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17190

REPORT OF THE CONSULTANCY SERVICES BY GUILLERMO CASTELLA  
JUNE, 1988 - JANUARY, 1989

Use of the MEPS (Methodology for the Assessment, Programming and Management of Production and Consumption Systems) in the Analysis and Programming of Different Industrial Sectors.

January, 1989

## Report of Consultancy Services

APP has organized a set of workshops for UNIDO staff during the months of August, September and October. The purpose of the working sessions was to train UNIDO staff in the use of the MEPS (methodology for the assessment, programming and management of production and consumption systems) in the analysis and programming of different industrial sectors.

This was done following the decision of the Director General that UNIDO should progressively adopt a methodology for programme approach to project identification and formulation.

I was hired as a consultant to cooperate with the organization of the workshops.

The consultancy services were provided in two different periods: June -September and October - December of 1988.

### First Period

From June to September, the consultancy services put emphasis in the preparation of four different workshops for the application of MEPS to different industrial sectors.

The workshops had the following general objectives:

- to familiarize UNIDO staff in the use of a system approach to design of integrated sectoral programmes.

- to train interdivisional groups in the application of the approach through specific cases.

- to ascertain the specific needs of UNIDO staff where the systems could be use useful and to elaborate recommendations on how the approach could be applied in UNIDO's work.

The first series of workshops were carried out in August and September and the following industrial systems were considered:

- Leather industrial system (LIS). The case of Zimbabwe case was used during the workshop to facilitate and promote the discussion.

- Agrofood industries and related subsectors. The case of Sudan was used during the workshop to facilitate and promote the discussion.

- Building materials/construction, in this workshop the participation of DIO specialists in the subject was very important and promoted active discussion.

- Pharmaceutical and biological, the discussion was promoted through the interesting participation of a DIO specialist

The total number of participants were 25 staff. They were selected on the basis of their functions (Area programme officers) and industrial area of expertise (technical officers).

Topics related to the women participation in the industry,<sup>1/</sup> rehabilitation and pollution were considered during the four workshops. In the first workshop (leather industrial system) the three above subjects were particularly discussed. In the second (agrofood industrial system) only the problem of the women in the industry was considered. And in the last two working sessions the industrial rehabilitation and environment in general were specially considered.

The consultancy services included also the following tasks:

- Desk research on the above mentioned sectors in order to collect relevant information as a basis for the workshops.
- The preparation of basic material used during the working sessions (slides, charts, etc.)
- Cooperating with the APP staff in conducting the working sessions.
- Drawing up sector specific base diagrams (generic base diagram of leather industrial system (LIS) and the case of Zimbabwe; generic base diagram of agrofood industrial system (AFIS) and the case of Sudan; generic base diagram of animal feed system; generic base diagram of building materials system and generic base diagram of pharmaceuticals and biologicals system.)

The schedule of the workshops was made in connection with the availability of technical staff specialized in the above-mentioned sectors of industry. Due to the fact that not all staff were available during September, 2 workshops (building materials/construction and pharmaceutical and biologicals) had to be rescheduled for October, 1988. As a consequence a 3-month extension of consultancy services was required.

#### Second Period

This new period of consultancy services, besides of the two workshops above mentioned, included the following tasks:

- Cooperation with APP staff in the preparation of a collection of guidelines for project and programme design based in the experience of the working sessions.

1/ With the cooperation from Mrs. Pat Neu a consultant to the Unit for the Integration of Women in Industrial Development.

- On the basis of the experience of the workshops held in September/October, a new set of workshops was prepared focussing on agricultural machinery, fertilizer and pesticides, iron and steel. This new set should be carried out during the first months of 1989.

- The preparation of generic base diagrams for the above mentioned sectors were made in close collaboration with technical staff from DIO.

- Assisting APP in providing advice on the formulation of Morocco FIS project proposals whose impact on the country could be enhanced with the use of the sectoral programme approach.

In addition to the above mentioned tasks, the consultant has carried out different activities related to MEPS, such as:

- Within the indicative programming exercise on the fisheries industrial system (FIS) of 8 West African countries belonging to four different patterns of development, complete and revised the report of Sierra Leonean FIS.

- Assisting consultants in the use of the computer to apply MEPS in Senegal, within the indicative programming exercise above mentioned.

- Analysis and revision of Peruvian FIS final report in order to identify the main components of a sectoral programme.

The analysis of the discussion generated during the four workshops allow me conclude the following:

i) The programme approach is a powerful tool in the preparation for country missions. The country typologies and the indicative sectoral programme for groups of countries would provide a important basis for the preparation of the missions.

ii) The programme approach would be particularly useful in responding to individual country requests to develop or rehabilitate a given sector of industry.

iii) The programme approach facilitate more effective co-ordination between different agencies such as: FAO, UNDP, etc. and as a consequence would increase the impact of the programme in the host country.

Attached please find the material prepared and distributed during the workshops. The main sections of the attached material are the following:

- Background and justification of the workshops
- Presentation of the system approach (MEPS).  
(Copies of the transparencies).
- Material distributed to the participants during the workshops

i) Guidance for identification of projects in agro-based industrial system in Mexico.

ii) Material of the Leather Industrial System (LIS).

iii) Guidance for identification and design of projects.

- Presentation of the industrial Rehabilitation. Copies of the transparencies.

- Report on the first series of four workshops.

1. BACKGROUND AND JUSTIFICATION

Internal Training on  
a Programme Approach to Project identification and formulation

1. Background

Following discussions of a proposal at a meeting of the Executive Management Committee (EMC) in December 1987, the Director-General decided that UNIDO should progressively adopt a programme approach to project identification and formulation, in addition to responding to individual technical assistance requests from developing countries.<sup>1/</sup>

Since that time, special meetings have been organized through the PRC Secretariat with donor countries in order to brief them on the sectoral programming approach; UNDP has been informed of this approach which UNIDO would use in relation to the forthcoming programming cycle; a programme approach has been reflected in the Medium-Term Plan 1990-95. In addition, an in-house working group has been applying this approach to the fisheries industrial system in Guinea-Conakry and in a group of West African countries. The work on Guinea is scheduled for completion in November 1988; it comprises a programme of several technical assistance and industrial investment projects designed to develop the fisheries industrial system as a whole.

UNIDO has developed a comprehensive method to analyze and address to complement regular programming at the project level, industrial development problems at specific sectoral or subsectoral levels through the application of a systems approach.

Through the application of such an approach, it would be possible to design integrated technical assistance programmes, investment promotion activities and the preparation of policy recommendations to the governments concerned. The advantages would be two-fold: to increase the impact of UNIDO's actions in the developing countries and to augment the mobilization of financial resources from donor countries, UNDP in the next programming cycle, and from other sources.

<sup>1/</sup> It is important to note that the proposed approach would not exclude UNIDO's response to individual requests from developing countries. Rather, it would be of a supplementary nature.



A selection of sectorally integrated priority programmes would lead to an increase of the capacity for development, approval and execution of projects. Sectorally integrated programmes would be fully responsive to the needs of many developing countries while taking account of the geographical and sectoral priorities that donor countries might have.

The Director-General has decided that UNIDO staff should be familiar with the systems approach to programme and project design, so that it be increasingly employed in a concerted and coordinated effort by staff from different technical units. In consequence, an extensive training effort involving PPD, IO and IPCT staff should be undertaken in 1988 and 1989.<sup>2/</sup>

Following the advice of the Deputy Director-General, DPPD, a series of workshops on the subject of sectoral programme approach for PPD, IO and IPCT staff are being organized by PRA/APP.

## 2. Objectives of the workshops

- To familiarize UNIDO staff in the use of a systems approach to the design of integrated sectoral programmes.
- To train interdivisional groups in the application of the approach through specific cases.

## 3. Organization of the workshops

### 3.1 Number of Workshops

The first series of four workshops will be carried out in August and September. The following industrial systems will be considered:

- a) Agrofood industries and related subsectors.
- b) Leather and leather products and textiles.
- c) Building materials/construction.
- d) Pharmaceuticals and biologicals.

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<sup>2/</sup> Memoranda of the Director-General to DDG, DPPD, dated January 28 and March 1, 1988.

#### 4. Work plan for the workshop

##### 4.1 First day (9.00 - 12.30 h)

###### 4.1.1 Introduction (9.00 - 9.15 h)

###### 4.1.2 Motivational Discussion (9.15 - 10.00 h)

Sample questions to be used during the motivational discussion:

- What can be done to strengthen the capacity of UNIDO to design T.A. programmes?
- Which UNIDO projects have had the greatest impact? What are the characteristics of these projects? Choose a project with which you are familiar and describe the characteristics of this project which contributed to its impact.
- How can UNIDO enhance its position to attract financing from UNDP, Special Purpose Donors and any other source?
- What can UNIDO do to enhance the impact of its programming activities?
- How does UNIDO, in cooperation with host country institutions, obtain base line data to be used when assessing the impact of its activities?
- As donors are accountable for the use of their funding, how can UNIDO support the information needs of donor countries to demonstrate the impact of donor funding to their constituencies?
- What is unique about UNIDO's position in the analysis of industrial sectors?
- Would it be possible for UNIDO to systematically develop integrated sectoral programmes and technical assistance projects, with the involvement of the developing countries concerned and of staff in various parts of the organization? How?

###### 4.1.3 Presentation of the Methodology for Integrated Programme and Project Design.

- i) - Definition of "integrated development"
- ii) - Explanation of the proposed approach
  - The meaning and uses of a "base diagram".
  - Presentation of the base diagrams from some UNIDO projects.

- Assessment:
- Programming:

#### 4.1.5 Question and answer period ( 30 min)

4.1.6 Written material on the method and examples will be distributed to the participants.

4.1.7 An explanation will be given of the exercise to be made by the group during the second day. This exercise would be based on the analysis of industrial system of a given country.

At this point the participants would be requested to bring for the second day project concepts presently under design to be analyzed under the systems approach during the third session of the Workshop.

#### 4.2 Second Day (9 h. - 1230 h.)

##### 4.2.1 Introduction

4.2.2 Presentation of an industrial system to be analyzed by the group. It is hoped to use a different example for each workshop, such as agro-food, leather, textiles, building materials, pharmaceuticals..

##### 4.2.3 Discussion

The following points should be covered:

- a) Identify the main constraints and bottlenecks of the system (30 min)
  - b) Identify technical assistance needs in order to eliminate these constraints (30 min)
  - c) Assess the present and potential contribution of women to the system under consideration. (30 min)
  - d) Elaborate basis for the "terms of reference" for experts to be sent to the field for design of integrated technical assistance programmes. Examples of TOR would be provided before discussing this point. (1 h)
- (Written material will be given to the participants).

#### 4.3 Third Day ( 9 - 1230 h)

a) Discussion of participants' own projects which are now still in the formulation stage and which might benefit from the application of an integrated programming approach. Participants who wish to discuss their project concepts should make them available to the workshop organizers during the second day of the workshop.

b) Some questions will be asked such as:

- Do you agree with an integrated approach? Why?

- What do you see as the advantages and disadvantages of the proposed approach?

- Are you going to use this approach in your job in the future?

c) Exploration of areas of informal interdivisional of cooperation in the design and implementation of the systems programme approach during the post workshop period.

Internal Training on a Programme Approach  
to Project Identification and Formulation

Workshop No.1: 31 August - 2 September 1988 from 0900 - 1230 Hrs.

Mr. J. Buljan, IO/T/AGRO  
Mr. A. Hasnain, PPD/AREA/AFR  
Mr. A. Huhtala, PPD/AREA/LDC  
Ms. G. Zahniser, PPD/SPA/WOMEN  
Mr. A. Volodin, IPCT/CONSULT  
Ms. M. Pokane, PPD/AREA/LDC

Workshop No.2: 14 - 16 September 1988, from 0900 - 1230 Hrs.

Mr. U. Antinori, IO/T/AGRO  
Mr. S. Miranda de Cruz, IO/T/AGRO  
Mr. B. Galat, IO/T/AGRO  
Mr. H. Koenig, IO/T/AGRO  
Ms. J. Jensen, PPD/AREA/LDC  
Ms. M.A. Martin, PPD/AREA/LDC  
Mr. A. Miklovicz, IPCT/CONSULT  
Mr. M. Gonbert, IPCT/II

Workshop No.3: - 5 - 7 October 1988, from 09.00 - 1230 Hrs.

Mr. N. Biering, IO/T/CHEM  
Mr. F. Richard, IO/IIS/PLAN  
Ms. G. Williams, PPD/AREA/LAC  
Ms. J. Orłowski, PPD/AREA/AP  
Mr. K. Billand, PPD/AREA/AFR  
Ms. K. Liebl, PPD/AREA/ARAB  
Ms. A. Mansur, PPD/AREA/AP

Workshop No.4: - 17 - 19 October from 0900 to 1230 Hrs.

Ms. M. Quintero, IO/T/CHEM  
Mr. Z. Csizer, IO/T/CHEM  
Mr. J.L. Ortiz, PPD/AREA/LAC  
Ms. A. Melajarvi, PPD/AREA/AP  
Mr. I. Djibo, PPD/SPA/COOP/STF  
Mr. J.M. de Galdas Lima, IPCT/DTT/TEC  
Mr. H. Al-Hafedh, PPD/AREA/ARAB

Place: The workshops will take place in D-1879

2. PRESENTATION OF THE SYSTEM APPROACH (MEPS)

**INTERNAL TRAINING ON A  
PROGRAMME APPROACH TO  
PROJECT IDENTIFICATION  
AND FORMULATION**



# OBJECTIVES OF THE WORKSHOP

- To familiarize UNIDO staff in the use of a systems approach to the design of integrated sectoral programmes.
- To train interdivisional groups in the application of the approach through specific cases.

## Motivational Questions

1. What can be done to strengthen the capacity of UNIDO to design T. A. programmes?
2. What can UNIDO do to enhance the impact of its programming activities?
3. How can UNIDO enhance its position to attract financing from UNDP, Special Purpose Donors and any other source?

Developing countries

UNIDO

Donors

are interested in ...

- increased impact of UNIDO activities on industrial development
- enhanced capacity of UNIDO for projects implementation
- greater amounts of financial resources mobilized

Can UNIDO achieve these objectives  
through individual unrelated projects?

**The success of technical assistance projects should be measured not only by the achievement of their immediate objectives but by the impact produced on the development of the industrial sector in the country.**

**The technical soundness of a project, while necessary, is not a sufficient condition to ensure that a project is likely to have a significant impact on a country's industrial development.**

A technical assistance project should fulfill the following conditions to ensure significant impact:

- -should be related to the sector-specific needs and government's priorities

- -should be properly located in the institutional framework of the sector

- should be compatible with other related ongoing projects .

One way to design projects that fulfill these conditions is through the use of a programme approach.

What is a Programme?



A Programme is :

- a set of Technical Assistance Projects
- a set of related Investment Projects
- a set of related Policies

Composite Flour Programme  
- Bolivia -

Activity/ Projects	Description	Approximate costs/ Investment Required (000 US\$)
Technical Assistance	Coordination and harmonization of production programmes	150
	Promotion and information systems for the new flours	60
Training	Training of bakers and pasta manufacturers	640
Investment	Improved wheat seed production	1,000
	Increase production local wheat	15,700
	Increase production of yellow corn	10,700
	Additional equipment for existing wheat mills	350
	Modification of oilseed plant for the manufacture of soybean meal for human consumption	450
	Expansion of the cornflour plant	7,440
Technical Assistance	Standardization of methods of quality control of composite flours	50
	Composite flours research and development (agricultural and agroindustrial)	--
	Economic feasibility analyses	25
	Effects of the PL480 on the proposed programme	3

A Resume of Policies Required for the Implementation of the Composite Flours Program in One Andean Pact Country (Bolivia)

Systems component	Agricultural component	Agroindustrial	Consumption	The system
Production	Quotas to ensure adequate supply of corn for the CF program.	Standards for raw materials and final products for the different CF.		A quota system should be implemented for the distribution of the CF to the wheat mills.
Prices and subsidies	A minimum reference price should be set (a minimum markup over costs of 9.6%.)	Price of CF to be set at that of imported wheat. Subsidy required million dollars (see below).		
Government's fiscal policy		Tariffs on agricultural machinery and milling equipment to be eliminated.		
Credit	Working capital requirements US\$4.6	Working capital for corn flour production US\$2.7 million		
Technological factors	Technical assistance to the wheat and corn crops to raise technological level from "traditional" to semimechanized.	Continuously adjust technologies for soy flour and composite flours.		
Coordination				A continuous dialogue among the various economic agents of the system (prices and production levels)
Marketing	The state should maintain stable reference prices for wheat via buffer stock sales and purchases.	Imports to be allowed when required.	Increase demand for CF for bakers	Government monitoring of investments and related activities.
Investments	Secure Investments as required by the production programmes	Secure investments as required by programmes		

**This programming could ensure the compatibility of projects and increase potential impact by design projects that simultaneously solve all the most critical problems affecting a given industrial sector**

- A Programme approach to project formulation and identification provides an analytic framework for the integration of women in industry
-

To design programmes effectively an analysis of the structure of an industrial sector is required

- This analysis can be best made using a

- **system approach**

Definition of a system:

An industrial system comprises one entire sector or several interlinked sectors/subsectors.

An industrial system is composed of:

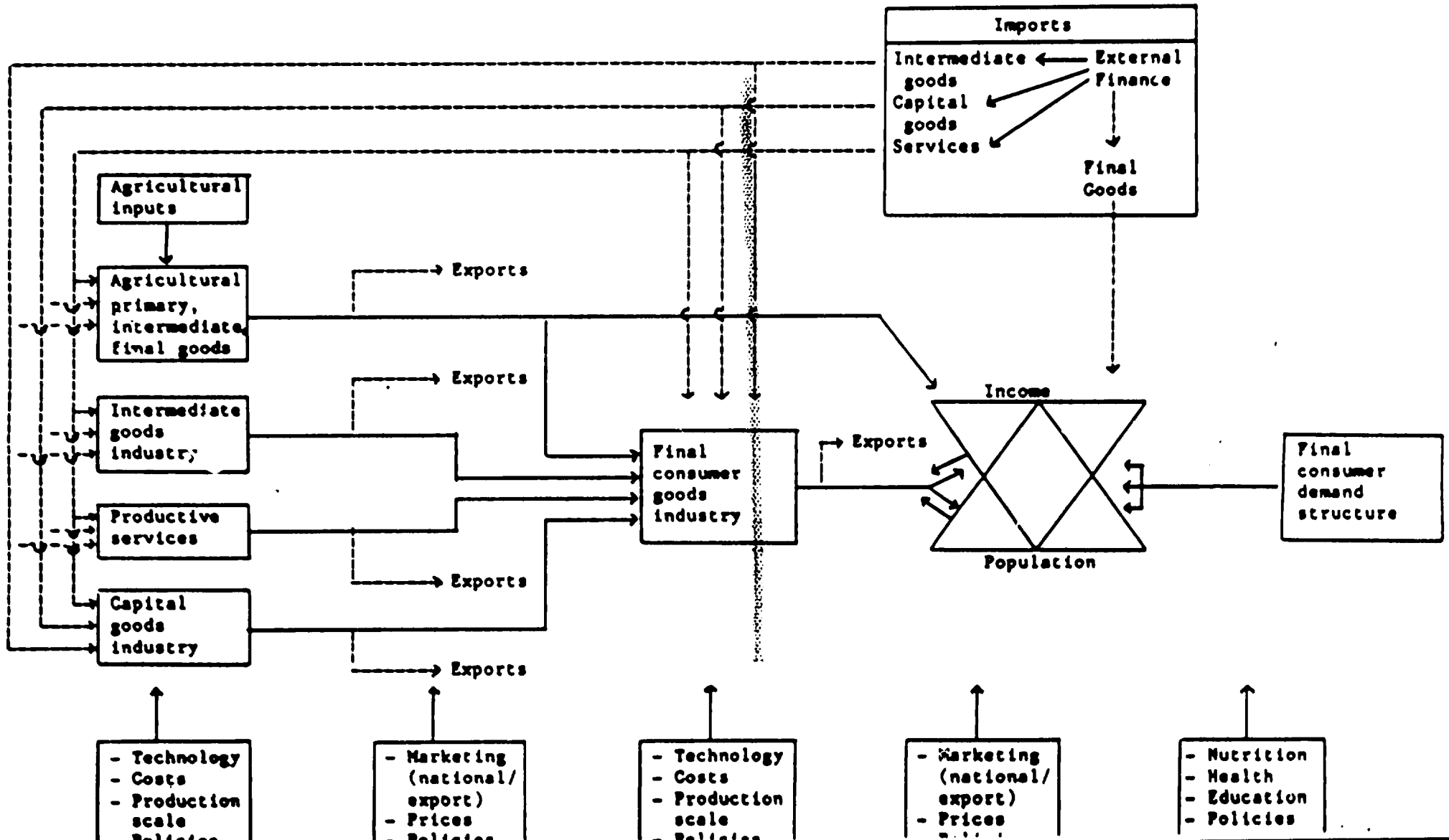
- A set of production and consumption components
- An institutional framework
- A policy framework.

The components of the system are highly interdependent



Within this approach, the objective is the integrated development of an industrial system . This is understood as the harmonious balanced development of an entire system including all its production and consumption components .

Figure 7 Production and consumption system



The necessity of integrated development is seen in the fact that any change in one component of a system tends to modify the whole system, in different ways and magnitudes; therefore developmental activities must consider the system as a whole and not only individual components .

