services)
Processing (3)				
a) artisanal sector	<ul style="list-style-type: none"> - Mainly women's work - Household industry for curing fish (salting, drying and smoking) for retail - Cottage industry for cleaning and sorting shrimp linked to the commercial export sector (cold storage companies) - Fish products, crispies, gelatin from sea weeds 	<ul style="list-style-type: none"> - Increase/diversification of traditional processing - Involvement of more women in cottage industries linked with the export sector (co-operatives) - New lines of fish and sea weed products 	<ul style="list-style-type: none"> - Cultural and religious obstacles (regional) - Access to investment and working capital - Hygiene (clean water) wastage - Technologies in processing - Security of supplies of raw material - Low remuneration for fish products 	<ul style="list-style-type: none"> - General education to overcome cultural & religious obstacles - Improve conditions of credit availability for women - Training in new technologies for fish curing (waste reduction) - Possibilities for women in processing to hire/own a boat to provide secure raw material supply - Provision of shade for shrimp cleaning, sorting - Assistance in diversification of fish products (acceptability/distribution) - Provision of sanitation/hygiene facilities at landing sites
b) commercial	<ul style="list-style-type: none"> - Working as labourers in fish processing factories 	<ul style="list-style-type: none"> - Setting up of women's enterprises in fish processing (co-operatives) 	<ul style="list-style-type: none"> - Cultural and religious values - Low wages/poor working conditions (legislation) - Access to credit facilities - Lack of training in management and finance 	<ul style="list-style-type: none"> - Wage legislation for women - Training courses in management - Increase credit availability
Distribution and marketing (4)	<ul style="list-style-type: none"> - 1/3 of women engaged in fishery related activities are involved in trade - Small middlepersons - Headload vendors 		<ul style="list-style-type: none"> - Lack of knowledge of efficient marketing techniques - Lack of transport roads - Lack of appropriate storage facilities - waste of catch - Competition with big middlemen - Seasonality 	<ul style="list-style-type: none"> - Training in marketing - Provision of roads and transport facilities - Adequate storage facilities - Market places with hygienic facilities

Indonesia (continuation)

Component	Present involvement of women	Further/enlarged opportunities for women	Constraints	Development strategies/ recommendations/action
<u>Consumption</u> (5)	<ul style="list-style-type: none"> - Purchase, preparation and consumption - Financial management of household income/expenditure 	<ul style="list-style-type: none"> - Improvement of nutritional level of the household's diet 	<ul style="list-style-type: none"> - General income level low - Lack of knowledge of nutritionally balance diet (diversification) - Seasonality of fish harvesting affects prices (substitutability) - Access to fish in rural areas (uneven distribution) 	<ul style="list-style-type: none"> - Encourage diversification of fish products to increase nutritional value and consumption level - Training courses (extension work) in family welfare/ nutrition
<u>Industrial inputs</u> (6)		<ul style="list-style-type: none"> - Making/repairing nets - Production of packaging materials 		
<u>Government policy</u> (7)	<ul style="list-style-type: none"> - Ministry of Women Affairs - Equal opportunities explicitly recognized in state policy guidelines (CNSW) - Emphasis on integration of women in development - Free government sponsored women's project (KSW, P2SW) 	<ul style="list-style-type: none"> - Improvement of standard of living and productivity of fisher families (food and health conditions) 	<ul style="list-style-type: none"> - Lack of clear operational steps - Lack of gender-specific data and surveys - Lack of understanding of the division of labour in fisheries (household level) - Cultural and religious values not properly understood - Underrepresentation in leadership and decision making 	<ul style="list-style-type: none"> - Female extension workers stationed at programme sites (health, nutrition, hygiene, income earning opportunities) community education - Training of women leaders - Access to credit facilities - Specially designed training courses suited to the needs of women and their timetable - Inclusion of gender-specific analysis in formulation of development programmes (local specific frame) - Legal framework for advancement of women (labour and wage laws) - Research/data collection on women's contribution to the family welfare - Provision of rural infrastructure - General education (men and women) to enhance status of women
<u>Cooperatives</u> (8) (industrial organization)	<ul style="list-style-type: none"> - Co-operatives (few examples of women's enterprises in processing and fish forming) - Vertical integration of catch processing and trade within fisherman households. - Integration via boat owner or trader (middlemen) 	<ul style="list-style-type: none"> - Increase women's participation in co-operatives and group work among fishermen 	<ul style="list-style-type: none"> - Unrecognized potential of women in adopting new technologies in processing marketing and management 	<ul style="list-style-type: none"> - Stimulate formation of co-operatives (guidance) - Opportunities to obtain loans for women entrepreneurs. - Courses in management
<u>Export orientation</u> (9) (export/local consumption)	<ul style="list-style-type: none"> - Primarily in production for local consumption (processing, trade) - Limited in export sector (shrimp cleaning and sorting) 	<ul style="list-style-type: none"> - Increase participation in the export sector 		

Chart 3.3.2

Sample illustrations of the impact of development actions and technological innovations on women in fisheries occupations

Type of action, change or innovation	Impact	FIS component	Country
Introduction of larger and/or motorized boats in fleet	Potentially negative - boat owner can sell catch personally to vendors in distant markets; circumvent role of women in marketing and distribution in rural areas	Distribution and marketing	Mexico
Introduction of larger catches, refrigerated transport and mechanized processing	Positive - more employment opportunities and source of income	Processing Distribution	Mexico
Industrial manufacture of cords, ropes and nets	Negative - displaced women from productive jobs	Industrial inputs	Mexico
Introduction of larger tanks in aquaculture work	Negative - larger tanks automatically become men's work	Extraction	Mexico
Technological innovations and increased mechanization in industrial processing factories (canning, especially)	Potentially negative - not so much due to employment loss rather, bind women more to machines, deny them individual initiative, deny access to broader skill development and experience	Processing	Senegal
Increased employment opportunities in urban areas (especially where attractive for younger girls); practice of recruiting young girls to work in factories	Potentially negative - rural women with children in rural labor markets increases their work load, decrease in-labor availability; labor shortages in rural zones; women with children cannot pursue more lucrative manner of gathering oysters - nobody at home to tend children and chores; need to call on older women in community to work	Extraction	Senegal
Exclusion of women from development, design and equipping of processing plants	Potentially negative - for industry; women not included may boycott plant, especially if becomes a source of pollution/public nuisance	Processing	Senegal
Continuation of using electricity as power-source for processing plants	Potentially negative - threat to jobs because of high costs; costs of processing in relation sales price of finished product can endanger intrinsic profitability of fish sector.	Processing	Senegal

Type of action, change or innovation	Impact	FIS component	Country
Introduction of better/modern equipment and fishing gear by fishermen having access to financial resources	Potentially negative - for rural women married to artisanal fishermen not having such access; fishermen cannot compete against trawlers, affects catch levels, and in turn affects women's participation and family income	Extraction Processing Marketing and Distribution	Indonesia
Government failure to control industrial dumping and pollution from other factories in waters crucial for fishing trade	Potentially negative especially for women in such areas married to fishermen who must extract fish from such waters; product damaged, affects catch levels, supply for processing, household income	Extraction Processing Distribution and marketing	Indonesia
Introduction of new processing techniques and organization of processing work; formerly independent family workers become laborers in enterprises	Potentially negative-action affects both men and women; however, factory owners unlikely to observe labor legislation-typically results in wage discrimination against females	Processing	Indonesia
Technological changes resulting from village-level fisheries development project: - introduction of mechanized boats - use of ice for preservation taking root/expanding - growth in infrastructure for ice production, freezing and cold storage Result is larger catch, more shrimp in composition of catch	Positive - (a) expanded wage and self-employment for women in number of jobs/types of jobs; upstream in net-making, coir processing downstream in prawn processing, marketing and trade (b) employment and wage increases have resulted from increase in number of ice/freezing plants (c) female workforce now comes from married women, and girls from 2-parent households, - greater status for work; formerly employed women were from socially disadvantaged classes only.	Processing Industrial inputs Distribution and marketing	India
Introduction of factory-made nylon nets	Potentially negative-employment opportunities for women in villages using traditional skills, threatened, diminishing	Industrial inputs	India

Type of action, change or innovation	Impact	FIS component	Country
Introduction of technology for machine-made nets	Negative - training for technology given to men because of their assumed higher levels of education (and literacy)	Industrial inputs	India (Tamil Nadu)
Introduction of machine-made nets	Negative - role of women in marketing; catch levels, especially prawns, too large for women to handle; became economically viable for urban male prawn traders with refrigerated vans to stock at landing sites, sort/export directly; women have disappeared	Distribution and marketing	India (Tamil Nadu)
Introduction of new technology for fishing boats and gear	Negative - women previously dealt with all fish species; after introduction, division of labor with women limited to finfish (less lucrative) and men handling shellfish; use of technology directed at men	Extraction	Fiji
Combined introduction of cash crop and auction system of trade	Negative - (a) fish previously used for barter for goods/services; role of bartering was wife's; conferred status; introduction of money/wages, family needs met with money, man seen as earning wage for work, even though wife gets money from marketing, money attributed to man (b) with auction system at landing sites, fish go to higher bidder; women cannot compete with urban, male, cycle traders who can outbid them	Distribution and marketing	India (Tamil Nadu)
Not including available labor-saving devices as part of aquaculture project	Negative - increased women's work load; shrimp ponds were successfully introduced; women's responsibility to prepare food; labor-saving device for food preparation not included - women had to spend 5-6 hours every two days preparing 50 kilo of needed food	Industrial input	South Thailand

Type of action, change or innovation	Impact	FIS component	Country
Inadequately understanding division of labour in <u>local</u> area before designing project	Potentially negative - In Indonesia, women dominate in marketing and processing in Java/Bali; in Sumatra, men dominate (mainly because of religious restrictions on women working); differences important for strategies such as training, overall project design/success	Marketing	Indonesia
Inadequately understanding division of labour and economy of the local area before designing or implementing a development project	Potentially negative - assumption may be made that women are not involved because of religious or cultural traditions; in fact, inactivity may arise from structure of the work (e.g. men extract, then sell fish directly to middlemen from urban areas who transport product for local markets or shipping) and from lack of alternative occupations for women	System-wide	Indonesia
Improvement in marketing technique - sale of live fish in water troughs in village markets; avoids hygienic problem of flies in the current market facilities	Potentially negative - lessen employment opportunities for women in marketing because sales process is greatly simplified	Marketing	East African region

4. SUGGESTED GUIDELINES FOR BETTER INTEGRATION OF WOMEN IN THE FIS PLANNING, IMPLEMENTATION AND EVALUATION PROCESS¹

4.1 Introduction

The development of a systems approach, referred to as the (MEPS) methodology, represents an important advance in the analysis and programming of industrial sectors and systems linked to the overall economy and related to various socio-economic goals. The (MEPS) methodology was originally developed with the purpose of designing a micro-computer (MEPS) model, which is capable of simulating different development scenarios for a given industrial system.

Guidelines describing the application of the systems approach, as stated in the MEPS User's Guide², are thought of as a general set of tools for practical applications of the methodology and not as a 'blue print' device. The generic nature of the approach and the micro-computer model allows for versatility of applications. This, however, requires tailoring the methodology to a particular objective for its concrete application. In this way the methodology can be modified and further developed drawing on the accumulated experience gained through its practical use.

In the previous chapters the concept of an integrated systems approach has been introduced and its application illustrated in the analysis of women's position in the fisheries sector in three countries. The application of the methodology was limited both in terms of the level of details and the extent to which a detailed quantitative sectoral analysis would be required. However, the usefulness of this kind of an analytical framework to gender-sensitive sectoral analysis has been demonstrated. In addition, gender-sensitivity provided a new dimension to the systems approach application.

General lack of systematized gender-specific data is one of the major obstacles in addressing women's issues in planning processes and devising development strategies which would both credit women's economic contribution and develop their potential in line with their special needs. Chapter 2 and 3 highlighted the type of issues which have to be taken into account in the systems approach application to sectoral analysis where women are important economic actors.

Not all women-specific issues identified in the previous chapters may be of an equal importance considered in different analytical perspectives. There is a danger in trying to include all kinds of information pertaining to women which may prove practically impossible to collect, let alone quantify. A critical selection has to be made of the most important variables closely linked to the objectives of the analysis.

In this chapter an attempt is made to provide some general guidelines for application of the systems approach to the analysis of women in FIS and outline criteria for selecting relevant information/data required for that purpose. The point of reference for this chapter is the User's guide to MEPS

¹ All tables, figures and charts referenced in the chapter are found at the end of the chapter.

² Op.cit. UNIDO, (PPD.33/1987)

application which is the most relevant documentation of the systems approach methodology for the stated purpose. The focus of this chapter is:

- a) Selecting important issues to be considered in further efforts to integrate gender aspects into sectoral analysis using the (MEPS) methodology of systems approach;
- b) Providing a framework for a separate gender-sensitive systems analysis compatible with (MEPS) methodology application;
- c) Providing guidelines based on the systems approach for the assessment of the impact of development strategies on women, particularly in connection with design and evaluation of development projects.

The economic environment of the fisheries sector is the major point of reference. Some of the suggestions, however, are of a rather general nature and can be applied to other sectors. This will require modifications to suit a particular country and sectoral specifications. Further adjustments to the proposed guidelines will be, undoubtedly, needed when more experience is gained through practical applications of the (MEPS) methodology and further development of the (MEPS) computer model. It is hoped that suggestions developed here will give an impetus to further discussion on human resource integration into the (MEPS) methodology.

The chapter is divided into three sections, one presenting the operational sequence of the (MEPS) methodology and relating it to the experience gained from this study. The second part deals with the special issue of data collection. The concluding part draws together a set of guidelines for the three different areas of the methodology application stated in points a), b) and c) above.

4.2 Application of the systems approach. (MEPS) methodology

4.2.1 General description of the operational sequence

This section concentrates upon outlining only the main features of the operational framework for the application of the (MEPS) methodology to provide points of reference for further discussion in this chapter. A detailed description of the methodology application is given in other UNIDO publications.³

Figure 4.1 illustrates the conceptual framework of the systems approach in terms of the (MEPS) methodology. It is the concept of the methodology which is of interest here and not the detailed technical structure of the (MEPS) computer model. From the concept point of view five operational steps are of interest in relation to the way the (MEPS) methodology has been used in this study:

³ For the analysis of the industrial system, detailed planning manuals already exist. The MEPS User's Guide cited earlier and a UNIDO internal document "The Application of a Programme Approach to Technical Assistance Project Identification and Formulation" (UNIDO/APP, October 1988) provide technical instructions, sample worksheets, detailed recommendations for data collection and analysis techniques, etc.

1. Identification of the system and its main components, i.e. designing a base diagram;
2. Assessment of the present status of the system, simple and structural disaggregation of collected data and information;
3. Identification of constraints and bottlenecks affecting the system's productivity;
4. Designing development strategies for enhancing the system's productivity and simulating feasible alternatives;
5. Programming integrated development of alternative strategies and actions for the system.

All five steps are closely related to objectives defined at the outset of the exercise. Defining of the objectives is discussed separately in section 4.3.

The first step involves identifying the system in terms of what kind of a main product or group of products is/are to be the focus of subsequent analysis, identifying the major components comprising the system, and establishing the linkages between the components. The level of system disaggregation is determined by the analytical objectives and selection of indicators needed to measure system performance in terms of these objectives. Example of a generic production and consumption system base diagram is given in Figure 4.2.

The major output of this step is a presentation of a base diagram which shows the main components of the system and the linkages among the components for the geographical entity that is being studied. This is a most useful tool of the methodology. It can be used for representation of various qualitative and quantitative information about the components reflecting the criteria chosen for their disaggregation. It also provides a quick visual reference of the main features of the industrial system being analyzed.⁴

Step two consists of an assessment of the present system. The simple disaggregation gives diagnosis of the principal variables chosen to represent each component in step 1. This forms the basis for determination of both development constraints for each component and potential resources that can be used for further development.

The structural disaggregation concentrates on the assessment of the components' structure defined according to criteria chosen to best represent the objectives of the analysis. Structural disaggregation is only useful when it increases the power of the analysis, or helps to improve significantly the fulfilment of the objectives.

Step three is closely linked to the previous step. It identifies bottlenecks and imperfections of the system in relation to the set of

⁴ Examples of base diagrams for the three countries examined in this study are given in Figure 1.3, 2.2, 2.3, and 2.4.

development objectives. The constraints are identified at various levels: productive structure, inter-and intra-component linkages, and at the aggregated system level.

Step four is concerned with identification of economic, technical and policy options that could be implemented in the system to improve its performance in terms of the set of goals. Selection of feasible alternatives based upon combination of possible options leads to formulation of different development strategies. An alternative strategy includes several options, but only one of a kind for each component. A strategy satisfying best the development objectives is selected.

Step five involves translating the chosen strategy into concrete operational proposals. At this final stage all activities and projects to be undertaken in order to implement the selected strategy are identified and programmed.

The above summary of the operational sequence has not explicitly mentioned the use of an accounting and engineering simulation model which is the principal tool of the methodology.⁵ This is because the structure of and data requirements for the (MEPS) computer model are implicitly built into the system definition and disaggregation and because it is possible to apply the concept of the (MEPS) methodology without making an explicit use of the computerized model. This abridged version of the (MEPS) methodology has been used for this study where qualitative assessment and basic indicative programmes were used as substitutes for quantitative data and detailed programming/simulation exercise.⁶

4.2.2 Experience of systems approach application in this study

The analysis carried out in chapter two and three have drawn upon results obtained from a previously accomplished (MEPS) methodology application (excluding the use of a computer model) to the fisheries sector in the three countries. Chapter two used the readily available information on the system

⁵ The mathematical expression of the model contains a great number of behavioural equations expressing the techno-economic relationships between the variables making up a given system. The model relies upon exogenously determined coefficients and parameters using data collected during system identification and disaggregation. The model has been computerized and can be used on a microcomputer. Practical use of the computerized model is made in steps 3, 4, and 5 of the operational sequence, as shown in Figure 4.1.

⁶ Another example of an abridged version of the (MEPS) methodology is the main study of the fisheries sector in 64 developing countries (UNIDO, PPD.30/1987) resulting in construction of FIS typology and basic indicative programmes for groups of countries.

⁷ Analysis of Senegal, Mexico and Indonesia were included in the UNIDO main study on "Industrial Development Strategies for Fisheries Systems in Developing Countries". (UNIDO, PPD.30/1987).

definition and the main components identified in step 1 and 2. In chapter three results from steps 3 and 4 obtained from the main study were compared with the results of the women-specific analysis and conclusions drawn about the conversion/diversion between the two sets of information. In this way it was also possible to assess the impact of the suggested action plans defined in step 5 in the main study on the position of women.

The approach used incorporates dual analysis using the same conceptual framework as described above in the five steps. One examines the industrial system in a country, and the other concentrates on women's position within the system. The two processes were carried out separately, with the industrial system analysis conducted prior to the review of women's role. However, the preferred approach would be to integrate the women perspective as an additional disaggregating dimension into the methodology application from the outset rather than making it an object of a separate exercise.

The analysis in chapter 2 and 3 helped to identify some general issues needing special attention in the systems approach application if a women's perspective is to be integrated. These issues are discussed below within the context of the five steps of (MEPS) methodology application.

System identification: Central to the systems approach is the notion that an economy is a single system made up of inter-related sub-systems which themselves are made up of interrelated components. The fisheries industrial system is thus one of the sub-systems which is inter-related to other economic, social and political systems within a defined geographical area. This is an important asset of the integrated systems approach and should be made use of in the analysis of women's position in FIS.

Women are often involved in a number of activities which may be a part of different production/consumption systems. The notion of integrated rural development and household duties is relevant in this context since it implicitly recognizes the interlinkages of multiple economic tasks involving women. In addition, women's role in the traditional socio-cultural system may have a strong positive or negative influence on their economic position in an industrial system.

Thus, particularly from women's position, this aspect of the systems approach has to be fully exposed in the analysis. It is important to view FIS as a part of a larger complex of systems which both affect and are affected by changes inside and outside their own boundaries. The significance of FIS inter-relationships and inter-dependencies with other systems which women are part of has to be established and taken into account in the later stages of MEPS application.

Identification of FIS main components and designing of the base scheme has been done prior to this study. Nine major components have been chosen as most appropriate for describing the FIS.⁹ It was shown that this summary view of the system and its major components provided a relevant context for examining the role of women in the fisheries sector. However, it may be

⁹ The nine components described in chapter 1 include: resource, extraction, processing, distribution and marketing, consumption, industrial inputs, government policy, ownership (industrial organization), and system orientation.

desirable to modify the base scheme to include other components and/or disaggregate the main one in a different way which will help to characterize FIS from the point of view of women-specific objectives.

One aspect identified in this study as characteristic for women's participation in FIS is their involvement in more than one component. In order to reflect this characteristic the concept of a component, as defined in the MEPS model, may not capture the "one to many relationship", i.e. one woman may perform several tasks which are related to several components. This is particularly so in rural areas and in the "informal sector". In urban areas, where a woman's role is more specialised, this problem is not so important in the FIS context but is relevant in the context of FIS relationships with other systems, as mentioned above.

It may be useful to design an additional base scheme where tasks and time allocated to them is related to appropriate FIS components and other systems. This will be a useful reference point for later assessment, constraints definition and selection of alternative development options.

Another point frequently raised in this study refers to the importance of supportive infrastructure (extension services, social services, legislation) for women. This suggests that this type of services plays an important role in relation to women's economic performance. Thus, it may be more correct to single out the supportive infrastructure as a separate input component of the productive structure rather than treating it as an attribute.

System assessment/disaggregation: In the assessment stage the choice of criteria for disaggregation has to be closely related to the objectives of the analysis and to the particular characteristics of each component. The criteria chosen for general analysis of women's position within FIS has to aim at providing answers to the following questions:

What is special about women's position in FIS? (simple disaggregation)

How and why is their position different? (structural disaggregation)

How important is the difference for the development of FIS?
(identification of constraints and development alternatives)

In this study an answer to the first question concentrated on identifying the economic contribution of women at component/system level. An answer to the second question focused on identifying where in the component/system are differences between men and women most apparent and try to give explanation in terms of factors causing it. An answer to the third question integrates the previous two answers into a context of defined development objectives and strategies.

One important aspect which needs a special attention in answering question one is ascribing value to activities which are not remunerated. Making the "invisible" contribution of women "visible" is of great importance to ensure correct assessment of women's contribution. Use of the cost benefit concept of "shadow wages" would not only reveal the correct economic value of women's contribution but also the economic cost/loss of withdrawing it (opportunity cost).

Structural disaggregation of the production and distribution components, guided by the objectives of the analysis, should reflect criteria which best expose the characteristics of the individual component and allow for their more accurate assessment. Since no women-specific objectives were chosen for the component analysis in the country studies the criteria for structural disaggregation were left to the discretion of the individual consultant. This has made comparisons more difficult but, at the same time, presented a range of criteria important for correct assessment of women's position within the context of a particular country and FIS status.

Criteria for structural disaggregation which were mostly used to demonstrate where the differences between men and women were most apparent include: employment structure, level of wages, employment conditions, working conditions, technology used and level of skills. Explanation for the differences is related to demographic and social factors such as: age, marital status, number of children, level of education, socio-cultural taboos, access and availability of appropriate information and supportive services.

The above factors should be integrated into the components' analysis. However, the absence of technical tools in the MEPS model which would allow expression of interrelationships between the human-related factors and pure technical and economic ones makes this task difficult. Nonetheless, an attempt should be made to accommodate these factors either inside or outside the model. It may not always be possible to select appropriate variables to measure, for example, cultural values with respect to labour division between sexes. However, the presence of socio-cultural values, if important in a given component, has to be acknowledged, if only as an attribute.

Another important criteria, from women's point of view, cutting across all productive and distribution components is the division between formal/informal sector. It has been demonstrated, not just in this study, that women are most active in the informal sector of the economy. The informal sector operates according to different sets of economic and social rules effecting the production structure. Clarification of a question regarding transposition of the MEPS model production and price structures onto the informal setting is needed. Development of more appropriate tools in the model to integrate the informal sector activities may be required.

In the consumption component women's potential as an agent for increasing fish consumption and raising the nutritional level of a family and wider population is generally recognized. It is primarily women who select, prepare and serve fish-based products for family consumption but also for restaurants and other public eating places. What is needed is to expose their role in terms of measurable indicators. Factors which play an important role are income, education, price and availability of substitutes. Although these factors are included in the general MEPS model their structural disaggregation has to bring out variables and attributes which would highlight this potential.⁹

Identification of constraints: Identification of constraints and bottlenecks of the individual components will be apparent after the assessment in the previous stage has been accomplished. What is important at this stage

⁹ See criteria for disaggregation of the consumption component in section 4.3.2.

is to assess the constraints in relation to achieving given objectives for individual components and the system as a whole. Critical selection has to be made in order to set priorities for remedial actions. Identification of constraints common to several components can help in dealing with the system imperfections in a more efficient manner.

What has been shown in this study is that women face similar types of constraints cutting across a number of components. The type of constraints special to women are primarily of socio-cultural origin and difficult to expose by the tools available in the MEPS model. There is a need to view and understand women's constraints from a dual perspective. One is within the context of a traditional socio-cultural network determining women's position within the family/household/community and the other is the economic environment where women play a productive role. Assessment of how strong the ties between the two positions are and determining their inter-relationship in terms of their supportive/obstructive effect on achieving the development objectives is important.

Another aspect which should be examined at this stage is the relationship between general, i.e. industrial system constraints, and women-specific enhancements and constraints. Merged perspective on constraints can not only lead to consolidated development policies but also examining competition/complementarity aspects between general enhancements and women-specific constraints, and vice versa. Outcome of this evaluation could widen the scope of development options and affect the choice of development strategy.

Development strategies and options: This step in the methodology is the culmination of the preceding analysis and it is here that the crystallization of answers to questions about what is special about women in FIS (e.g. why and how they are important) has its strongest impact. The major point stressed throughout this study is that women should be considered as an integral part of the development process. Efforts for women's enhancement integrated in the overall development strategy for FIS has been shown as economically justified in the three countries under review.

Definition of a development strategy used in the MEPS model refers to a set of development options that could be implemented in order to improve the performance of the system in terms of the defined objectives. Since capitalization on the present and future potential of women in FIS has not been specified as one of the objectives in the main study of the fisheries sector, including the three countries, the impact of the proposed strategies on women's position was assessed separately in chapter 3 of this study.

General conclusions derived from the assessment was that the proposed strategies aimed to remedy constraints and bottlenecks similar to those identified in the women-oriented analysis. However, not all of the chosen options included in the development alternatives would favour enhancement of women. This may prove unfortunate since a number of the development strategies effect directly or indirectly components where women are strongly represented. A new assessment of the development alternatives is required if the position of women is to be an additional criteria for assessing/simulating development alternatives. The following criteria should be integrated in the selection process of development alternatives:

Would the position of women in the targeted component be affected, if yes, how?

Is women's position in other than targeted components affected, if yes, how?

What other employment opportunities can be identified for women inside FIS and/or outside the system?

How does a new set of options enhancing the position of women compare with the original set in terms of component/system performance?

For example, a decision to invest in large boats to increase production will result in bypassing small rural landing sites. This will have repercussions for small-scale production, distribution and consumption systems where women play an important role. Possibilities for compensatory measures to offset the negative effect, or consideration of different sets of options to achieve the same intended goal, may lead to a choice of a different strategy.

This possibility of cross-checking of consistencies between development actions and their effect on achieving the desired system/component objectives is an important asset of the methodology. This has proved useful, for example, by tracing the impact of new technologies in the target component and across the system with respect to the implication this will have on women's participation. The qualitative assessment of this effect is given in Chart 3.3.2.

Programming/project design: The selected strategy includes recommendation of economic and policy instruments to be applied. The measures identified in the three countries fall into four categories: financial assistance, technological development, institutional and supportive back-up, and regulatory measures. The women-oriented analysis revealed the same type of measures needed to remedy component/system constraints. It is the form and practical delivery of these measures which will be reflected in individual projects' design and ultimately determine the success of the development strategy implementation.

The results from the assessment of why and how the position of women is different to that of men in FIS should be reflected in the project concept. Following themes which have emerged from this study and other relevant material need to be considered in project design, planning and implementation if women are included as recipients:

- women should be actively involved in all three stages, planning, implementation and evaluation;
- availability, appropriate method of delivery and coordination of extension services have to be ensured;
- socio-cultural constraints/enhancements affecting women's position in the community and the household have to be considered in all project stages;

- the concept of integrated rural development should be applied in relevant situations to ensure coordination and avoid competition of development efforts;
- experience from similar types of projects should be capitalized upon;

Chart 4.3 gives a schematic overview of the MEPS methodology application to analysis of women used in this study, including the identified special issues needing attention in the operational sequence. In the following section the concentration is focused upon identifying types of data which would qualify/quantify these special issues.

4.3 Choice of women-specific variables and indicators

4.3.1 Defining objectives

Importance of clearly stated objectives for systems approach application has been repeatedly mentioned in the preceding section. First, two interrelated questions have to be answered: How do we want to make use of the methodology and for what purpose? An answer to these questions will define the scope of the systems approach application.

Examples:

1. In this study only the abridged version of the (MEPS) methodology was used to demonstrate a systems approach as a useful tool for examining women's position in FIS.
2. In the main sectoral study on fisheries ¹⁰ the (MEPS) methodology was used in the same way but for a different purpose, i.e. creating a typology of FIS in 64 developing countries.
3. A detailed quantitative sectoral analysis making use of the (MEPS) computer model to simulate the impact of proposed fisheries development projects on the present FIS and in programming FIS development in the Republic of Guinea.¹¹

The next step is to define objectives related to a system which is going to be studied and to determine the goals for the system. An answer to these issues is crucial for the correct understanding and application of the methodology which evolves around the problem of how to achieve defined objectives. More specific definition of objectives in terms of measurable variables and indicators will provide better guidance for system definition, disaggregation, data collection and focus for the subsequent analysis.

For the purpose of this study an overall objective was to promote better understanding of women's issues and outline possibilities for their

¹⁰ Op.cit UNIDO (PPD.33/1987).

¹¹ UNIDO. A Programme for the Development of the Fisheries Industrial System in the Republic of Guinea (Working Papers in Industrial Planning, no. 2 (IO. 29, 9 May 1989), Vienna, Austria, UNIDO.

integration into the planning and implementation of FIS development. No specific goals which could be expressed by quantifiable variables and indicators were defined at the start of the analysis to serve the purpose of being descriptive rather than prescriptive. This has on one hand diminished the power of the analysis but on the other hand highlighted a large spectrum of issues which may be relevant in other, more specific, MEPS applications.

Chapter 3 has drawn on a set of FIS development objectives stated in the main study as being: increasing production, domestic consumption, export revenues and employment. None of the aspects which may relate to the position of women in FIS have been identified as a specific objective. If women issues are to be addressed either in an integrated or in a separate manner using the MEPS approach it is important to define women-oriented objectives at the outset.

Example:

Overall objective: To promote FIS development capitalizing on the present and potential role of women

Specific objectives:¹²

- To increase production level/value contributed by women at a component/system level;
- To increase employment of women in the formal sector at a component/system level;
- To increase general wage level of women in the formal sector at a component/system level;
- To improve the employment structure of women at a component/system level;
- To improve the equipment/technologies used by women in the informal sector.

The above examples of women-specific objectives have to be viewed in the context of the previously defined scope of the (MEPS) methodology application. They can be used as an additional gender-sensitive set of goals integrated into the methodology framework or used separately for testing the impact of proposed FIS development strategies on the position of women.

Choice of specific objectives is guided by economic and political criteria and it may be necessary to state priorities when a trade-off between objectives is required. Re-adjustment of objectives may be also necessary depending on the information obtained from the system disaggregation.

4.3.2 Criteria for data collection

¹² Specific objectives are subordinate variables of the overall objective emphasizing political and economic preferences. Achievement of the specific objectives is measured by indicators selected for each goal.

Data collection will be determined by the scope of the (MEPS) methodology application and objective of the analysis. Thus it will be of little practical use to produce a general list of women-specific variables. Guidelines for data collection outlined in the guide to MEPS methodology application¹³ are tailored to input needs of the (MEPS) computer model. Since the (MEPS) model does not include gender-sensitive relations collection of the same type of data only for women will not help. An attempt is made, however, to provide an outline of criteria for selection of relevant variables which could be useful for further development of the MEPS model or used for separate, MEPS-compatible, analysis carried outside the main model.

It is assumed that the first set of general information leading to identification of the main FIS components and their magnitudes has been collected in a separate exercise without gender differentiation. In the context of the limitations stated above the focus is upon types of data that would highlight the role of women in FIS (simple disaggregation) and characterize the main features/differences of their participation (structural disaggregation).

Suggested variables have to be seen as an additional set of information which can be integrated or added to non-gender-specific data about the FIS. Collecting women-specific data outside this context will be meaningless and will not serve the purpose intended, i.e. integrating women's issues into the mainstream of development planning.

a) Simple disaggregation

The first set of data should clarify the question why and where are women important in FIS. Employment, production and ownership patterns are suggested as the first crude criteria for disaggregation of production and distribution components. Examples of measurable indicators are given below:

Participation rate of women in the main components and activities defined under them. It is possible to choose either absolute or relative values depending on what would be better suited to characterize analytical objectives. Relative values can be expressed as a ratio between men and women with respect to one or more components of the system; a ratio of women in one type of an activity to the total number involved in the whole component or the system.¹⁴

Estimated physical level and value of production attributed to women at a component/system level. Special attention should be paid to activities which are "not visible", i.e. not remunerated.

Ownership pattern with respect to number of enterprises owned by women and value of the assets, both expressed in absolute and relative terms.

¹³ Detailed information regarding data collection in full MEPS application is given in UNIDO (PPD.33/1987).

¹⁴ Caution has to be exercised in interpretation of quantitative data. Since a woman is often involved in several components of FIS there is a danger of double counting. This can be avoided by assigning different weights to different activities or making a particular task/activity the object of assessment.