The integrated development of  
an industrial system requires  
programmes rather than  
individual unrelated projects

●

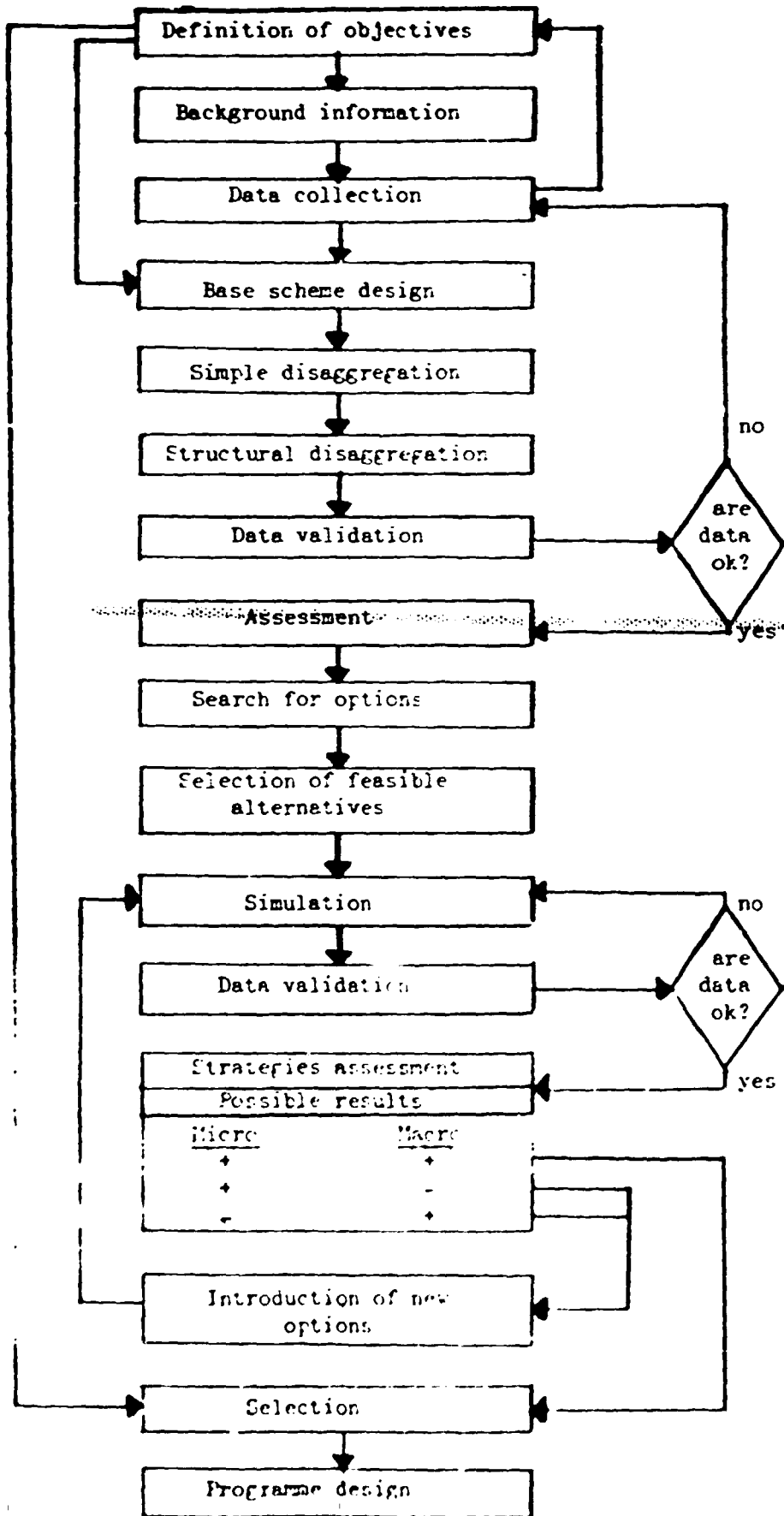
Sectoral Studies has developed a comprehensive approach for analyzing industrial sectors and formulating integrated development programmes

●

APP has identified the possibility of applying this approach to improve projects and increase their potential impact

The proposed SYSTEM APPROACH  
requires the following activities:

Operational sequence for a hypothetical application





## TABLE

### OBJECTIVES

#### VARIABLES

#### INDICATORS

i) Production growth	i) Value added or physical production
ii) More equal Income Distribution	ii) Factor share among salaries, taxes, profits and interests.
iii) Employment increase	iii) Job creation
iv) Improvement of trade balance	iv) Trade balance
v) Improvement of fiscal account	v) Fiscal balance
vi) Increased fulfillment of minimum nutritional requirements in low income population groups	vi) Calories/per capita, protein/per capita in low income families

# COMPOSITE FLOURS

## Objectives (Bolivia)

- Reduce dependency on imported foods
- Promote agroindustrial development
- Improve levels of capacity utilization in the agroindustrial sector
- Reduce foreign exchange requirements
- Facilitate the transfer of technologies to the agroindustrial sector

DEFINE OBJECTIVES

## DEVELOPMENT OBJECTIVES

Correspond to the Government development targets for the development of the industrial system. The programme will contribute to their attainment by dealing simultaneously with a set of problems

DESIGN BASE DIAGRAM

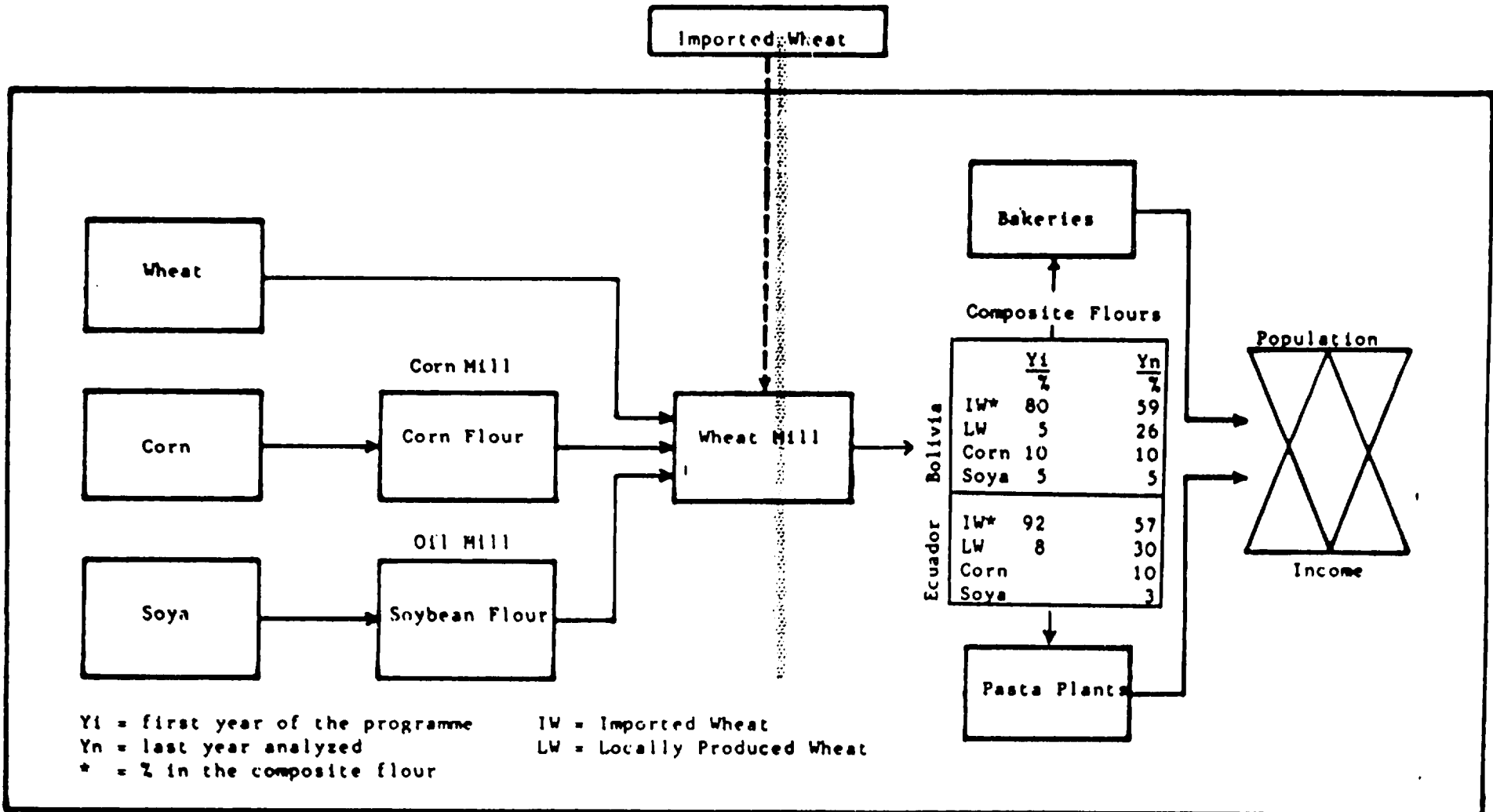
A "BASE DIAGRAM"  
is a schematic  
representation  
of a system

It shows:

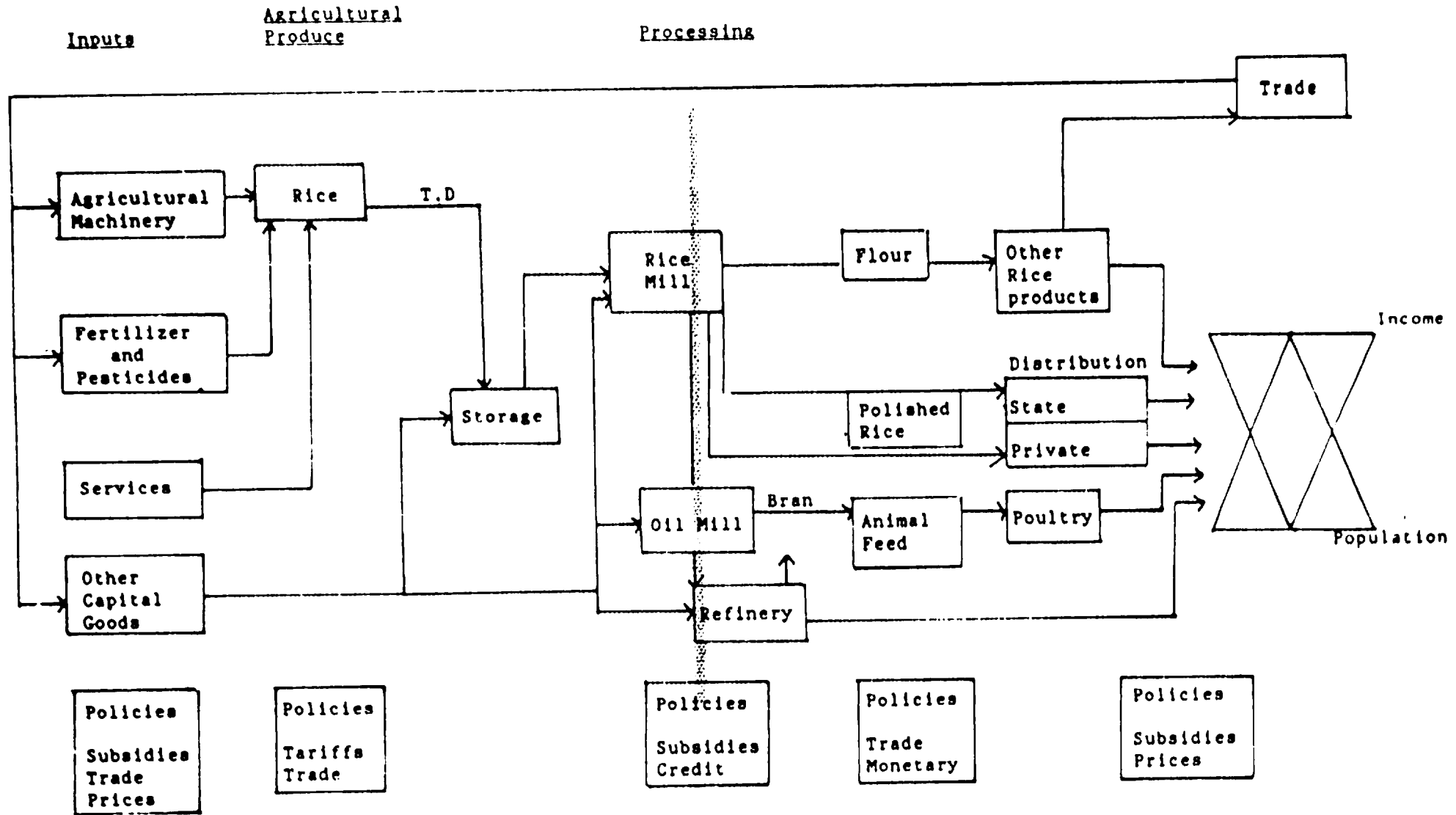
- the components
- the linkages  
between them
- the policies that  
influence their  
behaviour

It defines the boundaries of  
the system

DIAGRAM 3  
 PROPOSED COMPOSITE FLOURS SYSTEM  
 BOLIVIA AND ECUADOR



# Rice





ASSESS PRESENT STATUS OF  
THE SYSTEM

## The assessment requires...

- the analysis of the relative importance of each component in the light of government objectives;
- the identification of weaknesses in the different components and their linkages that hinder the attainment of government objectives

● This stage is carried out through

### DISAGGREGATION

● This corresponds to the usual diagnosis stage. It is applied to all the components of the system.

The disaggregation stage covers:

- The consumption component
- The productive components
- The quantification and representation of the system
- The institutional framework
- The types of market which make up the system

The disaggregation stage allows:

- - to define more precisely the operative structure of the system (components, linkages, etc.)
- - to describe the main features of each component and their behaviour in the recent past.

FIGURE Nº 6  
 BASE SCHEME OF THE INDEXES OF THE PRODUCTION AND CONSUMPTION SYSTEM OF OILS AND FATS  
 YEAR 1984

READING

EP = ECONOMIC PROFITABILITY  $\left( \frac{\text{Profits + Interest}}{\text{Total Capital}} \right)$

UC = USED CAPACITY

Y = YIELD

AV = AGGREGATE VALUE

GVP = GROSS VALUE OF PRODUCTION

FC = FIXED COST

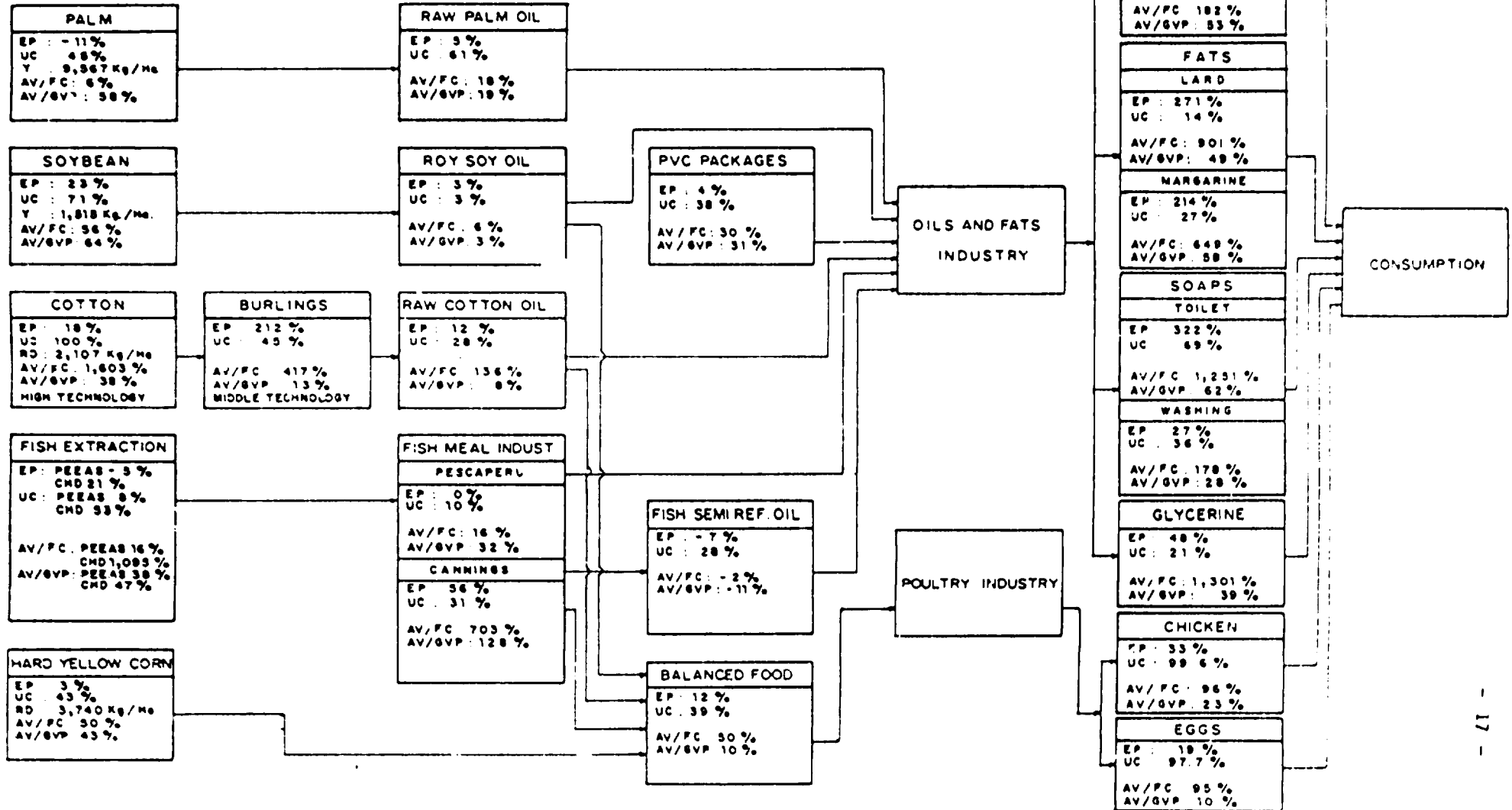
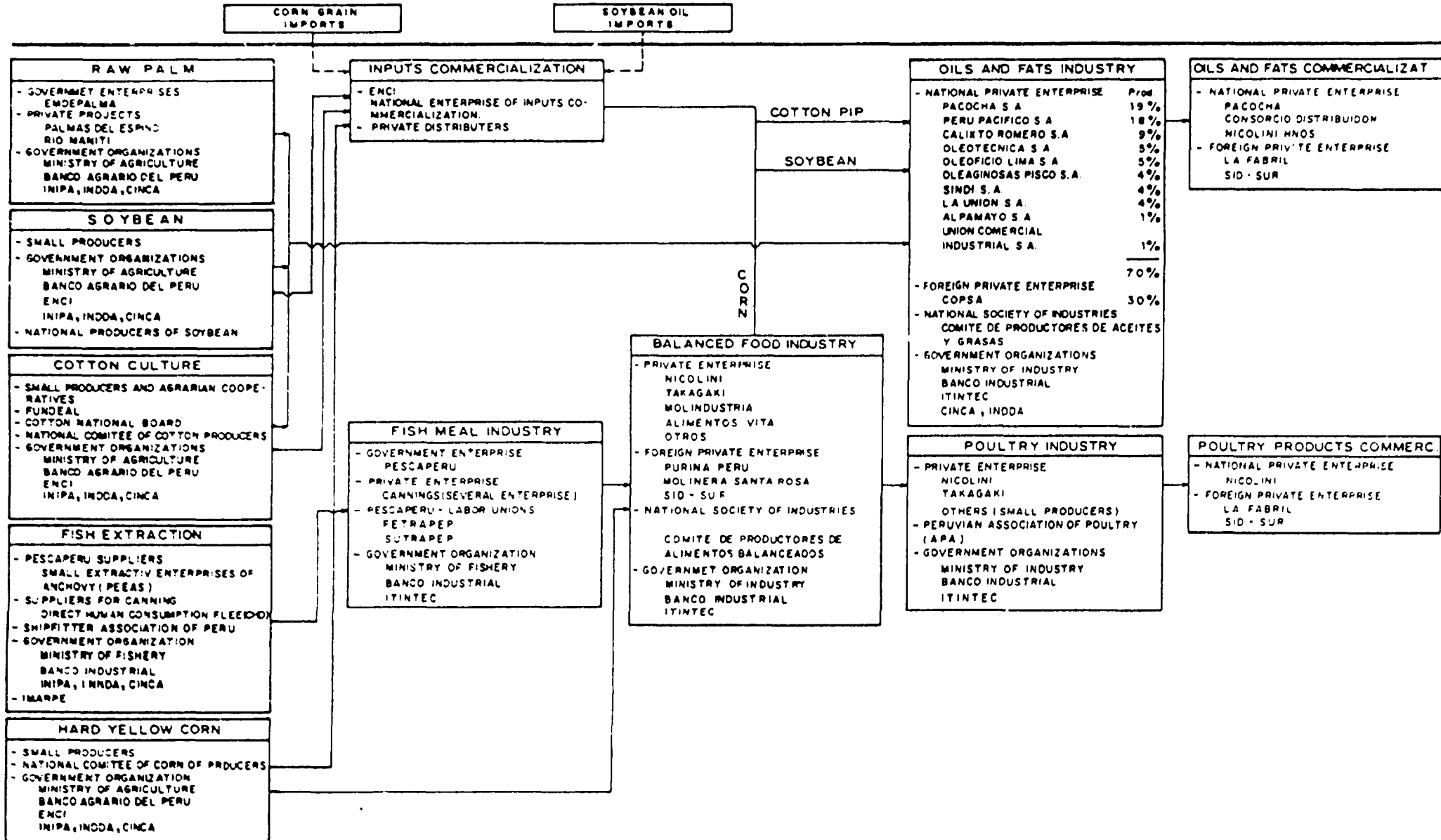


FIGURE Nº 7

BASE SCHEME OF THE AGENTS OF THE PRODUCTION AND CONSUMPTION SYSTEM OF OILS AND FATS



IDENTIFY BOTTLENECKS AND  
IMPERFECTIONS

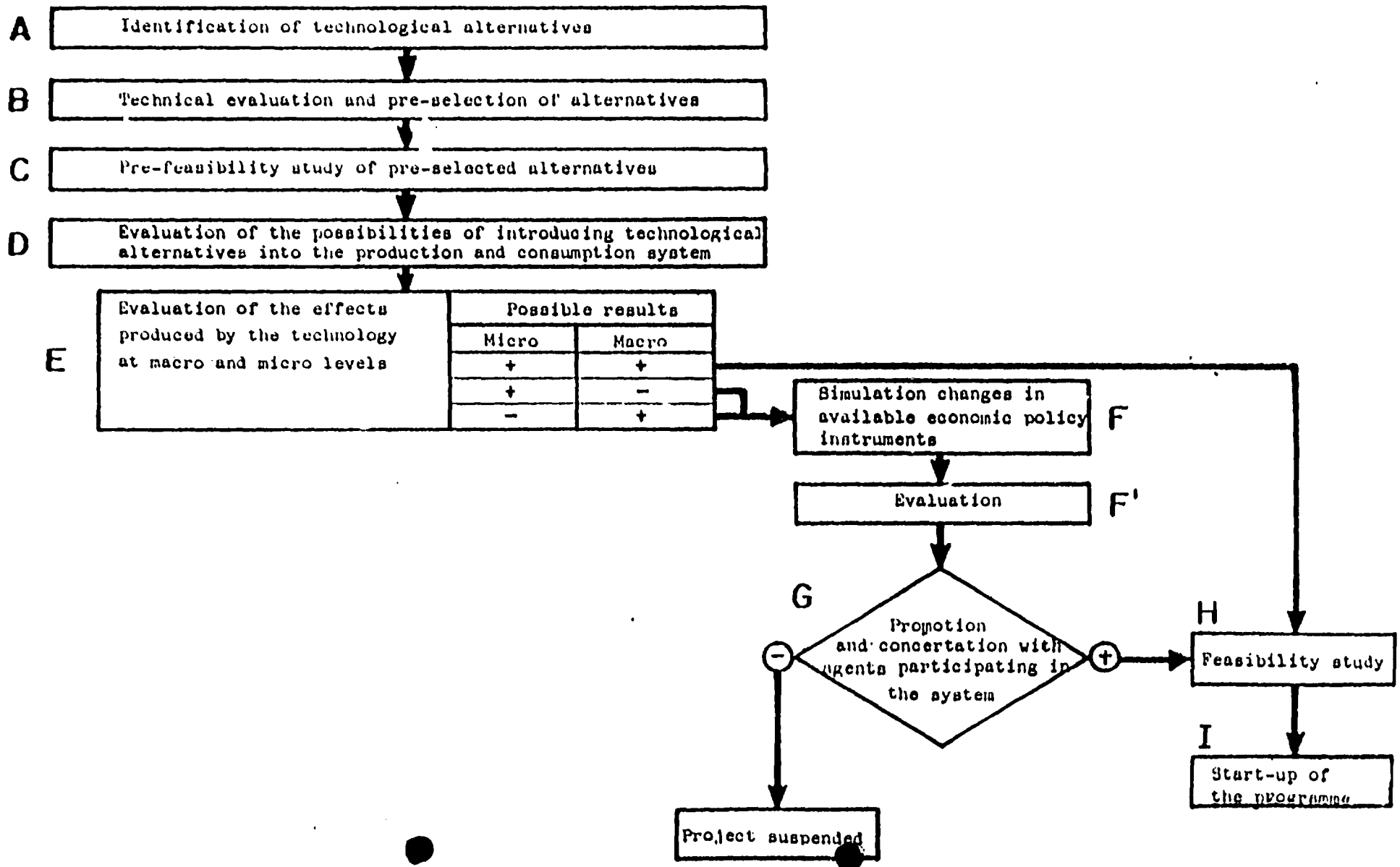


## ASSESSMENT:

### Constraints and Bottlenecks in Oils and Fats System in Peru

- ■ Oligopolistic nature of industry
  - High concentration indices
  - Barriers to entry
  - 88% of the market controlled by 3 conglomerates
- ■ Instability of supply of local raw material
  - High level of external dependency of raw material
- Excess Capacity
- Vertical Integration