For the consumption component women's contribution to a household income, either in kind or money is important. Identification of the size and origin of women's contribution can reveal functional relationships between women's contribution and family expenditure on food, between composition of family diet and women's involvement in productive or subsistence agricultural/fisheries oriented activities. A new set of relations may bring out factors influencing nutritional levels of a family and may help to establish degree of substitution or complementarity of fisheries products. Suggested variables are:

Size of women's contribution, both in kind and money to the family/household income;

Identification of activities from which the contribution is derived;

Percentage of women's contribution spent on food.

Information obtained from this general survey would help to establish the absolute and relative economic importance of women in the main components of FIS. It also would be possible to see which of the components and activities are economically important for women.¹⁵ A first draft of a base scheme can be drawn mapping out where in FIS women are and what they are doing.

b) Structural disaggregation

The next step is to search for variables that could help to explain why and how position of women differs from that of men in FIS. For the assessment and simulation purposes¹⁶ the choice of variables has to be closely linked to the indicators for measuring performance of the system in terms of the specific objectives defined at the outset.

Categories of women-oriented criteria for structural disaggregation that may help to identify and explain the different status of women in FIS are suggested in Chart 4.3.2. The list is based on the first experience of applying MEPS approach to analysis of women in FIS and should not be considered exhaustive. More work has to be done on the choice of variables to ensure compatibility with the MEPS model and accommodating variations which will be experienced in consequent MEPS applications. Allowance must be made also for cross-disciplinary verification by expertise and possibilities for pragmatic solutions to problems with data collection.

For each component an individual selection of appropriate variables has to be made keeping in mind the specific objectives. A standard unit of measure for each chosen variable, compatible with the indicators for the specific objectives, has to be identified to ensure consistency and possibilities of comparison. Different types of base schemes can be designed displaying particular aspects of women-oriented structural disaggregation.

¹⁵ In this study, for example, it was shown that the system orientation component seemed most relevant for women in Indonesia while the role of women in the extraction component was more important for analysis in Mexico.

¹⁶ Reference is made to step 2 and 4 of the operational sequence.

This will increase the comprehension of the system and demonstrate the multidisciplinary characteristic of the MEPS approach.

Examples:

Spacial disaggregation of the marketing/distribution component has helped to identify regional differences with respect to men-women dominance of the activities in Senegal. This would be an important aspect to consider if regional development and increasing women's employment were specific development objectives. Regional location would have to be applied as a criteria also to production components and consumption.

Organizational disaggregation of the marketing/distribution component in the case of Indonesia has revealed presence of a three-tiered marketing structure with women predominantly found in the two bottom tiers. This may be an important factor if improving marketing and distribution were a specific development objective together with increasing income of women.

Enterprise organization as criteria for disaggregation of the processing component exposed differences in the three countries with respect to where women could be found. Women in processing in Indonesia were examined in artisanal and commercial processing whereas in Mexico, women in processing were examined according to home-based fishing communities, rural-artisanal non-home based, industrial/commercial and the making of crafts, jewelry and related articles from fish catch.

It is important that choice of criteria is closely related to the objectives of the analysis and conditions particular to the country and FIS they are applied to.

4.3.3 Considerations related to data collection

a) Expertise required

The ability to execute a successful MEPS application implies and is dependent upon the gathering, processing, displaying and analyzing specialized information in many areas. Especially, for the analysis leading to women's integration programming, qualitative information is required and in many instances may be the only type of information available. This means that the ability of the staff carrying out the exercise to locate, interpret and analyze information in a meaningful way is of utmost importance.

Relating information to field-level needs and activities, translating information into development objectives/policy priorities, abstracting from available information in order to establish indices and priority weighting procedures etc., are skills requiring a team of expertise from different disciplines. The persons involved should ideally work as a team comprising expertise in industrial planning, macro-economics, labour market information, industrial/economic sociology, and, depending on the industry system, rural sociology. In addition, a women-in-industry specialist with experience and knowledge related to employment, and socio-cultural factors affecting women's participation in the industrial system is an important asset on a team.

b) Information sources

Determination of information sources and data collection procedures are other important aspects. For reviews of existing national data and records, both published and unpublished, government ministries, research centres, and universities are likely information sources. Other sources may be trade or professional associations, employer or enterprise associations, and grass-roots and national-level women's groups. Information about the industrial context could come from both international and national industry-related publications.

Locating available data needs to be a resourceful exercise, perhaps searching beyond the scope of sources most closely (and naturally) associated with the industry. For example in Mexico, relevant data were gathered from ministries dealing with rural peasant affairs and field extension services for rural communities. Also, it is helpful to have whenever possible, a basis for comparison by including information on men's work, at least for the occupations at which they are employed. This is especially relevant for the rural areas where the "unit of analysis" is often the household.

Information on general economic development and human resource interventions could come from research-based and project-level literature. Literature could include specific studies or project reports in the particular country, for the particular industry (within the country and internationally), and project document/evaluation studies (within the country and internationally). For this latter body of literature, special note should be taken of the effectiveness of particular development strategies, lessons of experience and identified needs which projects and interventions were designed to address.¹⁷

It will likely be too costly and time-consuming to conduct "grass-roots", household-census-type surveys or sample surveys suggested, for example, by FAO.¹⁸ However, a technique used in labour market research called the "key informants" approach can be utilized. Carefully selected individuals are chosen for structured interview sessions; questionnaires are developed to elicit information about the industry, the work tasks, the social/human resource needs of the industry and target population, potential project interventions, etc. Responses are subsequently validated by available data and research literature.

c) Establishment of a data base

One of the most important outputs of MEPS is the development of a comprehensive planning and programming information data base. There is an investment required at the outset in terms of time, human input and financial costs. However, once established, the system is not difficult to keep updated and for many of the informational aspects, especially those related to the qualitative aspects of women's participation, changes do not occur rapidly. Thus, once established, the information base has a long life and can be used for successive applications.

¹⁷ See "project abstracts" included in Annex 3.3.2 for examples.

¹⁸ See FAO guidelines Project planning and assessment instrument entitled "Women in Fisheries Initiatives" in Annex 3.2.A.

The information base can be used as a guide for policy makers, researchers and donor agencies. Additionally, the information base, with appropriate modifications provides benchmarks to use in monitoring and evaluating projects and development initiatives it has been used to. As a result, the initial efforts diminish in terms of costs and with longer-term use, it has a long-term pay-off.

4.4 Conclusions

What has been shown in this study is the strength of the systems approach as an analytical tool but also a need for future development in making the (MEPS) methodology and the (MEPS) computer model more useful in human resource planning by aiming at a greater emphasis upon and inclusion of gender-sensitivity. To achieve a full integration of gender issues into the methodology and the computer model, both in conceptual and data collection terms, is a difficult and complex task. It requires extending the limits of the systems framework and the data modelling attempt beyond the purely techno-economic ones. New areas of complex and differentiated socio-economic relations would have to be introduced. Nonetheless, it is important that an early start is made, both in terms of programming and in terms of introducing the systems approach methodology in practical applications even where the gender aspect has not yet been fully integrated into the computer model itself.

In this study a first attempt has been made to apply the systems approach to analyse women's participation and role. It is through this first experience that the strong and weak points of the methodology in the context of human resource analysis could be exposed. Discussion in the previous sections tried to highlight the advantages and the conceptual and technical problems related to integration of women into sectoral development planning. It remains to be seen whether it is technically possible to integrate gender-specific relations into the industrial systems structure and develop the engineering/accounting model to include human resource parameters. It may be necessary to develop a parallel model compatible with the structure of the existing MEPS model. Then the question would be at what point/points the two models should join.

The concluding remarks in this chapter draw together major issues arising from the experience gained which could form a set of guidelines for future application and/or development of the methodology for sectoral analysis including women. The comments focus on three alternative ways of making use of the systems approach for integrating women in sectoral planning: full integration of gender relations into the (MEPS) methodology and (MEPS) computer model; a separate gender-specific analysis using the same principles of the (MEPS) methodology; and a variant of the latter intended for the assessment of impact of development alternatives and options on women.

- a) Issues to be considered in integrating gender aspects into existing systems approach methodology

Discussion in section 4.3 has drawn attention to issues to be specially considered in the operational sequence of the (MEPS) methodology. General outline of these issues is presented in Chart 4.4. One of the issues, however, deserves to be mentioned in more details here.

There is a conceptual difficulty concerning perception of production components as closed units classified by the type of output. In the case of women this view would omit an important aspect, i.e. one woman is often involved in several activities cutting across not only a specific component's boundaries but also crossing boundaries of different systems.

This would require redefinition of a component in terms of tasks with many to many relationship, i.e. one person can perform many tasks and one task can be performed by many persons. Thus, the analysis can be performed on either a task or a person. This perception would allow introduction of variables and relationships which would help to explain the differences between the position of men and women and assess their importance.

Variables such as time allocation, remuneration, skills, age, marital status, level of education, socio-cultural values, when put into a more specific context of relationships to a task or a person would have a more concrete meaning. All of these variables are of interest in relation to women's economic position. It should be possible to develop an outside module linked to the main (MEPS) computer model, for example via indicators related to wages, price and value of output.

The main task concerning further development of the (MEPS) computer model will be in the areas of internal structure adjustments incorporating new sets of gender-sensitive relations and selecting appropriate variables for their expression in line with selected indicators chosen for measurement of specific objectives. This brings up a crucial point, i.e. commitment at the policy decision level to recognize and enhance the economic role of women. By implication, this would be reflected in the formulation of development objectives which the model can only accommodate not change.

b) Operational outline for conducting separate analysis of women's position in FIS

Demonstration of this approach was given in chapter two and three. Presentation of the link between the general, not gender-specific, analysis of FIS and those oriented towards women is given in Chart 4.3. It will thus suffice here to summarize the lessons learned from this experience.

There are two important points of clarification to be made before commencement of such studies. First, the purpose for which the systems approach is going to be used has to be defined. This can be a country study done after FIS has been examined using (MEPS) methodology and the interest is in showing how the results of the first analysis, conducted in non-gender-specific terms, affect women. It can also be a country study just to show where in FIS are women most dominant. Another example can be of a large-scale comparative investigation/typology identifying the position of women in different types of fisheries sectors.

The next step is to define what the results of this analysis are expected to be used for. For the three examples of different types of studies

mentioned above the possible areas are: provide input into decisions about the choice of alternative development strategies, establishing a data base, and creating a women-specific FIS typology.

Clear understanding of the two points will help to define the areas of the methodology's operational sequence which are of most interest and provide basis for formulation of specific objectives for the system and components examination. In other words it will guide the simple and structural disaggregation.

An underlying assumption for this type of analysis is that there exists a previously defined framework of FIS to which this women-oriented analysis refers to. As mentioned earlier, it is important that women-oriented analyses are viewed in a context of the overall sectoral development. Without this the notion of an integrated approach would be defeated. Chart 4.5 gives a schematic overview of the inter-linkages.

A detailed description of specific tasks to be completed in the operational sequence of MEPS in relation to women's role and status in the FIS is provided in Annex 4.1.

c) Analysis of impact of development alternatives and options on women, at the project level

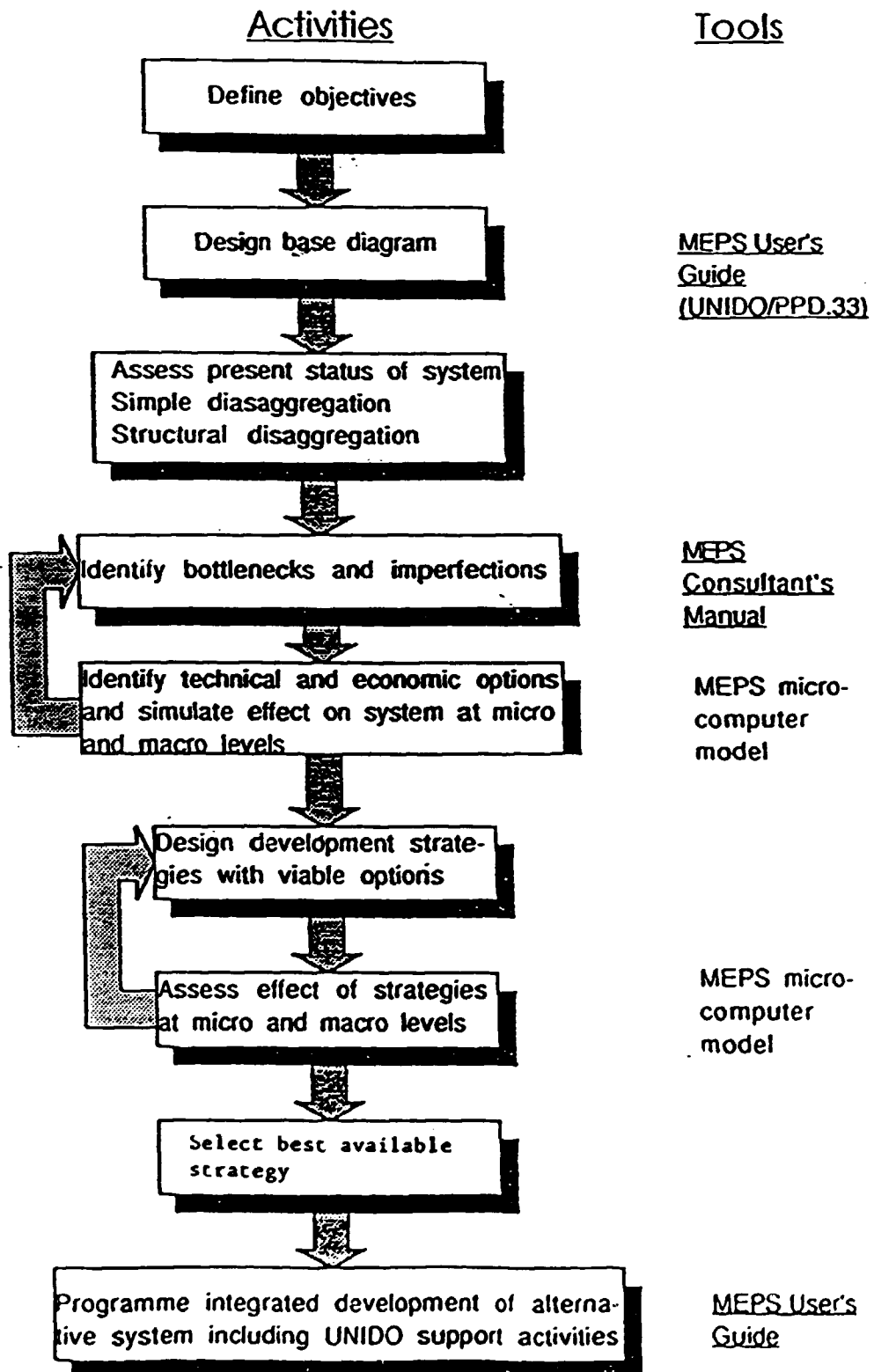
This type of analysis is an abbreviated version of the type described in the above section. Here, the objective is clearly defined in terms of a major focus being on the last two sections of the operational sequence, i.e. development strategies and project level programming.

What needs to be defined in addition is the use of the results obtained. The results can be used, for example, in evaluation of proposed development projects, adjusting on-going schemes, creating a data base, or providing general guidelines for project planning. On the basis of an answer to that effect, limits of the frame of reference will be defined.

For the purpose of evaluating and adjusting development projects or on-going schemes which were a part of a comprehensive plan of action, resulting from a previous MEPS application, implications of the impact analysis have to be seen in a much larger context. For the purpose of evaluating specific regional or local projects the context is limited to a geographical area. Nonetheless, even in those cases application of the systematic approach used in MEPS is of value.

Chart 4.6 presents a schematic picture of the relationship between the (MEPS) methodology sequence and its modified application for the purpose discussed here. A detailed set of guidelines for project formulation, design, implementation and evaluation is given in Annex 4.1, especially sections 4.1.5 - 4.1.8.

Figure 4.1 Application of MEPS methodology to an industrial system



Source: Application of a programme approach to technical assistance project identification and formulation (UNIDO/APP, October 1988).

Figure 4.2 Production and consumption system, base scheme

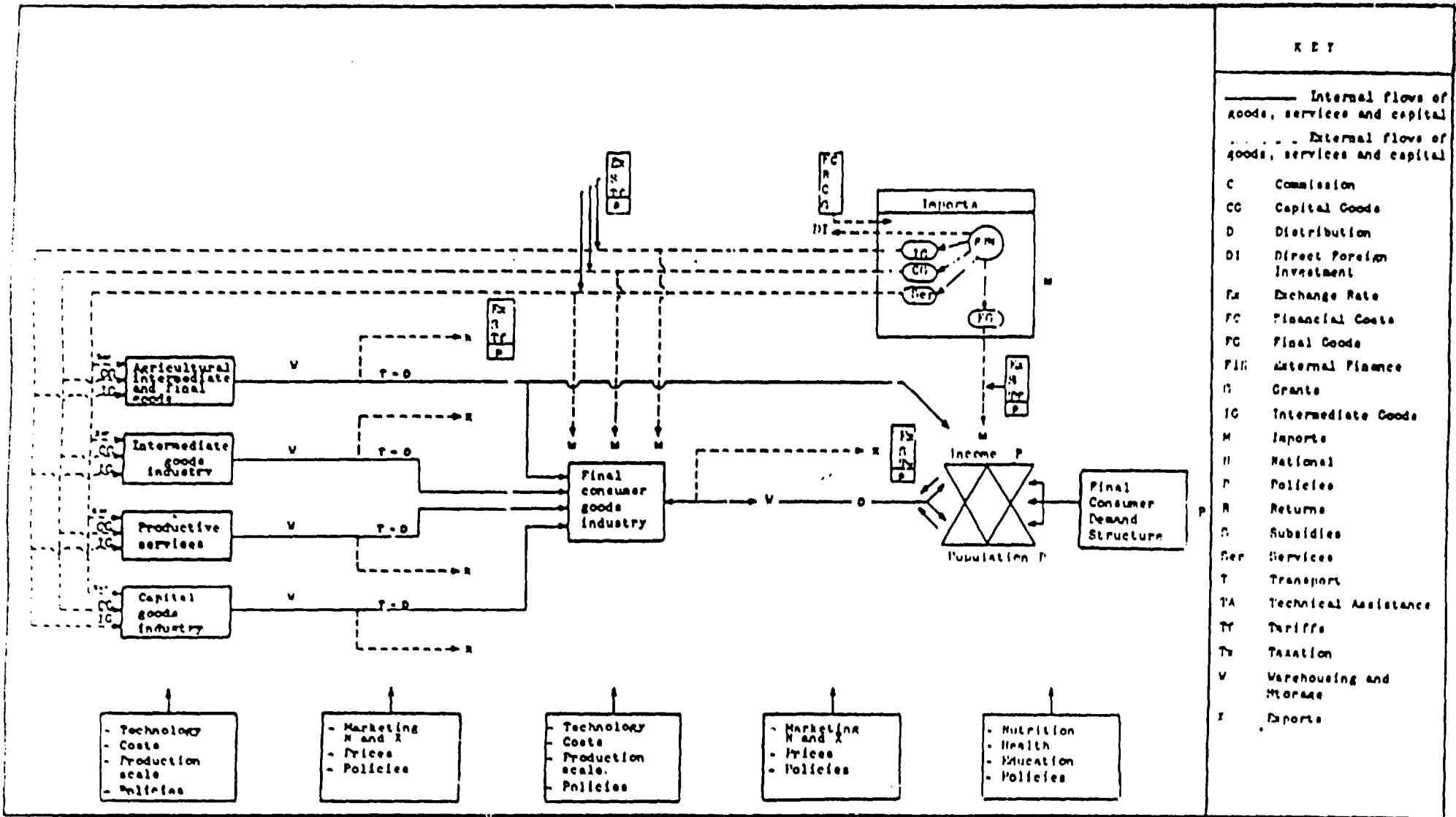


Chart 4.3

APPLICATION SEQUENCE OF
MEPS METHODOLOGY

USE OF MEPS METHODOLOGY IN THIS STUDY

- | | |
|---|---|
| <u>Objectives</u> (for the system) | - promotion of FIS development
- women specific objectives not defined |
| <u>System identification</u> | - components and linkages already defined from other MEPS application |
| <u>System assessment</u> | - general assessment completed in another, separate MEPS application |
| simple disaggregation | - assessment <u>where</u> women are and <u>what</u> are they doing (gender specific disaggregation of main components and linkages) |
| structural disaggregation | - assessment of <u>how</u> women perform their tasks (disaggregation of productive/distribution components with respect to specific criteria of interest to women) |
| <u>Identification of constraints</u> | - general constraints identified in a separate MEPS application
- identification of women specific constraints/enhancements
- identification of points of conversion/diversion between the general and women specific constraints at component/system level |
| <u>Designing development strategies</u> | - development strategies already identified
- assess impact of proposed development options on position of women
- assess compatibility of women-oriented development options with the component/system development objectives |
| <u>Programming of development</u> | - general indicative programme already outlined
- assess project compatibility with women special needs in terms of project concept, design, implementation and monitoring |

Chart 4.3.2. Examples of women-specific data for structural component disaggregation

CRITERIA EXPOSING THE DIFFERENCES BETWEEN MEN AND WOMEN	VARIABLES/FACTORS HELPING TO EXPLAIN CAUSES FOR THE DIFFERENCES	ANALYTICAL OBJECTIVES AT A COMPONENT/SYSTEM LEVEL
Regional rural Urban differences	<ul style="list-style-type: none"> - Demographic data - Socio-cultural data - Income data - Production activities - Distribution network - Access to supportive services 	<ul style="list-style-type: none"> - Balanced regional development - Increasing national consumption of fish
Use of Technology	<ul style="list-style-type: none"> - demographic data - level of education/training - socio-cultural factors - access to supportive services 	<ul style="list-style-type: none"> - increase productivity - decrease wastage
Employment	<ul style="list-style-type: none"> - demographic data - remuneration - conditions of employment - socio-cultural factors - type of productive activity - time allocation between FIS related and other activities - presence and nature of legislative measures 	<ul style="list-style-type: none"> - increase employment - improve working conditions - improve wage level
Organization structure	<ul style="list-style-type: none"> - demographic data - size of production unit - socio-cultural factors - type of ownership - type of productive activity - education - access to supportive services 	<ul style="list-style-type: none"> - improve employment structure - improve income distribution

Chart 4.4

APPLICATION SEQUENCE
OF MEPS METHODOLOGYISSUES NEEDING ATTENTION IN APPLYING MEPS
METHODOLOGY TO ANALYSIS OF WOMEN IN FISHERIES
SECTOR

- Objectives(for the system) - women's role should be acknowledged and integrated in the set of objectives for FIS development from the outset
- System identification - assess importance of other production/consumption and/or socio-cultural systems involving women in relation to FIS activities
- check that all components and linkages are correctly identified in the base scheme to capture possible differences with respect to women's position
- System assessment
- simple disaggregation - components characteristics should reveal where and how contribution of women is important in FIS
- assess economic cost of activities not remunerated
- structural disaggregation - assess importance of variables explaining why position of women differs from that of men (age, marital status, number of children, remuneration, time allocation, technology) in the context of specific objectives
- include qualitative assessment of attributes (structural constraints) such as: socio-cultural, power structure, access to assets, information, education and training, working conditions, legislations
- devise applicable set of tools to deal with formal/informal sectoral division in the context of MEPS model
- Identification of constraints - identify importance of socio-cultural constraints in terms of their impact on achieving specific objectives
- Designing development strategies - include impact on women specific objective as an additional criterion for selecting development options
- Programming of development - check compatibility of policy implementation with special needs of women identified in system disaggregation and constraints evaluation
- pay special attention to supportive infrastructure

Chart 4.5

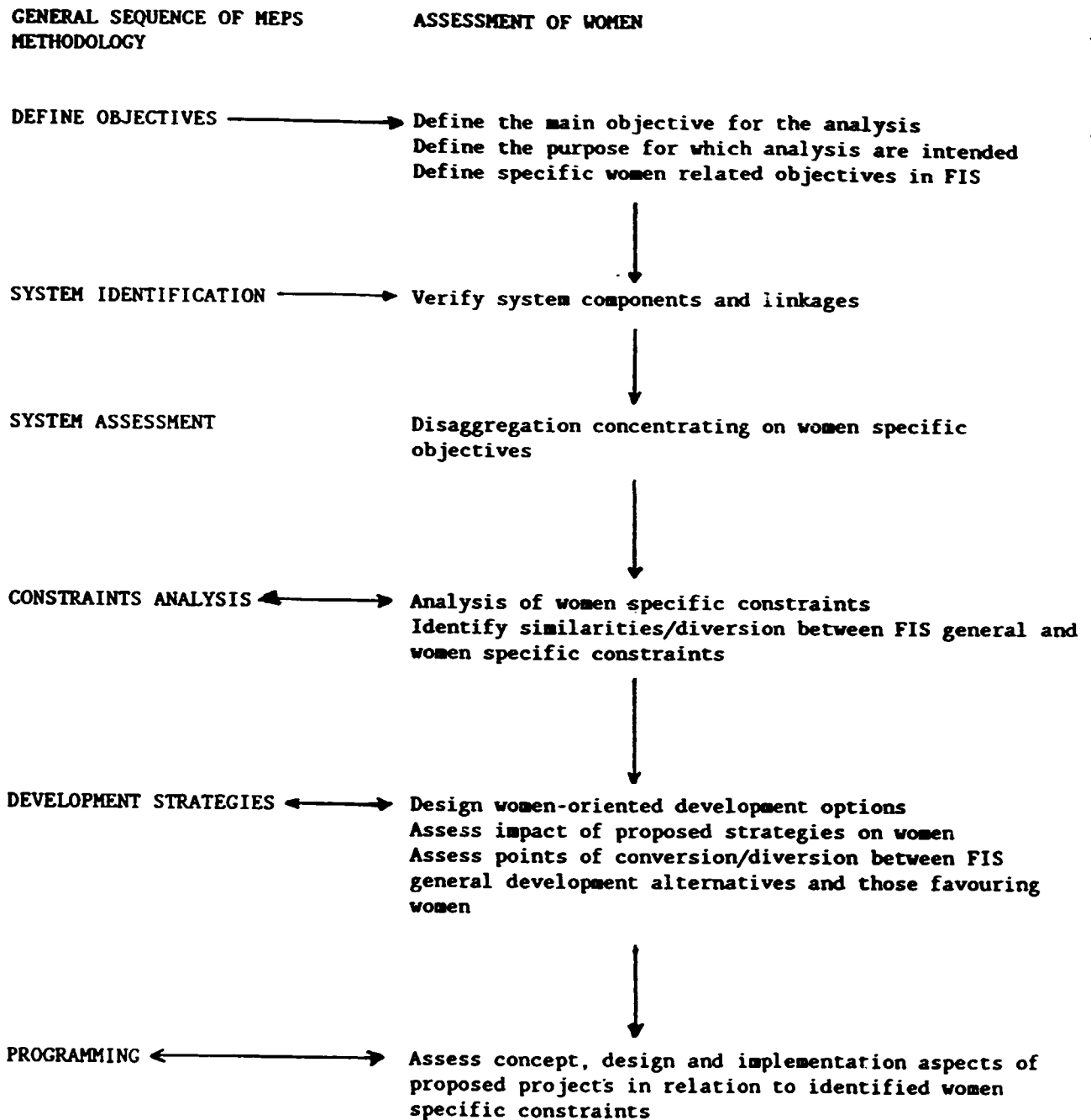
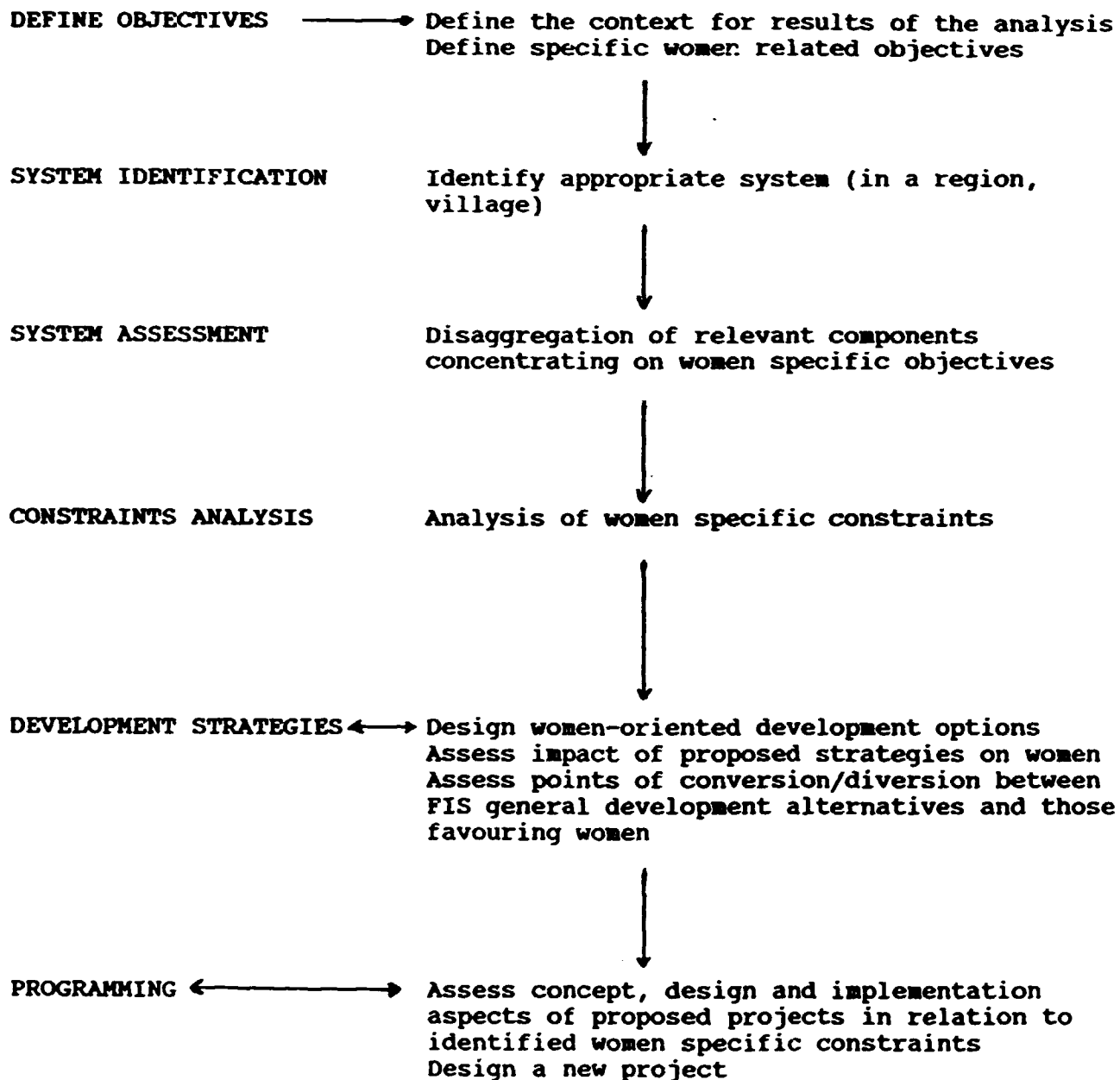


Chart 4.6

**GENERAL SEQUENCE OF MEPS
METHODOLOGY**

IMPACT ASSESSMENT- PROJECT DESIGN



Annex 3.2

**Detailed Component Analysis of Proposed FIS Development
Objectives and Actions on Women's Participation -
Mexico, Senegal and Indonesia**

3.2.1 MexicoResource management (1)

In terms of particular development actions for the overall system, recommended resource management initiatives will affect mostly the extraction, processing, distribution/marketing, and government policy components. At the extracting end research is suggested in order to: expand fin fishing; to develop aquaculture and fish farming centres in rural areas; to know where to initiate or expand extension assistance for aquaculture; to better develop aquaculture in a balanced way throughout the country to meet both domestic and export objectives; and to better utilize the existing fleet to more fully exploit known under-fished resources. In relation to processing, research is suggested for the development of new fish pulp products and processing techniques (ones requiring simpler technologies and lower investment).

In relation to the distribution and marketing system, resource management strategies suggest both research and practical measures. Research includes market research to identify product demand trends and to determine acceptable pricing structures (providing greater impetus to creating integrated food chain production); practical measures include an upgrading of the system's refrigeration network as a way of integrating catch, processing and export opportunities and the creation of a national market information system that includes an analysis of export opportunities and the ability to direct FIS resources to appropriate markets. At the government policy end, there are two suggested resource management actions, one of which is an examination of the legal restrictions reserving exploitation of higher-priced species to co-operatives and the second, the provision of state participation in, and direction for, large-scale fisheries.

In terms of women in relation to the resource management initiatives, there are a number of ways in which they ultimately can or will benefit:

- The research conducted for resource management initiatives - women are already in positions of research, policy, and extension leadership at the national level. Research needed across the FIS can perhaps create more opportunities for both men and women, or perhaps more promotional opportunities for those already employed. As Mexico's FIS is largely state-controlled, the opening of the system to women's participation at all levels can be a government-led action and example.

The areas of proposed research should be of benefit to women over the long-run. Results could and should be in the form of more suitable technology in aquaculture/fishfarming and in processing and marketing jobs, and in training and technical assistance initiatives that are more tailored to local needs, including those of women.

- Expanded extension services for aquaculture, both training and technical assistance - already discussed in the overview section, this point needs little elaboration. The general point should be made

however, that one of the more pressing needs for rural women appears to be access to information and training, via extension workers. In the area of aquaculture, at least, and perhaps fishfarming, the groundwork for enhancing women's involvement may be a natural outgrowth of actions and investments that are already planned for the larger system.