IDENTIFY TECHNICAL AND  
ECONOMIC OPTIONS FOR EACH  
COMPONENT



**A** Identification of technological alternatives

**B** Technical evaluation and pre-selection of alternatives

**C** Pre-feasibility study of pre-selected alternatives

**D** Evaluation of the possibilities of introducing technological alternatives into the production and consumption system

**E** Evaluation of the effects produced by the technology at macro and micro levels

Possible results	
Micro	Macro
+	+
+	-
-	+

**F** Simulation changes in available economic policy instruments

**F'** Evaluation

**G** Promotion and concertation with agents participating in the system

**H** Feasibility study

**I** Start-up of the programme

Project suspended

Design development strategies  
with viable options

Diagram 7. Base scheme for the composite flour production-consumption system; alternatives III and IV [20]

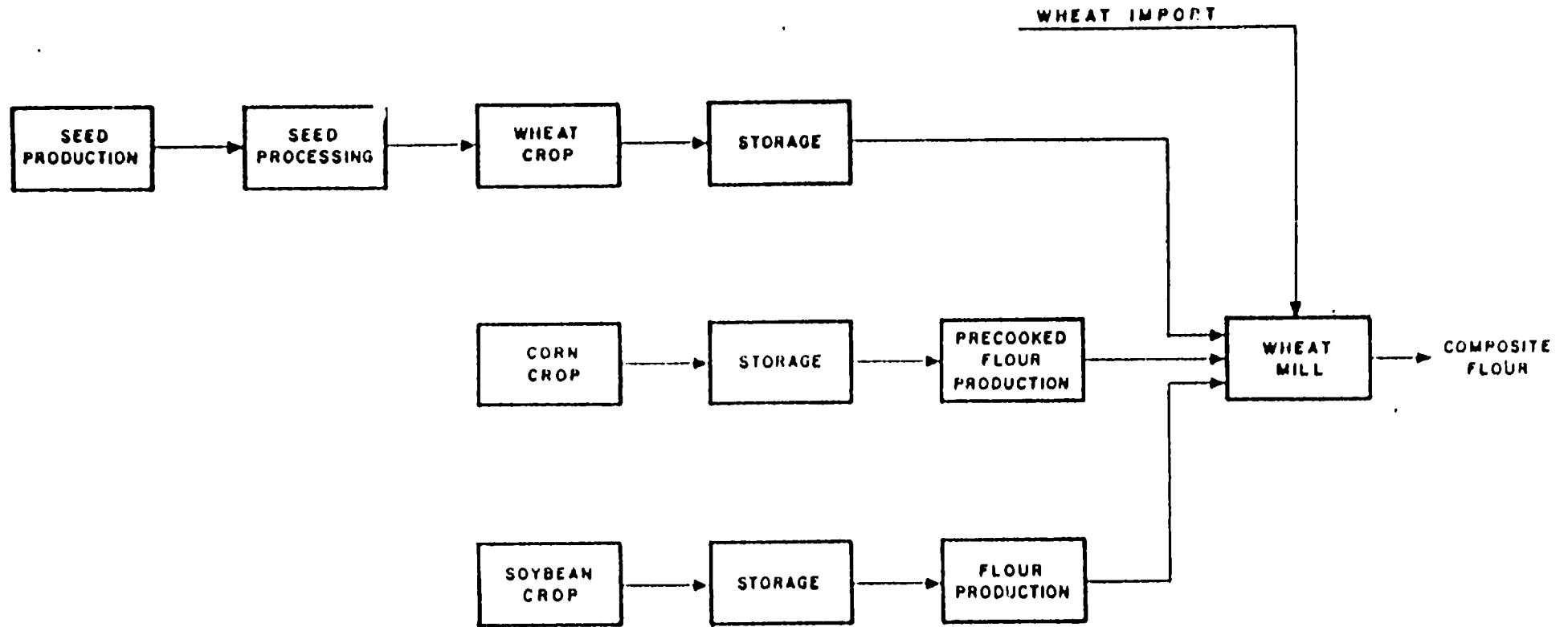


Diagram 6. Base scheme for the wheat flour production-consumption system:  
alternatives I and II

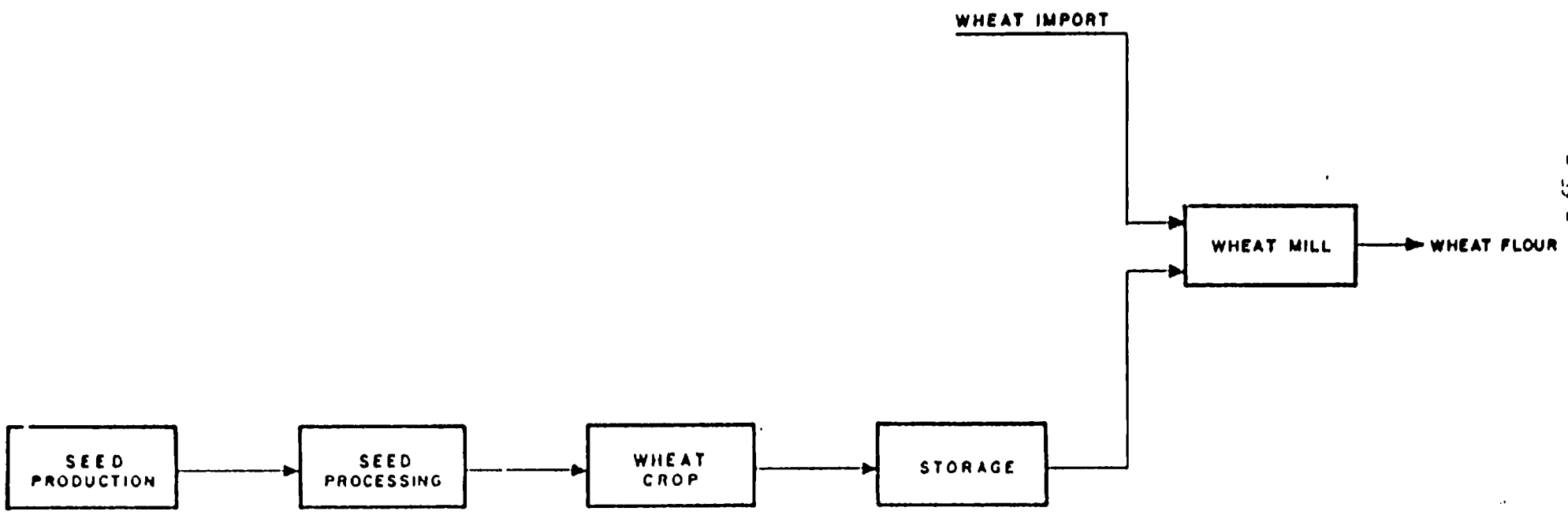


Table 16. Comparison of alternatives considered, Bolivia (20)

Factors for fifth year	Alternatives			
	I	II	III	IV
<u>Natural resources required</u>				
Agricultural areas (ha)	19 593	102 260	47 592	117 769
<u>Foreign currency requirement (dollars)</u>				
	118 584 240	97 331 840	109 119 440	90 777 960
<u>Additional financing required (dollars)</u>				
	581 880	17 976 400	1 157 800	9 542 600
<u>Additional gross investment (dollars)<sup>a/</sup></u>				
	-	85 460 600	70 612	85 531 240
<u>Added value (dollars)</u>				
	10 761 760	18 627 280	55 627 280	61 849 800
<u>Employment generated (W.U.)</u>				
	2 320	3 738	4 746	5 950
<u>Costs in government accounts (dollars)</u>				
	13 505 800	10 418 560	8 030 560	5 373 520

<sup>a/</sup> In the first year.

The most acceptable strategy would be the one that best fulfills the objectives



PROGRAMMING THE INTEGRATED  
DEVELOPMENT OF THE  
ALTERNATIVE SYSTEM

Main  
Constraints

Preferred  
Options

- Low availability  
of funds

I, IV (Lower additional funds,  
less investment)

- High fiscal deficit

IV (Decrease government  
costs and  
exchange demand)

- Land availability

I, III (Locally grown wheat  
is not required)

Integrated development  
programmes would allow  
UNIDO to offer Governments:

Packages of:

- Technical assistance  
projects
- Investment promotion  
activities
- Policy advice

Informal micro- and small scale enterprises are the sector of the economy in which the majority of women in the labour force

Are already active

And it provides an easy entrance point for absorbing women displaced from agriculture

**The small scale enterprise sector plays a vital role in:**

- Supplying goods and services**
- Generating income**
- Providing employment**

**Within sectoral programme planning intended beneficiaries should be identified by:**

- \* Gender**
- \* Income level**
- \* Regional Location**

**So that an assessment of the impact of the proposed UNIDO Programme can be made**

With the system development programme the achievement of the following three major objectives is attempted:

- those relating to final demand for defined goods
- those of the various producers and economics agents\* involved in the system or linked with it
- and the national and/or regional social and economic development objectives.

\* Government/ industry/ universities

3. MATERIAL DELIVERED TO THE PARTICIPANTS



UNITED NATIONS INDUSTRIAL  
DEVELOPMENT ORGANIZATION

Dist. RESTRICTED  
UNIDO/IO  
11 January 1988  
ENGLISH

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Preparatory Assistance for a Regional Hide and Skins, Leather and Leather  
Products Improvement Scheme.

UC/RAF/87/069

COUNTRY REPORT:

ZIMBABWE

Based on a visit by Gerhard Felsner (Austria),  
leather industry expert,  
to Zimbabwe 02-09 December 1987

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COUNTRY REPORT FOR ZIMBABWE

I. INTRODUCTION AND BACKGROUND

The Regional Meeting on the Leather and Leather Products Industry in Africa, held from 12-15 January 1987 in Alexandria, Egypt, focused on the constraints and shortcomings experienced in the African leather industry as a whole and emphasized the need as a first priority measure to upgrade the quality of raw hides and skins and to improve the collection systems.

In the following the proposed scheme was presented to the First Session of the FAO Intergovernmental Sub-Group on Hides and Skins, convened in Rome, 21-23 January 1987 and was as such welcomed and accepted. For the Implementation of the integrated sectorial improvement scheme UNIDO was entrusted to seek the required funds. It was agreed, after receiving the approval and support of many African countries, that eight English and eight French speaking countries should be grouped under the envisaged umbrella project.

To assess the exact needs and to define the required inputs in relation to the existing sectorial infrastructure of the selected countries as well as to quantify the respective cooperation expected from these countries the Preparatory Assistance for the Regional Hides and Skins, Leather and Leather Products Improvement Scheme started with the recruitment of the Senior Leather Industry Expert on 1 October 1987 for a period of four months. The expert was first briefed in Vienna from 1-7 October and from 8-9 October in Rome before leaving for the field. On 21 December the expert was debriefed in Rome and in the following assisted in the preparation of the draft documents for the participating countries and for the region at UNIDO in Vienna.

EXPLANATORY NOTES

During the mission of the consultant to Zimbabwe, the official value of the Zimbabwe currency was Dollar 1.65 = US \$1.00.

## II. SUMMARY

Zimbabwe features one of the best developed leather and leather product industries in Africa. A sound and relatively high quality raw material forms the basis of this fast growing sector. The majority of hides and skins produced originate from controlled slaughter houses where workmanship, hygiene conditions and curing are excellent, although pre-mortem defects are evident. Most of the tanneries are comprised of large units and have interests in shoe factories. The footwear factories are modernly equipped and in one case even computerized. With regards to the leather goods manufacture there are many smaller and medium sized units throughout the country catering to domestic demands and export, particular articles made from exotic leather and skins. Except for the abattoirs the public has no ownership in the leather sector industries. In spite of the good industrial performance witnessed the need to improve the raw material quality in rural areas is most evident. Therefore the envisaged project will focus mainly on the improvement of raw hides and skins in the communal trust lands where assistance is most needed.

III. FINDINGS

A. Raw Material

Livestock is reared in commercial and communal areas. The commercial areas are comprised of ranches supporting up to 30,000 head of cattle mostly privately owned and well organized. Some of the large ranches are also owned and managed by the Cold Storage Commission (CSC)

1. Livestock Population 1983-86.

	<u>Year</u>	<u>Cattle</u>	<u>Sheep</u>	<u>Goat</u>	<u>Donkey</u>
Commercial Area	83-84	2,071,232*	146,893	21,434	n/a
	84-85	1,893,327**	123,839	16,061	n/a
	85-86	1,911,500***	n/a	n/a	n/a
of which are dairy cows:		* 112,301			
		** 110,690			
		*** 111,500			
Communal Area	83-84	3,087,003	259,671	1,408,527	223,352
	84-85	3,230,934	410,848	1,513,454	229,116
	85-86	3,452,150	30,052	1,860,318	277,877
<b>Small Scale</b>					
Farming	83-84	196,007	24,654	57,187	5,693
	84-85	215,861	19,667	40,365	4,632
	85-86	213,788	22,989	48,914	5,181
Resettlement	83-84	146,892	6,322	36,845	8,286
	84-85	178,325	10,830	50,527	8,226
	85-86	203,954	13,142	56,154	7,615

<u>Total:</u>	<u>1983-84</u>	<u>1984-85</u>	<u>1985-86</u>
Cattle	5,501,143	5,518,447	5,781,392
Sheep	437,540	565,184	366,183
Goat	1,524,093	1,620,407	1,965,386
Donkey	237,331	241,974	290,673

Source: Cold Storage Commission. It is estimated that Zimbabwe could carry 6.5 million head of cattle on a sustained basis and given the application of known technology annual production could reach over 900,000 head.

2. Hides and Skins Production.

	<u>Cattle</u>		<u>Sheep</u>	<u>Goats</u>
	(2)CSC Kill	National Kill (1)(3)		
1980	455,200	509,400	64,700	6,400
1981	350,300	425,700	54,900	5,200
1982	450,400	527,100	41,100	4,900
1983	457,300	529,800	62,900	5,400
1984	431,500	509,100	53,600	4,700

- Note: (1) Excludes slaughtering for subsistence in communal areas  
 (2) Includes detained and condemned  
 (3) Excludes farm slaughter

The record was reached in 1977 with 711,400 heads of cattle slaughtered. The figures above indicate that the majority of goats are slaughtered within the communal farming areas. The CSC purchase of cattle from communal farming areas for the period 1982-87 were as follows:

<u>Year</u>	<u>Offered</u>	<u>W/Drawn</u>	<u>Bought (CSC)</u>	<u>Bought (others)</u>
1982	90,550	13,977	59,272	17,301
1983	120,177	34,585	68,352	17,240
1984	102,102	22,549	65,106	14,447
1985	44,765	7,001	18,326	19,438
1986	61,157	7,987	37,420	15,750
1987	125,051	14,290	85,651	25,110

The role of the CSC as the most important supplier of cattle hides to the local tanning industry exhibited in the following table.

3. CSC Hide Sales - Local and Export.

Year	Average Price c/kg	Local Tanners/Merchants (pieces)	Export Sales (pieces)	Value \$'000 (f.o.r.)
1982	70.4	259,144	199,350	7,900
1983	80.6	295,835	198,750	9,352
1984	134.8	322,263	125,000	14,654
1985	168.2	303,115	131,100	17,022
1986	170.9	167,191	94,700	13,547

It is believed that the increasing local demand of raw material will have an impact on the export of salted raw hides from 1988 onwards. The export of this commodity in spite of the valuable foreign exchange earnings may be stopped in the foreseeable future. The leather sector industry emphasizes the export of finished leather products like footwear with high value added components.

4. Sales of CSC Cattle Hides to Local Tanneries.

	CSC Slaughter	Sales to Local Tanneries	%
1980	455,100	200,300	44
1981	350,300	262,700	75
1982	450,400	243,300	54
1983	457,300	306,900	67
1984	431,500	322,400	75

Source: CSC

## 5. Preservation of Hides and Skins.

Hides produced at the five CSC abattoirs in MARONDERA, CHINHOYI, KADOMA, MASVINGO and BULAWAYO which account for 80% of the country's beef production are of top quality with regards to flaying, cleaning and curing. Hides are brined for 24 hours, afterwards drained, separated into different weight ranges, salted with fresh salt and palleted. The grading at the CSC plants takes place immediately after flaying, before defatting, cleaning and brining.

The salt consumption per fresh hide is in the region of about 60% of its green weight which indicates that some 13 kg salt is used for the curing of an average sized hide of 22 kg. This high level salt consumption includes the re-use of salt reclaimed in the brine evaporator. The CSC yearly salt consumption is therefore in the region of 500 tons, which in turn creates effluent problems for the tanneries. Experiments include reducing the salt requirements to an acceptable minimum by using salt additives.

Other non CSC slaughter facilities are employing the usual salt curing wherever possible including dry salting of skins. However, hides and skins from rural areas originating from subsistence slaughter are mainly air dried.

## 6. Grading in Quality and Weight Classes (CSC).

A "light" hide is described as weighing between 11 and 18 kg. (average 16 kg) a "medium" hide as weighing between 18 and 23 kg and a "heavy" hide as weighing 23 kg and over (average 24-27 kg). This type of grading is internationally recognised and accepted.

With reference to sheep skins the CSC is grading according to appearance made up of four categories, separating coarse wools and glovers of good texture. The third category refers to "seedies" of both groups, and the last category represents the rejects. Skins from calves, goats, slinks are graded on the same basis (seconds or rejects). The bulk of the CSC hide production falls under the "heavy" category. The local trade terms the first two grades as "sounds" hides, the other lower grades are referred as "undergrade".



## 7. Marketing and Pricing Policy

The collection of hides and skins is carried out by private trading companies which in most cases are exporters too. The private collectors are well established, well organized and efficient, however prices paid to the primary producer in the rural areas appear not to reflect the actual market value of raw hides and skins. The cost of collection and transport is the main argument brought forward by the traders. Without proper measures of incentives it would be very difficult to expect co-operation from the primary producer in up-grading the raw material quality. In denser populated rural areas collection points are established throughout the country. Nearly all sheep and goat skins collected are channeled through this network including cattle hides not produced by the CSC.

The hide and skin sales policy of the CSC places the local tanners on a par with the overseas customer. Offers of deliveries are made four months in advance, with priority given to the local tanning industry. The CSC prices of wet salted hides sold in the local market are calculated on export parity basis. The raw stock is available on an "ex works" f.o.r. basis and prices are based on export parity connected to local currency at the ruling exchange rate at the end of each month, less commission, and other overheads known as bridging costs.

The CSC sells hides to export customers on a price based on "sounds" which represents 80% first grades and 20% second grades. From this price other prices of different grades are calculated according to the following formula.

<u>Grade</u>	<u>% of "Sound" Price</u>
"Sounds" - 80/20	100%
Second grade	97%
Third grade	96%
Fourth grade (thornrakes)	93%

Source: CSC

#### IV. THE TANNING INDUSTRY

There are four fully mechanized tanneries in the country, all privately owned.

1. UMTALI LEATHER, (Pvt) Ltd., Bulawayo. Present production of about 1000 hides per day, wet blue for export and finished leather for the affiliated shoe factory G + D shoes, also based in Bulawayo. The tannery employs 170 people.

2. BATA, tannery and shoe factory in Gweru. It is reported that the installed tanning capacity is around 1200 hides per day. Leather produced is generally completely finished. Total employment is 2800 people.

3. EAGLE TANNING, (Pvt.) Ltd. This tannery in the Marondera area has a daily production capacity of around 1000 hides. Most of the raw material is processed into wet blue for export and the other part is converted into finished leather. This tannery also specializes in the processing of exotic leather like elephant, hippopotamus, zebra, antilopes, etc. In total there are about 280 people employed.

4. IMPONENTE (Pvt.) Ltd., Harare. The present production is 800 hides and 1000 sheep/goat skins per day which is the actual installed capacity. A good part of the cattle hides are processed into wet blue for export. The finished leather produced is utilized further in the affiliated footwear factory, SUPERIOR FOOTWEAR (Pvt.) Ltd., located in the same complex. The company employs 320 people.

In 1983 the local tanneries processed 347,419 cattle hides of which 842 emanated from the CSC: 219 were calf skins, 411 pig skins, 21,282 goat and kid skins, 30,186 sheep and camel skins, 604 crocodile bellies and back skins, 1,396 elephant panels and ears plus 43,112 kg hides, and about 22,000 other game skins of different species.

Source: CSC

## V. THE FOOTWEAR AND LEATHER GOODS INDUSTRY

The country has seven mechanized shoe factories of which 3 are linked through ownership to tanneries. It was reported that the leather shoe production for 1987 is expected to be between 3.5 - 3.7 million pairs of which considerable quantities were exported. The sector is well integrated and modern production methods are employed. Some of the footwear factories are also producing matching leather bound bags and other leather articles including leather garments. The larger plants have their own facilities for up-grading the skills of their employees.

## VII. SUPPORT FACILITIES

The fast but sound industrial development taking place in Zimbabwe's leather and leather products sector has created the need for the establishment of a Leather Institute to serve, advise and assist the industry in their further development objectives. The Leather Institute of Zimbabwe (LIZ) was founded in 1985 in Bulawayo, and has established itself on the new site presently being expanded. LIZ is supported and financed through the Leather Sector Industry, CSC, hide/skin producers and traders.

The Leather Institute is equipped with the most needed laboratory instruments and physical testing equipment to cater to the industrial need for quality control. Two small tanning drums and other leather processing equipment serve as demonstration facilities during courses in hides and skins improvement, which are conducted regularly. Services to the industry includes assistance in effluent treatment, testing of raw material chemicals and development of leather processing products which could eventually be manufactured locally.

It is intended to set up a training workshop for the needs of the footwear and leather goods sector addressing mainly the cottage industry.

### The Envisaged Project

The project will be designed to provide assistance primarily to the hides and skins improvement needs in the pastoral regions or better known as the communal areas and to uplift the training capabilities of the Leather Institute of Zimbabwe. Direct technical assistance to the leather and allied industry is not foreseen as this industrial sector is well developed and considered capable to cater on its own to the development needs.

Hides and skins emanating from the commercial sector are fully utilized and generally of good quality standards. The collection system in these areas is very efficient, therefore a significant increase in the recovery and supply of hides and skins can not be expected.

The situation in the communal areas is different, which provides about 20% of the national hide supply. It is estimated that only about 50% of the hides potentially available are actually collected and processed in the local tanneries. With regards to the supply of sheep and goat skins the potential availability is much higher. The project focuses on the enhancement of the hide/skin recovery rate and the improvement of the raw material quality supported by well planned information and demonstration campaigns in the rural area. Training of field personnel in proper skinning, flaying, preservation and handling of hides and skins will be one of the priorities. Further, emphasis will be given through an information service on the actual market value of differently graded hides and skins thus providing the stimulus for improved collection and better raw material quality.