- Creation of a national marketing information system and strengthening the integrated food chain production - already discussed in the overview section, the reinforcement only needs to be made here that in the long run women in processing, distribution/marketing and consumption might benefit. Most likely, women in distributing and marketing would benefit from a more studied allocation of resources throughout the country and to both domestic and export sectors. The information system should assist both with resource allocation and monitoring and with establishing a pricing structure. The system should also aid in establishing processing levels and supply/demand balances to bring about more effective pricing structures. Additionally, the system should help in assuring a steadier supply of fish to local and export markets on a year-round basis, an action which can also affect women in the marketing component.
- Measures to diversify the type of fish caught and better utilize existing fleet to exploit known species more fully - diversification of catch and further exploitation of known species can affect women both in processing and marketing. New species and different sized-loads may result, both of which can require different processing procedures and techniques. As mentioned in the overview section, caution is needed if increased loads or diversification result in bypassing both women and men in existing fishing villages; if this does occur, other productive options may need to be introduced.
- Reexamination of legal restrictions reserving exploitation of prawns/oysters/lobsters (all higher-priced species) to co-operatives - this policy is likely to affect women in aquaculture/fishfarming endeavours where these species are cultivated. Two women's co-operatives already have charge of oyster farming productives. The current and potential impact of this policy on women in terms of how they must organize themselves to carry-out their work, the type of species they may be able to cultivate, the competition they may face, and so forth, all need to be considered before revisions are made, or continuation recommended.

The main difficulty with system-wide actions for resource management actions is that they are unlikely to have an immediate or short-term impact upon women. Much of the research, the development of the aquaculture structure, the expansion of extension work, and other measures will manifest benefits only over the long-run. Additionally, the translation of research into tangible projects and local programme actions can take additional time, and, sizeable investments. While beneficial to plan for the long run, there are some immediate needs related to resource management that women have.

Due to the fact that species diversification and larger catch loads can only benefit the FIS if the country's processing and distribution/marketing capabilities are working efficiently, and that these

are areas where many women are involved, it is to the government's advantage to consider measures for women's integration. This means a dual approach - in the research that is undertaken and with programme-level actions, provisions for integrating women should probably be considered; additionally, for the government itself, more information on the women, the tasks they perform and what they need to improve their productive capacity, is vitally needed.

Among the more immediate needs of women related to resource management are the following:

- Rural women in fishing villages, especially, have inadequate access to technical assistance and extension help - they typically have access either through their husbands, or there is a shortage of extension service.
- Planners and administrators are needed who have a knowledge and understanding of women's capabilities, and the types of assistance and information the women need to fulfil their capabilities.
- Women have a need for access to better information - both technical/job-related and availability of social assistance (e.g., credit, financial, and general education/skill training) information.
- More funds/investment capital are needed by the government generally to implement a full range of extension and technical assistance, generally, throughout the country. The point needs to be made that extension assistance for both men and women needs to be made more accessible.
- Women need more access to training and employment for management and technical positions throughout the entire system.

There are initiatives already under way to meet each of these needs (see chapter 2). These initiatives should be strengthened and expanded, as time and funds permit. Priorities need to be established and adaptations made according to local-level variances. In many instances, a specialized, isolated effort just for women is not necessary. Rather, what is needed may be an assurance of access to existing training and technical assistance opportunities, the dissemination of information about services, and provisions made for services or resources to be delivered to the right people. The establishment of a better information base about women's participation patterns and roles is at least a mandatory first step that will ease the setting of priorities and allocation of valuable extension resources, for both men and women.

Extraction (2)

Women in Mexico's FIS can be involved in one of three types of extraction activities - marine and sea-going, inland and coastal waterways and aquaculture. Except for a few rare cases, women's participation falls exclusively into the latter two categories. There are two ways in which women are affected by extraction component initiatives. Overall actions taken to strengthen marine and sea-going extraction are most likely to have an indirect

effect on women whose main roles are in processing and/or distribution and marketing. For this reason, as much as possible, an integrated approach that considers processing and marketing capabilities along with changes in extraction patterns, might be wise. As mentioned earlier, the effect of recommended system changes on women (and men, too) could be either positive or negative. Newly built boats or ones that are upgraded and redesigned for larger catch loads or for different species may make it necessary to bypass traditional landing areas or find locations having better processing capabilities. Additionally, more efficient boats may require fewer fishermen, and/or, ones with more sophisticated skills. The role and pattern of male participation as a result may also be affected. At the very least, the system strategies and actions for marine-based fishing may signify two things, where women are concerned:

a) The distribution of women's participation, overall, may shift - perhaps a loss of opportunities in one location, if a village must be bypassed in favour of a larger location, is balanced by new opportunities in another; the important thing to consider, perhaps is not the loss of productive employment, but rather alternative options that can be opened.

b) In some locations of the country where significant activity such as manufacturing, maintenance and repair (see industrial inputs section) is expected in the marine fishing context, the system recommendations may generate a variety of options that are only remotely related to the FIS for women. Those developing programme/project actions for women may want to broaden significantly the types of initiatives they develop for women in such locations.

The consideration of women and approaches for their enhanced integration in other components of the FIS is important when plans and priorities are made for sea-based extraction. This is because it is at least partially, the capital and funds generated from processing and marketing activities that feeds back into the extraction arena and makes possible some of the improvements, modification and upgrading efforts.

For women directly participating in extraction-based tasks, the system actions relating to small-scale fishing, inland and waterways and aquaculture are most important. In addition to those already mentioned in the resources management component, these are primarily directed toward aquaculture. Included are the following:

- Review/adjust regulatory investment laws governing foreign investment - purpose is to raise needed capital for completion of high-technology aquaculture projects and large-scale fin-fishing projects. As already mentioned, the role of women in aquaculture has yet to be determined and there is no guarantee that they would benefit from either more foreign investment or from high technology projects. However, this may be an area where the government may want to promote more participation for women especially at the more technical/professional/managerial levels.
- Develop aquaculture centres and fishfarms and introduce fry into rural areas as additional sources of food, employment and income. These focal points can also be used to gain foreign exchange by cultivating species with high commercial value. The government has already involved women successfully in fishfarming endeavours, to raise

oysters, carp and trout. At least one objective was to incorporate women productively in rural areas without threatening the traditional home base of women. Thus, there is a precedent for involving women successfully in aquaculture - it appears to be possible to involve women in both an activity that is close to their home bases and if former experiences in Mexico are a precedent, to also involve them in management and ownership activities. Attention would be needed to the type of technology used (so as not to place additional burdens on the women), the type of species farmed and the relationship evolved between men and women, taking care that due to scale of operation, it is not the men who assume the most responsible involvement.

- The other way in which this action might benefit women directly is the introduction of fry into rural areas as additional source of food, employment and income. The raising of fry could generate productive options and opportunities for income for women in rural areas. Similarly, if accepted as a credible food source, the consumption roles of rural women could be enhanced - supply of fish and costs might place it more in reach of the average family.
- As part of an integrated rural development programme, encourage private investment in aquaculture and the production of fry to be released into lakes and waterways. Closely tied into the previous action, this one could be of benefit both to women in fishfarming and those involved in inland waterways extraction activities. The increase in the supply of fry in inland waterways, might translate into increased catch for women in these activities and potentially, more income and food supply.

For Mexico, perhaps one of the important considerations for women in aquaculture is the development of targets, priorities, etc., at the resource management stage, for the use of aquaculture domestically, versus, for export. If there is considerable variance in prices and income to be earned for those working in export-oriented rather than domestically-oriented projects, then, it might be of benefit whenever feasible to get women involved in the export-oriented activities and projects. The women's co-operative projects that have been established for oysters, might provide a prototype for the type of productive organization that could be established for women handling other species.

Based on current patterns of participation for women in extraction activities, there is room for expansion and improvement in the women's role. Women in inland waterways extraction are constrained by the seasonality of the work, inadequate equipment, social attitudes that only acknowledge the male's work as productive and competition with their traditional household duties. Their roles could likely be expanded or enhanced in one of several ways. Where the work is seasonal, the development of alternative options - including training and other supportive infrastructure as needed - would be one approach. A second might be the introduction of equipment that was both of the type that women need for their tasks and that include when, or as possible, labour-saving devices so that additional demands are not placed on women's time. A third might be the provision of some type of informal meetings or other means, where extension agents or other village-level professionals work for a change in attitudes about the productivity of women's work and the value of their contributions to economic activity.

From information that has been provided currently about women in aquaculture or fishfarming activities, it appears as though women could have a much more responsible role in this sphere. Indications are that training and technical assistance, along with careful planning at the resource management level might be required. Women currently involved in such projects are constrained by the operational scale of a particular project (males frequently being assigned more important roles in the larger projects), traditional beliefs about male and female divisions of labour, and competition from household duties. Some conscious effort might be needed to alter attitudes about women's capabilities; also technology utilized for such projects would need to include, whenever possible labour-saving devices to preclude placing extraordinary demands on women's time. The task of preparing women for aquaculture or fishfarming might be more demanding in terms of training and expense for more extension-based assistance. Also, it might not be feasible to develop projects in all areas of the country where women's needs are most concentrated, and the co-ordination of two or more government ministries might be necessary. The potential role for women in this type of activity is yet unclear and the number of projects that can be established feasibly is not known. However, further research and development seems warranted.

Processing (3)

In Mexico, women are involved in processing in one of three ways - in home-based processing where wives of fishermen may process their own family's food, plus fish on consignment from loading dock owners, in artisanal, non-home based establishment, and in large industrial processing plants that may either be privately or publicly owned. Many of the recommended system-wide actions are the same ones that can theoretically enhance women's participation in the sector. Among those most likely to be of influence for women are the following:

- Upgrade the ability of all industrial processing plants to handle large catches comprising a variety of species - especially fin-fish, if fishing for these species is to be expanded.
- Upgrade, on an integrated basis, processing and marketing capacities and consumption levels to correspond with the larger loads.
- Encourage national tinsplate production and provide the fisheries sector with its own packaging plants rather than having to rely on plants that serve other sectors.
- Diversify production of fish-related products such as creating new commercial pulps and pastes.
- Practical training for fisherpersons - especially in on-board product handling and for those onshore, and in food technology.
- Diversify processing and conservation processes - utilize simpler techniques and process a greater number of species in a form meeting market demand.
- Research for new processing methods for drying, salting, smoking and pickling - keep technology simple so that needed investment is low.

- Upgrade and enhance refrigeration network to link more effectively the catch and processing systems and to support export opportunities.
- Invest in equipment to modernize the industrial processing industry by supplying all plants with quality processing, packaging, cutting, filleting and refrigeration equipment.
- Invest in installation of new equipment for drying and smoking in factories so that these establishments can diversify and exploit more fully the species that are captured.
- Utilize joint ventures to complete processing projects - get partial investments in the form of both actual equipment and soft-export credit.
- For industrial plants, upgrade domestic capacity to produce processing and packaging equipment, especially for the larger plants.

Most of these actions are oriented toward the artisanal, non-home based and industrial processing areas. However, those actions directed at the artisanal could potentially be of benefit to the home-based work, either in the form of training, and new, more efficient technology, or assistance with new types of productive organization. Those actions that may be of most influence for the home-based activities are those calling for practical training in food technology for fisherpersons, research for simplified processing and conservation techniques (including drying, salting, smoking and pickling), diversifying the processing using simpler techniques, and an integrated approach to the extraction - processing - marketing development chain.

The majority of these system-wide actions, if taken, should address two of the main stumbling blocks affecting women in processing - inadequately functioning, outmoded equipment and insufficient integration between the extraction - processing and distribution-marketing chain. The measures suggested may not automatically expand the number of opportunities available to women but may help those already employed to work more efficiently and productively. The overall impact could not be determined until a particular type of technology were adopted and assessments made about specific jobs and tasks within the processing plants that would be most affected. Although adopted technology might be simpler, the effect might be one of streamlining the work and eliminating rather than creating additional opportunities. In a similar vein, especially at the larger industrial processing concerns, new technology and processes may be viewed as more advanced or complicated or affect occupations at the mid- or higher employment levels where women typically are not found. In either case, male employees would likely receive the most benefit in terms of any resultant upgrading, training or promotions.

To be of direct benefit to women, at the same time that system-wide actions are implemented, at least two other sets of measures should be considered:

- The types of jobs and tasks most affected by the introduction of new technology, a new species or a more diversified array of processing and conservation techniques at any plant should be monitored. This is especially true at the larger industrial processing plants. Where new opportunities arise at the mid- or higher-level jobs, women should at

least be given access to training and promotional opportunities. Similarly, if jobs at the lower end of the occupational ladder are eliminated, in cases where women are affected directly, provisions should be made for retraining or other employment/promotion-oriented options.

Attention needs to be given to some of the non-job specific aspects of processing work. It is more than likely these conditions rather than the specific job itself that may render processing unbeneficial for women. For women in home-based processing, this might mean ensuring that women receive remuneration for their work, introducing labour-saving technology so that women are not so heavily burdened with work and household chores, and changing social attitudes that constrain women from being mobile enough to take productive jobs in areas outside of their villages. For women in rural, artisanal processing, attention might be needed for the following:

- Work that is seasonal, temporary and on contract basis;
- Wages paid on piece-work basis and varying as per season, species and location of work;
- Shiftwork;
- Crowded, unhygienic working conditions;
- Few promotional opportunities or ability to manage/own processing establishments;
- Social benefits only when a co-operative owns/runs the processing work;
- Competing demands on women's time and predominance of males in upper-level jobs, in training opportunities and in jobs requiring higher skill levels.

For the women in industrial processing jobs, the workplace conditions needing attention are almost identical, to those for women in artisanal processing. The main differences are that perhaps in industrial processing, women are often hired intentionally for the lower-level jobs and not compensated at a rate that reflects the preference for their services, and that women are given less opportunity for promotion or training. Working conditions, especially at privately-owned plants may be crowded and unhealthy. At state-owned plants, there is typically legislation in effect covering minimum wage rates and working conditions.

Women in processing, both artisanal and industrial, need strategies and actions having a dual focus. One focus is on improved workplace conditions and practices. The second is on upgraded equipment and production infrastructure coupled with adequate training, as necessary - both general education (i.e., literacy skills) and specific skill training should be included.

For the home-based processing, "training" might cover all aspects of FIS related tasks including unloading the boats to sales since the fisherman's wife is typically responsible for all aspects. There are artisanal training centres found currently in two states - expansion of such centres to other states or in the extension services available would be warranted, as would leadership and home/financial management-type of training.

For non-home based processing women, workplace improvement (especially providing access and training to supervisory positions), upgraded equipment,

and, where co-operatives exist, assistance with obtaining credit might be appropriate. For industrial processing work, extension of labour legislation to cover privately-owned plants, attention to hiring/promotion practices, and access to training opportunities, especially for supervisory positions, is suggested. Additionally, for women on contractual-seasonal employment, training or employment-generating assistance with non-FIS-related jobs might be appropriate.

The whole issue of training needs careful attention for this component. For many lower-level processing jobs, only minimal job-related training appears necessary. This can probably be delivered at the workplace or via an extension agent. However, even for these jobs, general literacy, preparation for some other tasks, and leadership or basic management skills might be appropriate. Especially in rural areas, but also in the urban ones, the delivery of training needs attention. Women typically cannot leave their home villages and non-work time must often be spent on family and household. Consequently, training, as such, must often be imparted in non-traditional ways. This, along with the preparation of special training materials (e.g., more audiovisual and demonstration type aids) needs consideration.

In Mexico, there is one other processing-related activity occurring in several states that should be mentioned. This is the preparation of artifacts and handicrafts made from fish-related materials. Such activity is already popular in several tourist areas and combined work-training programmes have already been established under the Center of Arts Office in the Fisheries Secretariat. Expansion of such opportunities, where local conditions warrant, along with provisions for credit and financial backing appear necessary. More than likely, business development assistance for marketing-type research and sales and management or entrepreneurial training also might be needed.

Distribution and marketing (4)

For women in Mexico's FIS, especially in rural areas, marketing of fish and fish products can be a primary income source. Often the role of women is not just the marketing of fish products; also included may be the selling of food prepared from fish to restaurants, hotels and tourist spots, and artifacts or handwork made from fish or marine-based products.

Most of the system-wide actions suggested for this component are directed toward financing and building up the distributional and marketing infrastructure; included are measures to provide better transport of fish from landing point to marketplace and to increase the number of outlets where fish can be sold. Additionally, as already mentioned in the resource management discussion, there are national-level actions suggested to strengthen the distribution-marketing capacity including a better organization of the entire commercial process, creation of the market information system, and conducting more thorough market research to identify more precisely which products and pricing structures give the greatest stimulus to the development of an integrated food chain; and establishment of mechanisms for co-ordinating national and regional distribution.

It is in the government's interest to strengthen the distribution and marketing network, both for export and import, for it is in the sale of fish that capital needed for investments in fleets and factory investment is generated. Similarly, a consistent supply of affordable fish to rural areas can improve both local nutrition and dietary intake and provide valuable

income for fishing households and communities.

The system-recommended actions likely to have the most positive impact on women are:

- Multiplying the points-of-sale where fish can be purchased from existing commercial establishments.
- Expand and improve the overall wholesale and commercial infrastructure by establishing "sea-markets" in medium-sized and larger towns and developing mobile shops for smaller and more rural settlements.
- Expand port infrastructure - dredging and also establishment of wharves, docks and reception centres, especially for smaller boats in isolated rural communities.
- Integrated upgrading and diversification of extraction-processing-marketing capacities.
- Develop simpler processing techniques and ability to process species in form to meet demand of local market.
- Increase investments in refrigerated transportation equipment and refrigeration in point-of-sale commercial outlets.

These actions, at the broadest level are ones that could enhance opportunities for women by assuring a better supply of fish suited to the local market demand and a greater number of wholesale and retail commercial outlets. The integrated approach to catch sizes and species diversification is also essential because one of the main constraints facing women in this component is the threat of larger loads making it necessary to unload at larger docks, thus bypassing some rural fishing communities completely.

In order for the women to take advantage adequately of any commercial infrastructural improvement, three specific types of constraints need to be addressed. These are inadequate training in sales and marketing techniques, lack of access to credit/financing and restraints on women's mobility (societal constraints, primarily) and time (competition from household duties). Specific ways of meeting these objectives and enhancing women's participation in distribution and marketing may include the following:

- Continue the process of introducing refrigerated transportation and enlarging/diversifying catch loads; where larger, more diversified loads signify new processing techniques and marketing approaches, make sure that women are provided with adequate equipment and training, via extension agents or other means. Where these signify a diminishing of or an end to women's role, provide new training or employment-creation measures, as appropriate.
- Whether FIS or non-FIS related training and employment measures are needed, arrange for combined support and assistance in training, co-operative development (if appropriate), extension and financing/credit.
- For rural women who must perform a whole chain of tasks from boat

unloading to processing and marketing. provide integrated training to upgrade their overall effectiveness: as in processing. either establish centres for artisanal fishing where women can be trained or offer extension assistance.

- For women who prepare and market foodstuffs, provide assistance in organizing and training in managing, preserving and preparing foods.
- If warranted, offer specialized training and assistance to women who sell along the beach and in regional markets versus local, rural marketplaces.
- In tourist areas, training might be offered in marketing in conjunction with hotels, restaurants and worker unions - projects could be administered jointly by Fisheries Secretariat and appropriate government ministries.
- Where women sell artifacts and handicrafts, offer them training in marketing and distributing these specialized articles, especially in tourist areas.

Not enough information is available presently about the specific tasks and responsibilities of women in marketing, about the occupational structure or the ownership structure of the component's activities. This information might be beneficial because women might need basic management and entrepreneurial skills. This might be an area where women could, with proper financial backing and business development support, develop their own businesses. Additionally this is an area where any training offered could well include "transferable skills", i.e., those that might be applicable to other types of marketing and sales activities, especially for women in urban areas or in urban or rural areas where the work is seasonal due to an inadequate supply of fish.

Consumption (5)

Several of the recommended actions to upgrade the system's consumption component are likely to benefit women who are involved either as consumers of FIS products or as preparers of regional fish specialities to sell to tourists, local residents, eating establishments and institutions. Among the more specific suggested actions likely to affect women are the following:

- Launching promotional and educational campaigns to increase fish consumption and acquaint the public with new species of fish food; include new ways of preparing fish and fish-related foods.
- Promoting institutional consumption of fish in hospitals, labour unions, industrial canteens and the like.
- Providing greater regularity and consistency in the supply of fish throughout the country.

In addition to these are the relevant actions suggested for other components. These focus on the creation of a greater number of outlets where fish is sold, upgrading the processing and marketing infrastructure, closer integration between the form of fish demanded in the market and processing

techniques, the diversification of species, the development of aquaculture and fishfarms, and the introduction of fishfry into rural areas as a food source.

These measures if implemented will address the primary constraints facing women in FIS-consumption activities, e.g.,

- Inadequate access to extension assistance related to nutrition, consumption and preparation of food.
- Inadequate access to food supply - depending on harvest levels and available species.
- Inability to purchase an adequate supply of fish because of low income levels and inadequate supply.

The overall impact of the suggested actions of the system ultimately should help to assure an affordable and adequate supply of fish for women and their families. Better processing and marketing capabilities should make a higher quality of fish available. Also, the promotional and educational campaigns should help the women to make wiser food selections and perhaps food preparations that are healthier, take less time and offer more variety for the family. Additionally, for women preparing regional food specialities, the educational programmes may help women to prepare the food in more economical ways while the promotional efforts for institutional consumption may increase demand for the specialty foods.

The problem for women where consumption-related activities are concerned is that several, if not most of the actions can be implemented only over the longer run. The shortage of adequate extension assistance has already been mentioned. In a similar vein, the suggestions for new species and products research may take time; then, translating the research into promotional and educational campaigns and materials may take even longer. Also, the provision of an affordable and adequate fish supply throughout the country on a year-round basis is an action that will take time and be dependent on measures carried out for other components, e.g., building up distributional infrastructure, creating a greater number of wholesale and retail outlets where fish is sold, integrating the catch-processing-marketing processes and creating a greater number of aquacultural projects or centres.

Of the needed assistance for this component, perhaps nutritional information and assistance in healthier food preparation could be carried out via the existing educational system or other social service entities. For all other actions, implementation and the impact of benefits depends upon priorities set in other parts of the system and upon the priorities or objectives established for the country's rural development programmes, generally.

Industrial inputs (6)

Women in Mexico's FIS appear to have very little involvement in the industrial inputs component. Presently, their association appears to focus on two areas - netmaking and repair, and in gathering and preparing inputs for artisanal processing (gathering salt, carrying water, gathering wood and cutting ice). At this point, due to an inadequate information base, it is not possible to state whether or not women are involved in other tasks and

responsibilities or whether they are active, but not documented in official statistics.

According to the types of actions being suggested for the component, there would appear to be some untapped opportunities for women. The general categories of recommended actions are:

- Expansion of port infrastructure - dredging and provision of basic elements such as wharves and reception centres for tuna fleet and smaller boats in isolated rural communities and integrated service centres at key ports throughout the country.
- Establishment of preventive maintenance programmes at ports; special attention should be focused on motors and refrigeration plants.
- General maintenance and repair of existing gear and fleet, where appropriate.
- Development of domestic manufacturing capabilities in the areas of outboard engines and mechanized fishing gear for small- to medium sized vessels.

The particular tasks, and consequently, the type of policy approach or training that might best prepare women for work in any of these categories cannot be identified until the occupational and industrial structures are examined. Ultimately, the approach and type of employment opportunities would be determined by the type of work being performed and the mix of resources and technology used to perform it. However, those who plan and administer programmes for women perhaps could monitor events in each of the four categories, with the purpose of initiating training for women, providing access to women for ongoing training, and/or developing employment-generating actions. Among current system-level suggestions is the creation of a more highly trained mechanical maintenance staff; perhaps, as a trial initiative, women could be actively integrated into any training undertaken.

Important to note for any actions taken for this component is that the benefits for women will probably be localized to specific areas where there are ports/harbours and manufacturing activities. Careful attention, as a result, would need to be paid to the particular constraints that might affect local women, especially those concerning attitudes about women working outside the home, divisions of labour between men and women, and general misperceptions about women's ability to be trained for, and operate, any complex technology. The existence of such ideas can result in situations similar to those in industrial processing where women typically hold the lower paying, less prestigious jobs. Also, attention will need to be paid to labour market factors such as wage rates, the existence of unions, and the supply of available labour. Additionally, if training were needed, consideration would need to be given to the scheduling of classes, if on-the-job training were not possible, and to the preparation of training materials.

Perhaps the most important task related to women's industrial inputs involvement is the careful monitoring and assessment of all recommended actions. It may happen, for example, that the build-up of manufacturing capacity or of a preventive maintenance programme at a port or major harbour construction can be noted far enough in advance that both training and

employment generating actions can be implemented to prepare women for positions beyond the entry level. If women are actively considered for industrial input projects, it may be possible, also, from an industrial development, perspective to locate projects in areas that might otherwise be bypassed, especially if most of the men go out to sea. Women are a viable source of labour supply and can be considered as such by project planners. This component, especially given the array of actions suggested for Mexico, appears to offer untapped possibilities for integrating women into FIS activities.

Government policy (7)

The government is quite involved already in promoting policies to enhance participation in Mexico's FIS. Currently, the main obstacles constraining these initiatives are inadequate data on women's FIS role and inadequate resources to establish needed programmes and actions where needed around the country. The lack of data and information is being addressed currently at the national level. A programme of village visits spanning three years has been underway to identify more precisely the number of women participating in FIS activities and defining their roles more carefully. Similarly, the National Fisheries Secretariat has conducted diagnostic surveys of women's FIS roles and a survey of fishing communities has been conducted to provide better information on male/female employment patterns. This information has been used and continues to be used to establish policies, goals and objectives, and to designate areas of the country most needing assistance.

Since 1980, the Government's FIS policy associated with women, has focused on training, organizational assistance and technical assistance. This approach is at least partially credited with reversing the pre-1980 decline that had been occurring in women's overall FIS participation. The overall approach of government policy has been directed toward the following objectives:

- Organizing and training groups of women to give them the capacity to perform fishing-related tasks more effectively.
- To promote a greater number of aquaculture production units for peasant women.
- To improve and upgrade general working conditions for women.
- To improve living standards and conditions for families, generally.
- To promote artisan-type activities.
- To provide basic education for women, along with skill training and organizational assistance.

The series of measures the government has put together frequently involves several government departments working together and at times adopts a comprehensive approach that may incorporate social assistance along with specific skill training or productive technical assistance. Additionally, there is some evidence that there is national-local-level communication and co-ordination when programmes are planned and implemented (i.e., local-level programmes do not appear to be developed out of context from overall

nation-wide needs or development directions). The government's actions are characterized by the following four general categories:

- a) Social services and technical assistance administered by professionals especially trained to women's socio-economic situation:
- b) Training fellowships:
- c) Special programmes and training for inland waterways and fishing areas:
- d) Professional technical assistance for those along inland riverine waterways.

The social services/technical assistance programme currently has 106 women especially trained and living in fishing villages. These persons do not deal only with women - they are available for the entire population and assist with different specialties from administration and management to aquaculture, maintenance and repair of motors and refrigeration equipment, and food technology.

The training fellowships are more oriented toward young people from fishing families - the daughters in this case. These enable the recipient to train for 2 years in co-operative formation, management and administration. While not reserved for females about 13 per cent of the current successful enrollees are female, thus setting a precedent for further involvement.

For the inland fishing villages, 57 females were trained by the National Peasant Confederation. These have been giving assistance in 26 states - aquaculture assistance, productive organizational support and initiatives to upgrade fish consumption are the type of assistance extended by these women.

For the professional assistance provided to women in interior fishing areas, 42 women have been especially trained. They are working primarily with production units that have been developed for local women.

Several initiatives are of an on-going nature and at least for the socio-technical assistance efforts, funds increased after the initial period. In addition to these, there are varied actions and projects that have been implemented in aquaculture, as part of overall integrated rural development. Among these are the following:

- In 1984, as part of the country's regional development programme, various projects were implemented under the auspices of United Agricultural Industries for Women. In three states, rustic tanks were constructed for fish-raising in 6 communities, cage-based fish-raising projects were installed in several others, and combined grain-fishfarming, poultry-raising-fishfarming and horticulture-fishfarming implemented on others.
- In 1985, a Programme of Organization for the Better Use of Fishing Resources in Communities and Villages was developed jointly by the Fisheries Secretariat and the Secretariat for Agrarian Reform. This programme promoted aquaculture-oriented projects for women and

consisted primarily of tank construction for raising fish and cages for fattening fish. This programme is part of an integrated rural development thrust to raise nutrition standards, upgrade living standards and stem rural to urban migration.

In 1986, 25 special fishfarming initiatives for women were introduced. Jointly administered by the Secretariat of Fisheries and Agrarian Reform and financed by national banks, the initiatives covered the organizing and training of the women, construction of tanks and raising and cultivation of the fish. The objective of each project was to organize women into productive working units and to provide them with training, technical assistance and support to implement, manage and administer the projects.

Many of the specific policy initiatives that have been implemented focus on rural villages, field extension work, developing co-operatives or productive work units, and on fishfarming and combined fishing and farming agricultural projects. Each of these actions is of a type that is cited as a need throughout all FIS components - especially those that focus on training and expansion of field extension services. It would appear that in terms of initiatives taken to date, women should have benefitted positively. Without knowing more detailed information, however, definitive statements about the expansion of one or another of the initiatives cannot be made; to do this, an expanded information base would be needed. What can be said is that careful planning on the basis of local conditions and situations is needed for actions such as these. Because of this requirement, interdepartmental co-ordination and effective national/local co-ordination and communication is important. Centralized planning initiatives that design one set of basic project tasks for all areas of the country could result in counterproductive measures for women. Attention at the minimum would need to be paid to the following:

- Caution to see that organizing women into co-operatives or productive units does not isolate them into a separate enclave from the rest of community productive activities.
- Caution to assure that any initiated project in aquaculture or fishfarming becomes self-sustaining so that once the funding period or time of technical assistance is completed, the women can assume responsibilities themselves.
- Caution that any specific project such as fishfarming or aquaculture do not overburden women who may have to continue with household chores and assisting their husbands with agricultural or fishing-related work.
- Caution that, whenever possible, training and technical assistance be designed and administered in as complete and integrated a manner as is needed and warranted. This appears to be the way in which extension assistance is already being delivered to women in the FIS and it should only be strengthened - this means that training, financing, organizational and workplace improvement measures all may need to be examined simultaneously.

What perhaps needs to be underscored in a discussion of Mexico's FIS government policy actions for women, is that a balanced perspective needs to be retained. This means that before any of the many suggested economic or

industrial actions are implemented, their impact on women should be examined and specific measures to enhance their participation incorporated at the outset. Additionally, general policy actions also need to cover women in urban and in large-scale industrial-level fishing projects. As a result, particular attention for Mexico may need to include:

- Labour legislation and wage legislation measures:
- Hiring and promotional guidelines for the industrial workplace:
- Increased attention to younger women and the potential that FIS development holds for their long-term future:
- Potential of high-technology aquaculture for women:
- Training for interior water cultivation of oysters and other species bringing higher prices:
- Nation-wide guidelines for provision of loans and credit to women.
- Strengthening mechanisms to disseminate information about available government services and resources to women in local areas.

Ownership structure (2)

Women are just beginning to assume greater ownership involvement in Mexico's FIS. There have been two demonstration projects where women's co-operatives own and manage oyster cultivation projects. There is also a precedent for women's involvement in the ownership and management of fishfarming production units in selected areas of the country. Additionally, in state-owned industrial processing plants and at the national fisheries level, women are moving into higher-level management and supervisory positions. Due to lack of information, the number of women owning and managing artisanal processing or marketing businesses is unknown.

It is likely that women can become much more involved in the FIS ownership structure. However, for this to happen, several constraints need to be addressed and specific development actions taken. The constraints include:

- Traditional ideas about women's role and male-female division of labour.
- Inadequate access to credit, equity/collateral, and business development - entrepreneurial training.
- Inadequate funds to establish programmes in all areas of the country where needed at once.
- Lack of access to extension workers and technical assistance.
- Competition for women's time from family and household chores.
- Traditional hiring and promotional patterns in industrial processing and large plants.

Among the Government actions that are needed to assist women in assuming more ownership involvement are the following:

- Provide women with more access to credit and financing.
- Provide business development assistance - advisory and consultant services; offer through extension workers, co-operatives or other social service agents:
- Provide relevant training needed for ownership - management, entrepreneurial, basic marketing, bookkeeping and accounting;
- Provide access to promotional opportunities and jobs in supervision and management for women.

Suggested development actions regarding ownership are difficult to make. Similarly, the impact of other component and system actions on women's ability to assume ownership is hard to determine. It is possible however, to say that assistance provided for ownership involvement needs to be broader-based than other types of assistance. Management and entrepreneurial training with no on-going access to business development advisory assistance is not likely to be effective and vice-versa. Access to credit is also needed, as is some way of choosing businesses and options that can be integrated into the local economic patterns.

Many of the suggested economic and industrial actions for the various components could eventually benefit women in ownership activities. Measures to encourage fishfarming, the formation of a greater number of outlets for selling fish, and the commitment to increase domestic fish consumption might result in increased involvement for women, if not in actual ownership, then at least in jobs where needed managerial experience could be gotten. Also, the industrial inputs and artifact production areas may open some opportunities for women. Ownership is one area where research and more precise definitions are needed. Some agreement needs to be reached about the exact meaning of ownership - is the idea to give women access to jobs where they can develop skills in management, supervision, accounting and other business ownership type of skills, or, is the objective to generate a larger number of female owned and administered businesses? There are other types of ownership activities that would be appropriate; these need to be specified and then translated into development goals, objectives, approaches and programmes. Once definitions are identified and goals established, the supporting assistance and administrative structures can be established. This is likely one FIS component where actions to assist women will require the co-ordination across several government departments - especially those concerned with education/training, women's affairs, social or familial services, and small business or economic development.

System orientation (9)

Mexico is taking steps both to increase domestic consumption and to strengthen exporting capabilities. As a result, it is difficult to suggest that women's actions should focus more in one direction than the other. Many of the women within the system, with the exception of those in national-level technical and professional jobs and those in industrial processing are most likely found in the domestic portion of the sector. What the future holds, in terms of specific job emphasis and development actions to increase women's

participation is hard to predict. However, there are several trends that seem apparent:

- Regardless of system orientation, perhaps more emphasis should be placed on providing women with adequate training for, and access to, higher-level jobs - those that offer higher pay and more opportunities for advancement.
- If smaller-scale, traditional processing continues to decline perhaps more opportunities for increasing women's participation can or will occur in marketing or, in selected areas, perhaps in industrial inputs.
- The use of aquaculture and fishfarming for both domestic consumption and export, especially in projects developed for women, needs to be examined in relation to market demand and pricing structures. Provisions to involve women in projects with higher-priced species might be appropriate.
- Regardless of the system orientation, if women's participation is to be encouraged, attention needs to be paid to the scale of operation chosen for various projects, the level of jobs affected by new automation and technology, and the type of training and technical assistance provided with the initiation or upgrading aspect of FIS activities associated specifically with women.
- Information dissemination from national-level resource management research is needed for local-area actions; whenever possible, any applications of research findings needs to occur via an integrated approach covering at least the extraction, processing, and distribution and marketing component activities - included are measures undertaken to modernize the fishing fleet and develop techniques for new species.
- The emphasis on increasing domestic consumption may provide a greater number of jobs overall for women while jobs associated with export capacity might bring in more income. Depending on particular locations of the country, species available and private versus state ownership, numbers and quality of jobs may vary. Those planning general strategies for women, at the national level, may want to consider such factors when developing FIS objectives and policy measures. Difficult choices may have to be made between the number of employment opportunities generated and the quality/opportunity of the work itself.

Given the development objectives of Mexico's FIS, planners and administrators for women's participation, at least for the immediate to medium-term future will need to follow both the domestic and export-oriented movements of the system. Both hold potentially a positive impact on women's FIS involvement; however, at present, not enough information appears available to translate system actions and directions into specific employment terms. One of the promising aspects for women of Mexico's FIS may be the high degree of government involvement and control that is evidenced throughout the system. This may make it easier to incorporate measures to integrate women along with overall system actions and to make adjustments or plans for alternative, non-FIS related initiatives, when needed.

3.2.2. Senegal

Resource management (1)

To incorporate and promote women's FIS integration, two major approaches are suggested within the resource management sphere. One focuses on stock conservation and management and includes an evaluation of potential oyster and mollusk reserves and the introduction of oyster culture and shrimp farming. Women already are primarily responsible for oyster/mollusk extraction. However, in some areas of the country, there is evidence of overexploitation indicating a need for intensified management and conservation efforts. As women already have a recognized role in these activities, assisting them to perform their work more effectively could benefit both the women and the overall FIS system. In areas where oyster culture and shrimp farming is introduced, the suggestion is made that an integrated approach be taken to project development, emphasizing the conservation/processing and distribution/marketing aspects along with the actual breeding and farming.

The second approach comes from the Government's side and is aimed more directly at local communities, especially in rural areas. This approach calls for (a) training/sensitizing Government staff, especially extension agents, to deal with socio-economic problems generally; (b) training and encouraging local women to plan, manage and participate in projects of their own design, especially in areas requiring management of FIS resources; and (c) training and making available a greater number of field extension agents to assist women with the better management of resources.

To carry out these approaches, the following development actions might be appropriate:

- In areas where oyster beds are found, or oyster culture or shrimp farming can be undertaken, train women in all aspects of breeding and management techniques. Also needed is general literacy training for all involved women;
- Train local women in techniques of project planning and management. Allow and encourage them to participate fully in all aspects of any initiated projects;
- Develop oyster culture and shrimp farming activities within an integrated project approach that incorporates exploitation, processing and marketing. Special attention would need to be paid to the seasonal management of the resources. Requisite and integrated training might be needed for women in such projects, for breeding, conservation/processing, and marketing aspects;
- Strengthen extension services for women. Provide both training and technical assistance by the use of extension agents skilled in project planning/management and who are able to deal personally and professionally with women's socio-economic situation
- Provide training or awareness of women's needs to extension agent-include emphasis on developing integrated projects where appropriate and on improving the overall condition of the entire community, for men and women alike. Training should emphasize the ability to work with local communities and the variations that may

exist between and among communities:

- Train women simultaneously in any particular skill-related activities and in leadership/management development avenues.

The incorporation of women's needs at the resource management level has the potential to benefit both the system and women. Among the specific measures suggested, that of introducing oyster culture and shrimp farming via an integrated project approach incorporating exploitation, processing and marketing should especially benefit the women involved. Aside from specific projects in oyster and shrimp farming however, local women should be trained for resource management tasks throughout the FIS, wherever they are active. Training and technical assistance provisions related to resource management could be centralized and planned in conjunction with technical assistance needed for other component activities; hopefully this could circumvent situations where women's role is by-passed because of overlarge catch loads or fish going to waste due to inefficient conservation techniques.

At a general level, training and technical assistance channeled into building local women's capacities in project planning and resource management, could lead to projects tailored more specifically to local conditions, with more likelihood of success; eventually perhaps benefits from FIS-related activities for women could spin-off into other economic sectors. Additionally, capable, trained female leadership at the local level could eventually assume much responsibility for project planning and development, thus reducing costs for extension agents and technical assistance. Similarly, having staff trained at both the directorate and local levels, in assessing and responding to women's needs, should contribute to the formation of projects that are tailored to local areas and with greater opportunities for success.

The local women should benefit directly, depending upon the type of assistance or training they receive. If trained extension workers are present within communities, who are aware of the system's direction of development, they can help women to keep abreast continually of new developments and prepare them accordingly. A second benefit to women from training or workshop/seminar/demonstrations in leadership development, general literacy or planning could be the application of their new knowledge in other aspects of their lives, aside from FIS activities. Also, trained, capable women could provide a basis for general economic diversification with communities.

In the case of Senegal, introducing women's concerns at the resource management stage is positive because the measures, if taken, will affect women across all system components. The emphasis would appear to be on getting local women involved in defining their own needs and implementing remedial measures. Additionally, strengthening the ability of the system to respond to women's needs underscores the success or failure of many other actions across the system. The measures discussed for the resource management component complement those of the system's overall development objectives (see reference chart), especially the ones of placing more emphasis on artisanal fishing and integration of fleet development with on-land handling and processing capabilities. By incorporating women's concerns at the resource management level, at the same time that government policy toward women is developed, these objectives can be fulfilled in such a way that both men and women benefit.

The most negative impact that could arise for women from resource

management approaches is if the system orientation as a whole were to concentrate primarily upon resource management for export activities. This would mean, more than likely that more opportunities would open up in larger industrial canning and processing factories. Unless coupled with adequate workplace legislation and changed employer practices, this would not be a favourable opportunity for many women. However, if good attention is given to women's needs in the resource management component, such occurrences might be prevented because of the overall attention that could be expected to spin-off to all other components throughout the system.

There are no major constraints specific to women to be considered for this component. However, there are two resource management constraints mentioned for the system as a whole that may affect women's integration-- (a) traditional export species have reached optimum exploitation levels, and (b) competition between industrial and artisanal fishing for stocks nearest the coast. Effects of these constraints are shaping the major research and surveillance thrusts of resource management actions. However, until those actions are implemented fully, women who work in processing and marketing roles may be affected. Opportunities in processing/canning factories may decrease as per available supply of stock, at least until new species are identified (for those areas where overexploitation is occurring). Similarly, if artisanal fishermen are faced with too much competition, women who depend upon artisanal activities for small-scale processing, and marketing-related employment could suffer.

Extraction (2)

In the extraction component of Senegal's FIS, the primary actions taken to integrate women are very similar to those suggested for the resource management component, e.g. introduce oyster culture and shrimp farming, develop an integrated approach to such efforts incorporating exploitation, processing and marketing, and management of oyster bed extraction in one project approach. In addition to these suggested actions, the recommendation is made that project planners and administrators address the social and labour market needs of young girls who migrate to cities from areas of the country where women prevail in oyster and mollusk extraction.

Due to the low profile of direct women's involvement in extraction activities, it would be easy to ignore the need to consider women and their needs. However, although not direct participants in extraction-related tasks, what goes on with and for the men in terms of extraction, vitally affects women, to the point of heavily influencing the types of opportunities that become available throughout the system. For this reason, the suggested focus for women's integration in this component is not so much how to involve them more directly and actively; rather, the focus becomes one of the impact upon women of system level extraction-related actions and helping women to adjust to those impacts. For example, the type of fish that are caught, the number of fish caught and the location of the fishing activity may influence heavily the type of conservation/processing methods utilized and the choice of distributional and marketing patterns that need to be developed. Unfortunately, most projects or new initiatives are not typically implemented on an integrated basis, e.g. with extraction targets established in relation to processing/conservation and marketing capacity. The end result is that portions of catch can spoil or processing plants--freezing primarily--are underutilized at great cost both in terms of labour and industrial inputs. In terms of women's integration and programme planning, it may be important

for administrators to monitor overall system-level developments and examine these, early-on, in terms of their potential influence on women.

For example, actions undertaken to increase artisanal fishing activities or subsidies to encourage commercial fishing may both upgrade catch levels but have differing impacts on women and consequent development actions. A build-up in artisanal activities might translate into a need for more home-based processing work for fisherwives, or, perhaps offer the opportunity for the development of co-operatives. Beyond the processing/conservation stage, marketing practices might change, especially if catch levels became so large that rural communities had to be by-passed in favour of larger ports. A build-up in industrial/commercial fishing, however, might impact more readily on women in larger cities (or attract more girls and women from rural areas) with the impact being the creation of low-level jobs in canneries. In each case, the required development strategy might be quite different--in the first, (more for artisanal fishing communities) training in basic management if co-operatives are formed, extension/leadership-building assistance to form co-operatives and appropriate equipment for upgrading home-based processing capacity. In the second, (more for industrial processing) combined work-place legislation and training for non-factory jobs and social-welfare assistance may be required. What is important to note in this regard, is that the actions taken in this component will influence women in all FIS components and current and projected extraction-related trends should be monitored closely by those who plan and implement strategies and actions for women.

Regarding direct, extraction-related component actions for integrating women (i.e. those focusing on oyster culture and shrimp farming), the following comments can be made:

- The feasibility of introducing oyster culture and shrimp farming should be examined in relation to the technology that is available, the amount of time that such projects will demand, the amount of remuneration that might result for the women, and the ideas within the villages about divisions of labour. Thought will need to be given to whether the culture/farming tasks will add additional burdens to overworked women beyond their typical household chores. If projects were initiated, for example in locations where there is outmigration of younger girls, the time demands on older women could be too great, resulting in likely failure of any project initiative. Combined extension assistance and training in literacy, breeding techniques and basic management skills is likely needed.
- For integrated oyster culture/shrimp farming projects, i.e. ones including exploitation, processing and marketing, attention would need to be given to the size of the available labour force, the potential competition for processing capacity/marketing that might arise between aquaculture activities and other FIS-related work for women. Also, attention would need to be given to the most effective ways in which the work could be organized and carried out. Also, some leadership-development type training to instill ownership among local women might be appropriate.
- Where oyster gathering and mollusk collection is already being conducted, some assistance with monitoring and managing the reserves may be needed--overexploitation has occurred in some locations and specimen size is decreasing.

- In locations where oyster and mollusk gathering already occur, actions may need to focus on upgrading the equipment women use and on finding higher or alternative means of remuneration. Perhaps some attention could be given to the seasonality of the work by providing women with alternative productive options in off-season perhaps by integrating with agricultural tasks.
- In locations where women already conduct oyster-mollusk collection in natural organizational groups (as in the Casamance area), these groups might form a logical base for the formation of other FIS-related options for women. Training or technical assistance planned for such locations should perhaps consider these natural patterns in the delivery of any service.
- Planning for the implementation of new projects/actions should perhaps, where appropriate, account for and incorporate age-specific components. In areas where young girls typically migrate, planners might consider involving the young girls actively in project planning.
- Planning/implementation probably needs to be based on particular geographic areas and local customs--e.g. Casamance has women organizing themselves naturally into companies and migration of younger girls, in the Thies region men raise oysters but women harvest paigne and on the island of Fadiouth, children participate in harvest activities.

Overall, the development actions suggested for the extraction component should have a favourable impact on women's role. Indicated strategies and actions focus on upgrading (replacing when appropriate) the fishing fleet, actions to cut operating costs and improve fishing techniques, upgrading the skills of sea-going personnel, and arranging for cost subsidies and supply of motors and equipment to artisanal fishermen. These efforts, when combined with the resource management actions of research to identify new species and to increase the country's export capacity, may result in more opportunities generally for women, across the system. Constraints to the system generally can impede the efficacy of all actions. Included are:

- Lack of investment finance;
- High electricity and fuel costs;
- Industrial/artisanal competition in coastal areas;
- Inefficient technology used for the fleet.

However, proper monitoring of the overall strategies for this component and trends in catch levels should provide indicators and benchmarks to use in developing women's strategies and actions. Incorporation of women's concerns in extraction activities should not be burdensome for planners and administrators. This is because women are mainly found in processing and distribution/marketing; the capacity of these areas should be monitored regularly in relation to catch levels. Incorporating women's participation should, consequently, occur with some ease. In instances when aquaculture type projects are initiated, these should only enhance the lives of fisherfamilies and fishing communities, thus having a favourable impact on the system generally.

Processing (3)

For women, the incorporation of actions to enhance their integration is

somewhat more complicated than was apparent in other components. Partly, this is because the creation of overall employment opportunities depends upon external forces, namely the size and type of catch and on industrial inputs such as availability and cost of electricity, availability of cold storage facilities, and so forth. Also, while the skill levels of the women are important to the success of processing endeavors, other factors such as availability of good, modern equipment, appropriate technology, workplace conditions, pricing disparities for different species, workplace practices and adequate infrastructural support may be just as, if not more, important.

The country's overall economic and FIS industrial goals include an emphasis on upgrading processing capabilities. One of the primary system strategies is the streamlining of processing capacity and production diversification to be carried out by, among others, the following actions:

- Preferential charges for electricity for processing plants;
- Export subsidies to increase the competitiveness of fish and fish products;
- Upgrade and develop new methods of artisanal processing;
- Government funds for the promotion of fisheries and subsidiary industries which provide support to companies in financial difficulties

These and other measures are needed to overcome the numerous constraints that threaten processing efficiency and the future attempts to increase or expand catch activity. Included among the system's constraints are the following:

- High plant/facility operating costs;
- Underutilization of plant capacity of 50 per cent;
- Use of old processing equipment;
- High spoilage in artisanal processing--primitive methods, outmoded technology;
- Inadequate investment financing for modernization.

Women's position in FIS processing, is definitely influenced by these economic and industrial system actions and constraints that have been identified. This suggests that as women are often found in processing jobs, and as they are often the ones mainly responsible for artisanal processing, an incorporation of their needs and improvement in their ability to conduct their work will be of benefit to the overall industry.

The strategies and actions that have been suggested for women in processing fall into two main categories--those for artisanal-scale processing and those for industrial-scale processing. In a similar manner, the constraints affecting women's complete integration can be divided into the same categories. An interesting observation is that a minimum of needed actions and constraints for this component relate to the skill or preparation of the labour force; rather, most measures relate to such areas as inadequate facilities/equipment, the seasonality of the work, variations in earnings/pay for various species, integration of processing in local market economies, need for more research and diversified techniques, and workplace conditions and legislation. The two primary types of training are suggested for women in processing. One type is general literacy training to upgrade women's abilities to operate equipment and learn new technology and to follow/maintain

health and safety standards. The second type of training relates to management and supervision. Both varieties of training are suggested for women in artisanal and industrial processing. The former group would be for women who are also engaged in marketing or who maintain their own household's processing operation: the latter group would be comprised of women selected for foremanship positions or first-line managers in processing plants.

For women in the artisanal processing end of Senegal's FIS, the delivery and implementation of development actions is likely to require a three-phased approach. One phase entails research to determine new technology and equipment that are needed at which locations. A second phase is developing financial or credit arrangements for purchasing the equipment. The third is the provision of extension assistance to assist and train the women for the use of the new techniques and equipment. The research phase can probably be accomplished along with resource management actions directly for women. The financing and extension assistance might be carried out as part of an overall community, FIS-based strategy for both men and women.

In contrast, industrial processing actions focus on means such as legislative measures at the national government level, voluntary changes in workplace behaviour from employers and social-welfare type assistance from non-FIS governmental departments. The remedying measures for these actions appear to be much less tangibly defined (than those for artisanal processing), may require longer-term assistance for carrying out and may involve changing long-held attitudes about male/female divisions of labour and women's ability to train for, and use, new technology. Definitions of success for industrial processing measures may be harder to establish and implementation may have to come from non-FIS related government entities. For the overall benefit of the women workers, this may be a situation where specific vocational training and career guidance should be made available for the young girls recruited from the south to work in the processing factories. Additionally, skill/technical training might be valuable for older women, especially those affected by the seasonality of the processing work or the contractual hiring practices within industry.

Distribution and marketing (4)

At a macro level, the FIS economic/industrial strategy of improving marketing organization and infrastructure facilities should have a positive impact on women's FIS participation. However, due to the varied participation patterns of women in marketing activities, the specific impact of system actions upon them will be difficult to discuss. The main constraints affecting women's participation include an inadequate transportation and distribution infrastructure (which discourage women from becoming fishmongers in the interior), high transportation costs if they do wish to market fish in other than home communities, an absence of credit/finance backing enabling women to equip themselves with temperature-controlled containers, and from various indications, an inadequate organizational structure for women traders. An adequate organizational structure would enable women traders to market their products more efficiently, guarantee loans, purchase equipment, and undertake other effective measures.

Women who are active in distribution and marketing component activities are also affected, directly and indirectly, by constraints that have been identified for the overall FIS system which include:

- Fragmented organizational structure and expertise for domestic distribution and export;
- No links between landing sites and cold storage facilities in the interior;
- Low income of many domestic consumers;
- Uneven distribution of income of domestic consumers (concentration is on urban markets);
- High spoilage of artisanal products because of primitive processing methods, inadequate hygienic standards and no quality control.

There would appear to be congruence between actions that have been suggested for the FIS development and those that will enhance women's participation. For the overall system, three main actions have been suggested:

(a) Supporting and expanding access to foreign markets and export activities;

(b) Providing credit facilities to small traders from the National Agricultural Credit Fund for the improvement of fish preservation and transportation;

(c) Upgrading new methods of artisanal processing.

The actions that have been identified as necessary for incorporating women's needs focus on providing women with the equipment and skills to carry out the improvement of the FIS's marketing capabilities. Included are the following measures:

- Organize women into economic "fishtrading" groups and make it possible for these groups to apply for loans to purchase equipment; this is to be done in conjunction with the National Agricultural Credit Fund's programme;
- At the fisheries directorate/ministerial level, provide professionals (especially those working most directly with processing/marketing aspects) with training in food, health and sanitation and marketing techniques;
- Provide women in marketing with training in bookkeeping and business management;
- Upgrade the quantities and quality of fish reaching the domestic market;
- Upgrade quality of fishtrader's equipment and marketplace conditions;
- Alleviate conditions which discourage women from becoming fishmongers in the interior--conditions that presently result in substantial product loss; the unhealthy market conditions and poor transportation network make marketing an unprofitable undertaking for women outside of the capital area.

Due to the varied participation patterns of men and women in Senegal's distribution and marketing activities, it is difficult to think of these actions as only improving or enhancing women's integration. It is likely that in all but the organizing of women into co-operatives that male traders would also benefit. This suggests that for any training or skill upgrading initiative, both men and women might benefit. However, regarding the creation of marketing opportunities for women in rural areas, it would first seem appropriate to know whether current male predominance stems from cultural ideas about divisions of labour and taboos against women's mobility. If women's lack of involvement is due primarily to these factors rather than inadequate infrastructure, then the forming of co-operatives to purchase equipment and provision of training in business methods might be premature. Preliminary attention would need to focus on changing attitudes about female mobility.

What may seem to need careful attention when measures are undertaken for women in distribution and marketing are the following:

- Varying participation patterns for women themselves as per area of country and species--where women are both processing and traders, training and technical assistance might cover both areas. There are women in Senegal who deal primarily with fresh fish, others mostly with dried fish, some who remain in one area with their product, others who cover some distances. The configuration of training and technical assistance needed for these women might well differ and may need to be considered when actions or projects are designed.
- The hierarchy, if one exists, and or lateral relationships that may exist between women in the distribution and marketing component--Senegal's case study information gives some evidence that a hierarchy may exist within the distribution and marketing component, especially between fishmongers and "irregular" fish marketers in the capital city area and fishermen's wives and fishmongers (more than likely to be male), in the rural areas. The different position of women may be important to consider in both training and technical assistance. For example, the fishermen's wives may need some leadership development and management skills to deal with official fishmongers more effectively; women undertaking mostly retail tasks may require a quite different set of skills and assistance with equipment, etc.; and, official (i.e. licensed) women fishmongers may be a good group for entrepreneurial development training.
- Whether women work mainly by themselves and for their own household or are able to participate in a more organized "fishtrader" group--different configurations of training and technical assistance will be warranted by each setting. This may be especially true for the provision of credit to purchase equipment and instruction/technical assistance for choosing or operating new equipment.

Overall, there should be increased activity in the distribution and marketing area of Senegal's FIS. The country has unmet consumer domestic demand; if drought conditions continue or worsen, the demand for fish should increase. Whether women will benefit from any increased activity, however, is questionable. Benefits will depend on (a) larger numbers of fish either from increased extraction or better conservation practices, (b) the species

of fish comprising larger loads. (c) whether the point of final sale is in the hinterland or urban areas, and (d) on the magnitude of changes in infrastructural and organizational aspects of this component's activities.

Consumption (5)

The role of women in the consumption component of Senegal's FIS is largely that of choosing and promoting fish as a dietary element. In the rural areas, especially, there is potential for significant expansion of this role: presently, although about 70 per cent of the population is in rural areas, it only consumes about 38 per cent of the domestic fish supply. The constraints for this component do not arise from inadequate domestic demand. Rather, a combination of constraints, including the following, have contributed to a situation of unmet demand, especially in inland areas:

- Total system dependency on export demand, ignoring the need for low cost fish as a source of protein;
- Lack of organizational structure/expertise for domestic distribution;
- No linkage between landing sites and cold storage facilities in the interior;
- Inadequate/antiquated artisanal processing capabilities, inadequate hygienic conditions and quality control.

General system strategies suggested for the industry ultimately should have a positive effect on the supply of domestic fish available and ultimately enable women to assume a more active role. However, a considerable length of time may be required before the results are evident. The general strategies recommended for this component, improving artisanal processing capabilities and upgrading marketing organization and infrastructural facilities, should in the long run make a larger supply of fish available to inland rural areas. However, even at present, with the assistance and support of effective field extension agents, women's participation can begin to be strengthened.

Development actions suggested for enhancing women's participation include:

- Preparation of nutritional and dietary programmes, especially in rural areas, to increase fish consumption;
- Target rural distribution/conservation priorities to increase the supply of fish;
- Provide to local communities trained extension workers who can offer advice and technical assistance to women for the consumption and preparation of fish for the family.

The training of extension agents and provision of extension assistance to local communities is probably one of most effective means of enhancing women's participation/integration for the consumption component. The training can be part of the overall training recommended for project planning and development tasks as part of resource management component activities. The extension agent may well also be the person who assists women in upgrading their processing capabilities and both men and women in distribution and

marketing tasks. The provision of dietary and nutritional help to women can assist them for both the immediate and long-term future. For the supply of fish that are available in the rural areas, an adequately trained extension agent can assist women in using and preparing the fish efficiently and where necessary, providing instructional advice about the value of fish as a source of protein. It is feasible that such efforts can also help women to decrease the spoilage rate of fish in those locations where processing/conservation capacity is inadequate.

Industrial inputs (6)

The impact on women of Senegal's FIS strategies for industrial inputs is difficult to discern. As seen from the examination of other components, attention to factors that constrain the creation/maintenance of industrial inputs, should over time have a favourable impact on women. Constraints include high costs and inferior quality of ancillary services, the age of the industrial fleet and use of inefficient technology, high fuel and maintenance costs for the fleet, excess operating capacity for industrial processing, and high electricity and fuel costs. In a similar way, the action strategies suggested for the system should lead to overall upgrading of the extraction/processing/marketing processes which would then, in the longer run have a favourable impact on women.

System strategy and plans of action for the component include the organizing and improving of ancillary services via the following actions:

- Investment legislation for tax exemptions on equipment purchases, sales and profits;
- Provision of infrastructure, ports, markets with cold stores, etc.;
- Preferential charges for electricity for processing plants.

Attention to industrial inputs can affect women's FIS participation primarily in two ways. Indirectly, as just suggested, attention to ports, equipment purchase, provision of cold stores, and electricity purchase for processing plants can provide upgraded extraction capacity and increased industrial processing capability. There is no guarantee that increases would impact favourably on women. As indicated in the discussion for the extraction component, greater extraction capabilities may be a detriment to women if not undertaken in conjunction with artisanal processing and marketing capabilities. Similarly, more efficient use of industrial processing capacity can have a mixed impact on women, depending on employment opportunities and work conditions. However, more than likely, given attention to potential negative side effects, the indirect result of upgraded industrial inputs for women can be positive.

There is, or likely can be, a direct impact on women from actions taken for the industrial input component. Whether positive or negative, however, cannot yet be discerned, at least from current data and information. The direct impact would be jobs and positions created for women in varied aspects of industrial input activity-- jobs in port-related construction, boat building and maintenance, and other jobs associated with the provision of ancillary services. In order to assess the potential for such opportunities for women, the following actions would be needed:

- Gather data and information on women's involvement and develop strategies on basis of information;
- Gather information about availability of jobs and barriers that may prevent women from acquiring employment for industrial-input-type jobs;
- Train women or undertake appropriate employment-generating strategies for available jobs.

This may be a good component to examine for the prospects of promoting female entrepreneurs, especially in more urban areas. Appropriate training, business development help, and technical assistance would likely be warranted.

Government policy (7)

Presently, women are not involved or represented actively in the government policy component of Senegal's FIS. The FIS overall is a high priority for the Government and receives substantial indirect involvement in sector activities. Ultimately, the integration and fostering of women's participation may rest on governmentally initiated measures. This is especially true for the immediate to medium-term outlook. Currently, the Government has a need for more information and understanding about women's present and potential role. The information can be gathered through a much closer exploration of constraints and enhancements for women's participation and a more precise review of the likely positive and negative spin-offs of investment choices or decisions. Additionally, closer co-ordination with women themselves is recommended, at the local community level, in employment settings and in fishing households.

Information currently available indicates that at a beginning point the following minimum steps might be considered in government policy for women:

- Where necessary and appropriate, take special steps to provide productive opportunities and preparation for younger women. Examine the opportunities likely to be available to them from FIS activity and make some decisions about the benefits of preparing them for FIS activity as opposed to other employment.
- Develop a better understanding throughout the Government of the social and economic situations surrounding women; identify priority issues and actions that are needed;
- Identify problems/needs of women that extension agents and technical personnel will need to address. Provide requisite training and support;
- In project planning and management, integrate women into the overall development approach rather than isolating them in special project undertakings;
- Provide general education, literacy training and appropriate skill training as needed to assist women's integration;
- Provide more extension help for women; try to recruit and deploy extension agents capable of providing both training and technical assistance, and able to communicate effectively with women;

- Upgrade workplace conditions and provide supportive social infrastructure for women working in urban processing factories;
- Adopt an integrated approach to development projects in rural areas for those within the fisheries sector and those in agriculture. For FIS women, enhance their ability, as appropriate, to undertake the multiple roles of harvesting, processing, distribution and marketing. Skills provided for FIS activities might well be transferable for other agriculture-related tasks;
- When planning/implementing projects, avoid placing strain on the labour market or labour force. This is especially true in areas of heavy outmigration to urban areas. In areas where the youth, especially younger girls/women, migrate, attention might be given to special measures to stem the migration. Participation of women in project planning may assist planners with this task;
- At the same time that attention is given to women's integration only, other least advantaged groups of the population might also be considered in project planning/implementation tasks.

Ownership structure (8)

As with government policy, there is little information about women's role or involvement in Senegal's ownership structure. However, indications are that they are not actively represented, either at the artisanal level by owning canoes or dugouts, or, at the industrial processing or government management level. At present, information indicates that there is a presence of foreign companies, joint ventures--signifying a high dominance of foreign capital, technology and management--and an emphasis from the Government on privatization. These factors suggest that at present there is likely to be limited opportunity for women to increase their participation in the ownership component. As noted earlier, in the larger foreign firms for processing/canning, etc., women are typically in the lower-status jobs. Also, at the artisanal level, women do not appear to have the capital to own the processing establishments, although specific data were not available on this issue. Women may be more involved in ownership in the marketing and distribution component, especially women who are official fishmongers. Again, though specific data were not available suggested actions for this component include organizing women into fishtrader groups so that they can qualify for credit and financial assistance.

More information needs to be gathered about women's participation and potential for ownership and then specific strategies and action steps formulated. It is likely that a combination of relevant training (perhaps entrepreneurial/management skill training) combined with employment-related initiatives and credit/financing efforts for women might bring about significant changes. The overall ownership structure at present appears to be beneficial for Senegal's overall FIS development. For women's involvement, the most expedient approach may be to create some opportunities for them within the existing structure.

System orientation (9)

Senegal's FIS has a strong export orientation (with fisheries export contributing almost 25 per cent to the country's total export earning), and

a strong presence of joint ventures, foreign capital/technology/management, and so forth. In conjunction with this orientation, however, the development policy includes meeting domestic demand for fish protein, increasing local consumption of fish as food and increasing employment and income for local residents. While evidence would appear to indicate that women could be most completely integrated under a more domestic system orientation, careful project planning and implementation should be able to afford opportunities to women under either an export or import orientation. While numerically more opportunities might arise in the processing or distribution/marketing components, the all-important foreign capital needed to finance domestic operations may come only from export-promoting actions.

Women appear currently to be most active in the domestic portion of the FIS. Almost certainly, government actions/policies will create additional upgraded opportunities for them. For the future, moving more women into the export portion of the system and initiating measures to provide them entry into more responsible positions may be an action that government fishery and economic development administrators wish to examine and encourage. Depending on where the employment opportunities were to originate, assistance might include training, workplace legislation, employer-persuasion (e.g. to alter hiring or promotional practices) and credit and social welfare assistance (e.g. housing, transportation, health support).

3.2.3 Indonesia - development policies to enhance women's FIS participation

Resource management (1)

Indonesia is fortunate in having substantial resources for expanding its fish catch. However, the Government, aware that some areas are in danger of overexploitation and of the need to increase income and employment for artisanal fishermen and communities, is taking steps toward active resource management. Steps to carry out its overall approach include institutional and supportive back-up for the FIS as a whole and regulatory measures. The regulatory measures emphasize a reallocation of fishing areas in favour of small-scale operations. Measures of institutional and supportive back-up include a new directorate for fisheries extension work, government fisheries enterprises becoming deliverers of extension services and the compilation of statistics and surveys.

Each of these measures potentially can benefit women. However, if no special emphasis is given to women's needs or involvement, benefits are likely to be indirect, at best, and perhaps even negative. In terms of actions needed to enhance women's involvement, the Government likely needs to extend what it is already planning to do for the small-scale fishermen to incorporate a special emphasis on women. It is likely that lack of financial or staffing resources at the national level may obstruct a full-fledged effort for women, especially when the required action is expensive field extension assistance. However, if needs are properly identified and priorities established, actions can probably be undertaken on a variety of fronts. For example, the compilation of statistics and survey already intended could perhaps be extended to cover at least basic information about women. As another example, trained women have already been hired as extension agents. Perhaps these could provide initial leadership in the provision of assistance to fishing women, or in training male extension agents who service local villages designated as priority locations. And, on another front, efforts planned or underway to strengthen aquaculture activities can build upon and expand local resource management initiatives where women are already involved via their role in co-operatives.

There appear to be initiatives already underway on a number of different fronts that the Government can use as a base for encouraging and building women's resource management participation (see discussion under government policy). For the immediate and near-term future, perhaps the following are among the more important actions to be taken for women:

- Collection of statistics, surveys and qualitative information about women, their roles, tasks, needs, etc.;
- Open up more options or opportunities for trained women to assume leadership at the national fisheries directorate level, especially in the area directly responsible for extension work;
- Establish communication and liaison with local women and groups capable of enhancing women's role and involvement in managing resources;
- For women in areas where fish resources are in serious danger of being overfished, begin planning for and offering productive alternatives for them;

- When examining resource stocks and setting regulatory measures, also examine processing and distributional/marketing patterns in an integrated manner. This can ensure that processing methods and capacities are appropriate for the species being caught. Similarly, current marketing patterns may provide insight to species that can beneficially be harvested in greater quantities, stock levels permitting. Such an examination can also provide necessary information about changes that may be needed in extraction patterns, processing methods/technology and marketing customs:
- Training developed for local extension agents on women's potential involvement in resource management:
- Training for local women in basic resource management skills; where co-operatives already exist, build on established organizational structure.

Extraction (2)

As indicated in chapter 2, women are not involved in marine-based sea extraction. They are, however, directly involved in several types of extraction-related activities. There are some women reported as employed in fish breeding and seaweed culture activities. A second involvement is employment in fishing establishments involved in capture-related business. A third form of participation is in the management and operation of aquaculture projects and harvesting of seaweed and seaworms. Data provided were not detailed enough to offer specific ideas of the women's role or tasks performed nor a geographic location of each type of involvement. However, enough information was provided to offer suggestions about strategies needed to foster women's participation. The following comments can be made:

(a) The measures centered around financial assistance for carrying out suggested component strategies indicate support for the build-up of the artisanal sector, especially boats, equipment and gear, and for fishfarming endeavors. In the case of upgraded and motorized trawlers, considerations need to be given to the direct effect of motorized trawlers on fishermen themselves and to the indirect effect on their wives and other women in the community. Special attention is needed for the impact of larger catch loads, on processing and marketing capabilities; an integrated approach discussed earlier might have merit. Along similar lines, credit options might also include a review of property-holding activity among the small-scale fishermen and their general ability to repay any credit. Many of the artisanal fishermen are not landowners, with the result that their wives are unable to undertake any agricultural types of tasks while the men are at sea, in order to assist with additional, needed income. In the absence of such opportunities, planners might want to focus special efforts on developing specific income-generating activities, either fisheries- or non-fisheries-related, for women.