The operational framework is expected to be as follows:

- The UNIDO national expert who will be an expert in hides and skins improvement will have to function and liaise through the Leather Institute of Zimbabwe with the Ministry of Agriculture and in leather industry related areas with the Ministry of Industry and Technology.

The Veterinary and Agritex Departments would be required to nominate two counterpart officers, one each from the Veterinary and Agritex departments, to liaise with the national project co-ordinator.

- The national expert will be based at the Leather Institute of Zimbabwe and is expected to function at all levels of the hides/skins improvement.

- The national expert in co-operation with the hides and skins international consultant and the departments concerned will select a target area in a communal region, establish a data base line on the existing live stock, slaughter facilities, hides/skins production, recovery rate, and assessment of raw material qualities including pricing structure.

- The Leather Institute of Zimbabwe in co-operation with the international consultant and the national project co-ordinator will assess the number of field personnel to be trained at the Institute and the duration of the training courses. Further assistance will be provided through the international consultant in designing appropriate posters and leaflets.

- The other consultants in leather goods manufacture and foot wear production will assist the Leather Institute of Zimbabwe in providing the technical inputs required for conducting courses in the field of leather goods and foot wear production.

- The leather finishing consultant will be based at the Leather Institute in Zimbabwe and is expected to provide extension service to the industry as required.

- The leather Institute of Zimbabwe will also provide organizational assistance to seminars and work shops organized through the project.

UNITED NATIONS INDUSTRIAL  
DEVELOPMENT ORGANIZATION

Dist. RESTRICTED  
UNIDO/IO  
11 January 1988  
ENGLISH

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Preparatory Assistance for a Regional Hide and Skins, Leather and Leather  
Products Improvement Scheme.

UC/RAF/87/069

COUNTRY REPORT:

ETHIOPIA

Based on a visit by Gerhard Felsner (Austria),  
leather industry expert,  
to Ethiopia, 16-27 October 1987

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## COUNTRY REPORT FOR ETHIOPIA

### I. INTRODUCTION AND BACKGROUND

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In the following the proposed scheme was presented to the First Session of the FAO Intergovernmental Sub-Group on Hides and Skins, convened in Rome, 21-23 January 1987 and was as such welcomed and accepted. For the implementation of the integrated sectorial improvement scheme UNIDO was entrusted to seek the required funds. It was agreed, after receiving the approval and support of many African countries, that eight English and eight French speaking countries should be grouped under the envisaged umbrella project.

To assess the exact needs and to define the required inputs in relation to the existing sectorial infrastructure of the selected countries as well as to quantify the respective cooperation expected from these countries the Preparatory Assistance for the Regional Hides and Skins, Leather and Leather Products Improvement Scheme started with the recruitment of the Senior Leather Industry Expert on 1 October 1987 for a period of four months. The expert was first briefed in Vienna from 1-7 October and from 8-9 October in Rome before leaving for the field. On 21 December the expert was debriefed in Rome and in the following assisted in the preparation of the draft documents for the participating countries and for the region at UNIDO in Vienna.

### EXPLANATORY NOTES

During the mission of the consultant to Ethiopia, the official value of the Ethiopian currency was Birr 2.07 = US \$1.00.



## II. SUMMARY

The livestock population of Ethiopia is one of the highest in Africa, consisting of an estimated 27 million cattle, 24 million sheep, 17.5 million goats and 1 million camels. The annual off-take and the estimated production of hides and skins are believed to be as follows:

cattle	7%	1,950,000 hides
sheep	33%	7,900,000 skins
goats	37%	6,500,000 skins

The actual number of hides and skins collected is much below the estimated production figures. A certain percentage of raw material is utilized for rural leather processing, however the larger portion of it remains unrecorded. The difference between hide/skin production and actual collection stresses the need to improve the collection system as indicated below:

<u>estimated production</u>	<u>collection</u>	<u>shortfall</u>	<u>%</u>
cattle hides 1,950,000	1,300,000	650,000	33%
sheep skins 7,900,000	7,400,000	500,000	6%
goat skins 6,400,000	5,900,000	500,000	8%

Approximately only 30% of the hides and 20% of the skins are produced in centralized abattoirs, whereas the balance derives from rural slaughtering.

The collection and marketing of raw hides and skins is carried out through the Hides & Skins Marketing Corporation (HSMC), a parastatal operating under the Ministry of Foreign Trade. The export of raw hides and skins (expected to be phased out in early 1988) semi processed leather and finished leather products has increased to around US \$65 million for the year 1987 which represents the country's second largest foreign exchange earner after coffee.

During the period 1980-1986 the percentual share of processed leather in any form out of the total sectorial export has increased substantially, e.g.:

	1980 =	62% raw hides/skins
		38% processed hides/skins
of total export:		
	1986 =	36% raw hides/skins
		64% processed hides/skins

The policy of the government is to phase out the export of raw hides and skins and reduce the export of pickled and semi-processed skins and concurrently increase the export of crusted leather and finished leather products.

### III. TANNING INDUSTRY

The tanning industry is organized under the National Leather and Shoe Corporation (NLSC) which comprises 8 mechanized tanneries and 6 shoe factories. The plants do not operate, at present, at full capacity. Two of the large tanneries are undergoing a modernization programme and will be partly re-equipped with up-dated machinery in order to meet the demand for better and uniform products. In 1986 exports to Italy, United Kingdom, Japan and USA accounted for 65% of the total export earnings of processed hides/skins including leather goods.

Apart from the NLSC tanneries there is quite an active artisan tanning industry scattered over the country, utilizing mainly lower grade raw material for leather manufacture. The "leather" such obtained is used for the manufacture of traditional leather products. It is believed that about 30 rural tanning centres are in existence with an estimated monthly intake of around 200 cattle hides per unit.

The NLSC has its own hides and skins collection system. The appropriate raw material required for the different tanneries is allocated through the various market channels and central stores of the NLSC and HSMC. The NLSC tanneries are compelled to pay nearly the world market prices for their raw hides and skins - less an agreed percentage in the form of a discount - otherwise the raw material is exported by the HSMC.

INFORMATION ON THE LARGER TANNERIES IN ETHIOPIA

1. Ethiopian Tannery:

a) Production: 800-900 cattle hides/day, 6 days/week.

10,000 sheep/goat skins per day.

The leather processed from the cattle hides is finished for footwear and leather goods manufacture; sheep and goat skins are either pickled or wet-blued.

b) Employees: 800

2. Modjo Tannery:

a) Production: 6000 sheep and goat skins per day 6 days/week.

Processed into pickle or wet-blue. Setting up of water storage tank and installation of new tanning drums.

b) Employees: 220

3. Ethiopian Pickling Plant:

a) Production: 8000 sheep and goat skins per day 6 days/week.

Sheep skins are pickled only; goat skins processed into wet-blue.

b) Employees: 240

4. Awash Tannery:

a) Production: 500 air dried cattle hides (4000 kg) per day into finished leather for footwear and leather goods manufacture; 6000 sheep skins for pickling/day; 3000 goat skins/day for wet-blue.

b) Employees: 750

IV. FOOTWEAR INDUSTRY

The six shoe factories under the umbrella of the NLSC are reported to operate below their installed capacity. They account for about 50-55% of the country's footwear manufacture, specializing mainly in gent's and children's (canvas) shoes.

The private sector industry, consisting of a considerable number of medium and small enterprises is strongly represented in lady's shoe production.

In general, both sectors, public and private, cater to the domestic market only, as the quality of the goods manufactured does, at present, not comply with export quality standards.

#### V. LEATHER GOODS

During recent years this sector has developed into an export oriented industry. A new plant under the wing of the NLSC the "Universal Leather Articles Factory" was established a few years ago. This factory initially constrained through production and marketing problems is expected to achieve for the year 1987/88 export sales valued at US \$3.8 million, representing approximately 80% of the total value of goods manufactured.

#### VI. TRAINING FACILITIES

Training in medium level technology covering the important areas of the leather sector including raw hides and skins improvement is carried out at the Productivity Improvement Centre in Addis Ababa, an affiliate of the Ethiopian Management Institute. The duration of the courses vary from 2 weeks to 1 year in the case of leather technology. During the period of 1973-1987 640 participants were trained in the field of leather processing in courses of different subjects and levels. With regards to training in shoe and leather goods manufacture since the establishment of the unit in 1984 282 persons have been trained including 42 who participated in the 6 month shoe technician course.

#### VII. HIDES AND SKINS IMPROVEMENTS

Hides and skins improvement falls under the Ministry of Agriculture and is carried out by the Animal Resources Marketing Department whose field operations are organized in geographical zones divided into districts and subdistricts. The department at the Ministry is headed by one senior hide and

skin improvement officer. Each zonal office of the agricultural development department has at least one senior hide and skin improvement officer stationed there assisted by an adequate number of junior and extension officers, who are stationed in the outposts. In the case of the Western Zone there are 57 officers and in the Awassa Zone 42 officers engaged in hides and skins improvement. During the period from 1973-1987 337 officers have been trained in this field locally. Some of the officers are also acting, particularly in less developed areas, as slaughterhouse inspectors. A major problem constraining the activity in the field is the lack of transport.

In general the hide and skin collection is well developed and well organized, especially in areas with a higher population and better infrastructure. Hides and skins are produced either in controlled slaughter places or where such establishments do not exist on private and communal farms. In most cases the raw hides and skins are brought directly to the dealer which could be a service co-operative or a private establishment. In both cases, the place of purchase has to be registered and approved by the hide and skin inspector and must feature the requirements laid down by the government which includes the provision of a hide/skin drying shed, salting pit, cleaning table and an appropriate storage section. The relevant purchasing prices have to be made known on a black board in front of the collection shed. The exhibition of the prices offered for the various types of raw material and grades informs the seller/primary producer of the actual market value. The collected hides and skins are transported to Addis Ababa either once or twice a month where the grade and weights will be rechecked. Payment for the goods delivered is effected immediately after the records have been established.

The prices paid for raw hides and skins are varying from area to area depending also on the distance from the capital and type of raw material, however, during October 1987 the following price structures applied:

Prices paid to traders for hides and skins delivered to the central stores in Addis Ababa:

cattle hides a/d	I	39 Birr/Frasula	Birr 2.29/kg
	II	35 Birr/Frasula	Birr 2.06/kg
	III	32 Birr/Frasula	Birr 1.88/kg
sheep skins w/s	I	139 Birr/Score	Birr 6.96/skin
sheep skins d/s	II	129 Birr/Score (40/50/10)	Birr 6.96/skin
goat skins w/s	I	87 Birr/Score (gen)	Birr 4.35/skin
goat skins a/d	I	82 Birr/Score (bati) (40/50/10)	Birr 4.10/skin
goat skins w/s		77 Birr/Score	Birr 3.85/skin
goat skins a/d		72 Birr/Score (25/50/25)	Birr 3.60/skin

Note: Frasula is a traditional weight measure equal to 17 kg.

Score is a traditional measure made up of 20 units (skins)

Prices paid to primary producer/butcher for their hides:skins delivered to the collection points in the Awassa Zone:

	<u>service co-op</u>	<u>private dealer</u>
cattle hides, green	I Birr 0.40/kg	Birr 0.50/kg
	II Birr 0.30/kg	Birr 0.40/kg
	III Birr 0.20/kg	Birr 0.30/kg
sheep skins, green	Birr 5.00-5.50/skin	Birr 5.50-6.00
goat skins, green	Birr 3.50-4.00/skin	Birr 4.00
goat skin, a/d		Birr 2.00-2.50

The NLSC is purchasing at the same price structure, regardless of its source, service co-operatives or private.

For the envisaged national project executed under the umbrella of the Regional Hides and Skins, Leather and Leather Products Improvement Scheme it was agreed between the Ministry of Industry (NLSC) and the Ministry of Agriculture (Animal Resources Marketing Department) to select a suitable target area where a pilot project in the form of an intensified hides and skins improvement will be implemented. As a target area the Awassa Zone was selected for its high population of cattle with a relatively low recovering rate for hides, being much below the national average and its border with Kenya. The official recovery and collection of hides is approximately 40% only. The distance by road between Addis Ababa and Awassa is 275 km.

A. The Awassa Zone

The Awassa Zone combines two administrative regions, namely Sidamo and Gemu Gofa, the total area is 156,000 km<sup>2</sup> having a population of 5,038,000 people.

District	Livestock Population			Hide Sheds		Slaughter	Personnel H/S Impr.
	cattle	sheep	goat	co-op	priv.	houses	
Sidama	1,095,951	262,200	86,600	7	14	2	8
Gedewo	580,918	112,332	37,500	18	18	4	6
Wolaita	748,590	223,220	96,600	2	7	3	4
Ariro	955,870	140,760	292,000	5	7	-	4
Boyena	284,000	244,000	480,000	-	6	1	2
Jamjam	350,860	42,228	35,500	-	6	-	3
Gamo	452,780	165,600	131,000	-	12	1	5
Gofa	404,430	307,740	393,300	-	15	-	2
Gerdula	417,150	269,150	247,020	-	12	-	4
Gelebe	209,300	157,320	229,080	-	13	-	1
Awassa HQ	-	-	-	-	-	-	3
	5,500,086	1,939,810	2,036,000	32	98	12	42

The 10 districts comprising the Awassa Zone are divided in 56 subdistricts. The road distances between Awassa and the different districts varies from 45 km (Sidamo) to 550 km (Gelebe).

The collection of hides and skins from the Awassa Zone for 1985-87 was as follows:

	<u>1985/86</u>	<u>1986/87</u>
cattle hides	139,000	153,303
sheep skins	444,455	587,435
goat skins	295,275	257,676

During 1986/87 15,231 cattle and 14,088 sheep were trekked out of the Awassa region to Addis Ababa. The price for live cattle is around Birr 250 per head, for a sheep Birr 30-35.

Hides and Skins from the Awassa Zone were graded during 1986/87 as follows:

cattle hides:	I	50%	sheep skins:	I	42%
	II	29%		II	38%
	III	21%		III	20%
goat skins:	I	39%			
	II	37%			
	III	24%			

The price for salt which is distributed free through the NLSC network to the curing centres costs Birr 0.24 per kilo ex Addis Ababa.

During the first years of the envisaged project implementation the hides and skins collection is expected to increase as indicated:

	<u>1987(basis)</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>
cattle hides	153,303 + 10%	168,000 + 10%	185,000 + 15%	212,000
sheep skins	587,435 + 10%	645,000 + 10%	710,000 + 10%	780,000
goat skins	257,676 + 10%	283,000 + 10%	310,000 + 20%	372,000

The grading is expected to improve to a close 50% first grade, 30% second grade and 20% third grade during the same period of time.



B. Slaughtering at the Addis Ababa Abattoris Organization

	<u>1985/86</u>	<u>1986/87(planned)</u>	<u>1987/88(planned)</u>	<u>1988/89(planned)</u>
cattle	140,069	151,000	155,000	160,000
sheep	49,502	55,000	60,000	60,500
goat	11,391	11,000	11,000	12,000

C. Export Sales of the National

Leather and Shoe Corporation for the Year 1986/87

<u>Type of Products</u>	<u>Measurement</u>	<u>Quantity</u>	<u>Value in Birr</u>
Pickled sheep/goat skin	Dozen	428,455	57,939,961
Wet blue sheep skin	Dozen	88,606	10,313,609
Wet blue goat skin	Dozen	138,503	12,105,233
Crust sheep skin	Dozen	44,940	7,325,996
Crust goat skin	Dozen	50	7,203
Wet blue hides	Square foot	2,789,264	2,577,888
Crust hides	Square foot	3,784,863	6,289,346
Splits	Square foot	109,000	13,537
Lining sheep	Square foot	11,500	437,805
Lining goat	Dozen	5,000	243,225
Finished leather	Square foot	500,000	1,003,950
Shoe uppers	Pairs	30,000	322,920
Lady's hand bag	Pieces	6,721	40,445
Shoes	Pairs	49,000	299,115
Wool	Kg	56,000	94,122
ASA leather	Square foot	519,364	488,890
Leather sole	Square foot	200	828
Chamoise	Square foot	3,000	4,657
School bags	Pieces	24,735	873,645
Small leather good	Pieces	22,728	49,846
Upholstery leather	Square foot	997	4,203
Total			Birr 100,436,424
Raw cattle hides	Pieces	713,000	11,905,000
Raw sheep/goat skins	Pieces	2,380,000	14,803,000
Total			Birr 26,708,000

### VIII. RECOMMENDATIONS

During the subject mission it was identified that without enhancing the recovery rate of hides and skins and the improvement of the raw material quality the further development of this industrial sector will experience serious constraints. Therefore emphasis should be given for the implementation of an effective hides and skins improvement programme. Further there is an obvious need to enhance the quality of finished leather through the introduction of modern finishing techniques, which would in turn improve the export performance of the leather articles are manufactured from. The need for external expertise in leather finishing and leather goods manufacture would alleviate some of the problems experienced.

**PAPER PREPARED BY THE PROJECT APPRAISAL SECTION AS GUIDANCE FOR THE  
UNIDO-FRENCH PROJECT IDENTIFICATION MISSION ON AGRO-INDUSTRY  
IN MEXICO  
BASED ON THE WORK PRODUCED BY THE SECTORAL STUDIES BRANCH**

The following is based on the Methodology for the Assessment, Programming and Management of Production and Consumption Systems User's Guide. It is recommended that the mission take with them a copy of this document, Sectoral Studies Series No. 33.

**1. Mission Objectives**

The identification of technical assistance and investment projects to contribute to the integrated development of agro-industries.

**2. Definition**

The integrated development of an agro-industrial system is understood as the harmonious, balanced development of a production-consumption system as pictured in figure 1. Therefore, the analysis and programming of integrated development requires a systems approach, i.e. an approach that takes into consideration all the production and consumption components of the system, the linkages between them and the policies that affect specific components and the system as a whole.<sup>1/</sup>

**3. Priority sub-sectors**

It is understood that the Mexican Government has identified the following three sub-sectors as priority sub-sectors for the UNIDO-French identification mission:

- Oils and fats
- Cereals
- Milk and milk products.

**4. Criteria for project identification**

The technical assistance and/or investment projects identified should:

- contribute to the integrated development of the agro-industrial sub-sector and the agro-industrial system of which it is a part;
- produce the maximum positive impact on the development of the subsector and on the system;
- be related to the specific needs of the sub-sector;

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<sup>1/</sup> MEPS, Methodology for the Assessment, Programming and Management of Production and Consumption Systems, Abridged version, Sectoral Studies Series No. 27, UNIDO/IS.643, September 1986.

- contribute to the elimination of bottle-necks and to the expansion of the system;
- be located within the agro-industrial institutional framework;
- be compatible with other related ongoing projects and contribute to their successful implementation;
- be feasible under the prevailing economic policies or should include recommendations for necessary policy changes.

#### 5. Procedure

The success of project identification/design within a systems approach depends on being able to properly identify all the system components, their linkages and inter-relationships. This can be accomplished by applying the disaggregation techniques as prescribed by MEPS.<sup>2/</sup>

A complete disaggregation of the pre-selected systems would not be possible during the present 2 1/2 week mission. However, a large amount of recent information on the sub-sectors should be available, as well as a number of already pre-identified projects. Thus, the disaggregating procedure to be followed under the circumstances should be the following:

- a) Identify the development objectives set by the Government for each of the system variables and the indicators selected to measure the performance of the system (see p. 13 MEPS User's Guide).
- b) Base Diagrammes  
Identify the main components of the system, their linkages and the policy components. Draw a base diagramme, using figures 1, 2 and 3 as examples for the cereals, oils and fats and milk-milk products systems.<sup>3/</sup> Check them for completeness.

Obtain from your counterparts basic quantitative data that will allow you to assess the relative importance of each component, such as the following:

- (i) Level of consumption of the final goods;
- (ii) Number of enterprises involved in the production of the final goods and also in the production of each of the main inputs of the system;
- (iii) Level of foreign trade balance of the system's main goods;
- (iv) Installed capacity for each component;
- (v) Quantity produced of each of the goods previously identified.

Discuss the consumption/demand component with your counterparts. Is the Government interested in reaching the internal or the export market?

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<sup>2/</sup> Ideally, a full application of MEPS to the three selected priority sub-sectors should be undertaken in order to produce a complete analysis of the three agro-industrial systems and propose three alternative development programmes. The development programmes would be composed of: technical assistance projects, investment projects and the integrated development of the system.

<sup>3/</sup> Rice was taken as an example for cereals.

Does the Government want to reach specific target groups or geographical areas in the internal market? Is it enough to treat the consumption component as a unit? If available, it would be advisable to obtain the following data:

- Income elasticities, price, crossed elasticities
- Consumption by months
- Consumption by regions
- Goods that are substitutes and/or complementary goods.

The answers to the above questions will help you decide which of the information listed in table 2 of the MEPS User's Guide should be considered in order to describe the consumption component. Most of the information listed in tables 3 to 6 of the User's Guide, for agricultural, industrial services and marketing components should be available from the diagnostic work already performed in Mexico.

Using the tables, request the necessary data according to the particular characteristics of the system being discussed. This will help you most in defining the problem areas and identifying technical assistance and investment needs. Pay particular attention to projects that have already been identified and are under consideration or even being carried out in the agricultural, industrial and services components.

With the information gathered in the previous step,, draw descriptive base diagrammes. The diagrammes will help in the process of identifying problems and bottlenecks that hinder the development of the system and restrict the attainment of the Government's objectives, and thus in identifying projects to try to solve these problems. The diagrammes should also be useful for locating the projects within the institutional framework and assessing their compatibility with already existing projects in other components of the system.

For the analysis of the system, it may be useful to prepare several of the following base diagrammes:

- (i) System economic flows  
Use a few flow variables that characterize the system and that could help in the identification of bottle-necks. The following are suggested:
  - yield and area (for the agricultural components)
  - raw material - gross value of production
  - value added (see figure 4).
- (ii) System stock variables  
This diagramme would give a quick overview of the resources of the system. The following variables could be used:
  - installed capacity
  - fixed capital
  - foreign financing (see figure 5).
- (iii) System's main economic indicators  
This may be one of the most useful diagrammes for assessing project needs, because it can provide a brief description of the performance

of each component and facilitate the assessment of the system. You may use the following indicators:

- economic profitability
- % capacity utilization
- value added/fixed cost
- value added/gross value of production (see figure 6).

(iv) **Institutional framework**

Identify the economic agents that participate in the different components and activities of the system and picture how they are organized. This type of diagramme provides information on the degree of horizontal and vertical integration already existing in the system and permits the selection of the most appropriate counterpart institutions (see figure 7 as an example).

(v) **Regional base diagramme**

Indicate the regional distribution of the different components of the system. This type of diagramme will allow you to illustrate regional concentration and the relative importance of each geographical region with respect to each component of the system (see figure 8).

c) **Technology**

This will be a very important aspect to be dealt with when observing the productive components of a given system. The specialists of the group should be able to identify technological shortcomings and gaps and suggest, on the basis of their experience, technology options to be considered for investment and for technical assistance projects.

d) **Policies**

Request information on the prevailing policies and policy trends. Discuss the positive or negative effect of those policies on the behaviour of the systems and their components.

e) **Project identification**

On the basis of the analysis of the system carried out in the previous steps, identify the problems and bottlenecks affecting each component and the linkages between them and identify, together with your counterparts possible solutions that could be implemented through technical assistance and/or investment projects.