Women, in some parts of Indonesia, especially on Java and Bali have been involved with fishponds and fishfarming. It would seem that this is an area where women could participate more completely. Training and technical assistance (which is already suggested as a strategy) would be needed by the women, but with proper guarantee of such aid to encourage successful practices, it would seem reasonable to make provisions to set-aside a portion of the credit for women via co-operatives or other types of organizational

units. If this is not done, special attention might be given to provide training and employment-generating assistance for women so that they could assume responsible positions.

(b) For the industrial system, a variety of technological development initiatives are suggested. These initiatives could prove favourable to women, provided that the results and effects of the research are made accessible to women. Specific measures are indicated for aquaculture, an area in which women conceivably can become involved heavily. However, without special attempts to provide training/technical assistance directly to women, the choicest jobs, depending on the health of the local economy and number of unemployed males, could conceivably go to men. This is especially true if women are not given direct access to training, perhaps some organizational assistance, and some access to information about new techniques, research, and so forth.

(c) There are several constraints to women's full participation in this component's activities that need to be addressed. There are cultural values and general social attitudes against women working. In the poorest strata of the population where the entire household may be considered a production unit, attitudes against women are not so apparent. However, some attention may need to be given to attitudes if projects are to be operated successfully. Such attitudes may not stem just from cultural or religious traditions. They may also arise from groups such as traditional money lenders or large-scale traders who might be threatened by changes in credit policies or productive operations favouring women.

Other constraints are more of a technical nature and include the following:

- Extraction-related work, including aquaculture tasks can be physically demanding and time-consuming. Without proper consideration to both factors, either (a) women could be overburdened in terms of chores, especially if they are expected to help husbands unload catch, etc., or (b) the project could fail or pass on to male management/direction because women lack time to carry out responsibilities effectively.
- Lack of both appropriate training and equipment impair women's opportunities in this area. This constraint may be compounded by a lack of general education and literacy skills. Lack of training/general education, however, does not mean that women are untrainable - rather, different methods, approaches, and delivery modes may be warranted.
- Overexploitation of resources and pollution of inshore waters may pose real constraints where women are involved with any harvest activity such as oyster/mollusc collection or gathering of other species. Regulatory measures and technical assistance need to focus on removing environmental factors that may affect women's ability to participate productively in FIS activities.

In terms of measures to enhance women's participation in extraction component activities, there are three main categories:

- Training and general education - women in artisanal-based fishing villages have often not had access to education. What this

that general education and more direct, intense skill-related training may be required. Special attention and effort should probably be given, in areas where appropriate, to fishbreeding and skills related to aquaculture. Also, women need to have direct access to all training/technical assistance, rather than receiving it indirectly from their husbands.

- Credit and co-operative formation - women's participation within Indonesia's FIS extraction component varies, depending on location (e.g. patterns differ for the three main islands, Java, Bali and Sumatra) and type of fishing activity (e.g. sea-going, marine, or inland). Women's productive groups already have a start in some areas (especially on Java), most often in association with a particular fish pond operation or with processing or agriculture-related endeavours. Given socio-cultural constraints against women's employment and receiving credit in some areas, information needs to be gathered regarding where, when, and how credit can best be granted to women and whether best done via co-operative formation or through another organizational arrangement.
- Creation of employment opportunities related to extraction - women who have advanced training in biology, science and more technical skills need to be granted employment options along with women performing more routine tasks associated with fish breeding or fish pond operations. Detailed data are not yet available about the employment structure of Indonesia's aquaculture, fish farming and mariculture operations. However, some of the positions require the more complex skills. Indonesia has women trained in such areas; these women need an opportunity to assume leadership and responsibility while other women need an opportunity to receive advanced training. Especially at district and local levels in Indonesia, linkages and divisions between men's and women's work need to be understood better. This information then needs to be merged with an understanding of the labour market for the development of measures for generating employment for women.

The effective development of the extraction component is important to the general participation of women throughout the FIS. As a result, research, technological development and investment is both warranted and necessary. The type and supply of available fish stock in part influences the position of women in processing and marketing and perhaps to some extent where overall opportunities for women can be created over the long run. To be really effective in terms of FIS development, however, increased attention to extraction has to be combined simultaneously with improvements in processing capacity, and distributional and marketing facilities.

Processing (3)

Throughout Indonesia, women's participation in processing varies according to the type of extraction patterns of the local area (marine catch often gets processed by the same household, aquaculture and fresh fish stock are often processed outside the household and fish for export is usually processed in industrial plants). Also, processing techniques vary according to geographic location (e.g. women on Java and Bali, even though involved basically in the same types of processing procedures as women in South Sulawesi, use techniques that are much more sophisticated). Such variations indicate that project design may need to account for and incorporate them.

While confirming data are not available, it is quite possible, as has been pointed out in the other case studies, that fisher wives engage in tasks spanning several components; these women may require a far broader, more comprehensive training or technical assistance effort than those who work primarily in processing or in marketing-related positions. If the overall approach to analyzing technical and social needs of fishing communities is an integrated one spanning at least extraction, processing and marketing/distribution, the planning and design of efforts incorporating such variations could probably be facilitated. Whatever the variations, whether because of species, geography or technique, knowledge of the local area and participation of the villagers could likely ease the incorporation of these variations into project design.

For this component, the type of measures suggested for enabling women to participate more completely can be divided into two general categories--those needed by women more involved in home-based or small-scale processing and those needed in industrial establishments. Women in both groups share similar constraints--socio-cultural attitudes, inadequate access to credit/working capital (more pronounced for home-based, small-scale processing), low remuneration, inadequate training and promotional opportunities (especially for those in industrial processing who could qualify for supervisory or management jobs), general workplace conditions, and inefficient technology.

The measures needed or suggested for remedying these constraints are ones that both compliment and supplement those indicated for the overall industrial system. System measures which include subsidized prices of fuel, materials, fertilizers and pesticides, research on waste fish utilization and extension services to assist in handling of catch and processing, are made more concrete when examined in relation to needed women's measures:

(a) For artisanal processing the needs appear to be:

- General education, including literacy, basic accounting and basic management skills;
- Credit arrangements allowing for women's lack of property and general collateral;
- Training, when needed, for new techniques or equipment, especially in fish curing and waste reduction;
- Means when necessary for women to supplement inadequate supply of stock;
- Providing sheds for shrimp cleaning/sorting;
- Assistance in diversifying processing procedures and production of fish-related products;
- Improved hygienic conditions at landing sites.

(b) For commercial processing:

- Wage legislation;
- General education where needed, basic management skills, promotional opportunities;
- Increased credit availability.

Most of the measures for women in artisanal fishing would be implemented by the extension service. The subsidized prices and research

tasks would have to be set at another level but perhaps administered by the extension agent. For the commercial workplace, wage legislation would need to come from the Government with training coming from the employer or an outside party, and promotion opportunities from the employer.

The strategies and actions of the general system appear to be favourable to women. It is in the best interest of the entire system to create a processing capacity that is as efficient as possible and since processing appears to be the domain of women, it is in the system's best interest to enhance women's involvement. Unless the processing capability is present, fish catch potentially goes to waste and both export and domestic markets can suffer. Upgraded extraction and processing capacities can potentially result both in increased consumption of fish in the domestic market, increased income for the artisanal fisherpersons and their families, and increased employment opportunities for both men and women.

One of the primary types of information still lacking about women in processing is an occupational profile. For women not working in the home, it is not known whether women work in groups or as a co-operative, or in a small, privately-owned plant. Especially for strategies and actions centering around credit access such information could be valuable. This might be an area fruitful for entrepreneurial assistance for women. Also, such information might assist in the development of more relevant and targeted training/technical assistance programmes. An additional type of information that might be useful is the relationship between aquaculture, mariculture, and seafarming work and the requisite processing approaches for each. The capacity to develop an integrated project, based on available labour supply, women's time and capabilities, and linkages between male-female work, might enhance the success of any such undertaking.

Distribution and marketing (4)

The integration and enhancement of women's position in distribution and marketing is potentially a complicated undertaking. An initial impression would suggest this area to be a good one for women. This is especially true because of unmet demand in the consumer market, the expanded activity suggested for the extraction component, the build up in aquaculture/fishfarming etc., and the emphasis on and government support for the artisanal fishing sector. Also, initially, it would seem that the major constraint barring greater female participation is the lack of adequate roads, transport, cold storage facilities and so forth. However, such impressions are misleading. This is because in Indonesia there appear to be definite, defined participation patterns and roles in distribution and marketing for both men and women. Of the three general classes of middlepersons who conduct much of the fishtrading/marketing activity, women are typically found in the lowest class, those operating in a particular location, without much infrastructural support and little, if any, financial backing. Women in distribution and marketing are often the wives of fishing labourers or crew bosses. At the artisanal, household level, the wife may be responsible for selling as well as processing the fish; at the very least, she negotiates with the fishmonger for the selling price of the husband's catch.

Specific actions for upgrading women's participation in this component are difficult to identify in the absence of more detailed data. Especially needed is information about the potential for women to move from one level of middleperson activity to another, given adequate infrastructural support and

financial backing, and, the particular role, if any, that women have in the official system of auctions at which at least a portion of fishermen sell their catch. At the broadest level, planners and administrators, when designing strategies for this component, must deal with the following situation:

- A range of female participation patterns from the more unstructured--where women just wade into the water at a landing site and purchase a portion of the catch that has been set aside for them--to the more structured participation of women at the second category of middleperson activity--those who purchase fish at an auction site or from a boat's crew and resell to the largest middlepersons or directly to consumers.
- Variations in women's marketing role that appear to coincide with differences in the integration of the local economy and infrastructural support. Indications were, at least, that the role of women traders in villages located near larger towns is more pronounced and visible. In a similar vein, women in marketing on Java appear to have the most infrastructural resources at their disposal to perform their tasks efficiently and productively. Any action designed for this component will need to include measures to address the infrastructural variations along with women's own needs.

What is immediately striking for distributional/marketing strategies is the idea that actions taken to improve the system itself may not be of direct benefit to women. In some, if not many instances, infrastructural improvements may improve the position of male traders, to the detriment of females in marketing. Also striking is the notion that it may not be possible to guarantee the successful outcome or benefit of any strategy designed directly to assist women. This seems apparent because any outcome is likely to depend as much on the effectiveness of the action itself, as on the ability to alter established patterns and roles by both men and women. Whether this is readily achievable or not, especially in the time period set for many development strategies is a question to consider.

Regardless of whether benefitting men or women, for the development of the entire system, the distributional infrastructure needs to be improved. The primary system strategy is the development of small-scale fisheries as part of an integrated rural development programme. This may be carried out through financial assistance for the provision of infrastructural improvements and through extension services and by large-scale fisheries aiding smaller-scale ones, to assist in upgrading overall marketing capability. Especially relevant for women are infrastructural improvements in roads, transportation, and provision of adequate storage and hygienic facilities at the marketplace. Training for some female marketers is also indicated. Especially with the training, questions would need to be asked about the need and rationale for training women, who, through no fault of their own may be locked into a particular position. Similarly, a detailed review would be needed to provide relevant content for any training--the options a woman has in the labour market might influence the scope and breadth of any training. Questions also need to be asked about the wisdom of preparing women not yet in marketing for such roles, or, whether the creation of new options outside FIS activity might be better. The creation of an effective marketing system is important for meeting domestic consumer demand and for enabling the FIS to absorb effectively any expansion in catch and processing levels and to provide

profitable return in the recommended investments.

Consumption (5)

Women occupy a central role in Indonesia's consumption component activities. They are active as consumers and preparers of fish as food; also, indirectly, they influence the system's consumption component in their role as household financial managers for income and expenditures. Women are hampered in their role by two major types of factors--economic and educational. Overall general income is low, especially in rural areas; this fact, when combined with the price of fish (somewhat uneven due to seasonality of harvest) and uneven distribution (in rural areas with inadequate transportation systems), makes it difficult for women to include fish as a regular dietary staple. From an educational standpoint women also lack knowledge of general nutritional principles and the importance of fish as a source of valuable nutrients.

There are two general courses of action for facilitating women's participation. One is to encourage the diversification of fish products in order to increase nutritional values and consumption levels. The second is to offer training or workshops for families, especially women, in nutritional areas, helping them to understand the relationship between food and health, and to improve food selection and preparation methods. Such product diversification and training is especially appropriate for rural areas and would likely be undertaken by either a fisheries or agricultural extension worker, or in conjunction with family welfare work already being undertaken in the villages.

The upgrading of the consumption capacity is not likely to occur without improvements in the distribution and marketing system. Without regular access to fish and stable, affordable prices, the benefit of training may be lessened. The entire system has a benefit to receive from any upturn in consumption--more demand which in turn will contribute to expansion in other components' activities. The importance of women in relation to consumption trends, consequently, warrants recognition and the support needed to enhance their participation.

Industrial inputs (6)

The role of women in industrial input component activities in Indonesia varies, depending on how industrial inputs are defined. If inputs are viewed primarily in terms of infrastructure construction and maintenance, construction and maintenance of the fleet and energy and price inputs, then the role and participation of women is not well defined or documented. More information is needed about the specific employment and occupational structure associated with activities of this component; then a closer examination is needed of where women currently are involved, and potentially could be involved.

Women, especially in artisanal fishing households have a role in industrial inputs, just by the fact that they are typically the household financial managers, especially in areas of savings, and in loan repayments. If the husband takes out loans to purchase gear, equipment, and so forth, the woman typically is the one who must see that repayments are made. In this way, her efficiency and thrift contribute to the overall ability of the artisanal fishermen to increase catch loads, and draw more profit for the

household. The main difficulty with this role is typically that men are the ones who take out the loan and the ones to whom credit terms are explained; yet, the wife is the one typically having to meet the repayment terms.

A second yet similar role for women can be identified if income-generating activity (whether FIS or non-FIS related) which contributes to overall household capital is considered as an input. In this role, women can have both a direct and an indirect role. The direct would be activities such as netmaking and netrepair, making of packaging material, or perhaps the manufacture and/or repair of other extraction-related gear. Indirect roles might involve animal-husbanding or similar types of profit-making tasks in agriculture, fish-pond operation combined with goat raising, and so forth. These types of activities may be undertaken independently by the fisherman's wife, or, in a group of several fishermen's wives. As described in the Indonesian case study, there is a precedent for the successful establishment of such undertakings: there has been financial and operational support from both the Indonesian Government and international donor agencies.

There appears to be a much larger potential to expand women's role in industrial inputs, with strategies and actions such as the following to be considered:

(a) To increase direct involvement in industrial inputs (e.g. participation in infrastructural projects, equipment construction, maintenance and repair), data need to be collected, current participation defined, and available opportunities identified--likely, a combination of employment generating and training/technical assistance is needed.

(b) Provide, through extension agents training in household financial management for women. Such training might be combined with an orientation for bank or other credit officials about providing women/wives with information about loans, repayment terms and so forth. The primary obstacles surrounding this action might well include overcoming traditional attitudes and practices regarding the relationship between men, women and money. Additionally, difficulty might arise if the men take out loans from the owner of the boat on which they work. Such practice is common in Indonesia--boat owners actually prefer to have their crew members indebted, thus insuring their employment and loyalty. This practice might not permit direct involvement of women, especially when they typically are granted little decision-making authority over expenditures.

(c) Assist women to develop their own capacity to identify their needs, their capabilities and alternative productive opportunities for employment or business development. Once identified, assist in establishment of skill training opportunities or financial and business development assistance.

(d) Where feasible, establish special credit funds and arrangements for women, including where appropriate, assistance in organizing productive working groups, perhaps co-operatives. Decisions will have to be made as to whether to work within traditional financial patterns, or, to create new ones.

(e) Where women's involvement in industrial input is biased by traditional attitudes, practices, and so forth, thought perhaps should be

given to assisting, through various approaches, to working with men, traditional power structures or institutions, and other entities for change of practice and attitudes. Such assistance can be difficult to measure, in terms of outcomes, and may only be effective over the long-run. Yet, for this or any other component, such assistance may actually be the most valuable, just in terms of creating expanded opportunities for women.

Government policy (7)

Most of the strategies and actions government needs to take to encourage the integration of women have been discussed in chapter 3 and need not be repeated here. Specifically directed toward women, however, the following general areas need particular attention:

(a) The development of a good, quantitative and qualitative data/information base; inclusion is needed of local-level data on social, cultural, religious and economic trends, attitudes and practices.

(b) Encouragement of more leadership supporting women's issues, productive capabilities and advancement need to be encouraged at all government levels. This includes the placing of more women in positions of technical and professional leadership and attention focused on means of addressing and encouraging measures to enhance women's productive participation throughout the FIS.

(c) In the design of new projects or introduction of new techniques, provisions need to be made for social impact analysis and continuous monitoring on the impact of the actions on women. Provisions also need to be made for the introduction of alternative measures for women, if an action is deemed to be negative or detrimental for them.

(d) Attention needs to be given to operationalizing ways of enhancing women's integration, especially at the local and household levels. The Government has a commitment to women's quality as participants and beneficiaries in the development process. However, this needs to be translated into specific actions and planning and assistance approaches. Building of a solid database, provisions of social impact analysis, and attention to the issue of extension assistance will enable the establishment of operational measures.

(e) Attention needs to be given to the entire spectrum of field extension assistance and its role in assisting women and addressing their needs. Included are issues of hiring female agents, training of males, where and for how long the agents, especially females, are located, delivery methods used by agents, approaches used for working with both local men and women, and the breadth of support the agents can be expected to offer. In other words, attention needs to be given to hiring, training and funding of extension services as they relate to women.

(f) General social services required to improve the status and productive capacity for women in FIS development need to be assessed and co-ordinated with overall FIS development measures.

(g) Government-wide review needs to be made of labour and wage legislation and employment patterns of women in industrial FIS establishments. The impact of such legislation and patterns on women need to be assessed and

appropriate changes made as needed.

Ownership structure (8)

Limited data are available regarding women's participation in the ownership component of Indonesia's FIS. In the extraction and marketing components, males appear to have or own most of the capital and equipment. For processing capabilities, no information was provided. Due to restricted access to loans and limited entrepreneurial experience, women may until recently have been excluded in ownership activities. As a result, this may be an area that offers potential for women, once a variety of obstructing constraints are addressed. Among these are the following:

- Traditional view and attitudes about women's ability to learn and master new technology and skills needed for ownership. Lack of experience and exposure in this vein should not be confused with inability to learn and become skilled;
- Lack of access to ownership and collateral that could be used to guarantee loans;
- Lack of experience in such areas as planning, market identification, resource management, and other abilities associated with creating, developing and owning a productive endeavor;
- Lack of employment opportunities in positions that would prepare women for and give them access to the FIS ownership structure. There is a limited precedence for women's involvement in the ownership component. Typical involvement includes fishpond culture and some aquaculture and animal husbandry activities. Some of these have been undertaken through the auspices of a co-operative. These types of activities need to be expanded and made available to a larger number of women across the country. In the most general of terms, the following steps need to be taken:
 - Data and information collected about women's participation, both current and potential, in relation to ownership activities;
 - Identification of appropriate ownership responsibilities for women; included are identification of good markets, types of profitable businesses or small factories, business development services and entrepreneurial development assistance;
 - Assistance, as needed and appropriate, in facilitating the formation of co-operatives or productive work groups, for purposes of obtaining credit and carrying out productive responsibilities;
 - Assistance, as needed and appropriate, for providing access to loans, credit and capital;
 - Assistance, as needed and appropriate, through training and employment development measures, to provide women with the technical and managerial skills they need in order to assume ownership-related responsibilities and positions.

System orientation (9)

Women in Indonesia presently are more involved in the domestic sector--production, processing and trade for local consumption. While this is the part of the FIS that may be undergoing the most immediate expansion, with all the emphasis on building up artisanal, small-scale fishing, one of the development goals is an increase in the export of fishery products. This goal, if pursued, can offer options to women, especially those residing in areas where there is a concentration of larger-scale FIS, industrial activity.

Presently, most women in the export sector are in lower-level processing jobs--shrimp cleaning and sorting and labourer jobs in canning and freezing plants. As one outgrowth of increasing fishery exports, an attempt might be made to diversify fish and fish-related products for export. At least in theory, women might be favoured by an increase in processing opportunities and new employment that might evolve from diversification. To really "benefit", however, the types of opportunities opened to women would need to be examined. Unless accompanied by some accompaniment of changes in hiring and promotional patterns, access to training for new technology, preparation for higher-level jobs, and in wage legislation and working condition, the benefit of more export activity for women might be negligible. More information is needed about current employment trends, situations and industrial establishments, and expected expansion of jobs by occupational category before specific strategies or actions can be offered. The export sector bears a close examination for the potential it may hold for women. However, comments on the wisdom of promoting this aspect of the FIS actively in an overall strategy for promoting women's integration should be reserved until a more specific profile can be drawn of its expected development pattern.

Annex 3.2.A

**Sample Field Assessment Instruments
for Project Identification and Management**

This annex contains two sample field survey instruments for use in designing or implementing local-level FIS activities for women. The instruments are especially valuable for collecting qualitative information adequately identifying women's needs and designing project activities that meet both the requirements of the women and the industry for technical assistance. Likewise, the instruments are important tools that aid in identifying local variations in cultural, religious and social customs and constraints surrounding women's participation, information that is of crucial significance when sector-wide programming efforts are undertaken for any industrial sector. What is included here should only be treated as illustrative in that factors and questions could be added, or dealt in relation to a project's objectives and activities.

The first instrument is adapted from a Terms of Reference for women's fisheries initiatives prepared by James Hourihan for the Asian Development Bank. The instrument is designed to yield gender-specific information and as such is well-suited for both the systems approach to sectoral programming and for human resource development planning. Information yielded from this instrument is also useful for conducting a social feasibility analysis to assess the impact of new technology or industrial innovation and for establishing a framework for continuously monitoring and evaluating project activities. The Asian Development Bank's instrument is structured around six broad informational categories. For each of the six categories, general guidelines are offered regarding specific factors or types of information that are to be identified, analyzed and assessed.

The second instrument is based on work undertaken by the United Nations Food and Agriculture Organization. Constructed in two parts, the first part is of special use for developing a qualitative data base which defines the context and environment into which FIS projects will be placed. The second part focuses on the direct role, tasks and economic position of women who are currently working or who are potential employees in the FIS; additionally, questions for an examination of women's role by component is included.

I. Asian Development Bank FIS Information Collection Survey

The Asian Development Bank suggested terms of reference includes six major informational categories for assessment which are:

- I. Identification of existing and potential socio-cultural constraints to fisheries and aquaculture development.
- II. Identification of all project beneficiaries.
- III. Relationship between planned initiative and traditional productive behaviour.
- IV. Likely impact of planned initiative by gender.
- V. Project-specific issues to consider by gender.
- VI. Framework for on-going monitoring and evaluation.

The questions and informational elements corresponding to each of these categories are as follows:

Sample terms of reference and planning instrument for determining social impact of technology, innovations and development strategies
Fisheries industry

- I. Identify the real or potential social and or cultural constraints to fisheries and aquaculture development giving due consideration to the following:
 - (i) Population characteristics;
 - (ii) Household structure and kindship system;
 - (iii) Housing and land tenure patterns;
 - (iv) Wage-labour opportunities;
 - (v) The available technologies;
 - (vi) The range of cropping and fishing patterns;
 - (vii) The availability of livestock and their use;
 - (viii) The availability of potable water and fuels;
 - (ix) The elements of risk and the patterns of risk management;
 - (x) Community leadership patterns;
 - (xi) The articulation of the communities with the wider local and national communities; and
 - (xii) Ethnicity and religious variations.

Sample terms of reference and planning instrument for determining social impact of technology, innovations and development strategies
Fisheries industry (continued)

It is unlikely that these data will be readily available for the project area so it may be necessary to undertake a baseline survey.

- II. Identify the project beneficiaries by income groups and indicate the likely distribution of project benefits for each income group.
- III. For purposes of determining whether the project will fit into the traditional patterns of productive behaviour, identify and analyze:
- (i) The traditional productive and non-productive tasks undertaken by the planned project beneficiaries over the course of an annual cycle;
 - (ii) The traditional division of time and labour, by gender and age, to accomplish the tasks summarized in (i);
 - (iii) The prevalence of kinship or friendship-based shared labour pools to accomplish traditional tasks;
 - (iv) The social and cultural value attached to traditional practices of economic production;
 - (v) The degree to which, and in what areas, hired labour is utilized to accomplish productive tasks; and
 - (vi) The degree to which the practices introduced under the aquaculture and/or fisheries project will alter the traditional patterns of behaviour determined in (i) to (v) and the likely degree of acceptance of these changes by the project beneficiaries.
- IV. To begin to understand the differential impact of social and cultural phenomena on gender, and the potential impact of these on the proposed project, ascertain at least the following:
- (i) The beneficiaries perceptions of the socially and culturally correct domestic and production roles of men and women;
 - (ii) The social and cultural constraints placed on the freedom of movement for men and women;
 - (iii) The perceived value placed on providing education and /or training to females;
 - (iv) The degree to which men and women can hold and alienate (mortgage) property and personal possessions;
 - (v) The patterns of decision-making within households as regard domestic and economic production issues; and
 - (vi) The system of financial management within households in the proposed project area.

Sample terms of reference and planning instrument for determining social impact of technology, innovations and development strategies
Fisheries industry (continued)

- V. The information derived from the previous two sections should provide insights into such project-specific issues, regarding gender, as:
- (i) The required time/labour increases (or decreases) expected of males and females who participate in the project;
 - (ii) The likelihood that such increases will be a hindrance to project success;
 - (iii) The need to introduce time/labour-saving devices into the project, and for whom;
 - (iv) The degree to which the project may be socially disruptive as time/labour requirements hinder traditional patterns of socializing while accomplishing domestic or production tasks;
 - (v) The traditional roles of males and females and how these can or should be maintained through project implementation;
 - (vi) The likelihood (and probably the need) of men and of women having access to the extension services and/or formal training centres and courses;
 - (vii) The possibility that men and/or women will have access to sources of credit and/or the responsibility of repaying loans; and
 - (viii) The degree to which men and women should be provided with adequate information upon which to base a decision to participate in the project.
- VI. Recommend a project monitoring and evaluation system for continuously monitoring the proposed project and assessing the project's impact on production and on the beneficiaries, including:
- (i) Terms of reference, expertise requirements and work plan for a baseline study of the situation before the project is implemented;
 - (ii) General guidelines for a monitoring system during project implementation, including staffing requirements and work plan;
 - (iii) Suggestions for specific social and cultural phenomena or traits, and specific beneficiary actions or activities to be monitored; and
 - (iv) Recommendations for conducting a survey of the situation at full project development.

II. Sample project planning and assessment instrument - Women in fisheries initiatives - United Nations Food and Agricultural Organization

Part A:

- I. Political, administrative economic context - Using the following suggested topics, describe the political, social and economic context of the appropriate area, e.g., national, regional, local, and so forth.**
- (a) **Political structure - national, regional, local, as appropriate:**
- Socialist
 - Capitalist
 - Mixed
- (b) - **Establish organogramme of government administrative structure dealing with all aspects of fisheries industries - include, as appropriate, other ministries or government departments (e.g. labour ministry, economic planning department, ministry of industry, etc.); if particular type of project is intended, include relevant non-fishery departments; if appropriate, include regional or other geographically-based governing units.**
- **Identify/describe lines of horizontal and vertical communication among the most relevant ministries and government departments.**
- (c) **Describe the following economic and ownership factors for appropriate geographical level, e.g., national, regional, and/or local depending on type and location of development initiative.**
- **Free market forces (includes fixed pricing policies);**
 - **Government-controlled prices;**
 - **Government-managed enterprises;**
 - **Background/tradition of experience with co-operative formation and establishment of credit unions;**
 - **Experiences with and history of mutual aid societies;**
 - **Pattern of official and private credit system.**
- (d) **Where needed and as appropriate give emphasis to position and history of women's involvement in any of the above.**
- II. Social - cultural - demographic context: Using the following suggested topics/procedures, identify relevant demographic subgroups and socio-cultural-demographic factors for relevant geographical areas, i.e., areas affected by development initiative or located within expected project scope.**
- (a) **For assistance in identifying and defining characteristics of demographic subgroups, consult:**
- (i) **Literature**
 - (ii) **Universities**
 - (iii) **Managers of other projects**
 - (iv) **Administrators of relevant government departments or programmes - e.g., extension agents, home economists, social workers**
 - (v) **Local authorities.**

- (b) For assistance in gathering and compiling needed quantitative and qualitative information, hold discussions with persons mentioned above, and others determined as appropriate - interviews, open-ended discussions, focus groups, etc.; broad population subgroups should be determined before information collection begins and both leaders and non-leaders of such groups included; at this time, if not before communication and liaison relationships might be established with most important/relevant administrators and government departments - assistance from these could be useful for formulating questions, defining preliminary issues, considerations, etc.

III. Identify and define population sub-groups, according to following criteria; modify as appropriate for planning needs. If more than one community involved, provide separate description for each.

- (a)
- (i) Location and environment where population lives:
 - Topography - sea, river (water level annual changes, if relevant), lagoon, lake;
 - (ii) Size of village, number of persons by population subgroup, size/composition of economically active population, size/composition of fishing-related economically active population;
 - (iii) Type of catch - male/female activity;
 - (iv) Access of individual crew members (or fisherpersons, if appropriate, in inland fishing/aquaculture/fishfarming projects) to catch
 - (v) Number/length of trips made by fisherpersons, if relevant;
 - (vi) Regularity of fish supply by species, e.g., year round, monthly, seasonal supply patterns;
 - (vii) Catch loads (size) by species, if appropriate; differences in species within loads (large, small, oily, etc.) and by time of year;
 - (viii) Preservation techniques - market/consumer preferences;
 - (ix) Mobility of fisherpersons - males and female;
 - (x) Availability of processing and other inputs - wood, water, ice, (quantity, distance from community, ownership, costs, etc.);
 - (xi) Processing factors - wind (strength/direction), influence of environment on location of processing equipment in relation to community, rainfall (need covered kiln or not), sand or soil content, etc;
 - (xii) Distribution and marketing factor - communications facilities, roads, transportation infrastructure and access - distance from major markets, etc.
- (b) Economic activity of population - specific tasks by gender or population group, if appropriate (i.e., division of labour):
- (i) Fish or mollusc collection - male/female, how and where;
 - (ii) Unloading fish and carrying from boat to processing or lorry;
 - (iii) Processing - type (salting, smoking, sun-drying, other), male/female (by occupation):
 - Provision of inputs (e.g., wood - cutting, transport, splicing);
 - Fresh fish handling - male/female, how done;
 - Provisions of inputs for processing - male/female, how done;
 - Order of rank/tasks for women in polygamous households;
 - Packaging.

- (iv) Fishing-related activities - net making and repair, sail mending, trap and cage production;
 - (v) Marketing - male/female and tasks performed by each:
 - Fresh fish/molluscs;
 - Processed fish/molluscs;
 - Scale of operation;
 - Profits/accounting procedures, if applicable;
 - Methods (retail, wholesale, auction, middlepersons) - male/female roles;
 - Time schedule, both for bringing and selling;
 - Organization of markets;(national, regional, local);
 - Fixed prices or market based.
 - (vi) General types of work; assigned responsibilities in polygamous households;
 - (vii) General tasks/roles of single female household heads in fishing communities or camps;
 - (viii) Roles/tasks of women in agriculture in fishing community or local considered.
- (c) Productive organization of women in locale(s).
- Fish handling/extraction (within and between households);
 - Processing (within and between households);
 - Distribution/marketing (within and between households);
 - History/tradition of co-operatives, unions or other production patterns;
 - Pattern for sharing profits;
 - Co-operation - type and pattern for non-fishing activities.
- (d) Income and household financial management patterns by gender.
- Responsibility for savings, loans repayments, budgeting, etc.;
 - Disposal of household income by gender, e.g., wife's obligations, husband's obligations, freedom to retain own income;
 - Females obligations to fathers, brothers, other males in family.
- (e) Status of women in communities to be affected by initiatives - married/non-married, young/old, polygamous, or other identifier:
- In traditional settings;
 - In market economies;
 - Relationship between status and decision-making power;
 - Relationship between increased income, independence and marital stability;
 - Communication and persuasion channels;
 - Vested interests against change in status quo (male and female).

IV. The information obtained about the context and groups within the community or locales needs to be analyzed and examined in relationship to overall project goals and objectives. The information from the parts 1-3 should yield baseline information about the following:

- General overview of the impact (economic and social) that the specific initiative may have on the particular subgroups, on individuals within the group and on the community as a whole.
- General overview about which subgroups will be most affected and involved in specific project goals related to increased production, new, higher quality and improved products and lower production costs.
- Preliminary and general information about the constraints in terms of labour availability, social/cultural practices and environment that might affect or constrain project effectiveness; indications or signals might be derived regarding specialized project components that may have to be developed in order to overcome resistance from the general community.

A cursory analysis prepared at this point should be used in conjunction with and supplemented by information developed in Part V and simultaneously with the implementation and assessment checklist found in Part B.

V. This part of the general context is an attempt to determine whether the project in its basic conceptual form will be perceived as worthwhile or beneficial enough for the women to adopt the changes required by the project. Their adoption of new techniques or procedures will depend on their motivation (any risk incurred is perceived worthwhile, given expected outcomes) and their ability (whether they have adequate skills - technical ability - and the physical resources) to assimilate the required changes. At least in part, their adoption is based on a variety of social and economic factors, among which are to be found those in the following list. The final list of factors examined will depend on the project or initiative itself and may vary substantially. However, those included here are a prototype of the general categories of factors that project planners may want and need to examine. This information should also be useful during the actual implementation phase of the project.

(a) Women's roles and tasks in home and work:

- Time women spend on family chores inside and productive activities outside the home - estimate amount of time that would be required by new initiative and amount of time women have available;
- Labour availability - other sources in home and in the general community, female and male, especially unemployed;
- General health and nutrition of women, household and community.