The most appropriate solutions would be those that conform to the criteria established for project identification in section 4. of this document.

f) **Preliminary assessment of already identified projects**

The projects pre-identified by Mexico should be analyzed with reference to the systems in which they will be introduced. Apply for this analysis the criteria for project identification listed under section 4. This task would be greatly facilitated by the work previously undertaken by you for the characterization of the rice, oils and fats and milk products systems.

Remember that technical soundness by itself is not a sufficient condition to ensure that a project is feasible and likely to have a positive impact on the country's industrialization efforts. The larger the number of criteria met by a given project, the greater its potential impact on the development of the system.

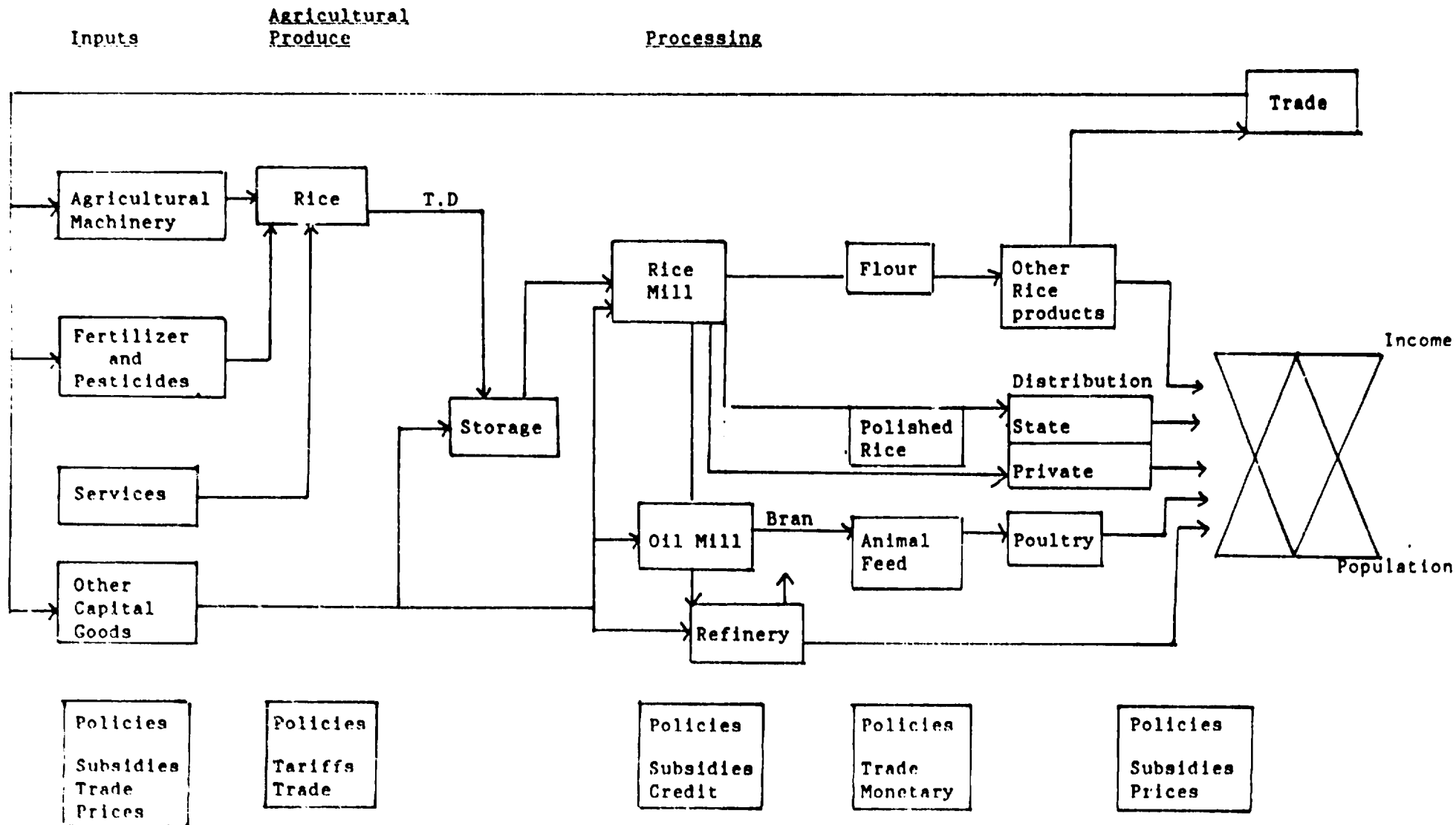
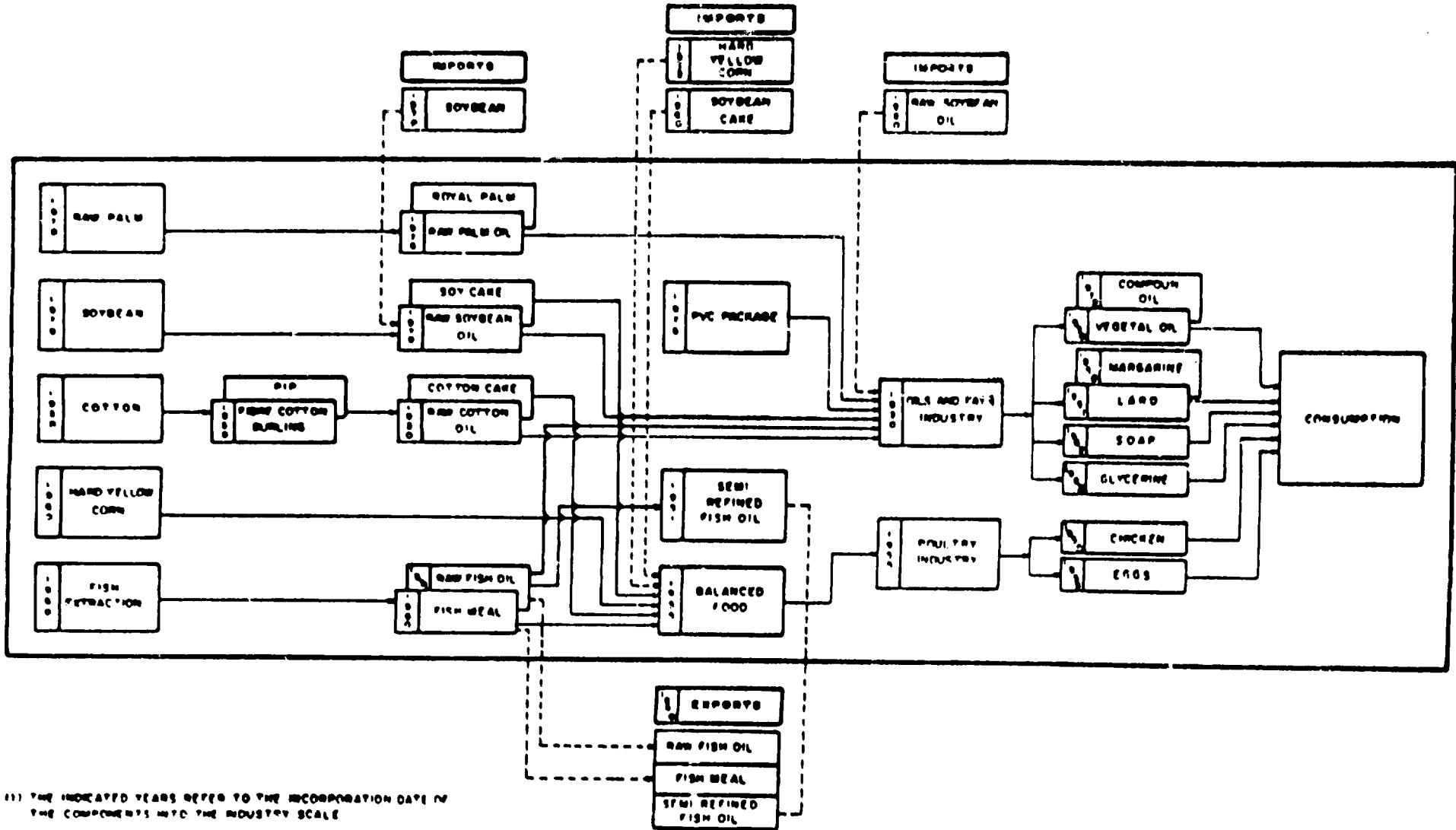


FIGURE Nº 2

BASE SCHEME BY PRODUCTIVE COMPONENTS OF THE PRODUCTION AND CONSUMPTION SYSTEM OF OILS AND FATS PERU (1)



(1) THE INDICATED YEARS REFER TO THE INCORPORATION DATE IN THE COMPONENTS INTO THE INDUSTRY SCALE



Milk and Milk Products

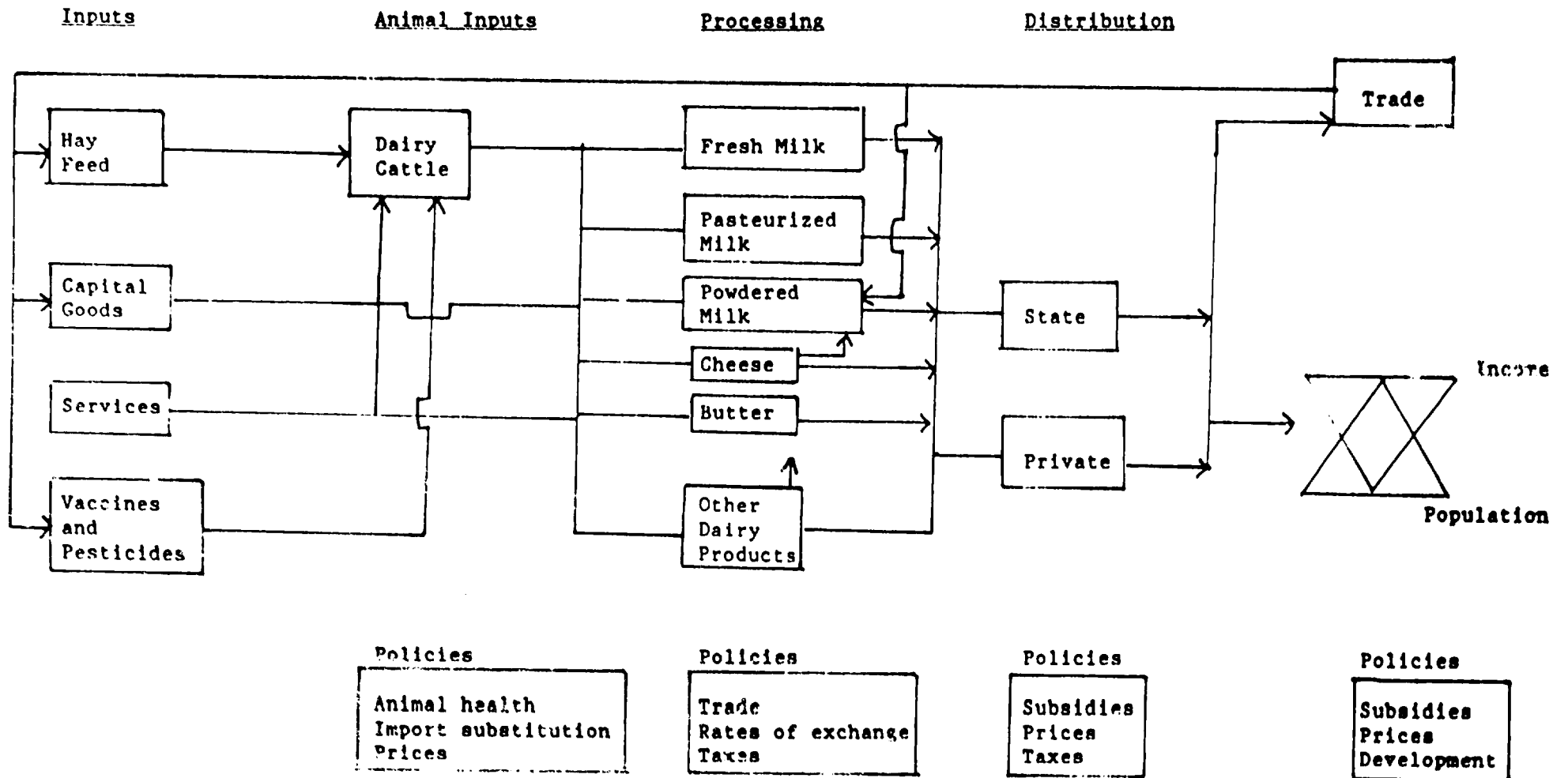




Figure 5

### BASE SCHEME OF THE STOCK OF THE CONSUMPTION AND PRODUCTION SYSTEM OF OILS AND FATS ( M T THOUSANDS US \$ )

FC FIXED CAPITAL  
WC WORKING CAPITAL  
IC INSTALLED CAPACITY  
FF FOREIGN FINANCING

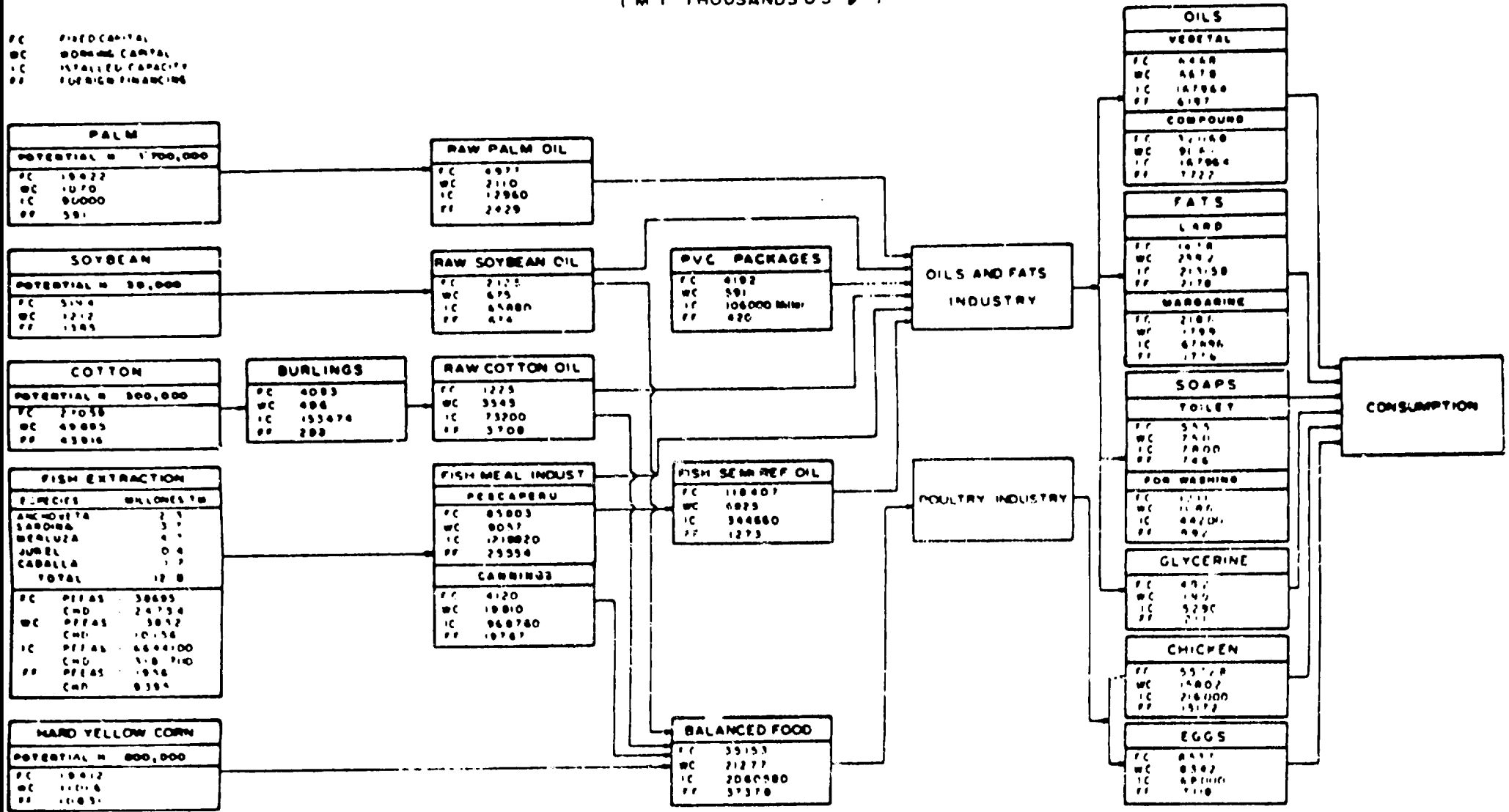


FIGURE N° 3  
**BASE SCHEME OF THE INDEXES OF THE PRODUCTION AND CONSUMPTION SYSTEM OF OILS AND FATS**  
 YEAR 1984

**READING**

EP = ECONOMIC PROFITABILITY  $\left( \frac{\text{Profits \& Interests}}{\text{Total Capital}} \right)$