(b) Assess in general terms at least to what extent women view new initiative as threat and risk; identify incentives and benefits accruing to women from participation.

- (c) Attempt to identify women leaders in the community (or, if initiatives will involve women as a group - co-operative or existing production unit, leaders within the group. Also, try to identify relationships and communication patterns between leaders and other women; and potential decision-making role of varied women in adopting or assimilating new initiative. Attention might also be given to women's skills in relation to planned initiative. When possible, involve women in actual development of project goals, anticipated outcomes, choice of implementation methods, delivery of technical assistance, and so forth.
- (d) Estimate the costs and benefits of the initiative; special attention should be given to the costs to women of participating, and comparisons made with other tasks or commitments in their lives.
- (e) Examine and identify women's current skill level and existing technical resources in relation to those needed for successful project completion.
- (f) Use information gathered to help determine general and intermediate project goals, and also for general structure.

Part B.

This section can be used for itself in areas where an in-depth examination of women's role and their potential is needed. Much of the information may already be available from work undertaken in Part A "General Context" and should be used here. However, the information requested here, leads to a much more complete review of women's position and to important considerations for any FIS development initiative that is undertaken for them. The questions solicited here can be used as a guide both during the project planning and implementation stages. They can also be used to guide the development of on-going project monitoring, by asking those in administrative or positions of giving assistance, to look at changes occurring in people (women) and the larger community as a result of the particular initiative.

In this section, there are 3 parts. For each part, there is a series of general questions that will enable the person responding to better describe the current situation of women in relation to their community and FIS participation. Then, there are questions relating to projects or development initiatives. By responding to these, more detailed attention can be given to the women's needs that should be addressed both during the planning/implementation stages and throughout the duration of the project. As with the topics and questions contained in Section I, those found here are prototypes. Given the particular type of initiative, the type of information needed about women, and the particular FIS component to which the initiative applies, questions and factors to be examined may be modified, perhaps in some cases the overall number being expanded or decreased. The ones presented here, are more for illustration and discussion.

- I. Questions about the general situation of women in community and households:
- What is the current socio-economic status and role of women in fishing and non-fishing-related aspects of area's economy?
 - Who controls the family cash?
 - Who typically owns or has most access to means of production - boats, nets, traws, ovens, means of transport, ponds, etc.?
 - In what ways do men and women collaborate?
 - What is the division of labour between men and women?
 - What are the women's primary fishing-related roles (see Parts through for more specific questions)?
 - Are women included as crew members on either marine or inland fishing boats?
 - Are women included in aquaculture activities - how?
 - Do women have access to organizations; institutions and services?
 - What is the comparison between women's FIS-related workload and the rest of their routine?
 - Are women remunerated for the work they perform?
 - Currently are women routinely trained in new skills and technologies, as they become available?
 - Are women routinely involved in training or technical assistance for new fishing or aquaculture technology?
 - Are women routinely included in training or technical assistance initiatives related to fish handling, processing or marketing?
 - Are women routinely trained as trainers?
 - Are there female extension agents in the village?
 - Are women included in boat-building courses and involved in any training/technical assistance efforts relating to industrial inputs?
- II. General questions about the project, its components and the broad impact it may exercise or is already exercising on women and the community. It should be noted that these questions can be useful both for women-specific and non-women-specific initiatives; in the latter instance, the questions can lead to an assessment of how the project may, or already does, affect women's participation.
- Does the project include activities (not necessarily related to fisheries) for women while men are out fishing?
 - How can the particular initiative respond to women's needs and make use of their abilities?
 - Does the project enable women to have direct access to funds and services?
 - Does the project reflect the traditional collaboration between men and women - if not, what provisions have been made to take care of any changes?
 - May or does the project affect women detrimentally - if so, how can these be identified and prevented?
 - Might or does the project deprive women of traditional means of support, if so, can this be remedied or can alternative employment be provided?
 - Does the project reflect traditional family income control - if not, what changes are needed?
 - Does the project include leadership training and development components for women?

- Does the project change the balance of women's time spent in FIS and non-FIS activities - if so, are changes needed in project design, e.g. labour saving devices included and so forth.
- Does the project increase women's overall workload (for example, by men moving from agricultural production to fishing, thus increasing perhaps the supply of fish to be processed - typically women's tasks - and the agricultural-related duties women must perform) - if so, what adjustments are needed?
- Is the traditional division of labour reflected in project design - if so, what modifications are needed?
- Does the project change the ownership patterns of the means of production - if so, are adjustments needed?
- Is the women's role in processing and marketing included? Is it changed - if so, are modifications or adjustments needed vis à vis relations to men's role, etc.?
- Does the project change the traditional middlemen position of women (or women's relations to traditional middlemen) - if so, what adjustments must be made in the socio-cultural environment of the community? For example, are women suddenly becoming boat-owners and creditors of fishermen; if so, what impact will this have on household and community life?
- Does the project ensure that women receive their fair share of project benefits? If not, what modifications are required?

III. The following questions are designed to provide those who plan and implement FIS development initiatives with more detailed information about women's role and needs in relation to specific component activities. The number and type of questions ultimately included in this type of instrument will depend upon many factors among which is an understanding of constraints and component interrelationships, of the type that are illustrated/examined throughout this report.

(a) Questions relating to women's FIS role in extraction:

- What is the role of women in marine and inland fishery and aquaculture production?
- Do women catch fry, fingerlings, juveniles? Do they collect molluscs? Do they collect seaweeds?
- Do women participate in rural cottage-level aquaculture activities?
- Do women make and repair fishing nets, sails, traps and fishing boats?
- Do women attend ponds of rafts?

(b) Questions relating to women's role in the processing component and corresponding project needs.

- Do women carry out any fish processing?
- What are the techniques employed by them? Could they be improved?
- What equipment do they need to decrease post-harvest losses?
- Do women have access to credit for fish processing facilities?
- Does the project reflect the traditional position of women in fish processing?
- Does the project create new forms of processing in conflict with the traditional processing methods of women?

- What type of processing tools and equipment do they want to have?
- Does the processing project increase the workload of women?
- What equipment do women need to decrease post-harvest losses?
- Are the new techniques adequate for the women's traditional way of processing (new smoking ovens too difficult to use, too far away from the village)?
- Do the women have the access to credits for owning the new processing tools?

(c) Questions relating to women's role in the distribution/marketing component and corresponding project needs.

- Are women in charge of the marketing of fishery products?
- How do women transport the fish to markets?
- What type of equipment do they need for working more efficiently?
- Do women have access to credit for use in marketing fish?
- Does the project reflect the traditional position of women in fish marketing?
- May the project influence negatively the traditional position of women in fish marketing?
- Does the project increase the workload of women?
- What type of equipment do women need to market the fish more efficiently?
- Does the project provide equipment to women to reach the markets quicker and transport more fish?
- Does the project reflect the traditional processing methods?
- Do women have access to credit to buy equipment for use in marketing fish?

Similar questions could be developed for each of the other components and, if appropriate, for component interrelationships. A knowledge of the literature on women in fisheries, of industrial/technical developments, the tools such as MEPS, and the situation of the particular country/local area and project, will assist planners and administrators in developing appropriate questions. In the present form, this instrument is much more applicable to artisanal fishing development in fishing communities. The format and procedures suggested by this instrument can be adapted for use in more urban settings and for industrial-scale operations. The development of such a tool would be a positive addition to this field of research.

Annex 3.3.2

"Lessons of Experience"
from FIS-related project evaluation literature

FISHERWOMEN'S ACTIVITIES IN BANGLADESH: A PARTICIPATORY APPROACH TO DEVELOPMENT

<u>Country</u>	<u>Type of Sponsoring Agency</u>	<u>Type of Population Served</u>	<u>Nature of Assistance</u>
Bangladesh (Jaldia-Shamipur and Mohara)	Funded by: Swedish International Development Authority (BOBP) Executed by: FAO	Fisherwomen in 2 small fishing communities	Socio-economic survey based on interviews with selected families Provision of training for field workers and fisherwomen Financial assistance in the form of interest-free loans

<u>Period of Implementation</u>	<u>Long-term Objectives</u>	<u>Immediate Objectives</u>	<u>Project Activities</u>
1981 - 1985	To improve the standard of living of marine fisherfolk utilizing the participatory approach	<ul style="list-style-type: none"> - To obtain a better understanding of the community - To assist fisherwomen in organizing themselves and to work in groups - To help the groups identify and implement income-earning activities - To help fisherwomen to improve the standard of living of their families through education programmes 	Net-making Chicken-, duck- and goat-raising Fish marketing Fish culture and tree planting Health Improvement

Project Accomplishments/Successes

The most successful project activities proved to be net-making, chicken-, duck- and goat-raising.

164 fisherwomen engaged in net-making, which generated the highest earnings vis-à-vis all the other project activities (a total of US\$2,555).

Incomes from fish marketing and drying fluctuated enormously because of the seasonal nature of fishing activities and also because fish was purchased in different quantities according to availability and price.

Fish culture and tree planting activities failed to produce a profit.

192

Source: Natpracha, Patchanee, Fisherwomen's Activities in Bangladesh: a Participatory Approach to Development BOBP/REP/24 (GCP/RAS/040/SWE) Madras, India. Bay of Bengal Programme for Fisheries Development, 1986

Impediments to Successful Implementation of Project Activities and Negative Impacts

<u>Net-making</u>	<u>Chicken-, Duck- and Goat raising</u>	<u>Fish Marketing</u>	<u>Fish Culture and Tree Planting</u>	<u>Health Improvement</u>
Impediments to Successful Implementation			Lack of know-how (in terms of technical and managerial skills) Inadequate planning Too little investment	

Conclusions and Lessons Learned

This project was based on a participatory approach to development based on a process of mutual learning. Two (well-educated) field workers were provided with on-the-job training in applying the participatory approach to work with rural women. The field workers organized the women into small groups of 5 to 6 members each. In 3 years, 178 women were organized into 13 groups. Each group selected one of their members to be a co-ordinator, called a link worker, who was paid a small monthly wage for her services. Voluntary leaders also emerged in the course of the project. Both the link workers and voluntary leaders are now considered to be a valuable human resource in the villages.

There are two other important aspects of the project which deserve a mention. The first was the use of local expertise for the provision of training. As many as 13 agencies or organizations assisted in some phase of this pilot project. The second was the provision of interest free credit which freed the local fisherfolk from dependence on usurious money lenders.

It was concluded that people's participation is an important element in strategies for integrated rural development. However, it was felt that this type of approach was far more suitable for implementation by a non-governmental organization funded by a donor agency as opposed to the government of the country itself.

Source: Natpracha, Patchanee, Fisherwomen's Activities in Bangladesh: a Participatory Approach to Development BOBP/REP/24 (GCP/RAS/040/SWE), Madras, India. Bay of Bengal Programme for Fisheries Development, 1986.

SOCIO-ECONOMIC SURVEY OF WOMEN IN FISHERIES IN FIJI

<u>Country</u>	<u>Type of Sponsoring Agency</u>	<u>Nature of Population Served</u>	<u>Nature of Assistance</u>
Fiji - six villages located in four islands: Naibalebale, Najia (Viwa island), Namara (Wayalailai island), Navatuyaba, Votua (Viti Levu island), Nasawana (Vanua Levu island)	Funded by: Voluntary Fund for the United Nations Decade for Women, ESCAP Executed by: ESCAP, FAO	Fisherwomen in six small fishing villages	Socio-economic survey based on documentary materials, discussions with fisheries extension workers and detail household surveys Formulation and implementation a pilot project to promote income-generating activities
<u>Period of Implementation</u>	<u>Objectives of Survey</u>	<u>Activities of Women</u>	
October 1981 - October 1982 (survey) 1983 (pilot project)	To assess the economic role of women in selected fishing communities in order to assist planners and policy makers in incorporating women into fisheries development programmes To identify and promote income-generating activities for women with a view to enhancing the socio-economic status of fishing families	Fish capture Shellfish capture Fish processing Fish marketing	

Findings of Study

The study revealed that there has been a shift away from subsistence fisheries towards market-oriented fishing. Previously, households would only sell surplus fish left over from domestic consumption. Increasingly, however, most the catch is sold and only the surplus consumed. One consequence of this appears to have been a more distinct division of labour in terms of the activities performed by men and those performed by women. Women became more involved in catching shellfish and men in catching finfish. This was thought to be attributable to the fact that programmes designed to introduce new fishing technology (modern fishing boats and gear) were directed almost exclusively at men. (See Conclusions and Lessons Learned).

The study also brought to light some of the problems encountered by women engaged in fish marketing activities. Many of the markets are so far away from the fishing villages themselves that the women are compelled to stay one or two nights in the towns where the markets are located without proper shelter. Other problems include the high cost of transport and shortage of space at municipal markets which has sometimes obliged the women to sell their produce on the roadside where they are exposed to the sun and rain.

The villages of Naibalebale and Najia had also suffered from the over-exploitation of lagoon resources which has led to a depletion of stocks of fish.

Conclusions and Lessons Learned

The lack of recognition of the essential role women play in fishing activities in Fiji was thought to be one of the reasons for the failure of some government extension programmes. Women had largely been excluded from these programmes partly because their crucial role had not been taken into account by the Fishery Division which was responsible for planning training and extension programmes and partly because the involvement of the villagers in such programmes was determined by the traditional chief and committee composed of the men of the village. Women did not, therefore, participate in either the planning or decision-making process. Fishing for commercial purposes meant that the scale of operations had to be increased. This involved the introduction of larger, more sophisticated boats and equipment. However, the women were excluded from introduction to the new technology.

A second conclusion was that not all villages should be regarded as potential areas for successful commercial fishing ventures just because of their proximity to aquatic resources. In cases where other resources and employment opportunities are available, fisheries should be regarded as a secondary source of income and not necessarily developed further.

Recommendations

The important income-generating role of women should be taken into account at the planning stage of future fisheries programmes. Women should be consulted either during village meetings or during separate individual meetings.

Fish marketing might be improved by adopting a communal approach towards alleviating some of the distribution problems confronting the villagers. In this way, transport costs could be reduced and congestion reduced at the municipal markets. Moreover, in order to overcome the problem of shortage of space at these markets, it was suggested that a sheltered area adjoining the market be erected.

Pilot Project

Nature of Assistance

The provision of a women's fisheries development loan fund operated by the Fisheries Division of the Ministry of Agriculture and Fisheries. Loans were made available to women's groups involved in commercial fishing activities.

Activities

Loans were given to women's groups mainly involved in shellfish and seaweed collection, but also in sea-cucumber fishing and processing and fish salting and smoking. The loans were used to buy three outboard engines for boats. Three locally made wooden punts for freshwater clam fishing were built locally and delivered to the women.

Project Accomplishments/Successes

Women were not only able to increase the efficiency of their traditional activities (e.g. freshwater bivalve collection), but were also able to engage in new activities, such as sea-cucumber fishing and processing. In Nasawana, the women were able to generate savings through a scheme which includes fishing, salting and marketing of mullet. These savings were used to improve their houses and they are also planning to buy more fishing gear and a punt.

ACTIVATING FISHERWOMEN FOR DEVELOPMENT THROUGH TRAINED LINK WORKERS
IN TAMIL NADU, INDIA

<u>Country</u>	<u>Type of Sponsoring Agency</u>	<u>Nature of Population Served</u>	<u>Nature of Assistance</u>
India (Tamil Nadu)	Funded by: Swedish International Development Authority (BOBP) Executed by: FAO	Fisherwomen in 7 small fishing communities	Socio-economic survey based on interviews with fisherwomen and key village personnel Assessment of results of survey Training of "link workers"

<u>Period of Implementation</u>	<u>Long-term Objectives</u>	<u>Immediate Objectives</u>
1981-1984	Improving the living conditions of small-scale fisherwomen	To obtain a better understanding of the situation of women in fishing communities by: <ul style="list-style-type: none"> - assessing fisherwomen's socio-economic position in the community - assessing the nature and extent of women's involvement in productive activities - obtaining women's ideas on possible ways to increase their incomes To assess the viability of the introduction of techno-economic measures to improve the incomes of women in small-scale fisheries. The training of "link workers" to liaise between the village women and the Government and improve the access of small-scale fisherfolk to existing technology, infrastructure and welfare facilities.

Activities

Socio-economic survey
Assessment of the following potential income-generating technologies:

- motorized cycle rickshaws to transport fish to urban markets;
- tents for solar drying of fish;
- icing and storage of fish in insulated boxes;
- hand-braiding of nets; and
- manually operated net-making machines

Design, preparation and organization of a 10 week residential course to train 21 fisherwomen from 7 villages to become "link workers". The course aimed

- at equipping the women with the necessary skills to:
 - liaise between the government and village women
 - assist local fisherwomen in utilizing government social infrastructure facilities (education and health) and government subsidies and welfare facilities (subsidized bank credits, food, accident insurance, lean season savings, production assets) in order to improve their economic and social position
 - assist in the formation of fisherwomen's co-operative societies as a means of channelling government subsidies to fisherwomen and to enable members to obtain training and information services and participate in community decision-making

- inform government institutions about the problems and the changing needs of women in order to adjust and modify development and welfare schemes

Project Accomplishments/Successes

The socio-economic survey provided very useful information on the role of women in small-scale fisheries, their views on how changes could best be effected and economic, social and cultural constraints to improving their living conditions.

The assessment of the potential income-generating activities, such as motorized cycle rickshaws, cents for solar drying of fish etc. was an essential step since it revealed that these new technologies would not be economically viable and that the income of women in the traditional fishing sector could only be improved by subsidies. Consequently, expensive project failures were prevented.

The link worker approach was tried out in order to allow fisherwomen to play an active role in tapping government and non-government services and schemes. One consequence of this approach was the upgrading of the social status of fisherwomen. Moreover, some of the social infrastructure schemes had provisions for a paid village based worker (e.g. assistants in mini-health centres, children's daycare centres, adult education classes). The link workers were the only women with sufficient training to undertake these jobs, which not only raised their incomes but also their social status.

198

The establishment of co-operative societies in the villages made it possible to take advantage of welfare and subsidy schemes offered by both government and non-government institutions and led to the introduction of, inter alia, low-interest credit, subsidies for motorized tricycles for fish transport, medical centres, child day-care centres and primary schools.

Impediments to Successful Implementation

The goal of providing link workers with the necessary skills to deal directly with the government and NGOs when applying for welfare schemes proved to be too ambitious without additional on-the-job training and guidance. The link workers required active moral support and motivation both for completing application forms and for contacting government offices. Only a few schemes with easy application procedures can be handled by the link workers themselves.

A certain amount of resistance to the link worker scheme was encountered from the women's husbands who did not want their wives to join the training because it would mean that there would be no one to look after the household, attend to the children and market the fish. As a result, more than half of the selected trainees were young, unmarried women.

Conclusions and Lessons Learned

It was observed that in villages where high priority had been accorded to the active participation of link workers in planning and introducing schemes, the facilities were much better utilized. Thus schemes involving a participatory approach are advocated.

The project was very cost efficient in so far as its main emphasis was upon the mobilization of human resources and tapping existing government and non-government schemes for the benefit of a particular target group for whom these schemes were in any case intended.

The introduction of the link worker scheme met with a very positive response from both the government and the fisherfolk themselves.

Source: Drewes, Edeltraud. Activating Fisherwomen for Development through Trained Link Workers in Tamil, Nadu, India. BOBP/REP 27(GCP/RAS/040/SWE), Madras, India. Bay of Bengal Programme for Fisheries Development.

THE ORGANIZATION OF FISH MARKETING IN MADRAS FISHING HARBOUR

<u>Country(ies)</u>	<u>Sponsoring Organisation(s)</u>	<u>Nature of Population Studied</u>	<u>Main Objectives of Study</u>
India (Madras Fish Harbour)	Funded by: Swedish International Development Authority (BOBP) Executed by: FAO	Women engaged in the marketing business at a large fish landing centre	To examine the role of women in the marketing of fish at Madras Fish Harbour To assess the impact of the modernization of fishing technology and fish transport on women engaged in the industry in terms of earnings and earning opportunities

Activities of Women Engaged in Fish Marketing

Auctioning
Retailing
Trash fish wholesaling/retailing
Export marketing
Fish wholesaling

Results of Study

Auctioning

Auctioning was revealed to be the most profitable activity of all those in which women are involved. A few hundred women are engaged in auctioning. Incomes and profits are higher here than at smaller landing centres because of the volume of business.

Retailing

The majority of fisherwomen are engaged in retailing and - to a much lesser extent in small-scale wholesaling. The retailers depend on marketing the catch which is mainly brought in by mechanized boats (mostly trawlers). One of the drawbacks of the use of mechanized craft is that the quality of the catch is inferior to that emanating from traditional craft because of dumping on deck and inadequate storage facilities. This means that the women have to sell the fish locally for fear of spoilage. However, some fish retailers have pooled their resources in order to enable them to purchase only the good varieties of fish and thus have been able to derive a comfortable profit.

Trash fish wholesaling/retailing

The approximately 400 trawlers at Madras fishing harbour catch large quantities of trash fish which enable

some women to make a living as retailers and wholesalers of trash fish. This would not be possible at smaller landing centres.

Export Marketing

The export sector is dominated by men. However, there are a small number of women who are active in this sphere. One woman who is politically active operates on a large scale and obtains prawns from several small suppliers in coastal villages. Other women function as sub-dealers and collect a few kilograms of prawns for supply to other dealers. This activity does not generate a particularly high profit but it is sufficient to meet daily expenses and to save a little. Another category of women buy crabs, squids or mussels. They prefer to act as intermediaries because the competition is not so strong as it is for retailers.

Fish Wholesaling

A small number of women are also engaged in fish wholesaling. They supply fish to small restaurants, small markets and distant areas. These women operate at a very low level of investment.

Conclusions

The modernization of fishing technology and fish transport has had a positive impact on some of the women engaged in fish marketing activities in so far as it has generated higher incomes or new earning opportunities. However, it has also given rise to greater income disparities among fisherwomen. One reason that is postulated for this phenomenon is because of the different forces in operation in large and small landing centres. In a small landing centre, fish marketing is usually decentralized and a high percentage of women participate in this activity. However, in a large landing centre, marketing is more centralized, offering fewer employment opportunities but higher profits for those women who have managed to stay in the business.

STUDY OF WOMEN IN THE ARTISANAL FISHING INDUSTRY IN SENEGAL AND GHANA

<u>Country(ies)</u>	<u>Sponsoring Organization(s)</u>	<u>Type of Population Studied</u>	<u>Activities Undertaken by Women</u>
Senegal Ghana	Economic Commission for Africa African Training and Research Centre for Women	Small-scale fisherwomen in Senegal and Ghana	Fish processing Fish transportation Fish marketing

Technical-, Socio-economic- and Financial Constraints

<u>Fish Processing</u>	<u>Fish Transportation</u>	<u>Fish Marketing</u>
Inadequate processing equipment	Lack of organized facilities for transporting and distributing fish	Fierce competition as a result of necessity of selling quickly before spoilage occurs and the fact that it is better to sell at a low price than not at all
Lack of effective preservation methods	Poor packaging	Inaccurate system of accounting
Unsanitary conditions		
Lack of adequate storage facilities, especially moisture prevention facilities		
Lack of funds for purchasing better equipment		
Lack of safe insecticides/anti-parasite and/or anti-bacterial agents		
Fisherwomen's rejection of new equipment and technologies for older, more traditional methods		

Effects of Constraints

Fish Processing

Heavy post-harvest losses

Fish often constitute a health hazard

Fish Transportation

Processors in remote areas who send their products to the main marketing centres incur high transport costs and heavy losses because of spoilage

Fish Marketing

Prices are never uniform and seldom reflect the true value of the product. Middlemen take advantage of the situation and make huge profits for themselves.

Processors often make the mistake of thinking they have made a profit when they have in fact made a loss

Recommendations

- The establishment of co-operatives to overcome the problems encountered at each stage of the production and marketing process. The co-operative would be responsible for the purchase of necessary processing equipment for distribution to its members on the basis of a credit system with easy terms of repayment and for establishing a fixed price for its members' products. It would also be responsible for the sale of members' products to middlemen. The Government would act as a guarantor for the co-operatives to obtain credit from banks and other organizations.
- The introduction of new, more efficient and more hygienic processing techniques and equipment taking into account prevailing work habits and methods.
- Research into improved packaging materials and techniques, the various kinds of drying and smoking equipment and appropriate products for fighting insects and parasites.

Source: United Nations Economic Commission for Africa. Women in the Artisanal Fishing Industry in Senegal and Ghana, E/ECA/ATRCW/84/04. Addis Ababa. United Nations Economic Commission for Africa and African Training and Research Centre for Women. 1984.

STUDY OF WOMEN AND THE FISHING INDUSTRY IN LIBERIA

<u>Country(ies)</u>	<u>Sponsoring Organization(s)</u>	<u>Nature of Population Studied</u>
Liberia	United Nations Economic Commission for Africa African Training and Research Centre for Women (ATRCW)	Women engaged in the artisanal fishing industry Women engaged in the industrial fishing industry

Main Objectives of Study

- to analyse the changing role of women in response to the industrialization of the fishing industry
- to assess the importance of women's participation in the industrial fishing industry
- to identify the roles played by women in the industrial fishing industry and to analyse the factors affecting these
- to provide a measure of women's involvement in the growth and development of the industry and to illustrate how the industrialization process has affected earnings
- to identify the role of women in the intersectoral dependence (modern formal sector and traditional urban informal sector) in the fishing industry

Activities of Women Engaged in the
Artisanal Fishing Industry

- | | |
|------------------|--|
| Fish processing: | - sorting, weighing, packing, glazing and reweighing
shrimp mainly for the export market (semi-skilled) |
| - smoking | |
| - drying | - filleting sole (semi-skilled) |

Fish marketing

Fish distribution

Activities of Women Engaged in the
Industrial Fishing Industry

- wholesaling

Fish marketing

Fish processing:

- retailing

- sorting fresh fish for local consumption
(unskilled)

Nature and Importance of Women's Role in Industrial Fishing Activities

Since 1972, there has only been one commercial fishing enterprise in Liberia - the Mesurado Fishing Company. This company both owns its own fishing vessels and buys from other fishing vessels. It also has a processing plant, refrigerated storage facilities, refrigerated trucks and good road access. Women perform critical roles in production and processing activities for which they receive a regular wage. These activities fall within the so-called "formal" industrial sector of the fisheries industry i.e. "The organized wage sector of the economy generally employing modern technology and having more formal relationships between employer and employees". The managers of the processing plant appear to have a preference for female as opposed to male employees because they are considered to be more patient than men and have also demonstrated a greater dexterity with their hands as well as a tendency to be more careful in handling the shrimps. Their role is considered to be crucial to the successful operation of the plant.

The present system of distribution and marketing was introduced between the years 1962-64. The Mesurado Fishing Company established a number of depots throughout the country which are managed by Lebanese agents. The MFC sells fish to these agents who also receive a commission for the services they perform. The agents then sell consignments of the fish to so-called "fishmammies". The fishmammies operate in what has been termed the urban "informal" sector of the economy. They perform both wholesaling and retailing functions. The "headmammy" takes a consignment of fish on credit and only pays the agent after the fish has been sold. The fish are either sold directly by the headmammy at the market or distributed among "submammies" who take over the retailing function. The study provides statistical data to substantiate its contention that the fishmammies are the "actual backbone of the depot sales".

Negative Impact of Industrialization of Industry on Position of Women: The "Debt Trap" Phenomenon

One of the most important findings of this study is that the industrialization process actually had a negative impact on both the positions and incomes of fisherwomen in the marketing and distribution side of the industry. Previously, women had obtained fish directly from the Mesurado Fishing Company and had thus occupied a dominant position in the distribution network as primary wholesalers. When the Company established depots throughout the country and installed Lebanese managers, the mammies place in the marketing and distribution process shifted from that of primary wholesaler to that of sub-wholesaler and wholesaler/retailer. Originally, it was intended that the mammies should receive a commission for their work, but this system was not universally applied at all the depots and even at depots where it has been applied, it has not always been sufficient to cover the prices charged by the agent for the consignments of fish. As a consequence, many women became victims of the so-called "debt trap" phenomenon which has been generated by the depots attributing a value to the fish which is higher than the amount the fish can be sold for in the market. Thus, the women very often find themselves indebted to the agents. The women's situation has therefore deteriorated in the wake of industrialization even though the price of fish has undergone a significant increase in recent years. The nature of the credit system is not in the best interest of the mammies.

RECOMMENDATIONS

- The fisherwomen should be appropriately remunerated for their distribution and marketing activities. The system of apying a commission to the women on the amount of fish they sell should be extended to all the depots. Moreover, those depots already operating a commission system should increase their rates. Alternatively, the headmammies should be given a basic monthly salary.
- To help overcome the "debt trap" phenomenum, a monthly prize should be awarded at each depot to the mammy with a debt not more than a certain proportion of sales. This prize should be financed jointly by the MFC and the agents.
- A fund should be established to assist in the education of the fishmammies children.
- A fishmammies' co-operative should be established in order to provide credit facilities to those women involved in wholesaling and retailing activities in order to promote an improved marketing system.

Source: Akerele, Olubanke. Women and the Fishing Industry in Liberia: Measures of Women's Participation. Addis Ababa: United Nations Economic Commission for Africa and African Training and Research Centre for Women. 1979.

SMALL-SCALE AQUACULTURE DEVELOPMENT PROJECT IN SOUTH THAILAND:

<u>Country</u>	<u>Type of Sponsoring Agency</u>	<u>Type of Population Served</u>	<u>Nature of Assistance</u>
Thailand (villages in the Phang Nga, Satun, Trang, Krabi, Phuket and Ranong provinces)	Funded by: Swedish International Development Authority (BOBP) Executed by: FAO	Small-scale fisherfolk communities Fisherwomen	Provision of training and demonstration of appropriate techniques Financial assistance in the form of loans and grants

<u>Period of Implementation</u>	<u>Long-term Objective(s)</u>	<u>Immediate Objective(s)</u>	<u>Project Activities</u>
1979 - 1985	To improve the standard of living of small-scale fisherfolk residing in depressed coastal fishing communities	<ul style="list-style-type: none">- To generate a viable alternative source of income for fisherfolk or a supplement to existing incomes- to develop a prototype for a wider development effort in the rural fishing sector	Finfish cage culture Shellfish culture (cockle, mussel and oyster) Fish processing, handicrafts training and education (for women) Infrastructure building

Project Accomplishments/Successes

Of all the project's activities, the biggest impact was generated by finfish cage culture. This activity gave rise to higher incomes and new income-earning opportunities (such as capture of fish fry and feed supply). Many small-scale fisherfolk became the owners of cages. The project started with only 28 fish cage demonstration farms in 1979. By 1985, there were 3,600 cages being operated by more than 1,000 fishermen.

Shellfish culture had only a very limited impact.

Fish processing and handicrafts training for women had little or no impact.

The education of women (in the areas of health, family planning, nutrition and hygiene) was only introduced in 1984 and it was felt to be too early to pass judgment on the success or failure of this activity at the time of the writing of the report.

Impediments to Successful Implementation of Project Activities and Negative Impacts

	<u>Finfish Cage Culture</u>	<u>Cockle Culture</u>	<u>Oyster and Mussel Culture</u>	<u>Fish Processing, Handicrafts Training and Education</u>
Impediments to Successful Implementation	Shortage of fish feed. Limited seed availability.	Limited seed availability.	Low yields and failure to attract fisherfolk or other investors. Lack of marketing opportunities.	Lack of marketing opportunities (no local demand because of higher price of improved shrimp paste).
Negative Impacts	Concentration of farm ownership among a few non-fisherman. Increased pressure on inshore resources due to procurement of low-value fish species as feed.			

208

Conclusions and Lessons Learned

The main conclusion to this study was that finfish cage culture had proved to be one means of generating or raising the income of small-scale fisherfolk. However, if this activity was to be further expanded, the production of a low-cost formulated feed would be absolutely essential. With regard to women, one of the lessons learned was a recognition of the fact that there was hardly any division of labour between men and women in small-scale fisheries and women should therefore have been provided with the same training in the new technologies as men as well as receiving credit and extension support.

It was also conceded that one reason for the relative success of the aquaculture component vis-à-vis the other components might have been due to the fact that this activity had been prepared far more thoroughly and in much greater detail than the other activities. The fact that there would not be a local market for the higher quality shrimp paste should have been foreseen at the planning stage.

Source: Drewes, Edeltraud. Small-Scale Aquaculture Development Project in South Thailand: Results and Impact BOBP/REP/28 (GCP/RAS/040/SWF) Madras, India: Bay of Bengal Programme for Fisheries Development

STUDY ON
FACTORS THAT INFLUENCE THE ROLE AND STATUS OF FISHERWOMEN

(Follow-up to Project Entitled "Activating Fisherwomen for Development through Trained Link Workers in Tamil Nadu, India")

<u>Country(ies)</u>	<u>Type of Sponsoring Agency</u>	<u>Nature of Population Studied</u>	<u>Activities of Fisherwomen</u>
India (3 villages in Chengalpattu, Tamil Nadu)	Funded by: Swedish International Development Authority (BOBP) Executed by: FAO	Fisherwomen in 3 fishing villages	

Main Objective(s) of Study

To determine the present role and status of fisherwomen and identify the factors that influence them.

Findings of Study

The Role and Status of Fisherwomen

Marine fishing is undertaken by a low and disadvantaged caste who belong to the lowest economic strata in Indian society. As is generally true for India as a whole, fisherwomen, in particular, have a very low status in the social hierarchy in all 3 of the villages under consideration. Traditionally, fishermen capture fish and women engage in shore-based activities. Fishermen's activities are considered to be productive and thus superior and indispensable. Fisherwomen's activities are considered to be insignificant and inferior even though the work they do is vital both to their families and to the village economy. Most of the women in the three villages undertake shore-based, fishery related activities. However, many of them are not paid for the work they do. For example, many women sell the fish caught by members of their family, but the proceeds are usually credited to male members of the family. Women are the main sellers and distributors of fish but, for the most part, their work is assigned no value whatsoever. Only those women who buy fish at the auctions and sell them at a profit are able to set a value on their labour. However, although fisherwomen who earn money enjoy a better status within the family than the ones who do not, these earnings do not improve the status of fisherwomen as a group or improve their control over the course of their own development.