UC = USED CAPACITY

Y = YIELD

AV = APPROPRIATE VALUE

BVP = GROSS VALUE OF PRODUCTION

PC = FIXED COST

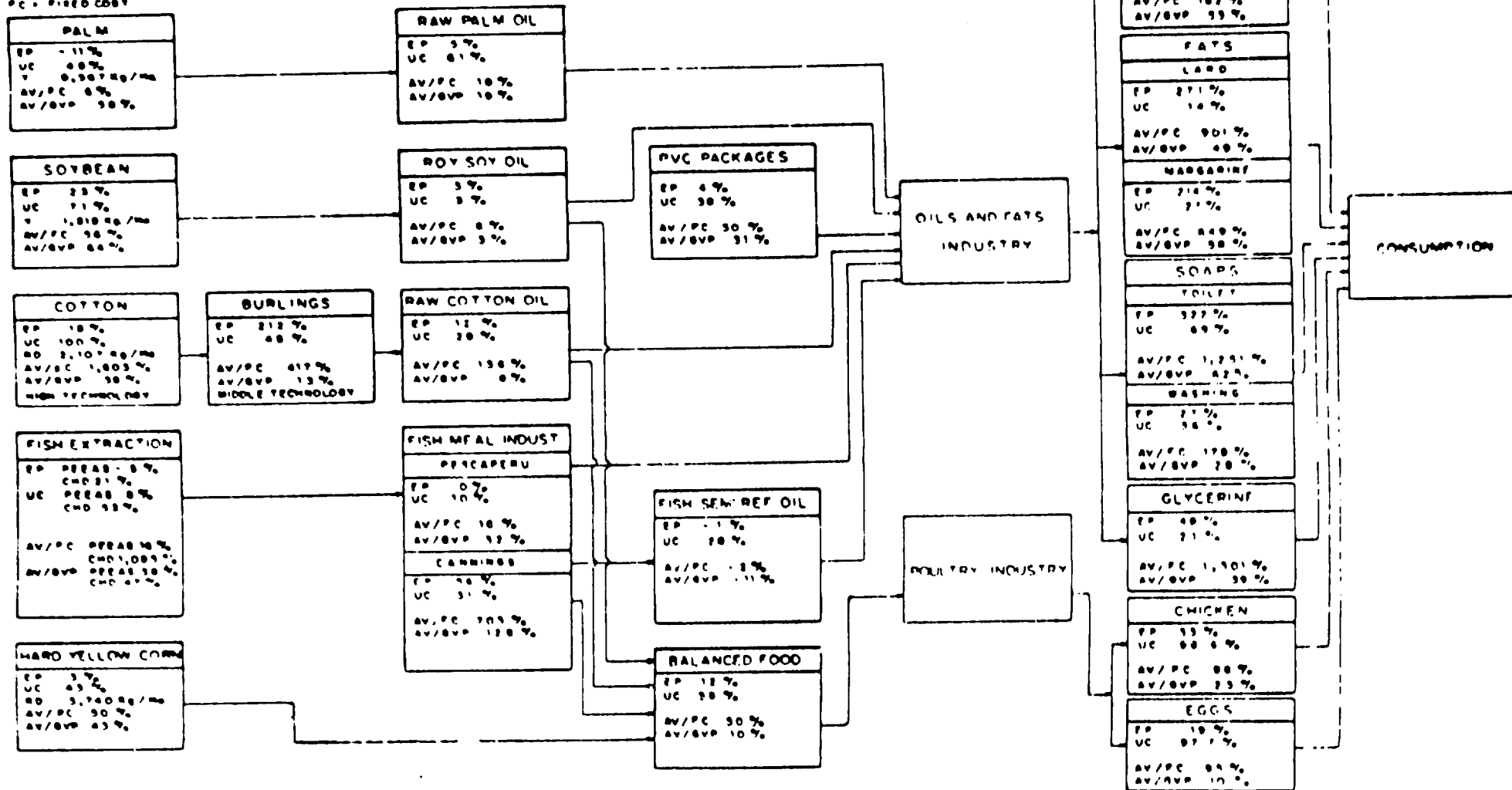


FIGURE NO 7

BASE SCHEME OF THE AGENTS OF THE PRODUCTION AND CONSUMPTION SYSTEM OF OILS AND FATS

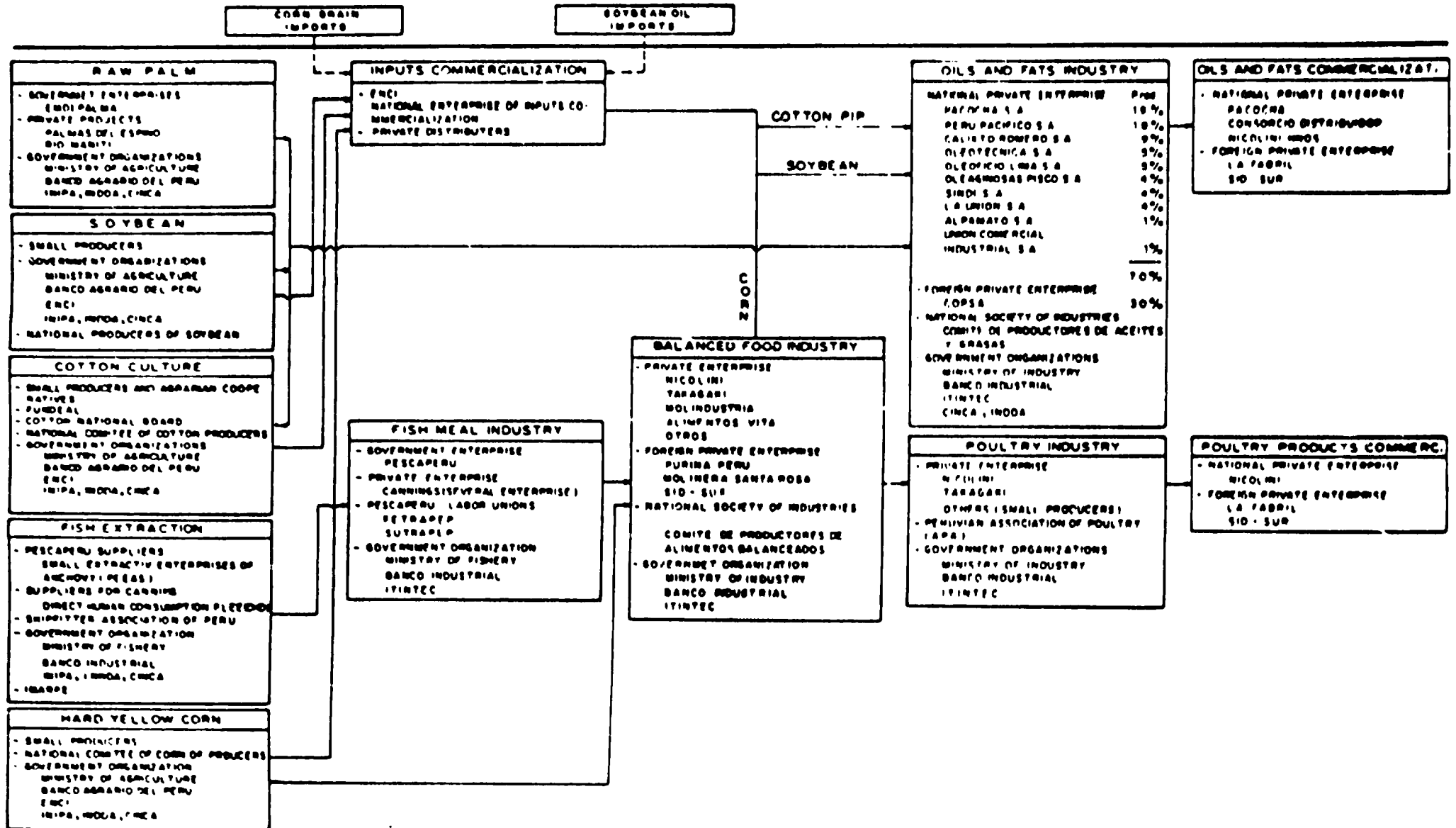
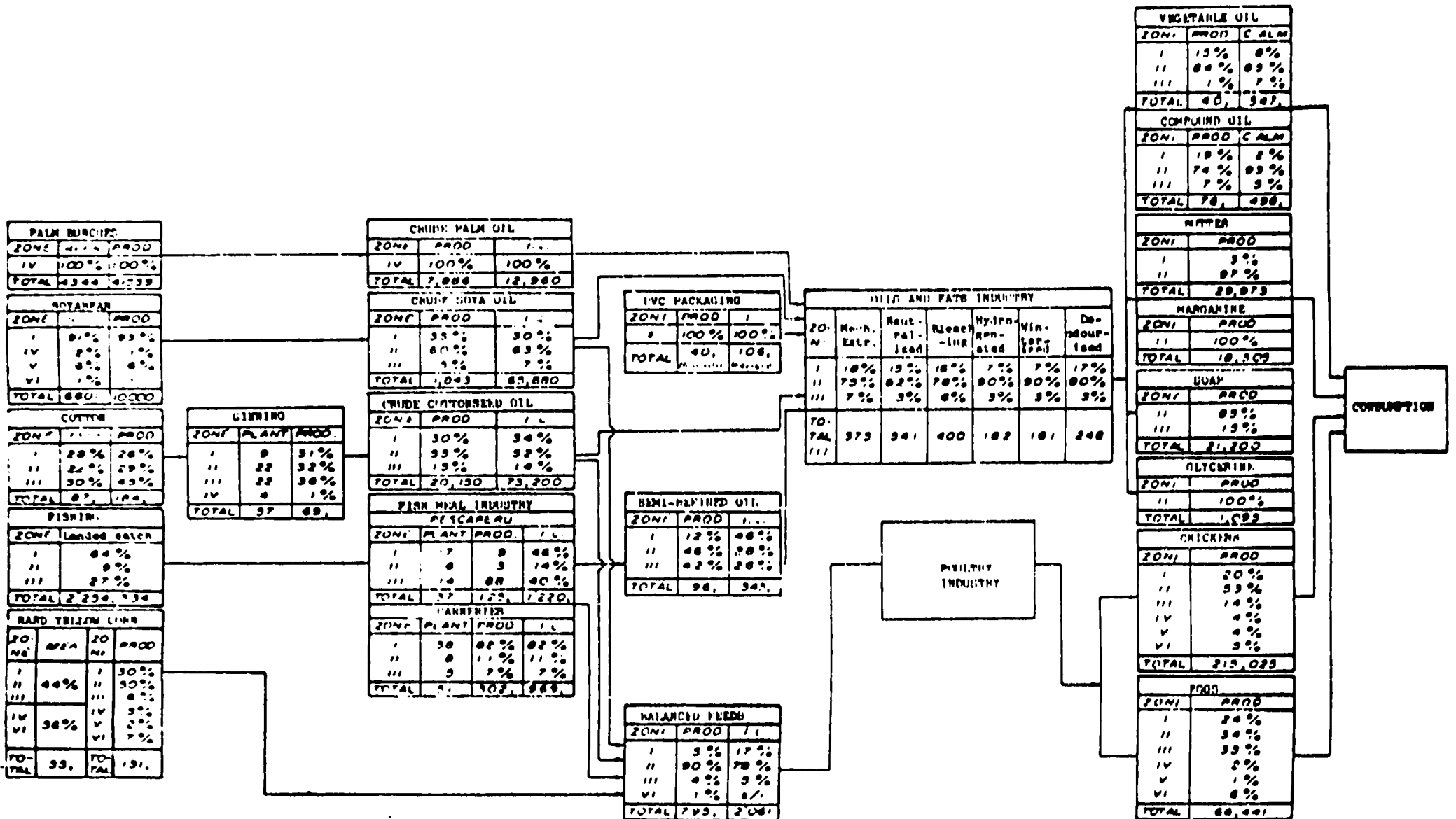
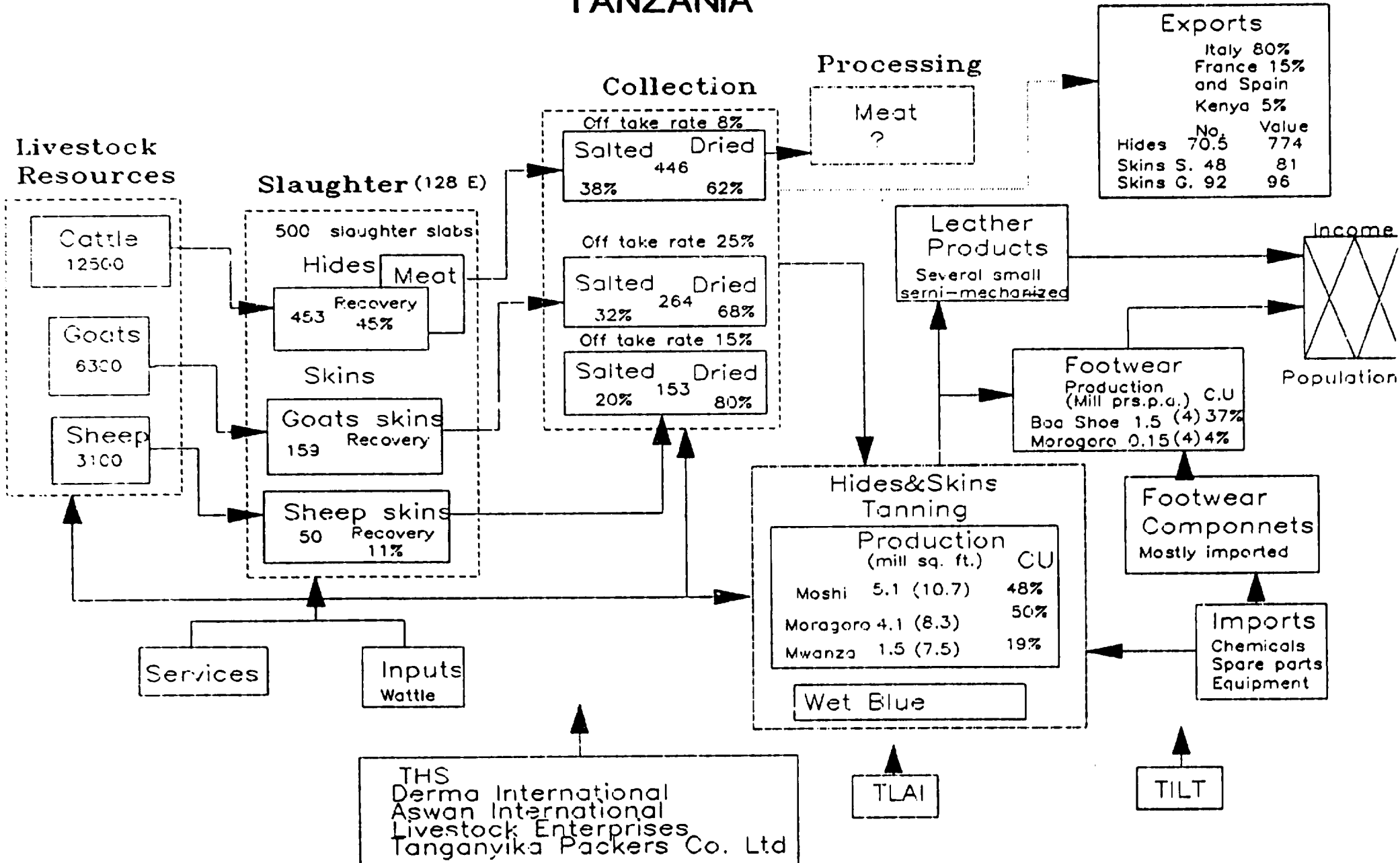


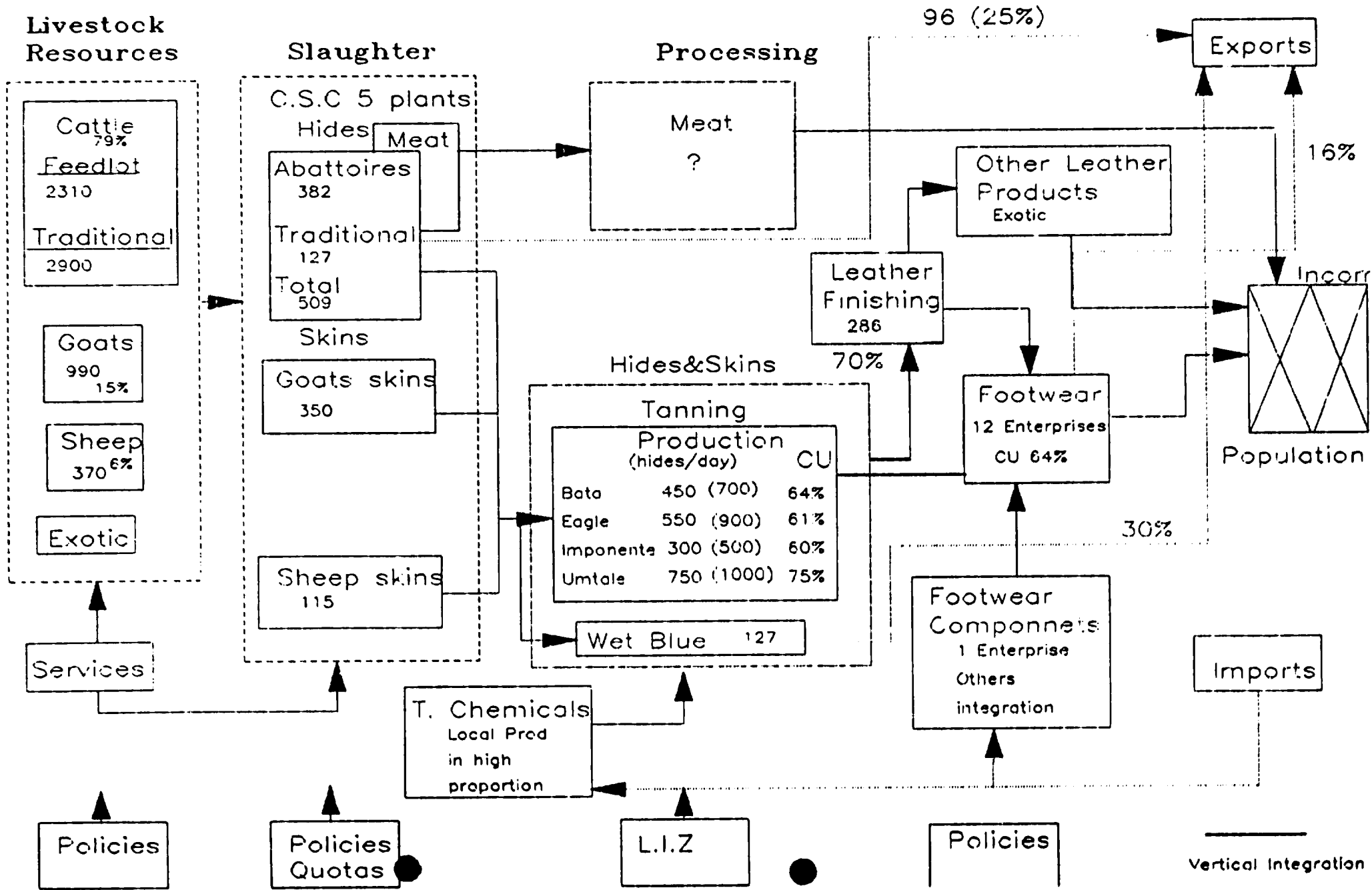
Figure 8 Regional base scheme of the production and consumption system of oils and fats - Per



# TANZANIA

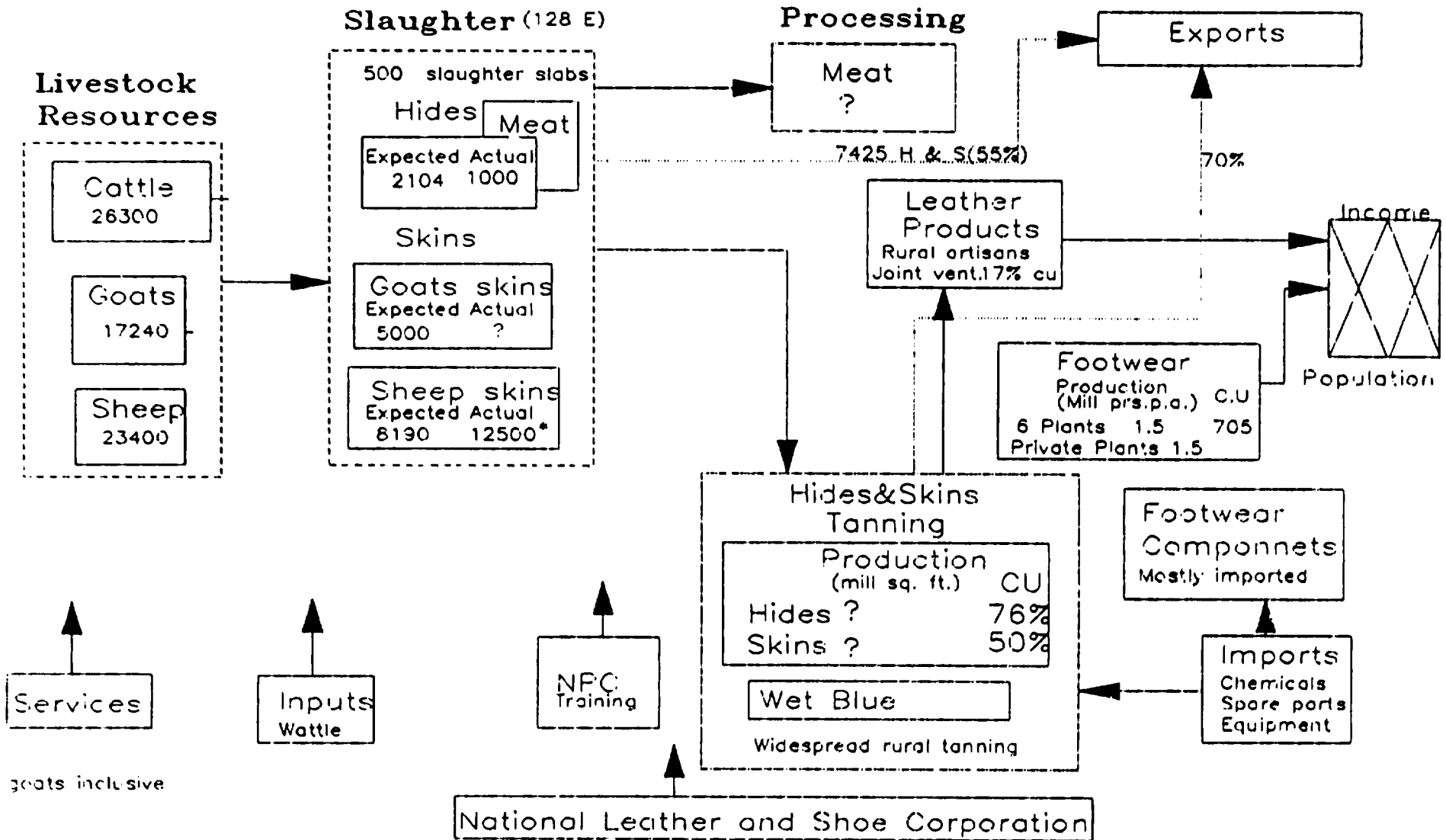


# ZIMBABWE





# ETHIOPIA



\* goats inclusive

4. PRESENTATION OF THE REHABILITATION OF THE INDUSTRIAL CAPACITY

## REHABILITATION

Underutilized industrial production capacities represent a major problem in Africa.

Rehabilitation can help restore economic growth in Africa by improving industrial capacity utilization and productivity. (CC.2/17)

UNIDO'S POSITION (GC.2/17)

Rehabilitation and productivity improvement should be tackled simultaneously:

- at the sectoral and sub-sectoral levels
- in core industrial sub-sectors
- according to national, subregional or regional priorities.

Rehabilitation should not only focus primarily on technical and engineering dimensions.

Rehabilitation should be viewed in a comprehensive framework.

Technology

Equipment

Management

Finance

Human skills

Policy environment

(IDB.3/16)

"UNIDO's role would begin with a techno-economic diagnosis at the individual factory level" (GC.2/17).

We believe that there is a "missing link", that an analysis of the system in which the factory operates should precede the diagnosis of the factory.

Further analysis of UNIDO's position indicates that

implicit in UNIDO's call for a

- sectoral approach to rehabilitation

and

- a comprehensive framework

is the notion of a systems approach.

Systems Approach

Within the systems approach any industrial activity can

be viewed as a system comprising:

- a set of: production components

marketing components

consumption components.

These components are linked in an interdependent manner

and are influenced by prevailing Government policies.



A "system" can refer to an entire industrial sector or one or more interrelated sub-sectors.

## Base Diagram

A "base diagram" is a schematic representation of a system.

It shows: the components

the linkages between them

the policies that influence their behaviour.

It defines the boundaries of the system.

Technical assistance programmes and investment projects should promote the harmonious balanced development of a system (Integrated Development).

Thus the system diagnosis required for the design of rehabilitation activities should properly identify:

- system components
- their linkages
- the prevailing policies
- government objectives.

The system diagnosis requires:

- the assessment of the relative importance of each component in the light of government objectives;
- the identification of weaknesses in the different components and their linkages that hinder the attainment of government objectives.

The use of descriptive base diagrams will facilitate the identification of problems and the design of most appropriate solutions.

Appropriate solutions should lead to an integrated rehabilitation programme that consists of technical assistance and investment projects at the factory or corporate level that meet the following criteria:

- would produce maximum positive impact on the development of the system;
- would contribute to increasing the level of productivity and capacity utilization throughout the system;
- would be compatible with other related ongoing projects and contribute to their successful implementation;
- and finally, would contribute to the rehabilitation of the system within an integrated approach.

The concept of integrated rehabilitation could be applicable at the country or at the subregional level, depending on the nature of the system.

Examples:

- Oils and fats system in the SADCC countries
- Fisheries industrial systems in West African countries
- Cereal systems in the SADCC countries.

- (a) Identify linkages between components and agents;
- (b) Identify most critical bottlenecks;
- (c) Establish priorities for technical assistance and investment projects in each component and assess their complementarity;
- (d) Choose the most appropriate location for each technical assistance activity at the country level;
- (e) Identify the most appropriate policy measures.

Identify complementarity of actions among activities and consolidate an integrated rehabilitation programme.



An Integrated Rehabilitation Programme would then consist of investment and technical assistance projects that simultaneously influence several components of the system where bottlenecks were identified during the analysis of the system.

THE APPLICATION OF A PROGRAMME APPROACH TO TECHNICAL ASSISTANCE  
PROJECT IDENTIFICATION AND FORMULATION

prepared by the  
Project Appraisal Section  
on the basis of the work undertaken for its workshops  
and that of Sectoral Studies and the Core Group on the  
Programme Approach to Project Identification and Formulation

October 1988

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The Application of a Programme Approach to Technical Assistance  
Project Identification and Formulation

Summary

The programme approach\* was developed at UNIDC in response to the widely perceived need for increased impact of technical assistance projects on the industrial development of developing countries. The application of the programme approach to project design makes it possible to produce an integrated development programme that comprises a package of technical assistance and investment projects and policy advice to promote the harmonious balanced development of all components of an industrial system. The programme approach can be applied at three different levels, as described below.

The grouping of countries (preparation of sectoral typologies) according to patterns of development of a given industrial system and the preparation of indicative programmes for groups of countries are complementary tools and options for the design of integrated development programmes. Ideally, UNIDO should develop typologies covering all the most important industrial systems in developing countries, in order to provide the basis for preparing indicative programmes and country sectoral programmes.

Indicative programmes represent a cost-effective programming method. By applying the programme approach to a group of countries with identified patterns of development (through sectoral typologies), it is possible to prepare an analysis of the industrial subsector, strategies for its development, technical assistance and investment requirements and policy advice that can form the basis for development programmes for all the countries in the group. Indicative programmes can be used by Governments, development assistance organizations, bilateral aid donors and potential investors. A further output of this work is a UNIDO position paper on the sector that defines priority areas for UNIDO activities.

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\*The underlined expressions are defined in the text.

Country sectoral programmes can be prepared independently of the foregoing programming activities, or they can be undertaken as a follow-up to a sectoral typology and/or an indicative programming exercise. They can be prepared at two different levels. An integrated sectoral programme provides a package of related technical assistance projects, as well as investment needs and policy recommendations for the development of an industrial system in one country.

If the time and resources are available and if the envisaged investment in the sector will be large, a quantitative and integrated sectoral programme has the advantage of permitting precise quantitative simulations of all proposed projects and policy changes to determine the optimal package of measures for achieving a country's objectives in the development of an industrial system. Furthermore, there are the benefits that can be derived from the transfer of the method used to the country, where it can continue to be used as a tool for monitoring and adjusting the implementation of a development programme and negotiating with domestic and foreign investors, as well as for planning the development of other sectors.

While the programme approach will not eliminate the need for individual technical assistance projects, it is hoped that it will complement the traditional approach to project identification and design and succeed in increasing the positive impact of technical assistance on industrial development.

## Introduction

Technical assistance projects for industry are generally designed to promote the development of a given industrial sector through the elimination of bottlenecks and constraints affecting the sector.\*

It has been realized by multilateral and bilateral development assistance organizations that despite the provision of large amounts of technical assistance, the expected impact on the industrial development of developing countries has not always been achieved. A frequent point of criticism from all parties concerned has been that many technical assistance and investment projects in developing countries have established R&D and other types of institutions, pilot plants and even industrial-scale plants that cease to operate with the end of the project or continue to operate at very low rates of capacity utilization and efficiency. Furthermore, technical changes resulting from technical assistance projects in a country have often not been successfully introduced and disseminated within the country, in spite of their being both technically feasible and economically desirable.

The reasons for this disappointing performance are, amongst others, the lack of adequate upstream and downstream linkages of the projects within the industrial sector and with other sectors, as well as the lack of co-ordination with other development activities. A further problem is that it is often

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\*Technical assistance may involve the introduction of new technologies and/or additional technical capabilities, the expansion of industrial capacity, industrial training, the creation and strengthening of institutions, etc.

difficult for Governments to identify accurately the "real" technical assistance needs within a sector and to establish priorities for action. "Perceived" needs are often not the "real" ones. Other problems include the lack of co-ordination between national institutions and the lack of co-operation and even competition between various development assistance organizations.

In many cases, the failure of individual projects to produce the expected impact illustrates that technical soundness by itself is not a sufficient condition to ensure a positive impact on a country's industrialization efforts. For this purpose, a project should meet several conditions: it should respond to the real needs and priorities of the country within that sector. should have adequate linkages with other components of the sector, should be self-sustaining after the end of the technical assistance project, should be properly located within the institutional framework of the sector, and should be compatible with other related ongoing projects (this, as will be seen below, leads to the concept of programmes). Furthermore, appropriate government policies are necessary for the project objectives to be fully achieved.

#### System Approach

For a project to be able to fulfill the above conditions, the structure and operation of the industrial system in which the technical assistance is provided must be clearly understood. The application of the system approach provides a framework for understanding the structure of the sector before undertaking project design activities. Within the system approach, any industrial activity can be viewed as a system comprising a set of production, distribution and consumption components that are linked in an interdependent

manner and that are influenced in their functioning by a set of policies. An industrial system can comprise one entire sector or several interlinked sectors/subsectors. Figure 1 shows a base diagram, which is the graphic representation of an industrial system, showing its components, the linkages between them and some of the policies that affect the various components and the system as a whole.

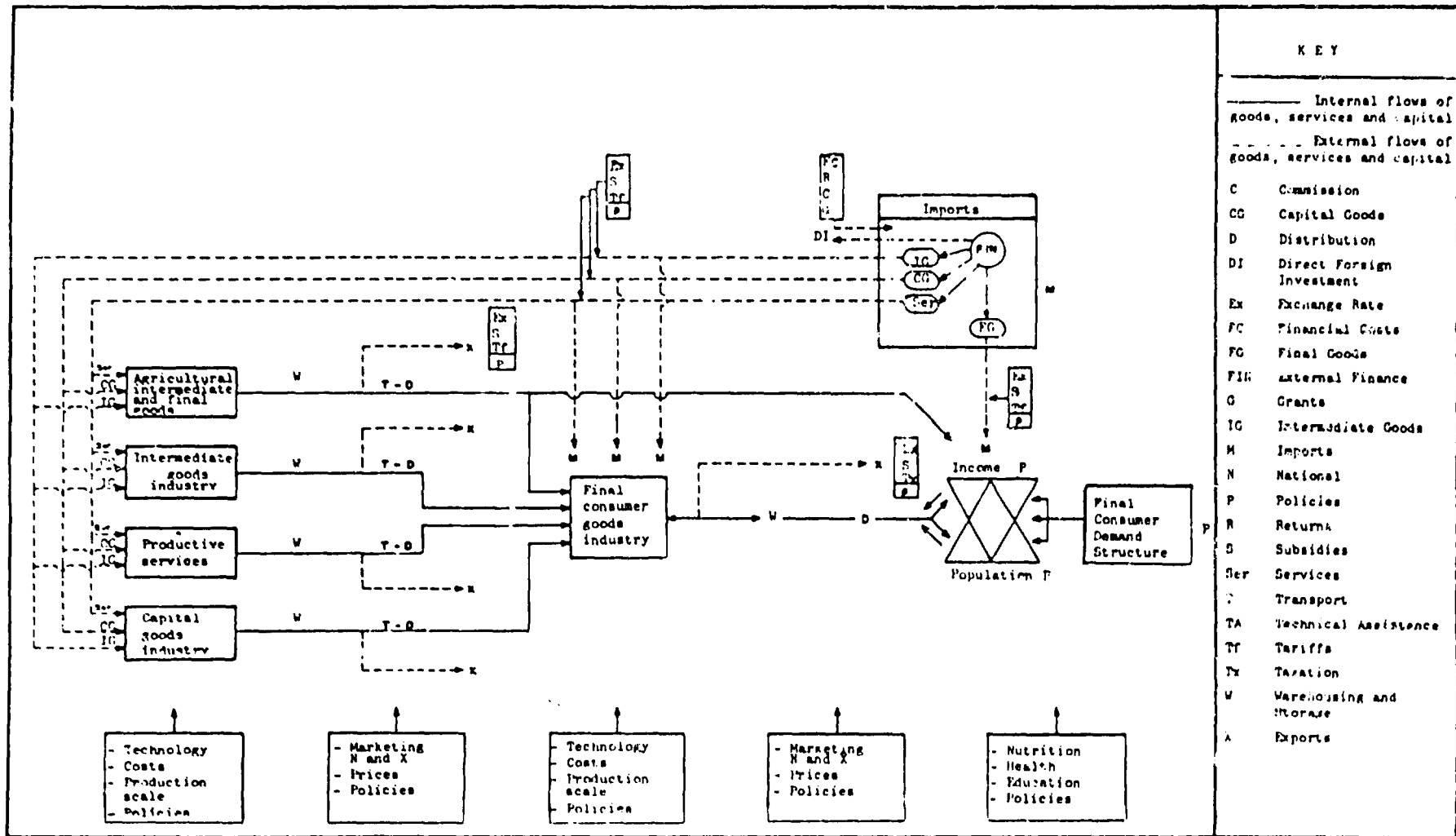
The system approach provides a broader view of an industrial sector than traditional approaches because it makes explicit the complex interdependence of the economic and social components within and outside the system and helps to provide the conceptual framework to analyze and evaluate these interrelationships. The application of the approach leads to the promotion of the integrated development of industrial systems, which is understood as the harmonious balanced development of an entire system, including all its components. Specialized issues such as the integration of women, energy and environmental considerations can also be addressed within the systems approach.

The final result of the application of this method is a programme for the integrated development of an industrial system during a given time period. A programme comprises a package of interrelated technical assistance and investment projects and specific policy recommendations. The programme addresses simultaneously all of the components of a system in which bottlenecks and constraints that hinder the development of the system have been identified, so that the technical assistance and investment projects in the programme have a greater potential for producing a positive impact on the development of the system. The system approach is thus the basis for the programme approach to promoting industrial development. In addition, this approach can also be a useful tool for developing integrated human resource development programmes needed to support and sustain the structural and technological changes required in the development of the system.

The technical assistance projects in such packages may be financed within the IPF, jointly with other institutions or bilateral donors, by special-purpose contributions to IDF or through other sources. The method can also be used to programme the use of special pledges or tied contributions in order to achieve the maximum impact in using resources.



Figure 1. Production and consumption system: base diagram



Such programmes can be useful to developing countries, to development assistance organizations and to donor countries. They can provide developing countries with a sound basis for promoting and following up the integrated development of their industrial sectors. They can also facilitate industrial co-operation between developing and developed countries by permitting a better identification of investment and joint venture possibilities. Programmes can also facilitate the efforts of development assistance organizations to design, appraise, approve, implement and evaluate technical assistance projects and programmes in an integrated manner, rather than only providing isolated unrelated technical assistance projects. Moreover, the assessment of the status of an industrial system made following the system approach can provide the necessary baseline data against which the impact of programmes and projects can be evaluated.

#### The Method\*

The system approach can be applied to the analysis of industrial systems at three different levels: for a large number of countries (to produce a typology), for a group of countries (to produce indicative programmes), and for a single country. These can be considered as successive or independent stages in a programming exercise. The three levels can be described briefly as follows:

- (1) Developing a typology of developing countries to identify groups of countries with homogeneous development patterns in the selected sector. This is done through a combination of statistical analysis of sectoral data and the use of the knowledge and insights of experts on the sector, including UNIDO's sectoral experts. The picture thus obtained of each group of countries already provides a preliminary basis for the activities undertaken by AREA officers in project identification.

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\*MEPS is a tool for the application of the system approach. This method was originally developed by the Junta del Acuerdo de Cartagena (JUNAC) and further expanded in cooperation with UNIDO. MEPS is an acronym for the original Spanish name of the method, Metodología de Evaluación, Programación y Gestión de Sistemas de Producción y Consumo, or translated into English, methodology for the assessment, programming and management of production and consumption systems.

- (2) Drawing up indicative industrial development programmes for groups of countries. Such programmes can serve as guidelines for AREA and DIO officers in UNDP-related country programming or as a tool for evaluating the viability of government requests or other project proposals and for improving them with respect to their impact on the industrial system. Within the indicative programmes it will usually be possible to formulate project proposals or packages of proposals as well as project concepts and ideas, but the quantitative simulation of the effects of proposed projects will be limited.
  
- (3) Designing country sectoral programmes, either as a follow-up to a typology and/or an indicative programme, or independently of these. Country sectoral programmes can be prepared at two different levels: integrated sectoral programmes or quantitative and integrated sectoral programmes. The former is a package of technical assistance projects and investment and policy requirements, while the latter is a package of technical assistance and investment projects that have been quantitatively assessed as well as specific policy recommendations for the development of the system. The latter involves the use of a computer model to simulate the impact of alternative programme options on all of the key components of the industrial system which comprises the sector.

The use of the programme approach thus offers three related ways of accelerating programming work and rendering it more efficient than a project-by-project approach. Furthermore, each programming application will help to facilitate subsequent applications, thus making them less expensive. The three levels at which the programme approach can be applied are described in greater detail below, together with examples of their application.

#### Sectoral Typologies of Countries

When applied to a large number of countries, the system approach permits the identification of similarities and differences in the patterns of development of a specific industrial sector, so that countries can be grouped into a typology according to patterns of sectoral development. This method of grouping countries represents a great improvement over the usual methods of grouping countries according to geographical, political or other criteria for industrial programming purposes, as it considers only those factors related

directly to the development of a particular industry, i.e. the production and consumption components, the institutional infrastructure and policy framework.

The method for producing a typology is carried out in four steps:

- (a) A global analysis is made of a given industrial sector covering its structure, trends and alternative development scenarios. This analysis permits the disaggregation of the sector into its component subsystems and linkages to the rest of the economy, taking into consideration economic, technical, social and policy factors affecting production and consumption.
- (b) Characteristics are selected that describe the components and variables are chosen to show the present and potential status of each component. Data is collected on these variables in order to carry out statistical analysis using different clustering techniques.
- (c) Based on the clusters identified, countries are grouped according to similarities of development of the sector. Each country group can be seen to have a distinct pattern of development. For each development pattern identified, a country case study may be undertaken. These studies provide in-depth and country-specific details, illustrate more closely the development patterns and contribute to the assessment of positive factors and constraints for each group.
- (d) Comprehensive pattern-specific development strategies covering the areas of investment, technical assistance, policies and regional and international co-operation are proposed, together with corresponding suggestions for action.

UNIDO has produced a typology of countries for the fisheries industrial system (FIS) of 64 countries following this method.\* The main results of the study consist of an assessment of the fisheries systems of 64 developing countries, leading to the identification of 10 distinct patterns of development prevailing in the fisheries systems of those countries and the classification of each country into one of the groups. Figure 2 illustrates the 10 patterns of development that were identified and Table 1 contains a summary description of those development patterns.\*\*

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\*The results of this work are described in a report entitled: "Industrial Development Strategies for Fishery Systems in Developing Countries", Sectoral Studies Series No.32, PPD.30, 2 April 1987, UNIDO, Vienna.

\*\* Each group's component score in this figure is the arithmetic mean of the countries within it. Each component was scaled so that across the 64-country sample each has a variance of one and a mean of zero. Deviations from the mean greater than +1 or less than -1 are more than one standard deviation away from the average of the 64 countries, that is, they are exceptional.

Figure 2. Patterns of FIS development of country groups

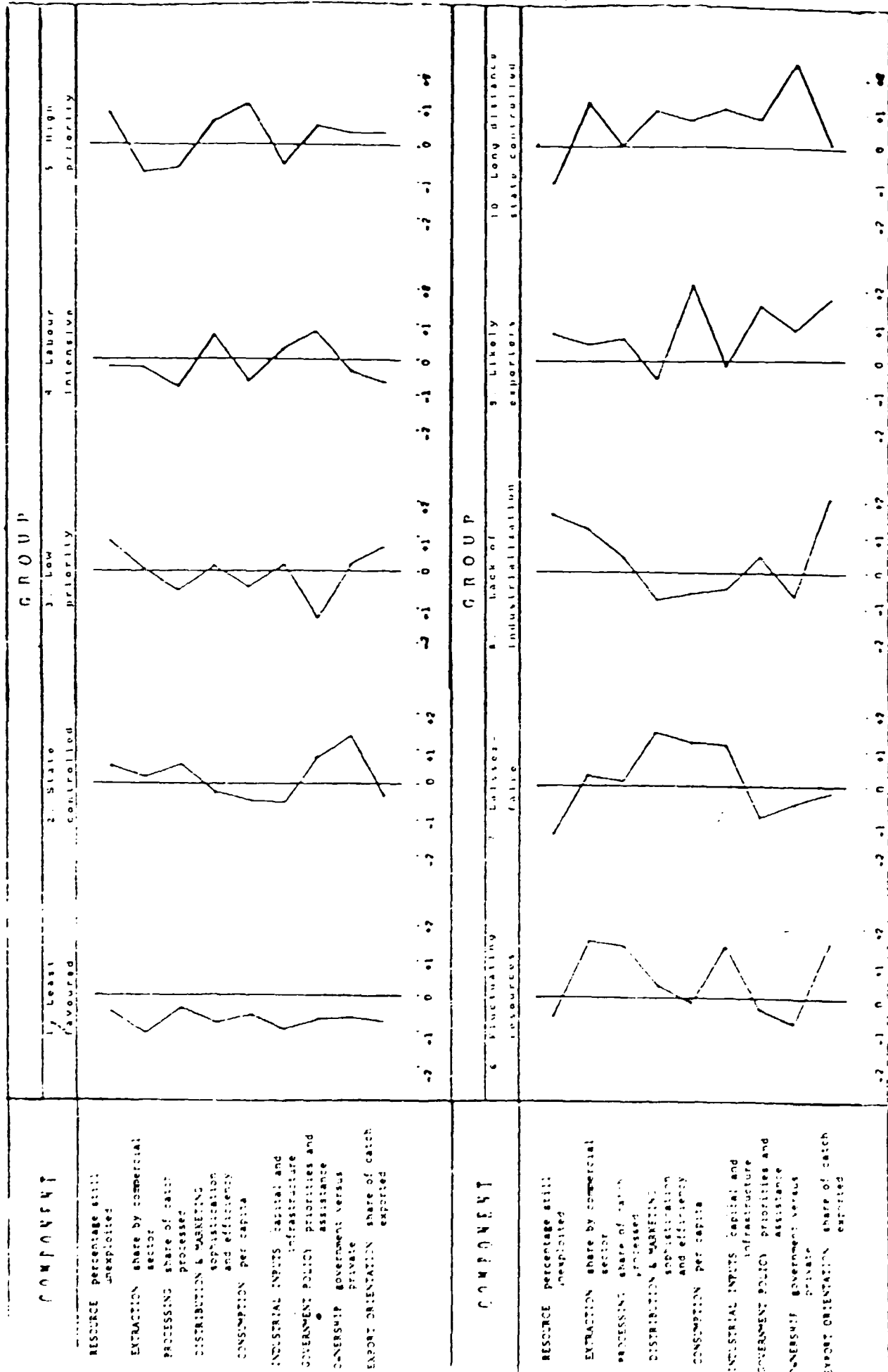


Table 1 Summary of development patterns identified

<u>Group</u>	<u>Country name</u>	<u>Continent</u>	<u>Description</u>
1	Ghana	Africa	<u>The least favoured countries.</u> Generally poor or under-developed countries needing fish protein but lacking in skills, inputs or infrastructure to maximize resource use.
	Kenya	Africa	
	Madagascar	Africa	
	Malawi	Africa	
	Mali	Africa	
	Nigeria	Africa	
	Sudan	Africa	
	Uganda	Africa	
	Untd. Rp. Cameroon	Africa	
	Untd. Rp. Tanzania	Africa	
	Zaire	Africa	
	Zambia	Africa	
	Bangladesh	Asia	
Turkey	Asia		
2.	Angola	Africa	<u>Largely state controlled fisheries</u> The government is involved in these countries' fisheries to a large degree. All of them have good potential for growth, both marine and freshwater.
	Morocco	Africa	
	Mozambique	Africa	
	Burma	Asia	
	China	Asia	
	Dm. Kampuchea	Asia	
	Viet Nam	Asia	
	Yemen, Dem. Rp.	Asia	
	Mexico	Latin America	
3.	Gabon	Africa	<u>Low priority fisheries.</u> Fisheries are not a high priority in these countries due to resource limitations national wealth or other factors.
	Sierra Leone	Africa	
	Iran	Asia	
	Iraq	Asia	
	Saudi Arabia	Asia	
	Brazil	Latin America	
	Colombia	Latin America	
	Venezuela	Latin America	
4.	Algeria	Africa	<u>Labour-intensive fisheries.</u> These countries are linked by having large artisanal fishery sectors and big domestic markets. Most of them have well organized fisheries departments and all but two have flourishing inland or freshwater fisheries.
	Egypt	Africa	
	Tunisia	Africa	
	India	Asia	
	Indonesia	Asia	
	Pakistan	Asia	
	Sri Lanka	Asia	

Table 1. (continued)

<u>Group</u>	<u>Country Name</u>	<u>Continent</u>	<u>Description</u>
5.	Congo	Africa	<u>Small states with growth potential.</u> These small population countries all have relatively good fishery potential, particularly for export. Their governments have made fisheries a high priority sector.
	Oman	Asia	
	Untd. Arab Emirates	Asia	
	Guyana	Latin America	
	Fiji	Oceania	
Kiribati	Oceania		
6.	Namibia	Africa	<u>Large but fluctuating resources and limited local demand for fish.</u> These countries have large fish meal industries or export oriented processing plants. Although their marine resources are substantial, they suffer from big natural fluctuations.
	Argentina	Latin America	
	Chile	Latin America	
	Ecuador	Latin America	
	Panama (Ex. CZ)	Latin America	
	Peru	Latin America	
Uruguay	Latin America		
7.	Côte d'Ivoire	Africa	<u>Laissez-faire fisheries.</u> Commercial and private interests predominate in this group of countries which also have good domestic markets and labour intensive fisheries. They all have high per capita consumption of fish.
	Area of Hong Kong	Asia	
	Korea, Republic	Asia	
	Malaysia	Asia	
	Philippines	Asia	
Thailand	Asia		
8.	Mauritania	Africa	<u>Lack of industrialization.</u> Good fishery potential but with serious lack of skills and inputs and very limited local market.
	Somalia	Africa	
9.	Senegal	Africa	<u>Likely exporters.</u> Similar to group 5 above these 3 states are well poised to develop the export potential of their fisheries. They all have good traditional fishery skills.
	Maldives	Asia	
	Solomon Islands	Oceania	
10.	Korea, Dem. P. Rp.	Asia	<u>Long distance, state controlled.</u> Strong government control but with somewhat better developed fisheries particularly in deep sea operations
	Cuba	Latin America	

On the basis of the patterns identified, comprehensive development strategies were designed for the 10 country groups. Table 2 illustrates this, showing the strategies applicable to countries in one of the 10 groups.

The analysis of the proposed development strategies and the difficulties hindering their successful implementation led to the identification of the pattern-specific actions required for the development of the FIS for each group of countries. Table 3 summarizes the actions recommended for the 10 groups. As can be seen from the table, these actions can provide the initial basis for further analysis leading to the design of development programmes for each group that are integrated, comprehensive and pattern-specific.

As the FIS study illustrates, such typologies permit the creation and presentation of development strategies which are internally consistent and are tailored to suit each of the current types of development patterns observed at one point in time.

The results of a typology are intended to benefit several types of users:

- (a) Government planning offices and ministries in developing countries can directly use the outputs of the study as inputs for further analysis and programming of the sector and for setting priorities for actions in an integrated manner.
- (b) The typology provides the possibility for countries to share and benefit from other countries' development experiences, and may thus provide a basis for promoting co-operation among developing countries.
- (c) It will also be of use to international technical assistance and aid-giving financial organizations in designing programmes for individual countries.

Based on the results of the FIS study, the programme approach was also applied on an experimental pilot basis to the development of policies and measures to integrate women into all components of the fisheries industrial system in three countries (Senegal, Indonesia, Mexico).\*

Indicative Programmes

The system approach can be applied to the further analysis and programming of the development of a given industrial system in a group of countries that have been identified as having specific patterns of

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\*The results of this work are described in a report entitled "The Integration of Women in the Fisheries Industrial System", PPD.34, 15 May 1987, UNIDO, Vienna.