Factors which Influence the Role and Status of Fisherwomen

Socio-cultural values and norms: Religious beliefs and customs, superstition and commonly accepted socio-cultural practices and values serve to perpetuate and reinforce women's subordinate role. Most of the fisherfolk in all three villages are Hindus and belong to one or the other sub-caste of the main fishing caste group of Pattinavars. Cultural norms prevent women from participating in decision-making at the village level. Politics and decision-making are considered to be the domain of men. Women are socialized into conforming to the roles proscribed by the community and tend to adhere to traditional values. Most of the women are illiterate and do not appreciate the importance of educating their daughters. Custom dictates that women only eat after the male members of the household and children have been served.

Women's medical and nutritional needs are ignored and only the ailments of the male members of the household are taken seriously because of the potential threat to family income. Religion is invoked to justify tradition. Thus, for example, physical ailments are attributed to the wrath of the family deity or goddess.

Ownership of Assets: The role and status of women are largely determined by the assets owned by their families. Women from families who do not own production assets frequently engage in fish marketing - sometimes by carrying headloads of fish and walking to distant inland villages. These women are assigned a low status by the village. Women from families which own a variety of nets and kattumarams hire other women to carry the fish to the markets. They also supervise the gulling of the fish. Thus women enjoy a higher status in the village. A fisherwoman's status in her husband's family can be significantly enhanced if her natal family owns production assets. However, by custom, fisherwomen cannot inherit any family assets except in the rare cases where the fisherwoman is an only child. All family assets are considered to be the property of the male head of the family.

The Development of a Market Economy: The development of a market economy diminished the status of women. Under the previous barter system, the women exchanged any surplus fish left over from domestic consumption for essential items such as paddy, vegetables and clothes. Women thus performed an active economic role which enhanced their status within the family. This economic role was attenuated with the development of a money economy. The money that accrues from the sale of fish caught by husbands/sons is automatically credited to the latter. Women are no longer seen as playing an active role even though their fish marketing activities are vital.

Competition from Male Cycle Traders: Increasingly fisherwomen have been facing fierce competition from male cycle traders. These traders have an obvious advantage over the fisherwomen because they are able to transport the fish to distant markets without incurring transport costs.

The Introduction of the Auction System of Selling Fish: The system of auctioning fish which has emerged in the course of the last decade has a largely negative impact on women's role in the industry. Cycle traders are able to outbid women at auctions. Consequently, male family members frequently sell their catch directly to these traders thus eliminating women's participation in this activity. This has increased women's dependency on men and further diminished their role and status within the family because they no longer contribute directly to the family's finances. Paradoxically, their status within the village has improved because it is considered prestigious not to work for money.

Urbanization: Urbanization led to an increase in demand for fish in distant towns and city markets. Again the best quality fish is almost exclusively bought for urban consumption by the male cycle traders. Women cannot meet the cost of serving distant markets and have either had to sell fish of a poorer quality and therefore of a lower cash value for local consumption or have given up fish marketing, thus further diminishing their status within the family.

Improved Technologies for Catching Fish: The introduction of nylon net fabrication machines had two negative consequences for women. Previously, women's net-making skills had enabled them to play a

significant role in the industry. These skills ceased to be of value following the introduction of the new technology. Moreover, training opportunities for developing the necessary new skills were channelled more towards fishermen than fisherwomen. Thus, women were displaced from their traditional activity of net-making. A second consequence of the new technology was that the nylon nets increased the size of the catch to such an extent that the women could no longer handle them. This has been especially true of the prawn industry where the women who continue to be connected to the prawn trade work mostly as unskilled labour (sorters and peelers) in prawn factories for low wages and in poor conditions.

Proximity of the Village to the City: The fisherwomen living in Thiruchinankuppan which is close to Madras are more exposed to the influence of the mass media such as radio, television and films and to women who perform important functions in society such as lady doctors and policewomen. They are therefore more aware of other existing socio-cultural patterns than are the women who live in the villages which are less closely linked to the city.

Other factors: Employment position, age, marital status and educational level also determine the status of individual fisherwomen.

211

Conclusions and Recommendations

- Women have an important role to play in promoting social change because of their socializing influence on children and thus on future developments.
- Women's status could be improved by the creation of income-generating opportunities and the formation of small women's associations. These would hopefully foster a change in women's attitudes and a redefinition of women's roles - and also those of men - in the family and the community. These issues should be discussed and a plan of action should be formulated and implemented by the existing fisherwomen's cooperative societies.

SOCIO-ECONOMIC SURVEY OF WOMEN IN FISHERIES IN INDONESIA
(from Women in Fisheries)

Survey

<u>Country</u>	<u>Type of Sponsoring Agency</u>	<u>Nature of Population Served</u>	<u>Nature of Assistance</u>
Indonesia - five villages in Cirebon, a coastal district in West Java	Funded by: Voluntary Fund for the United Nations Decade for Women Executed by: The Directorate General of Fisheries and the Agency for Agricultural Education, Training and Extension of Indonesia	Fisherwomen in five small fishing villages	Socio-economic survey based on household interviews and questionnaire Formulation and implementation of a pilot project to promote income-generating activities

<u>Period of Implementation</u>	<u>Objectives of Survey</u>	<u>Activities of Women</u>
1981 - 1982	To assess the economic role of women in selected fishing communities in order to assist planners and policy makers with incorporating women into fisheries development programmes To identify and promote income-generating activities with a view to enhancing the socio-economic status of fishing families	Fish handling Fish processing Fish distribution Fish marketing Net-making and mending

Findings of Study

Very little information was available on women's specific role in processing and marketing activities. Only four out of ten villages in the Cirebon district had a fish auction market. Small-scale fish processing industries were concentrated in one village which had 50 units producing salted fish. In some of the other villages, there were a few industries producing dried and fermented fish and shrimp paste. 48% of the fishing families were members of the village co-operative unit which allowed them access to credit, which, in the opinion of most of the fishermen interviewed, enabled them to increase their income.

Fishing families considered their main problems to be the depletion of marine resources, the low price of fish, the lack of marketing facilities and the non-availability of credit to expand their fishing activities.

Fish marketing, fish processing and the purchase and maintenance of fishing gear were suggested as potentially successful group activities.

Impediments to successful implementation of project activities and negative impacts

<u>Impediments</u>	<u>Overall</u>	<u>production</u>	<u>Tailoring</u>
	<ul style="list-style-type: none"> - Household duties and children-care - Male resistance against women earning an income 	<ul style="list-style-type: none"> - Lack of social status in this activity (making traditionally associated with poverty) - No access to raw material 	<ul style="list-style-type: none"> - Lack of managerial skills and entrepreneurship among the women involved (no participation in management, responsibility and control) - Lack of orders - Mediocrity of trainers

Recommendations for the future

- Need for a better assessment of skills required: for processing and lace making, traditional activities in the villages. Too much emphasis has been put in technical skills. Whereas in tailoring, a non-traditional activity, acquiring tailoring skills was central to the project. As the sending of trainers from Colombo has not been successful, it might be better to send village women to Colombo to acquire the skills.
- Not enough emphasis on managerial skills.
- Need for providing access to production assets, natural resources or raw material.
- Need for a better assessment of potential market demand: production was a success largely because demand was high for fibre. (However, risk : mechanization of the sector); whereas insufficient demand for tailored garments.
- Promoting women initiative and

Pilot project

Type of Sponsoring Agency

Funded by: ESCAP, the Government of Indonesia
Executed by: Field extension officers from the Agency for Agricultural, Education, Training and Extension

Period of Implementation

1983

Long-term Objectives

To increase the income and standard of living of fisherfolk families with an emphasis on the group approach to project activities

Immediate Objectives

- to identify those fisherwomen who were living below the poverty line
- to help them to organize themselves into small groups (10 - 15 persons) for the purpose of undertaking common income-generating activities
- to identify a feasible income-generating activity on the basis of the needs and plans of each group member
- to assist each group in obtaining a loan from existing credit institutions without collateral and against joint liability in order to assist them in their chosen activity
- to help each group to secure the inputs and services they require for successful co-operative action and group savings

- to acquaint group members with the concept of shared leadership to enable the group to become self-sustaining within a period of two years

Project Activities

- training of field agents (field extension workers and sub-district fishery officers)
- organising a field workshop to identify income-generating activities to be implemented by women
- consultations
- extension support activities
- monitoring and evaluation
- technical training of group members in order to improve their skills in their selected activities

Project Accomplishments/Successes

Nine groups of women were selected from families living below the poverty line. Most of the groups chose goat fattening as their income-generating activity. However, two groups chose to engage in fisheries related activities - one in fish processing and the other in the supply and maintenance of fishing gear. Each of these groups was given a loan of US\$450 for the purchase of fish processing equipment and fishing gear. The group members also received training in fish preservation techniques and net mending.

214

Impediments to successful implementation of project activities and negative impacts

<u>Impediments</u>	<u>Overall</u>	<u>production</u>	<u>Tailoring</u>
	<ul style="list-style-type: none"> - Household duties and children-care - Male resistance against women earning an income 	<ul style="list-style-type: none"> - Lack of social status in this activity (making traditionally associated with poverty) - No access to raw material 	<ul style="list-style-type: none"> - Lack of managerial skills and entrepreneurship among the women involved (no participation in management, responsibility and control) - Lack of orders - Mediocrity of trainers

Recommendations for the future

- Need for a better assessment of skills required: for processing and lace making, traditional activities in the villages. Too much emphasis has been put in technical skills.
- Whereas in tailoring, a non-traditional activity, acquiring tailoring skills was central to the project. As the sending of trainers from Colombo has not been successful, it might be better to send village women to Colombo to acquire the skills.
- Not enough emphasis on managerial skills.
- Need for providing access to production assets, natural resources or raw material.
- Need for a better assessment of potential market demand: production was a success largely because demand was high for fibre. (However, risk : mechanization of the sector); whereas insufficient demand for tailored garments.
- Promoting women initiative and

Source: Drewes, Edeltraud. Income-Earning Activities for Women from Fishing Communities in Sri Lanka. BOBP/REP/21 (GCP/RAS/040/SWE) Madras, India: Bay of Bengal Programme for Fisheries Development 1985 (199-200)

Annex 4.1**Operational Outline for Analysing Women's Position in FIS
- General Tasks and Guidelines**

There are 8 tasks included in applying the MEPS analytical framework to the issue of integrating women across an industrial system of a particular country (in this case, the fisheries industrial system). Although the fisheries industry is used to illustrate the process here, the procedures/guidelines for other industrial sectors would be quite similar. The process discussed below is a planning approach that begins with guidelines for the identification of women's present status across the system and proceeds with guidelines for the identification of projects to integrate women within the system.

4.4.1 Task 1 - Identify present placement and status of women within the industrial system

There are three steps associated with this task and all of them relate to the specification of data and information needed for the identification of women's present status within the system. The first step is specification of information about the industrial system. This information consists of the identification of the production and consumption components comprising the system; the base diagram; the development, system-level and component-level objectives specified; the listing of constraints and enhancements for the system; and the chosen development strategy favoured for the industry's development within a country (i.e the programme of technical assistance, projects, policies and investments).

The second step for task I is the identification and selection of variables showing women's participation in and contribution to each production and consumption component identified as comprising the industrial system. This step should be carried out by a person or persons having a knowledge of (a) the industry and its structure within the context of a particular country, and (b) knowledge of women's employment and socio-cultural status within the country and (c) data sources pertaining to women, employment and the industry. The choice of variables is likely to differ from one component to another, as is the level of disaggregation needed for a particular component. In the example of the fisheries industrial system for example, nine general components were identified for each of the countries analyzed. However, the system orientation component seemed most relevant for women in Indonesia while the role of women in the extraction component was more important for analysis in Mexico. In terms of disaggregation levels, women in processing in Indonesia were examined in artisanal and commercial processing whereas in Mexico, women in processing were examined according to home-based fishing communities, rural-artisanal non-home based, industrial/commercial and the making of crafts, jewelry and related articles from fish catch. In Senegal, due to the industrial system's structure, the extraction and distribution components had to be examined by geographic region. The summary charts discussed in Chapters 2 and 3 illustrate the utility of using the component approach to examine women's present status. For example, an initial reaction of many individuals is that women are not involved in extraction activities and this would be an area overlooked in project identification. Yet, looking at women's involvement through the MEPS framework, there is evidence of women's

contribution/participation, especially in relation to inland waterways, coastal areas and in aquaculture. These examples illustrate the importance of looking at women's involvement in relation to industrial system structure, and to having staff with industrial, women-in-development, and data expertise.

The variables chosen should reflect both quantitative and qualitative indicators and should encompass the following two groups of characteristics: a) demographic, attitudinal, education/training, employment and socio-economic conditions, and b) work-place, conditions-of-work and the context of work information.

Examples of information for group A might include

- Occupation of employment
- Tasks performed
- Equipment used (if relevant)
- Status in family/community by type of work performed
- Reasons for working
- Length of time already working, time allocation between work and household routine
- Full-time/part-time/seasonal work
- Age
- Marital Status
- Children
- Wage or Income data
- Resource ownership/entrepreneurial status
- Type of workplace and scale of enterprise if relevant

Group B's information should be of the type that will lead to the identification of enhancements facilitating women's participation and constraints obstructing women's participation. Other information such as economic and market factors, technological factors, relevant workplace practices, etc., that make more explicit the context of women's work in the particular industrial system should also be included. It is important to treat each component of the system individually and compile as detailed a picture as possible of the work women perform.

Much of the data/information will necessarily be qualitative, descriptive, and perhaps impressionistic in nature. Resources of time, money or staff rarely permit the full-scale collection of information suggested here. For this reason, specialized input from appropriate decision makers or policy makers at both national and local levels are acceptable. Also, those locating available data need to be resourceful, perhaps searching beyond the scope of sources most closely (and naturally) associated with the industry. For example in Mexico, relevant data were gathered from ministries dealing with rural peasant affairs and field extension services for rural communities. Also, it is helpful to have whenever possible, a basis for comparison by including information on men's work, at least for the occupations at which they are employed. This is especially relevant for the rural areas where the "unit of analysis" is often the household

The comparative basis is also important for industrial processing where women are most likely those employed in seasonal, non-contractual and part-time positions and very seldom at occupations above the semi-skilled level. In order to know where, and how, to focus development interventions,

precise documentation regarding number/gender/occupation of those employed is vital.

The third major step in carrying out this task is the determination of information sources and data collection procedures. Included should be a review of existing data, both published and unpublished, and from both formal and administrative data sets or records; government ministries, research centres, and universities are likely sources. Others may be trade or professional associations, employer or enterprise associations, and grass-roots and national-level women's groups.

Development plans for the particular country should be thoroughly reviewed including those for macro-economic and industrial development; social development; education/training development; women's affairs and development plans. Information about the industrial context could come from both international and national industry-related publications. Information for development and human resource interventions could come from research-based and project-level literature specifically related to the fields of women-in-industry, women-in-development and human resources. Literature could include specific studies or project reports in the particular country, for the particular industry (within the country and internationally), and project document/evaluation studies (within the country and internationally). For this latter body of literature, special note should be taken of the effectiveness of particular development strategies, lessons of experience and identified needs which projects and interventions were designed to address (see "project abstracts" included in annex 3.2 for examples).

It will likely be too costly and time consuming to conduct "grass-roots", household-census-type surveys or sample surveys. However, a technique used in labour market research called the "key informants" approach can be utilized. Carefully selected individuals are chosen for structured interview sessions; questionnaires are developed to elicit information about the industry, the work tasks, the social/human resource needs of the industry and target population, potential project interventions, etc. Responses are subsequently validated by available data and research literature. As a variation on this approach, a round-table type of discussion can be held, with participants carefully selected to represent the issues needing to be examined. Again, responses are documented by available data and literature. Properly utilized, such qualitative research techniques are also useful for the next task, i.e. determination of development objectives for women's integration into the industrial system.

4.1.2 Task 2 - Determine development objectives for integrating women into the industrial system

To carry out this task, data, development objectives, and preferred development initiatives identified for the industrial system and development objectives/targets for women's participation are needed. Other required input for this task is preliminary analysis of the data collected in the preceding task. At the very least, preliminary participation rates for women throughout the system should be developed on a component by component basis and a broad profile drawn of the type of work they perform. If possible and/or as required, the information should be disaggregated by urban and rural locations, and by the basic structure of women's overall participation within each component (e.g. for fish processing, industrial, enterprise-based, small,

artisanal-based, and home-based activity levels may need identification; for distribution and marketing, women's participation level according to species of fish and location within country may need specified activity levels; in Senegal, men dominate fish marketing in some areas of the country, in Indonesia, a three-tiered marketing structure is evident, with women predominantly found in the bottom two-tiers, while in Mexico, women earn substantially more from marketing some species rather than others). For tasks performed, detailed information may be lacking; however, at the very least, a ratio of women to men in decision making capacities, skilled/semi-skilled, and general labourer employment categories would be helpful.

Once the broad participation/task specification is completed, the next step is a determination across the system and within each component of where women are either overrepresented or underrepresented. This specification becomes, subsequently, an initial tool for guiding the initial establishment of objectives and target for enhancing women's integration. The desirability of such measures as (1) increasing women's participation in areas of underrepresentation, (2) maintaining, shifting or decreasing participation in areas of overrepresentation[1], or (3) taking measures to increase women's effectiveness in both areas of under- and over-representation, can be seen more clearly, especially when viewed in relation to goals and objectives for the industrial system itself.

After the basic determination of women's participation patterns is completed and initial decisions made regarding areas of the system where objectives and goals are to be directed, a further review of government development plans, development objectives for the industry and development goals for women generally might be conducted. At this point, it might be useful to make an initial assessment of the impact, positive or negative, that industry development goals and objectives are likely to have on women. This is where a deeper review of research literature might be useful, as well as an examination of project-related and human resource-related literature. From this review, the potential impact of development objectives perhaps can be determined. For example, a decision to increase the size, horse power, and catch levels in the fisheries industry may signify that traditional landing bases must be bypassed in favour of larger villages, thus displacing both women and men from jobs (see Mexico's case study for illustration). Not all industrial development objectives can be so neatly analyzed; however, for those that can, planners can potentially build preventive actions into their projects and strategies.

The final step for this task is to establish both macro- and micro-level integration goals and objectives for women. Whenever possible, the goals/objectives should be quantified, or, in lieu of quantification, made as specific patterns, based on the development pattern recommended for the system itself, and the areas of the system where women are over or underrepresented. It should be noted that while setting objectives is labeled as "Task 2", this is an exercise that will be conducted throughout the entire planning process. Goals and objectives will be refined, re-checked and probably revised

[1] Areas where women are heavily represented may not be the most advantageous for women and may even be detrimental, given the development path anticipated by the government. A development objective in such instances may actually be to cut back women's participation level by shifting them into other activities of the system, or out of it altogether.

throughout the programming exercise, as new information becomes available and as more explicit analysis is conducted.

4.1.3 **Task 3 - Identify women's contribution to FIS System and constraints and enhancements influencing their contribution**

This task's completion depends heavily on the type and depth of data/information collected under the first task. The essential work of this task is preparing and presenting the information in a way that provides the basis for developing an initial set of development initiatives for integrating women into the industrial system. This is one point within the process where the need for additional data or informational needs may occur and additional provisions for collection will need to be made.

For each component within the industrial system, a profile needs to be developed to clarify women's participation in and contribution to the system. For most components, quantitative assessments, aside from the participation rates developed for task 2, are not likely to be possible. What is important for the work of this task is the disaggregation of information according to the structure of women's participation and the provision of a detailed description of women's role and function. It is at this point in the planning process that detailed information is required regarding the specific tasks women perform, equipment they may use for their work, working conditions and wage/income information. It is helpful if summary charts or tables can be prepared for each component within the industrial system, containing the information to be analyzed. At the minimum, the profile of women's role for each component should consist of the following elements:

- women's current tasks and how they perform the task;
- participation rates if available and income earned;
- broad expenditure pattern of income (e.g. for supplies and input: for family or household, for self), if available;
- comparison with men performing similar tasks and work (perhaps in relation to geographic location - see Senegal's or Indonesia's marketing component analysis, for example, or seasonal work - specifying what the male and female "tasks" are, for example, when the men do not go out on ocean-going fishing vessels, etc.);
- enhancing factors facilitating and supporting women's participation and role including socio-economic and cultural factors;
- constraining factors and bottlenecks limiting women's participation and role including socio-economic and cultural factors
- current supportive Government policies, actions and strategies enhancing women's participation and contribution;
- initial identification of industrial system policies, strategies or actions that appear to specifically enhance or constrain women's participation in the industry.

Once the basic profile is developed for each component, the remaining step for this task is to develop a preliminary listing of constraints and bottlenecks affecting women's participation. These could be ones associated directly with the industry, or, specifically related to women's participation; next to these constraints, preliminary suggestions should be listed for varied

development initiatives that could address or counteract the constraint. This listing of development initiatives will become a tool to use during the project identification stage.

4.1.4 Task 4 - Analyze Identified Constraints and Enhancements for their Impact on Women's Participation

This task and the following (task 5) form the core of the analysis for examining women's integration. It is through the work of these two tasks that constraints, enhancements, and bottlenecks are analyzed in detail for their impact on women's participation and subsequent integration throughout the industrial system. As a result of the work of these tasks, development objectives for women's integration can be specified more clearly and the content of development strategies and initiatives identified more precisely.

Task 4 has four steps. The first of these is a detailed examination of the enhancing factors identified in the previous tasks that promote and sustain women's participation in the industrial system. Step 2 is a detailed examination of the constraining factors related to women's participation, along with a preliminary categorization of the type of development initiatives which the constraints potentially require. Step 3 is a detailed analysis of the impact of system constraints, bottlenecks, and enhancements on women's participation. Step 4 is the preliminary prioritization of system enhancements and constraints according to their impact upon women's integration.

To carry out the work of this task, the expertise and background of several individuals may be required. Also, it is in relation to this task that corroborating research and project-based literature may be utilized effectively. Increasingly, beginning with this task, the application of the analytical framework relies upon the informed judgment and expertise of those conducting the analysis. Whenever possible, informed judgment should be supplemented with supporting research; however, when the work requires that priorities be assigned and decisions made regarding the seriousness or significance of one factor in relation to another, human value judgments always are required. While indices and priority weighting schemes can, and should be established, the element of political reality, and resource availability must also be considered. Thus, the analytical and applied research and field-based expertise of those carrying out tasks 4-8 are extremely important - and as important, if not more so, than the data or information on which the overall analysis and planning process are based. The steps required for completing this task are in detail elaborated below:

4.1.4.1 Task 4, Step 1 - Component-level analysis of enhancements affecting women's integration

The enhancing factors for women's participation that were identified in task 3 are the main input for this step. For each component of the system, identified enhancements need to be examined from the following perspectives - (a) those that suggest the creation of completely new areas for women's participation (e.g. new occupations or employment tasks) and (b) those that support/sustain a capacity for expanding current tasks, functions and roles that women are performing. Some knowledge is needed at this point of the capacity of the local economic/industrial environment to sustain increased and/or expanded participation of women. Where capacity is not adequate, the expansion should not be ruled out; however, notation should be made, for use

at a later stage when priorities are assigned to interventions and development initiatives.

Next a preliminary identification is needed of the secondary impacts an enhancement from one component may exercise upon the participation of women in another component. Attention needs to be drawn conceptually, at this point, to the fact that the use of components is a qualitative rather than a quantitative tool, i.e. subdividing women's roles by components does not mean that one woman, as an individual performs only tasks or work associated with one component; the same woman, especially in rural areas may in fact perform work related to 2,3, or more components. Thus, when quantitative indicators are developed, caution is needed because double-counting (i.e., including the same woman in the tasks/work of multiple components) is to be expected (i.e., the same woman, for example, in the case of fisheries, engages in extraction, processing, market/distribution, and consumption activities). In more urban areas, where a woman's role may be much more specialized (perhaps focusing on one occupation as in industrial processing), quantitative indicators take on a different importance and can be more readily used for determining project size and scope (see task 8 of this annex). For the purpose of this step, attention needs to focus on the tasks women are performing, whether the economic or industrial market can sustain an expansion of task-related activity, and whether an enhancing factor identified in one component will have a similar, positive enhancing impact on the tasks/work and participation of women in another component; these elements warrant more attention than the actual number of women performing a particular set of tasks.

The next type of information needed in this step is a specific identification of areas in each component where women appear to be underrepresented. The preliminary notations made regarding underrepresentation in task 3 are one input. Also, this is the point where gender-specific information on work roles and tasks is useful. Areas in which men's involvement far overshadows women's can be treated as a potential enhancement signal for recommending specific initiatives for increasing women's participation. Included with this identification should be assessments of cases where a constraint in one component may actually serve as an enhancing catalyst for other components (e.g., women displaced by mechanized net-making processes may possess skills/knowledge that can transfer to another industrial input process related to fisheries, or that could be utilized for another sector; or, the same displaced women may be available for technical assistance initiatives related to agriculture or marketing/distribution).

Also, components for which few or no constraints are noted should be identified. In an indirect way, such components become enhancements during the final programming exercise and can serve as indicators for assigning priorities during resource and investment allocations.

4.1.4.2 Task 4, Step 2 - Component-level analysis of constraints affecting women's integration

The constraints and bottlenecks obstructing women's participation/integration throughout the industrial system have already been identified in task 3; the identification made for that task becomes the main input for the analysis here. What is involved at this point, is:

(1) examining the constraints in relation to the types of development initiatives that might address them;

(2) categorizing the constraints and the suggested initiatives according to type of initiative (e.g. training, technical assistance, access to credit, research, etc.), and preliminary implementation time-frame (i.e., short-term, medium- or long-term);

(3) rating the constraints according to magnitude (i.e., those affecting only one component vs. those affecting multiple components); and

(4) estimating, in a preliminary fashion, supporting inputs of policies, infrastructure, staff, etc. required for the initiatives suggested for addressing a particular constraint.

It should be noted that multiple development initiatives may be suggested for each constraint. Also, any estimates regarding requirements for implementation are only broad and preliminary at this point. Such information included here is used mainly as an indicator and guide for selecting appropriate and feasible initiatives during the programming and project design phase. The basic procedures for carrying out this step are:

- for each component make a listing of constraints or bottlenecks and specific, potential actions and initiatives for responding to each one, e.g., technical assistance, training, policy/legislative, research, equipment purchase, financial/credit access, investment, etc.;

- for each component, make a listing of those constraints that can only be addressed by longer-term, indirect interventions, e.g., cultural traditions, myths or taboos regarding women's role and work (e.g., women belong in the home, women are incapable of making economic decisions, women cannot perform physical or manual labour), and expectations regarding women's employment and economic roles;

- for each development initiative or action, assign a preliminary planning priority based on (a) feasibility or likelihood of implementation given current priorities and resources; (b) time required for starting and implementing specific type of initiative and (c) expected magnitude of the project (e.g. establishing large scale pilot industrial canning enterprise, small-business loan and enterprise development project for 5 villages, skill-training for home-based processing techniques quality control hygienic standards for small-scale processing operations, etc.) The planning priority/feasibility assignment should only be in terms of short-term (1 year from present) medium-term (2-3 years from present) and long-term (beyond 3 years).

- prepare a companion listing that groups constraints according to type of intervention. With this listing a rough estimate is created of the magnitude or relative importance a particular type of initiative has across the system (information that will be useful later when detailed priorities are assigned to projects), e.g. if some type of training will address the greatest number of constraints in the largest number of components, perhaps training as a general approach should receive highest priority; similarly, a large number of constraints requiring revised credit access procedures may indicate a major emphasis on banking/investment procedures etc. Additionally, this listing, in conjunction with the one immediately preceding, provides helpful guidance and input for the programming and project design phase, when either (a) project content must encompass multiple or combined initiatives (e.g., training and financial/credit assistance and business advisory support) or (b)

when one type of initiative can be designed to address multiple constraints across the entire system.

- Based on preliminary priorities and listings made above, for each constraint within a component, provide initial estimates of resource inputs needed for each development initiative suggested - inputs might include planning and design time, length of expected duration, staffing and funding levels. Like the listings already completed, this one will be a planning tool for shaping final strategies and selecting final priorities.

- Next, a designation should be prepared for those components, if any, where constraints are so pervasive and solvable only with medium-to-long term actions, that interventions seem currently impractical. Additionally, those constraints common to multiple components need to be classified according to priority by the initial estimates of the type of suggested interventions, planning time-frame and required, resource inputs. As with all the other information developed during this task, these identifications become the ground work for priorities and choices to be made later during the programming phase.

4.1.4.3 Task 4. Step 3 - Analysis of Industrial System's bottlenecks, constraints and enhancements on women's participation

The work associated with this step and the following step has as its purpose the identification of the impact of industrial system constraints and enhancements on women's participation and vice versa, i.e. impact of constraints and enhancements related to women's participation on the system. For step 3, the focus is on the impact of the industrial system's activities on women. As with the other steps in task 4, the work of this step relies heavily on the subjective expertise and judgement of team members and on supporting literature and documentation materials that were gathered during task 1. Of special assistance would be material such as that found in the sample project abstracts of this report which details the impact of selected development initiatives on women and which components of the system are most likely to be affected. Most helpful is likely to be industrial project evaluation literature, usually from other countries and literature related to human and social impact of technology.

The step is crucial because the case may occur where a constraint identified for the industrial system can actually be turned into a positive impact in relation to women's participation or, an enhancement for the industrial system's development can exercise a negative impact upon women's participation. For example, in Indonesia, one enhancement is a positive attitude to foreign investment. Foreign investment, while valuable for upgrading system activity overall, if focused upon larger-scale, industrial fishing, processing and exporting operations could encourage industrial-scale operations to the detriment or exclusion of smaller-scale, domestic-oriented market needs. Negative impacts could result for women in smaller villages and in small-scale processing. Similarly, in Senegal, a system constraint is high cost and inferior quality of ancillary services. While a hindrance to the system, this could translate into an enhancement for women as this is in an area where increased participation strategies for women could be directed. (e.g., this could be an area that is constrained because of an unskilled supply of labour; training women might solve the shortage and raise the quality overall, an in-depth assessment would be needed before final determinations are made). The objective here is not to eliminate or disqualify any

system-level activities on the basis of whether women's participation is positively or negatively affected; rather, the objective is just to develop, preferably in chart format, an understanding of which aspects of the system exercise a positive or negative impact on women. This information, will in turn, be useful in the identification and development of projects in task 7-8.

There are two levels of analysis needed. The first is on a component level. On this level, for each component of the industrial system, an initial assessment needs to be made as to whether each identified constraint or enhancement exercises a positive or a negative impact on the participation of women's work within that sector.

The second analysis is on an inter-component level. For each component's constraint or enhancement at the system level, the positive or negative impact on women's participation in other component's needs to be assessed.

From these identifications, a simple assessment can be made of the potential magnitude of the positive or negative impact that a constraint or enhancement carries. Based on the judgment and background of the experts conducting the analysis, the system's constraints and enhancements should be prioritized according to the adjudged magnitude of their negative and positive impact upon women's participation. According to the sector being studied and the needs of those conducting the analysis, a rating index could be established at this point to provide a quantitative basis for assigning priorities. Criteria for the index could include number of components affected, the way in which women's participation is affected (e.g. increase or decrease in number of jobs), regions of the country in which women's participation will be affected, and/or a combination of these and other factors.

4.1.4.4 Task 4, Step 4 - Based on foregoing steps, make assessments regarding interactions between industrial system-level constraints/enhancements and those associated with women's participation

The work in this step is mainly for the purpose of developing information that will be useful in designing the series of project/development initiatives chosen to enhance women's integration into the industrial system; also, the information will provide guidance in the final programming of development initiatives for the industrial system. Essentially, five specific types of assessments are needed to complete the work of this step. These are as follows:

(a) Industrial system enhancements that are specifically rated as having a positive impact (and/or constraints judged to be positive for women) on women's participation need to be identified according to whether the impact is likely to be immediate or longer-term (e.g. two-to-five years):

(b) Industrial system constraints (and/or system enhancements) rated as having a negative impact on women's participation need to be identified according to whether the impact is likely to be immediate or longer-term (e.g. two-to-five years). For this assessment especially, the priority ranking of constraints completed in the previous step may be useful;

(c) Enhancements re women's participation that contribute to the productivity/performance of the industry need to be identified, additionally, a determination should be made as to whether the contribution's impact is immediate and on-going, or longer-term;

(d) Constraints related to women's participation that also negatively affect the productivity/performance of the industry need to be identified; additionally a decision is needed as to whether the impact on the industry is immediate and on-going or will only constrain the industry in the longer-term;

(e) An identification is needed of those constraints and enhancements, whether pertaining to the industrial system or directly to women's participation, that:

(i) have a positive impact on both the industrial system's performance and on women's participation, or

(ii) have a negative impact on both the industrial system's performance and on women's participation.

4.1.5 Task 5 - Assess impact of proposed industrial system development options on women

The objective for this task is to assess, on a component-by-component basis, the impact that identified strategies or development initiatives for improving the industrial system's performance is likely to have on women's participation. At the completion of this task, three types of concrete information will be evident. One type will be the likely impact, positive or negative, that each identified system development option will have on women. A second will be the identification of system-level options that will need to be accounted for most seriously when the final programming exercise for women's integration is conducted. A third will be an identification of priority, system-level options that best satisfy the needs for enhanced system performance and women's participation.

In order to determine whether a particular option is likely to have a positive or negative impact on women's participation, the analysis of women's current status, development objectives formulated for women's integration, and the assessments of constraints/enhancements related to women's participation will be needed. Additionally, as in the previous task, supporting literature, especially project planning and evaluation reports and technological impact literature, will be useful. Those conducting the analysis will use the analysis of women's participation and the supporting literature, in combination with their own informed expertise and judgment to determine the likelihood of a negative or positive impact for a particular industrial development option.

The following steps are suggested for completing this task:

4.1.5.1 Step 1 - Component-level assessment of industrial system options

For each component of the industrial system, proposed options that have been identified should be assessed for their potential positive or negative impact upon women's participation within the particular component. Those conducting the analysis may wish to develop criteria or categories to assess the magnitude of the impact. Choice of criteria will vary according to the

industrial sector and perhaps to the component being examined. Sample criteria might include employment increase or decrease, displacement of workforce, increase/decrease in time spent at work, increase/decrease in input of resources, increased need for capital/credit, etc.

4.1.5.2 Step 2 - Inter-component level assessment of industrial system options

For each identified industrial-system option, the positive or negative impact on women's participation in other components needs to be assessed. With the completion of this step, the direct impact of each option (i.e., impact upon women's participation in the same component) and the secondary impact of each option (i.e., impact upon women in all other components) will be evident. As in the previous step, criteria or categories could be established to assess the magnitude of the impact.

4.1.5.3 Step 3 - Identify options for which women's participation is likely to enhance successful implementation and outcomes

This is a crucial step, especially in cases where simultaneous programming for the industrial system and for women's integration is occurring. Where women's participation can be determined as an asset for the implementation of an option, other factors being equal, that option should be chosen over others.

In cases where industrial system programming has already occurred, i.e., options for each component have already been chosen, this identification is also useful as a guideline for ongoing modifications on programming adjustments that may be required throughout the implementation period. Where women are heavily represented in the component's workforce (as in the processing or marketing/distribution components of the fisheries industrial system), an option that would directly upgrade their performance might be a beneficial choice, when or modifications are needed.

4.1.5.4 Step 4 - For industry options identified as having positive impact on women, propose corresponding technical assistance initiatives for women

For each development option that is determined as having a positive impact on women, technical assistance measures to enhance women's participation should be suggested. For example, if, for the industry, one option for the distribution/marketing component is to increase investment levels in cold storage equipment, corresponding technical assistance measures for women might call for purchase of transport equipment that women can operate or location of stationary, smaller-scale cold storage facilities in areas where women are heavily represented in marketing activities. This identification should be conducted for each component, with several technical assistance measures offered for each option.

This information will serve as a guideline for developing both the system-wide programme to enhance women's participation and the design of individual projects.

4.1.5.5 Step 5 - For options identified as having a negative impact on women's participation, make the following determinations

(a) whether the impact is of a magnitude that specific technical assistance measures should be developed for women to counter the expected impact:

(b) whether the impact is of a serious enough magnitude that the choice of an alternative option might be suggested:

(c) whether minor modifications can be made as the option is implemented:

(d) whether the impact is so slight that no corresponding action is warranted.

If (a) is chosen, various technical assistance measures should be suggested for each option. As in the previous step, the identification should be done for each component. Similarly, this information will serve as a guideline for creating both a system-wide programme to enhance women's participation and the design of individual projects.

4.1.6 Task 6 - Assess impact of proposed industrial system programming alternatives on women

The purpose of this task is three fold. First, is the determination of how optional proposed system "plans of action" will impact, overall, upon women. It will be difficult, if not impossible, to come up with an overall label of positive or negative. Rather, the pattern and balance of the impact of optional "Plans of Action" that are proposed for system-level programming must be determined. This is arrived at through the use of the supporting project planning and evaluation and human/social impact of technology literature, the background expertise of those conducting the analysis, and the outcome of analyses that have been conducted in previous tasks.

The second purpose is the separate identification of which optional "plan of action" best enhances the industrial system's development (i.e. meets the development objectives cited at the outset of the study) and which has the most favorable impact upon women's participation.

The third objective is the determination of the system-level "plan of action" which best satisfies the development objectives of the industry and those established for women's participation. The plan of action which best addresses the development of industrial system objectives and those for women's integration becomes a benchmark and guideline upon which (1) the final selection of the "plan of action" for developing the industrial system is based and (2) the system-wide programming created for women is based. This will not necessarily be the "plan of action" for the system that is selected for implementation. However, it will serve as a common denominator indicating perhaps how specific options included in the chosen plan of action could be modified to address better the women's integration objective and guiding the creation of a similar system-wide programming package for the enhancement of women's integration.

Basically, the following steps are needed to complete the task:

Step 1: Using the identified, alternative industrial system plans of action, determine pattern of impact on women's participation.

Step 2: Based on pattern of impact, select plan of action best fulfilling development objectives for the industry.

Step 3: Based on pattern of impact, select plan of action best fulfilling development objectives for enhancing women's participation.

Step 4: Select plan of action best fulfilling objectives both for development of industrial system and women's integration.

Step 5: For the selected plan of action for industrial development objectives, propose technical assistance measures for women; where any portion of the plan has a negative impact on women suggest technical assistance measures that can counter or compensate for the impact.

Step 6: Determine whether modifications should be made to the plan of action selected for developing the industrial system; make modifications as needed, using the plan of action chosen in step 4 (i.e., the one best fulfilling the objectives for industrial development and women's integration) as a basis.

4.1.7 Task 7 - Identify system-wide programming package to enhance women's integration into the industrial system

The objective of task 7 is to prepare a system-wide plan of action (i.e., a series of technical assistance and development initiatives spanning all components of the system) for the integration of women into the industrial system. The work of this task aims at creating a strengthened resource base for the system through preparing and training women for effective participation in the industry in ways that harmonize with the overall development pattern.

The needed information for completing this task is essentially, already available. The starting point is the chosen plan of action for the development of the industrial system (step 2 of preceding task), the plan of action best satisfying, both industrial development and women's integration objectives, along with any corresponding listing of technical assistance measures for women's integration that has been created. These informational elements will form an initial programmatic baseline against which specific programmatic options for each component will be rated and upon which final options for individual components (i.e., specific technical assistance measures) will be selected.

The other informational elements (i.e., completed outputs from other tasks) include the development objectives that have been established for women's integration; the listing of potential development initiatives or technical assistance measures produced in conjunction with the analysis of constraints and enhancements for women's participation; the review of women's current status within the system; technical assistance measures suggested as a result of the analysis of the impact of industrial-system constraints and options on women's participation; and any preliminary assessments that have been made regarding necessary resources for implementing initiatives and implementation time-frames, etc..

From these assembled information elements, some preliminary judgments have been made that indicate the feasibility of implementing a particular action given required resource inputs, timetables, and government policy supports. At several stages in the process, priority indexes have been established - these will be of value in helping to select one option over another. Additionally, indications will be available regarding areas of the industrial system where women are currently underrepresented but have a good opportunity to make a significant contribution in the future. All of this information is valuable for this task, but will become even more important for the one following, when individual project-level initiatives are chosen and designed.

It may be wise, in completing this task, to first develop several alternative programming packages for enhancing women's integration. These should then be compared on the basis of factors such as: compatibility with overall industrial programming plan of action; design and implementation costs; available resources for implementing; expected magnitude of implementation impact, etc. The factors should be quantifiable and chosen by those on the project team having some background in industrial operations/project planning, evaluation design or cost/benefit analysis.

Once the preferred programme plan of action for enhancing women's integration has been identified, the individual initiatives comprising the plan need to be categorized according to major type of implementing action required, e.g. financial investment, training, technological development, research, government policy, etc. Also, an initial implementation timetable for the entire plan of action should be designated, with individual initiatives prioritized accordingly. Lastly, for each individual initiative within the plan, specific goals, objectives and preliminary implementation activities should be established.

4.1.8 Task 8 - Design and prepare project-level initiatives for implementation

As will be seen when reviewing the steps for carrying out this task, much of the required information will already be available; it just may not be organized in a form that will be useful for the work of this task. The objective for this task is two-fold. One objective is the translation of development initiatives comprising the programme plan of action for women's integration into specific and concrete projects or technical assistance measures. The second objective is to assemble the type of detailed information for each project that can be used for developing an actual project document and work plan.

In reality, the work of task 8 does not have to be deferred totally to the very end of the programming exercise. For some project-level activities, evidence may emerge early in the planning process that one type of measure may be preferred over another. For example, in the case of the fisheries system, from the Mexican and Senegal case studies, there was evidence of the geographical concentrations for women's participation in processing and marketing. Early in the programming exercise, at the point of analyzing constraints and enhancements, a planner would be able to identify which areas of the country were likely to be a focus of project initiatives and specific factors constraining women's participation and/or effective performance. With some assurance, an analyst or a planner could initiate at least a request throughout government ministries and local/regional country-level field

offices for more detailed data. Similarly, a review to identify on-going or anticipated field projects related to fisheries could be undertaken. Also, a request to university or research and development centres could be made to locate research or surveys being undertaken in relation to either the industry or the population of the targeted localities. Those conducting the programming exercise will need to be resourceful and forward-thinking in relation to task 8. However, if the end-result is kept clearly in sight throughout the entire programming exercise, the time needed at the end for project-level design can be reduced drastically.

One of the more valuable informational elements for task 8 is the identification and analysis of constraints already completed. The constraints provide valuable data regarding negative factors that must be accounted for and perhaps overcome in project design. As the analysis of constraints on women's participation encompasses economic, demographic, social and cultural factors, project planners/designers potentially have a well-rounded idea of personal, technical and environmental elements that must be considered during project design and implementation phases.

The suggested steps for actually completing the work of task 8 are outlined below. These steps should be followed for each project or technical assistance measure that is being proposed as part of the system-wide plan of action for enhancing women's integration into the particular industrial system under review.

4.1.8.1 Step 1 - Identify specific type or types of assistance or intervention

The consideration here is more detailed than just indicating credit assistance or increased financial access, training in processing skills, purchase of new equipment, or regulatory measures for industrial processing enterprises. This step is actually to focus on the substantive content likely to characterize particular initiatives. While this will vary as per the type of initiative being proposed, it will be an especially useful step where effective project implementation requires combined forms of assistance, e.g. training in managerial skills for aquaculture co-operatives and assistance in choosing needed equipment; establishment of a revolving loan fund in a village along with training in household budgeting and management; training in proper fish handling techniques coupled with loans for purchasing new home-based processing equipment and money-budgeting skills for marketing etc. This is perhaps where a very short description of the intended project along with a corresponding rationale should be developed.

4.1.8.2 Step 2 - Identify scale and scope of project

This could include factors such as whether the project is to be national in scope or localized to one community, or just for urban or rural areas. Whether the project is to be tested on a pilot basis before full-scale implementation occurs needs attention. Also, the phasing of the implementation should be considered (e.g. whether implemented all at once or introduced in phases over an extended time period).

4.1.8.3 Step 3 - Identify specific location for project within country and population for whom project is to be designed

4.1.8.4 Step 4 - Determine need for additional data/information related to project design and implementation

This can be a crucial step and needs to be related specifically to the particular type of project activity being considered. Most likely, if primary data collection/research efforts are needed at any point during the analysis of women's participation, it will be in relation to this step; as a result, the data collection should be considered as one of the principal tasks in any work programme that is developed. Frequently, the required data collection effort may be of a qualitative nature, based primarily on observation. Also, modified attitudinal or opinion surveys may need to be conducted, personal interviews conducted with a selected sample of the target population or focus group discussions held.

This information is to be used in combination with the constraints analysis data to determine special factors that may: (1) affect negatively the successful implementation of any project; and (2) need to be compensated for through special measures built into the project's design.

This is also the point at which a decision needs to be reached about whether the participant population (i.e. those individuals for whom it is designed) is to be involved directly in the design of the project, the establishment of objectives and the methods to be used for implementing and delivering the actual assistance. The literature indicates that especially in the case of rural fishing communities, projects have a better chance of succeeding if the women are involved directly in the planning/implementation phases of the project and have an ownership and on-going vested interest in a successful outcome.

4.1.8.5 Step 5 - Determine methods for collecting additional information, if it is needed, and for securing the women's participation in project planning, if warranted

If the decision is made to collect additional data and/or to secure the involvement of project participants, there are sample data collection instruments available that can serve as guidelines for both purposes. For the fisheries industrial system, sample questionnaires for conducting a "social feasibility" analysis are included in appendix 3.2.A; one was developed by the UN Food and Agriculture Organization and the other by the Asian Development Bank. Although created specifically for the fisheries sector, the format and general theme of the questions can serve as guidelines for the development of questionnaires for other industries.

Aside from collection of the actual data, if a decision is made to involve participants actively in project design/implementation, attitudinal research methods are suggested, and again, there are resource guides to facilitate this process.

4.1.8.6 Step 6 - Survey other, related project/technical assistance initiatives being conducted either by the national government, non-governmental related bodies or outside donor groups

The objective of this task is two-fold. One is to avoid duplication. The second is to co-ordinate and build upon on-going efforts, if at all possible. Also, actions to be initiated for the particular industrial system may be similar to ones that would be helpful in another industrial system; in such

a case, perhaps additional resources could be located from other donors and a larger number of individuals assisted. As examples of such instances - forming/establishing co-operatives, specific skills training, entrepreneurial skills development, or provision of increased access to loans and financial assistance.

4.1.8.7 Step 7 - Ensure availability of adequate, supplementary support/infrastructure for project initiatives

Project literature indicates that projects do not fail necessarily because of faulty design or inadequate implementation procedures, but rather because of inadequate support and infrastructural provisions. For example, for some entrepreneurial or income-generating projects, training coupled with arrangements for small-scale loans have been necessary. With some training projects, skills were imparted, but at the completion of training, either jobs were not available, or equipment at the workplace differed from equipment used in training, or training was offered at times and by individuals that rendered women ineligible from attending. Similarly, initiatives focused on equipment and physical facilities have failed because the equipment used increased women's workload or, as illustrated in the Mexican FIS case study the size of tanks used in aquaculture projects were above a certain dimension, thus becoming the domain for male employees. This is an important step and one for which there are no established guidelines. Information such as project abstracts of similar initiatives in other locations can help; also, expertise of a trained industrial sociologist or anthropologist is helpful; additionally, the analysis of constraints to women's participation already completed can provide helpful insights.

4.1.8.8 Step 8 - Ensure appropriate delivery of assistance to be provided by project initiative

This is a crucial consideration for all project planning and perhaps especially so in the case of initiatives for women. There are frequently cultural considerations that impede women from receiving instruction or technical assistance advice from male extension workers. Training that requires attendance at a residential facility or a facility at some distance from home may impede women's attendance. Provision of credit/financial aid through formal institutions in areas where middlemen control commercial activity can undercut the success of activities that women might finance with loans. Similarly, projects based on new technical equipment that do not instruct women in maintenance and repair, along with operational skills, may fail.

The manner in which assistance is delivered is again, one for which no one set of guidelines has been developed. However, the constraints already analysed will provide insight. Additionally, the expertise of industrial sociologists or anthropologists may be helpful. Determinations for proper delivery techniques are ones that definitely need to be tailored to and based upon the local culture and traditions.

4.1.8.9 Step 9 - Establish monitoring and evaluation indicators and procedures for the duration of the project

Provisions need to be made for monitoring the implementation progress and performance of the project's in relation to established objectives and to make modifications. Additionally, criteria need to be set to assess the

project's success; this is especially important in instances where a pilot project is being tested before replicating the project on a larger scale.

Arrangements also need to be made, depending on the type of project initiative, for on-going performance and follow-up assistance. Some projects or initiatives have a definite beginning and termination point; however, to ensure maximum benefit to participants, arrangements are needed for some type of follow-up activity. This can often be accomplished as part of the arrangements for ensuring adequate project infrastructural support, and may include continuing provision of information through a local government office, extension agents in rural areas and/or active involvement of an appropriate NGO.

The monitoring and evaluation criteria can be established at the time of project-level data collection (see step 4 above). The sample questionnaires referenced in step 4 (i.e. the FAO and Asian Development Bank instruments) can serve as guidelines, both for choosing monitoring/evaluation criteria and as a basis for conducting periodic reviews of project performance. While directly applicable to fisheries project initiatives, these guidelines can serve as models for other sectors, especially in the sense that they relate directly to specific components of an industrial system. Other useful resources for choosing criteria are project documents and literature from others experiences, evaluation reports, and technological impact literature.

4.1.8.10 Step 10 - Establish an in-depth schedule of implementation activities, a detailed work-plan and a format for charting and reporting progress and performance

This activity is essentially the creation of the operational plan for the project initiative. The particular approach for this work will vary according to the type of project and the complexity of its implementation. Although being established at the end of the planning process, it is a crucial exercise and will provide assistance in maintaining a systematic approach to project implementation, in anticipating and identifying problems related to organizational or administrative tasks and in scheduling and conducting regular monitoring and evaluation sessions.

BIBLIOGRAPHY

- African Training and Research Centre for Women
Women in the Artisanal Fishing Industry in Senegal and Ghana. Addis Ababa, United Nations Economic Commission for Africa, 1984.
- Akerele. Olubanke
Women and the Fishing Industry in Liberia: Measures of Women's Participation. Addis Ababa, United Nations Economic Commission for Africa, 1979.
- Anbarasan, Karuna
Factors that Influence the Role and Status of Fisherwomen. BOBP/WP/33. (GCP/RAS/040/SWE) Bay of Bengal Programme for Fisheries Development, Madras, India, 1985.*
- Angulo, Lourdes
"ADB Projects to Integrate Women in Development". Asian Quarterly Review. January-February 1986, pp.9-12.
- Anker, Richard and Hein, Catherine
"Why Third World Employers Usually Prefer Men" International Labour Review. 124 no.(1), January-February 1985, pp. 73-90.
- Arizpe, Lourdes
"Women and Development in Latin America and the Caribbean: Lessons from the Seventies and Hopes for the Eighties". Development Dialogue, No. 2, 1982, pp.74-84.
- Asian Development Bank
Indonesia Fisheries Sector Study. Manila, Philippines, Asian Development Bank, December 1983.
- Bay of Bengal Programme for Fisheries Development
Report of the Workshop on Social Feasibility in Small-Scale Fisheries Development BOBP/REP/5 (GCP/RAS/040/SWE) Madras, India, Bay of Bengal Programme for Fisheries Development, 1980.*
- Bay of Bengal Programme for Fisheries Development
Report on the Consultation-cum-Workshop on Development of Activities for Improvement of Coastal Fishing Families. BOBP/REP/15. Madras, India, Bay of Bengal Programme for Fisheries Development, 1982.*
- Becker, Truman E.
"Fisheries Play an important Role in a Developing Nation's Economy". Asian Development Bank Quarterly Review. January-February 1986, pp. 13-16.
- Bhavani, V. (Compiler)
Women and Rural Development in the Bay of Bengal Region: Information Sources

- (BOBP/INF/1). Madras, India. Bay of Bengal Programme for Fisheries Development, 1982.
- Boesveld, M. et al Towrds Autonomy for Women: Research and Action to Support a Development Process: Working Paper 1. The Hague, Advisory Council for Scientific Research in Development Problems.
- Boserup, Ester Women's Role in Economic Development. New York, St. Martin's Press, 1970.
- Botchie, George Employment and Multinational Enterprises in Export Processing Zones: The Cases of Liberia and Ghana. Geneva, International Labour Organization, 1984.
- Buivinic, Myra Women and World Development: An Annotated Bibliography. Washington D.C., Overseas Development Council, 1976.
- Campbell, Frank A. "A Window on Caribbean Women". Reports: The International Development Centre, 5, No. 3, July 1986, p. 10.
- Carter, Mary "Women's Banking Expands". Development Forum, January-February 1986, p. 11.
- Chung, Hua Soo and Hayashi Michiko Structural Change and Adjustment in Manufactures Trade and Female Employment. Geneva, Switzerland, United Nations Conference on Trade and Development.
- Coombs, Philip The World Crisis in Education, New York, Oxford University Press, 1985.
- Deem, Rosemary Schooling for Women's Work. London, Routledge and Kegan Paul, 1980.
- Denti, E. and Yiry, D. "The Participation of Women and Young Women in Economic Activity in the World and its Regions: Present Situation, Development between 1950 and 1985, and Prospects up to the Year 2025". Women at Work No. 1, 1986, pp. 8-16.
- Dioh, Bernard Codou and Dieme, Cheikhou Senegal: Etude de cas sur le Rôle des Femmes dans le Système Industriel des Pêches: Country Case Study. Vienna, Austria, UNIDO consultant's report, January 1987.

- Drewes, Edeltraud Activating Fisherwomen for Development through Trained Link Workers in Tamil Nadu, India. BOBP/REP/27 (GCP/RAS/040/SWE) Madras, India. Bay of Bengal Programme for Fisheries Development, 1986.*
- Drewes, Edeltraud Income-Earning Activities for Women from Fishing Communities in Sri Lanka BOBP/REP/21 (GCP/RAS/040/SWE). Madras, India. Bay of Bengal Programme for Fisheries Development, 1985.*
- Drewes, Edeltraud Small-Scale Aquaculture Development Project in South Thailand: Results and Impact. BOBP/REP/28 (GCP/RAS/040/SWE). Madras, India. Bay of Bengal Programme for Fisheries Development, 1986.*
- Fawcett, James T., and Khoo, Siew-Ean Smith, Peter C. Women in the Cities of Asia: Migration and Urban Adaptation. Boulder, Co., . Westview Press, 1984
- Garcia-Lopez, Liliana Mexico: La Participaciòn de la Mujer en el Sistema Industrial Pesquero: Country Case Study. Vienna, Austria. UNIDO consultant's report, January 1987.
- Gardiner, Mayling Oey Women in Development: Indonesia, Jakarta, Manila, Philippines, Asian Development Bank, Consultant's report, November 1986.
- Ginneken, W. van "The Impact of the Changing World Labour Situation on Women Workers". Women at Work, No. 1, 1986, pp. 6-7.
- Growth and Adjustment in Asia - Issues of Employment, Productivity, Migration and Women Workers: Report of the Director General. Geneva, Switzerland, International Labour Organization, December 1985.
- Gulati, Leela Fisherwomen of the Kerala Coast: Demographic and Socio-Economic Impact of a Fisheries Development Project. Women, Work and Development, 8. Geneva, Switzerland, International Labour Organization, 1984.
- Hogg, Martin V. Basic Issues - Women's Integration in Industrial Planning and Development.

ID/WG/422/4. Vienna, Austria, United Nations Industrial Development Organization, 4 April 1984.

- Hourihan, John J. Women in Development: Guidelines for the Fisheries Sector. Manila, Philippines, Asian Development Bank, Consultant's report, August 1986.
- Ihromi, Topi O. The Role of Women in the Fisheries Industrial System (FIS): Country Case Study - Indonesia. Vienna, Austria, United Nations Industrial Development Organization, Consultant's report, 1987.
- International Labour Organization Equal Opportunities and Equal Treatment for Men and Women in Employment: International Labour Conference, 71st Session. Geneva, Switzerland. International Labour Organization, 1985.
- International Labour Organization "International Workshop on Rural Energy Crisis - Women's Work and Basic Needs", Women at Work No. 1, 1986, p. 67.
- International Labour Organization "Latin America: Female-Headed Households on the Increase". Women at Work, No. 1, 1986, pp. 50-51.
- International Labour Organization Latin America and the Caribbean: Strategies to the Year 2000", Women at Work, No. 1, 1986, pp. 32-33.
- International Labour Organization "Pakistan: Women in Industry". Women at Work No.(1) , 1986, p. 34.
- International Labour Organization "Skill Levels". Women at Work No. 1, 1986, pp.38-44.
- International Labour Organization "Technological Change: The Tripartite Response 1982-85". Women at Work No. 1, 1986, p. 64.
- International Labour Organization "Technology and Rural Women", Women at Work, no.1, 1986, pp. 63-64.
- International Labour Organization "UN: ACC Task Force on Rural Development Emphasizes the Role of Women". Women at Work No. 1, 1986, pp./67-69
- International Labour Organization "Women Workers in the Electronics Industry in Peru". Women at Work. no.1, 1986. pp. 34-35
- Kalavathy, M.H. The Organization of Fish Marketing in Madras Fishing Harbour. BOBP/WP/39

- (GCP/RAS/040/SWE) Madras, India. Bay of Bengal Programme for Fisheries Development, 1985.*
- Kelly, Deirdre "St. Lucia's Female Electronics Factory Workers: Key Components in an Export-Oriented Industrialization Strategy". World Development/14. No. 7, 1986. pp. 823-838.
- Kwong, Virginia "The Indonesian Fisheries Sector". Infofish Marketing Digest, June 1984, pp. 10-13.
- Lele, Uma "Women and Structural Transformation". Economic Development and Cultural Change, 34, No. 2, January 1986. pp. 195-221.
- Long, Frank Employment Effects of Multinational Enterprises in Export Processing Zones in the Caribbean. Working Paper No. 42. Geneva, Switzerland, International Labour Organization, 1986.
- Maex, Rudy Employment and Multinational in Asian Export Processing Zones. Working Paper No. 26, Geneva, Switzerland, International Labour Organization, 1985. .
- Marsh, Lawrence, Newfarmer, Richard and Moreira, Lino Employment and Technological Choice of Multi-national Enterprises in Developing Countries. Geneva, International Labour Organization, 1983.
- Mueller-Dixon, Ruth Women's Work in Third World Agriculture: Concepts and Indicators. Geneva, Switzerland, International Labour Organization, 1984.
- Mullin, Roger W.A. Latin American Fisheries Manpower Survey Report. Unpublished report conducted for United Nations Food and Agricultural Organization, Rome, Italy, 15 July 1984.
- Muntemba, Shimwaayi "Women as Food Producers and Suppliers in the Twentieth Century: The case of Zambia". Development Dialogue 1, No. 2, 1982, pp. 29-50.
- Narian, T.M. "Linking Agricultural Research and Extension Services for a Better Service to Farmers". Bulletin of the Technical Centre for Agricultural and Rural Co-operation No. 100, November-December 1986,

pp. 127-129.

- Natpracha. Patchanee Fisherwomen's Activities in Bangladesh: A Participatory Approach to Development BOBP/REP/24, (GCP/RAS/040/SWE). Madras. India. Bay of Bengal Programme for Fisheries Development, 1986.*
- Orlansky, Dora and Dubrovsky Silvia The Effects of Rural-Urban Migration on Women's Role and Status in Latin America. Paris, United Nations Educational, Scientific and Cultural Organization, 1978.
- Paukert, Liba The Role of Women in Industrial Development. UNIDO/IS.484. Vienna, Austria, United Nations Industrial Development Organization, 13 September 1984.
- Petritsch, Mechtild Women's Participation in Manufacturing in Developing Countries with Emphasis on Agro-Industries. ID/WG.452/2, . Vienna, Austria, United Nations Industrial Development Organization, 14-18 October 1985.
- Powles, Howard "Fencing Off Fish". International Development Research Center Reports 15. No. 4, October 1986, pp.18-19.
- Pratt, Joanne H. "Methodological Problems in Surveying Home-Based Workers". Technological Forecasting and Social Change. V.31, No.1, March 1987, pp.49-60
- Rothenberg, Erhard "Basic Needs Oriented Vocational Education". Development and Co-operation 4, 1986, p. 26.
- Schmitz, Hubert Technology and Employment Practices in Developing Countries. Croom, New Hampshire, Croom Helm Ltd., 1985.
- Sen, Amartya K. Women, Technology and Sexual Division. UNCTAD/TT/79. Geneva, Switzerland, United Nations Conference on Trade and Development, 1985.
- Shah, Bindi and Clarke, Anne "The Role and Status of Women in Development NGO's" Transnational Associations No. 2, 1986, pp. 87-94.

- Swantz, Marja-Liisa The Role of Women in Tanzanian Fishing Societies: A Study of the Socio-Economic Context and the Situation of Women in Three Coastal Fishing Villages in Tanzania. Royal Norwegian Ministry of Development Co-operation, 1986.
- Tempelman, Diana "BOBP Begins its Quest". Development Forum, January-February 1986, p. 11.
- Thompson, David B. et.al. The SCOTED/FAO Manual and Model for Fisheries: Strategic Manpower Planning and Development. Rome, Italy, United Nations Food and Agriculture Organization, 1981.
- Timmer, C. Peter et.al. The Choice of Technology in Developing countries: Some Cautionary Tales. Cambridge, MA., Harvard University, Centre for International Affairs, 1975.
- "Training for Women's Groups in Stove Production". Appropriate Technology 13, No. 2, September 1986, (Informational Insert).
- United Nations The Nairobi Forward-Looking Strategies for the Advancement of Women. Nairobi, Kenya, World Conference to Review and Appraise the Achievements of the United Nations Decade for Women, 15-26 July 1985.
- United Nations Development Programme Women's Participation in Development: Evaluation Study No. 13. New York, United Nations Development Programme, June 1985.
- United Nations Economic Commission for Africa and United Nations Food Agriculture Organization Fish Culture Development and Technology Transfer for Eastern and Southern Africa: Project Identification, Volume II. Maseru, Lesotho, Multinational Programming and Operational Centre for Eastern and Southern African States, Ninth Meeting of the Committee of Officials, 17-22 March 1986.
- United Nations Economic Commission for Africa and United Nations Food and Agriculture Organization Rural Fish Culture Development and Technology Transfer in Eastern and Southern Africa: A Proposal for Subregional Co-operation. Rome, Italy, United Nations Food and Agriculture Organization, December 1985.
- United Nations Economic Commission for Asia Women in Fisheries: Report on Socio-Economic Surveys in Fiji, Indonesia.

- and the Pacific Papua New Guinea, and the Philippines.
Bangkok, Thailand: Economic and Social
Commission for Asia and the Pacific. 1985.
- United Nations Economic and Social Council Note on the Institutional Framework Governing Relations between the Various Organs Established to Promote the Integration of Women in Development.
E/ECA/ATRCW/ARCC/85/4. New York: United Nations Economic and Social Council. 25 February 1985.
- United Nations Economic and Social Council. The Role of Women in Alleviating the Food Crisis in Africa. E/ECA/ATRCW/ARCC/84/8.
New York: United Nations Economic and Social Council. April 1984.
- United Nations Food and Agriculture Organization "Fighting Hunger". Rome, Italy: United Nations Food and Agriculture Organization. 16 October 1986 (Informal Bulletin).
- United Nations Food Agriculture Organization "Fishermen and Fishing Communities".
Rome, Italy: United Nations Food and Agriculture Organization. 16 October 1986 (Informal Bulletin).
- United Nations Food and Agriculture Organization. Integrated Extension Services Support to Small-Scale Fisheries--Particularly to the Outer Islands: Indonesia Project Document.
Rome Italy: United Nations Food and Agriculture Organization. 1984.
- United Nations Food and Agriculture Organization Review and Analysis: UN Guidelines and Women in Rural Development. Rome, Italy: United Nations Food and Agriculture Organization. March 1983.
- United Nations Food and Agriculture Organization "The Role of Women in Small-Scale Fisheries". Rome, Italy: United Nations Food and Agriculture Organization. 16 October 1986 (Informal Bulletin).
- United Nations Food and Agriculture Organization Training for Agriculture and Rural Development. FAO Economic and Social Development Series, No. 24, United Nations Food and Agriculture Organization. 1981.
- United Nations Food and Agriculture Organization Women, Food Chains and Agrarian Reform.
Rome, Italy: United Nations Food and Agriculture Organization. 1981.

- United Nations Industrial Development Organization Accelerated Development of Human Resources for Industrial Development. Issue Paper. ID/CONF. 5/21. Vienna Austria. United Nations Industrial Development Organization.
- United Nations Industrial Development Organization The Application of a Programme Approach to Technical Assistance Project Identification and Formulation. (UNIDO/APF). Vienna, Austria. United Nations Industrial Development Organization. October 1988.
- United Nations Industrial Development Organization Asian Regional Workshop on the Integration of Women in the Industrial Planning and Developing Process. ID/WG.424/4. Vienna, Austria. United Nations Industrial Development Organization. 8 August 1984.
- United Nations Industrial Development Organization Expert Group meeting on Women in Agro-Industries. ID/WG.452/3. Vienna. Austria. United Nations Industrial Development Organization. 14-18 October 1985.
- United Nations Industrial Development Organization Guidelines on the Integration of Women in UNIDO Technical Co-operation Projects and in Industrial Studies Programmes and Research. Vienna. Austria. United Nations Industrial Development Organization. 12 February 1986.
- United Nations Industrial Development Organization Development Strategies for Fishery Systems in Developing Countries. Volume I. Sectoral Studies Series No.32 (PPD.30). Vienna, Austria. United Nations Industrial Development Organization. 3 April 1987.
- United Nations Industrial Development Organization Methodology for the Assessment, Programming and Management of Production and Consumption System. Sectoral Studies Series no. 27 (UNIDO/IS.643) Vienna, Austria. United Nations Industrial Development Organization.
- United Nations Industrial Development Organization Methodology for the Assessment, programming and Management of Production and Consumption Systems: User's Guide. Sectoral Studies Series no. 33 (PPD.33). Vienna, Austria. United Nations Industrial Development Organization. 24 April 1987.

- United Nations Industrial Development Organization A Programme for the Development of the Fisheries Industrial System in the Republic of Guinea. Working Papers in Industrial Planning, no.2 (IO.29). Vienna, Austria, United Nations Industrial Development Organization. 9 May 1989
- United Nations Industrial Development Organization Prospects for Industrial Development and for a Capital Goods Industry in Industry. Volume I. UNIDO/IS.47 Vienna, Austria, United Nations Industrial Development Organization. 20 July 1984.
- United Nations Industrial Development Organization Seminar on the Role of Women in the Development of Industrial Branches Traditionally Employing Female Labour. ID/WG.351/9. Vienna, Austria, United Nations Industrial Development Organization 7 December 1981.
- Wel. Lisette van der (ed.). Women, Money and Development. Leiden, The Netherlands: Univeristy of Leiden. 1986.
- Wichterich, Christa "Women in the Third World: Agents, not Victims of Development" Development and Co-operation, no. 1.1986. pp. 12-13
- Yue. Leung Wing "The Dark Side of Industrialization". Multinational Monitor 7, no.14, October 1986. pp. 22-23

* Report based on 6-year project for small-scale fisheries development in the Bay of Bengal funded by the Swedish International Development Authority and executed by the United Nations Food and Agriculture Organization. Publications are available from the project office, P.B. n. 1054, Madras 600 018, India.