Table 2. Group 4: Labour-intensive fisheries  
(Algeria, Egypt, India, Indonesia, Pakistan, Sri Lanka, Tunisia)

Strategies	Special problems	Relevant Constraints		Appropriate actions	Examples of ongoing actions
		Cons.	Other		
Increase fish production to maintain food security and employment.	Some major fishing grounds located very far from markets and population centres.	7	1	Development of good quality processing and curing in rural areas, improvement of fish transport and establishment of regular schedules for fish collection boats or trucks.	Regional fisheries development programmes including harbours projects, provision of ice plants, cold stores and fish transport vessels, with finance from ADB. (Sri Lanka, Indonesia)
		13	9		
		15	3		
		16			
Improve marketing and distribution to raise consumption in inland areas.	Capture and processing technology inefficient or energy expensive in some areas.	3	6	Increased use of artisanal fishermen and intermediate technology vessels in off-shore fisheries. Energy conservation and more efficient energy use in fish plants.	Fleet operation with artisanal tuna fishermen working around a motherhip from a large domestic enterprise. (Indonesia) Use of natural energy and fuels such as biogas in fisheries. (India)
		4			
		5			
Decrease waste by reducing spoilage and by utilizing by-catch from shrimp trawlers.	Fishermen and fish plant operators lack knowledge of modern gear and techniques and of the operation, maintenance and repair of engines and machinery	24		Training of personnel at all levels but with strong emphasis on practical and technical aspects.	Establishment of training centres, academies, colleges and university departments for fisheries. Fisheries research projects on waste fish utilization. (Indonesia)
Increase exports by better quality processing and by harvesting offshore stocks of tuna and shrimp.	Appropriate technology for utilization of by-catch not yet ascertained.		6	Further research and pilot projects.	
Expand aquaculture both for food fish and for export species.	Fish canning plants lack continuity of supply.	27		Better marketing and distribution, more freezing and cold store facilities at distant ports. Purchase of frozen fish from abroad to maintain supplies in off seasons.	Joint venture agreements with foreign fleets and fish suppliers. (Egypt, Tunisia) Artisanal-private sector co-operation in capture and supply of fish. (Indonesia)
Develop support industries and general fisheries infrastructure	Artisanal fishermen lack capital and often operate at the mercy of markets and merchants.  Fish farmers have difficulty getting legal access to land and water. Fish culture is mostly integrated with small scale agriculture or animal husbandry	21	6	Establishment of co-operatives, small scale credit schemes and support by extension services.	Ministry of co-operatives, fisheries projects K.I.K.(small scale credit Indonesia) fisheries programmes. Fisheries extension service and co-operative establishment. (Indonesia)
			14		

Table 3. Group-specific actions

INVESTMENTS	GROUPS <sup>a/</sup>									
	1	2	3	4	5	6	7	8	9	10
<b>RESOURCE MANAGEMENT</b>										
- Survey					x			x	x	
- Monitoring		x	x	x		x			x	
- Policing						x				
- Aquaculture	x			x	x					x
- Conservation						x	x			
- Extension to non-EEZ waters										x
<b>EXTRACTION</b>										
- Ice plants	x				x		x			
- Design and construction of energy economical and appropriate vessels	x	x		x	x	x	x			
- Fish ponds	x									
- Conversion of vessels						x				
- Develop local fleet						x				x
- Fishing gear				x				x		
- Instrumentation				x		x	x			
<b>PROCESSING</b>										
- Energy economical plants & processes	x			x		x				
- Improved methods of fish curing		x		x			x			x
- By-catch utilization						x		x		
- Selective rehabilitation		x				x	x			
- Low cost packaging							x			
<b>DISTRIBUTION &amp; MARKETING</b>										
- Cold stores	x		x	x	x					
- Cold chain		x	x	x	x	x	x			
- Improved fish transport systems	x	x	x	x					x	x
- Rationalization		x	x				x			
<b>FISHERIES INFRASTRUCTURE</b>										
- Harbours	x	x			x	x	x	x		
- Boatyards	x									
- Marine engineering workshops	x									
- Fish markets	x	x		x			x	x		
- Upgrading						x				
<b>TRADE</b>										
- Domestic promotion				x		x		x	x	
- Export promotion						x			x	

a/ Groups:

1	2	3	4	5	6	7	8	9	10
least favoured	state controlled	low priority	labour intensive	high priority	fluctuating resources	laissez faire	lack of industrialization	likely exporters	long distance state controlled

Table 3. (continued)

SUPPORT ACTIONS AND MECHANISMS	GROUPS <sup>a/</sup>									
	1	2	3	4	5	6	7	8	9	10
<b>GOVERNMENT POLICIES</b>										
- Integrated development policies	x	x	x	x	x	x	x	x	x	x
- Goals and priorities				x						
- Institutional & legal infrastructure			x	x			x		x	
- Standardization of imported machinery	x									
- Promotion of co-operatives			x	x						
<b>GENERAL INFRASTRUCTURE</b>										
- Roads and transport system	x				x					x
- Water supply	x	x		x						
<b>TRAINING AND EXTENSION</b>										
- Mechanics and technicians	x			x					x	x
- Quality control		x		x	x	x	x	x		x
- Extension services	x			x						
<b>Fishermen</b>										
- Basic	x	x	x	x	x			x	x	x
- Intermediate	x	x	x	x	x			x	x	x
- Advanced	x	x		x	x			x	x	x
<b>RESEARCH &amp; DEVELOPMENT</b>										
- Resource							x			
- Processing					x			x		
- Marketing				x	x					
- Climatically appropriate energy systems	x							x		x
<b>TECHNOLOGY</b>										
- Fuel/energy conservation systems	x									
- Transfer of intermediate technologies	x			x	x		x			x
- Transfer of advanced technologies		x	x							x
<b>CREDIT &amp; FINANCE</b>										
<b>Credit</b>										
- Industrial				x						x
- Small-scale			x	x	x	x	x			
<b>Monitoring investment</b>										
- Local govt/private		x					x			
- International		x					x			
<b>JOINT VENTURES</b>										
- Fleet		x			x			x	x	
- Processing			x		x			x		
- Marketing		x	x		x					x

a/ Groups:

1	2	3	4	5	6	7	8	9	10
least favoured	state controlled	low priority	labour intensive	high priority	fluctuating resources	laissez faire	lack of industrialization	likely exporters	long distance state controlled

development of that industry. The output of this analysis is a detailed description of the industrial system, including the bottlenecks and constraints identified, as well as an indicative programme, which comprises strategies and specific actions for technical assistance, investments and government policies to promote the development of the system.

Indicative programmes for groups of countries are prepared in four steps:

- (a) The selection, based on the results of the typology, of the geographic area where the industrial system is to be further studied because it has potential for development, owing to the existence of natural resources, high demand, possibilities for economic cooperation etc. Although countries in one geographical area will often have different sectoral development patterns, it is likely that some similarities will exist in terms of resources, costs of factors of production, consumption habits, etc., which can facilitate data collection and analysis, thus making the programming work more cost effective.
- (b) The identification of the sectoral development patterns that prevail in the countries of the area selected.
- (c) The selection of countries that are representative of each development pattern and conducting case studies of those countries. This involves desk work and a brief visit to the countries before preparing indicative development programmes based on the analysis made.
- (d) The preparation of programmes for other countries in the group through desk work complemented by extrapolations based on the information obtained in the previous steps (typology and case study).

UNIDO is presently conducting an indicative programming exercise on the fisheries industrial systems (FIS) of 8 West African countries belonging to four different patterns of development. Before carrying out the case studies on four countries (one from each group), operational kits were prepared to facilitate the use of the system approach, to standardize the kinds of information to be collected during the desk studies and field work and to ensure that data was included on all the components of the system.\*

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\*The kits for two countries (Ghana, Sierra Leone) included charts for data collection on the participation rates of women throughout the various components of the systems with a view to ensuring their consideration in ensuing project concepts and policy recommendations.

The outputs of the indicative programming exercise will consist of programmes for the development of the fisheries industrial system in eight West African countries on two different levels. For the four case study countries, Senegal, Côte d'Ivoire, Ghana and Sierra Leone, the main outputs of each case study were a preliminary version of a fisheries system development programme consisting of technical assistance project concepts and ideas, investment proposals and policy recommendations. The background and justification for the preliminary development programmes is to be provided by the following information obtained or refined during the case study: government objectives with respect to fisheries, including nutritional goals, distributional aspects, etc.; an assessment of the present status of fisheries in quantitative terms; an analysis of the requirements for the further development of the system, including an identification of bottlenecks and constraints, as well as rehabilitation, training, investment and assistance needs; an examination of existing pipeline fishery-related projects; and an analysis of prevailing policies and their effect on the system.

For the other countries being studied (Mali, Togo, Gambia and Mauritania) indicative programmes are being developed on the basis of the original typology together with information collected through desk studies and in the case studies. The outputs of this programming exercise for each country studied will consist of: refined description of the pattern of development, (with greater precision than in the typology), refined development strategies, and a more precise definition of required actions to overcome bottlenecks, including: project ideas, investment ideas, and plausible policies.

A further output of the indicative programming work will be a UNIDO position paper on the fisheries industrial system in the West African countries. This paper will describe the potential role of UNIDO, in co-operation with other international agencies and financial institutions, in the development of the fisheries industrial systems in these countries. It will indicate priorities, both in terms of groups of countries and of activities, for UNIDO's involvement in the sector, following the integrated approach to development.

Indicative development programmes for groups of countries provide the following:

- (a) Guidelines for UNIDO for country programming of a given industrial system;
- (b) Guidelines for developing countries for their own sector planning and for requesting more integrated and well coordinated technical assistance;
- (c) Guidelines for UNIDO for an assessment of the requests for technical assistance placed by developing countries;
- (d) Guidelines for UNIDO for the design of "modular technical assistance programmes" (integrated packages of projects for a group of countries);
- (e) The basis for developing a full UNIDO position paper on a given industrial system for a group of countries;
- (f) A tool for UNIDO to identify which other countries would be suitable for carrying out projects/programmes similar to those already implemented in countries belonging to the same development pattern;
- (g) A guide to promote economic and technical co-operation among developing countries (ECDC/TCDC) activities in a given industrial system;
- (h) A tool to promote the interest of donors and developing countries in the design of country-specific programmes.

Country Sectoral Programmes

The analysis and programming of an industrial sector in one country represents the third type of application of the system approach to sectoral programming. The work can be undertaken at two different levels of detail and effort depending on governments' requests. The first level would produce an integrated sectoral programme, and the second level would result in a quantitative and integrated programme for the development of the sector. The latter represents a full application of the method and would require 4 - 6 months of work, while the former would require a maximum period of work of about 2.5 months.

(i) Integrated Sectoral Programme

In this case, the programme approach would be applied within a preparatory assistance project\* that would have a maximum of duration of 2.5 months. The main output of the project would be package of related technical assistance projects that can include direct support, institution-building,

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\*APP has prepared a sample project document for this purpose, as well as detailed terms of reference for the field work to be carried out.

training, pre-feasibility and feasibility studies etc., as well as opportunities for investment projects and recommendations concerning necessary policies, or areas in which policies need to be elaborated. The difference to most preparatory assistance projects will be that instead of resulting in just one project, the output will be an integrated development programme aimed at simultaneously overcoming all the major bottlenecks and constraints hindering the development of an industrial system.

The preparatory assistance project following the programme approach will provide the basis for well-prepared project documents that answer all the most important questions about the system. It should also provide baseline data for the future evaluation of the impact of technical assistance on the development of the system. The work would involve both desk study and one visit to the country and could also involve the use of the MEPS model at an intermediate level of disaggregation to carry out some computer simulation of programme options.

(ii) Quantitative and Integrated Sectoral Programme

The main output is a quantitative programme for the integrated development of an industrial system, similar to the type described above, but with a greater level of precision, and containing not only all the required technical assistance projects but also the investments that would be needed (including estimates of their cost), and specific recommendations for appropriate policies. This is possible because of the level of disaggregation of the industrial system carried out, which permits the full use of the MEPS quantitative model on a micro-computer.\*

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\*This is an engineering and accounting model, comprising a large number of equations in which parameters related to production, inputs, investments, labour force, imports, etc. are estimated for each component and for the system as a whole, based on data collected in the country, taken from expert opinions and extracted from statistical sources and input into the model. This model is different from econometric projection models based on the analysis of historical time series as well as from optimization models which imply the aggregation of results in a single objective function. It is not a predictive model but an instrument to facilitate the comparison of hypotheses and alternate policies by successive approximations.

The full application of the MEPS method permits a large number of quantitative simulations of changes introduced in any one or more components of the system (for example, technical changes, price changes, changes in supply and demand, expanded and diversified production, different policy decisions etc.) and shows the effects of these changes on the various components and on the system as a whole, thus making it possible to select the most appropriate activities for a development programme. Furthermore, the MEPS application means that the potential impact of all technical assistance and investment projects under consideration by the Government (both those emanating from the programming exercise and those already in the pipeline) can be measured and the risks and constraints that would endanger their success can be identified and proposals made for overcoming them.

A final feature of a project to prepare a quantitative and integrated sectoral programme will be the transfer of the MEPS method to the country, including the provision of the computer software and the training of local counterparts in its use. This will provide a tool for monitoring the progress of the implementation of the programme (which will generally cover a five- to ten-year period) and for conducting negotiations, both among the domestic actors and with potential foreign donors or commercial business partners.

#### Advantages of the MEPS Methodology

The advantages of this methodology over conventional methods for technical and economic assessment and programming the development of industrial sectors are the following:



(a) Development programmes are generally formulated with a macro-economic approach with reference to national economic policies but with a micro-economic approach when specific projects are formulated and evaluated. The links between the macro and the micro aspects are often not sufficiently taken into consideration. This methodology combines the micro and macro analysis and makes it possible to evaluate a given development programme at both levels and to determine the necessary policy measures.

(b) The use of this methodology permits the immediate quantitative comparison between different technical or economic options, thereby facilitating decision making.

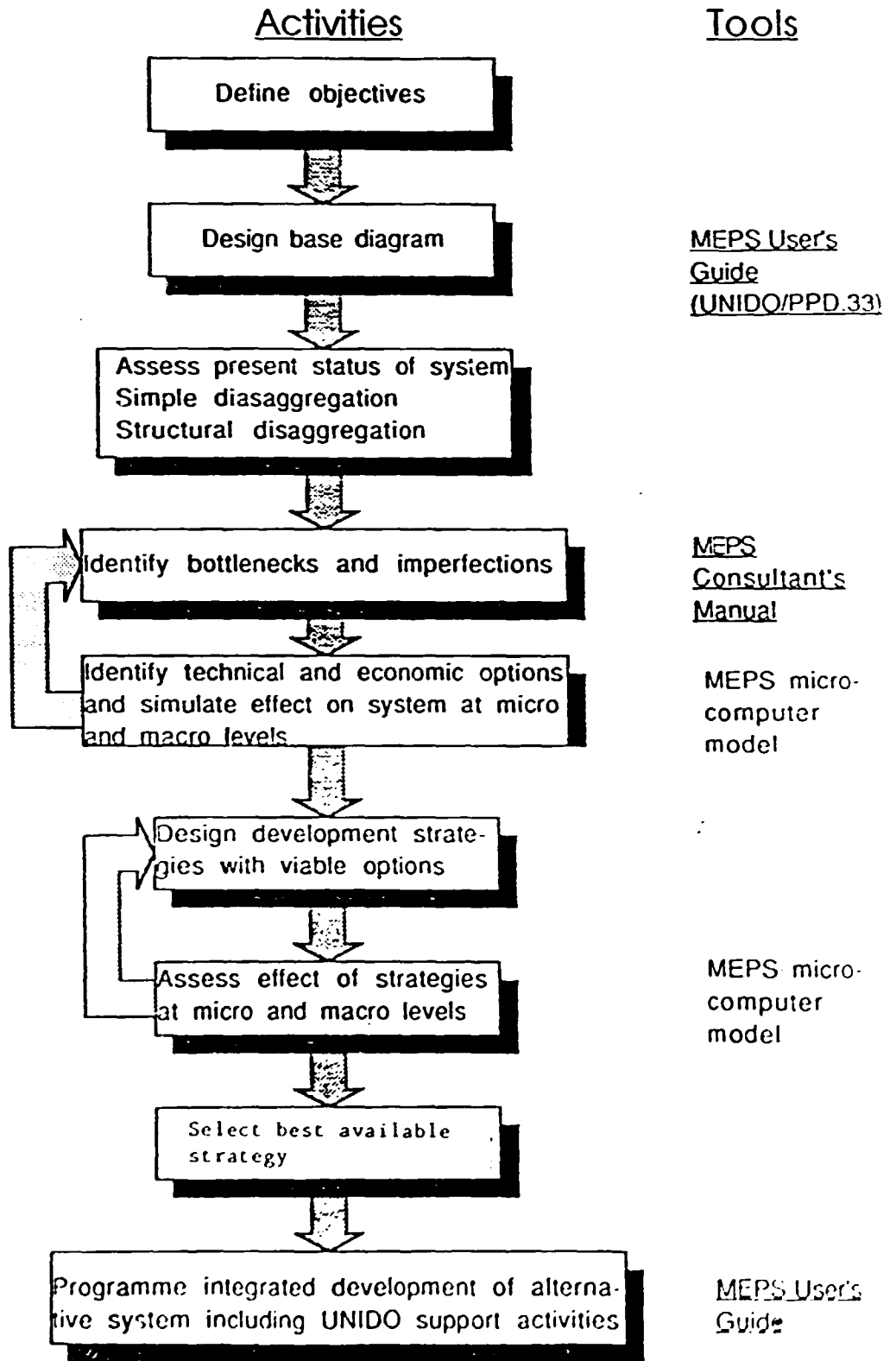
(c) The methodology links directly the production components of an industrial system with the demand and makes it possible to evaluate the effects of the interaction between production and demand.

(d) The methodology incorporates the sectoral interdependence of a given system, thus facilitating the analysis of integrated development. It allows quantitative evaluation of different options for both vertical and horizontal integration.

#### A Full Application of the MEPS Methodology

An example of the results of a full application of the programme approach using the MEPS methodology to an industrial system by UNIDO is a study of the fisheries industrial system (FIS) in a West African country carried out by UNIDO in cooperation with the World Bank and FAO. Since it was a full application of the method, it included all the stages described in Figure 3, including the definition of objectives, the assessment of the present status of the system, the identification of the main constraints hindering its development, the design of development strategies and programming. In 1987, when this work was started, the Government was already considering a group of investment and technical assistance projects with a total estimated cost of nearly US\$100 million. Therefore, an important part of the analysis included the quantitative assessment of the potential impact of these projects on the system in relation to the government objectives for the development of the system.

Figure 3. Application of MEPS to an industrial system



Some of the results obtained during the assessment stages of the FIS study are shown in the base diagram (Figure 4). This diagram provides an overview of the system in 1987. It shows a very high level of exploitation by the foreign fleet that leads to overexploitation of the resource, a very minor contribution of the domestic industrial fleet, an active artisanal fleet in marine waters and a small fresh water fleet. The almost complete lack of infrastructure for landing catches and the unavailability of storage facilities and distribution channels from landing to processing sites is also pictured. Their absence not only hinders full capacity utilization but also produces handling losses. Fish processing is primarily done by smoking and accounts for 80-85 per cent of fresh fish caught. This is done in cottage industries, no industrial plants are operational for either curing by smoking or freezing. The distribution and marketing sector is underdeveloped, also lacking the infrastructure for storage, transport and communication.

With regard to consumption, the per capita level is low with respect to neighbouring countries (approximately one-third of that of one immediate neighbour) and is concentrated mainly in the capital due to the location of landings and poor distribution network. All capital goods for the system have to be imported, with the exception of canoes and smoking ovens. The main characteristics and constraints of the system are briefly presented in Table 4.

The simulation of the potential impact of the approximately US\$80 million worth of projects\* that were approved in 1987 by the government showed that considerable improvements in the FIS would be achieved and that they would succeed to some extent in achieving the goals set by the government. However, not all the government objectives could be achieved by the planned projects, particularly increasing the availability of fish to 15kg per capita in 1995 and overcoming the imbalance between regional population distribution and fish availability.

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\*These projects address constraints related to resource management, the national industrial and artisanal fleets, landing facilities and training.

Figure 4. Base Diagram of the Fisheries Industrial System (FIS) - the Present System

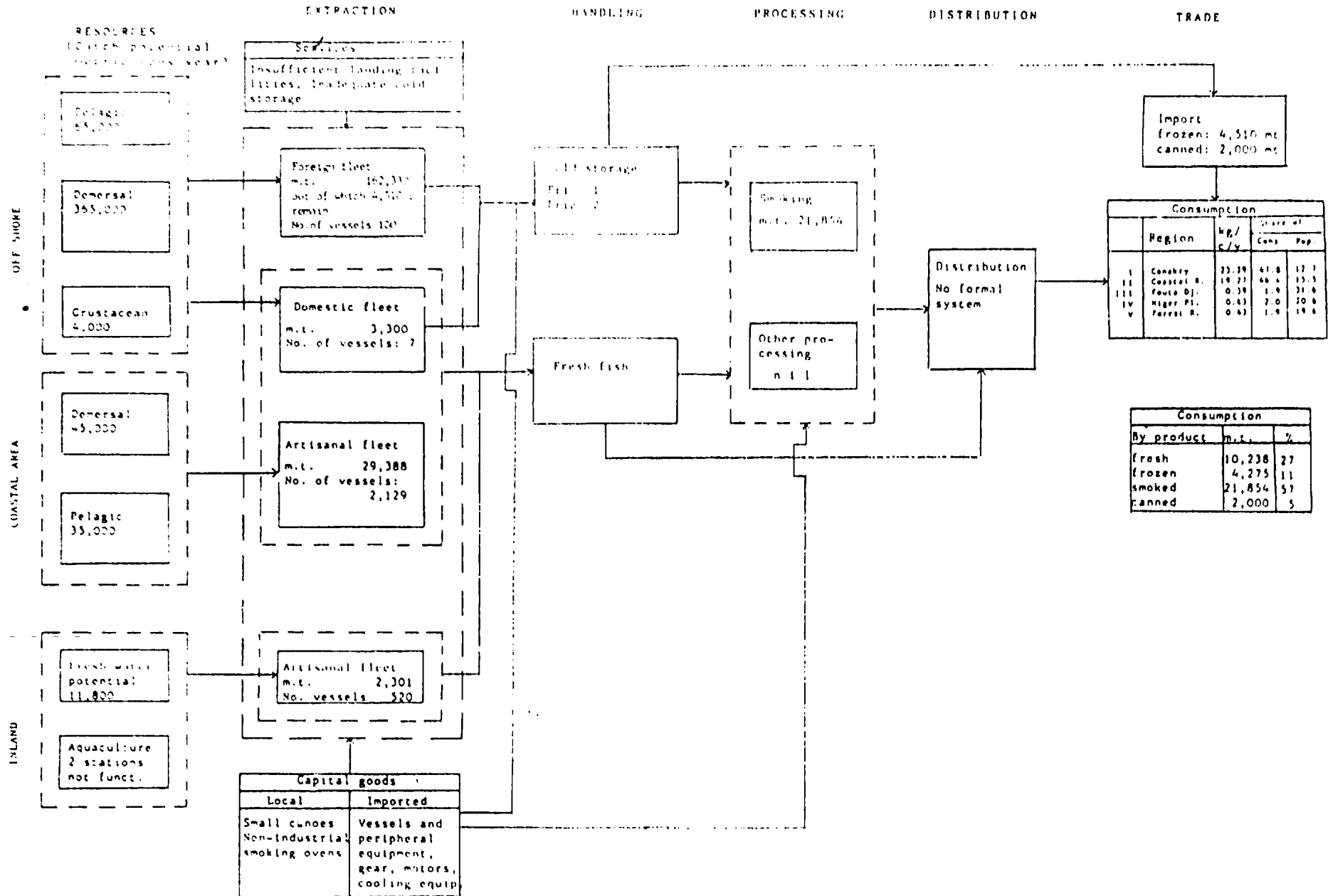


Table 4. Characteristics and Constraints of the Fisheries Industry System of One West African Country

Characteristics	Constraints
Only a small portion (19%) of the fish caught in the country's exclusive economic Zone (EEZ) stays in the country. Most is caught by foreign fleets and sold abroad.	Absence of an industrial fleet. Insufficient capacity of the semi-industrial fleet. No support facilities such as cold stores and ice plants.
The artisanal fleet reaches 36% of the catch potential in the artisanal zone (within 5 miles of the shore).	An almost total absence of support services for the artisanal fleet, such as landing sites, equipment, repair centres.
The fresh water fishing reaches about 20% of its potential.	Insufficient boats, lack of equipment, repair services, spare part supply, etc.
The only processing done is smoking in cottage industries.	No industrial processing facilities exist in the country.
All fishing equipment and spare parts must be imported.	No manufacturing capabilities exist locally for this type of equipment.
The Government is not receiving the full economic return for licences issued to the foreign fleet.	No mechanism of enforcement of payment of licence fees exists.
Trigger fish (a species that, when processed, is eaten in neighbouring countries) is underexploited.	There is at present no market for this type of fish in the country.
Consumption is concentrated mainly in the capital and the coastal region.	Lack of adequate infrastructure for transport and communications.

In order to reach the goal of 15 kg per capita of fish available by 1995 and to attain a higher level of seafood self sufficiency, local fish extraction should increase by approximately 30,000 tons per year by 1995. Quantitative simulations of two possible strategies for the attainment of this goal (either doubling the landings by the national industrial fleet or expansion of the artisanal fleet) were carried out. The simulation permitted a precise comparison of the results of each one, showing their advantages and drawbacks. The first alternative would lead to further overexploitation of some resources and require substantial amounts of foreign exchange for imported inputs; for the second alternative, this would be much lower. Further advantages of the second alternative would include increased employment in the system and expanding the availability of fish outside the capital.

Even after the implementation of one of the two strategies proposed to increase domestic availability of fish and achieve seafood self-sufficiency, some problem areas would still remain. Therefore, a successful development of the FIS will require additional support measures in the form of technical assistance projects and appropriate government policies.

A package of eight technical assistance projects, with a total value of US\$1.1 million, was prepared on the basis of computer simulations made using the model. This package constitutes an integrated technical assistance programme that would provide the necessary support to ensure the success of the approximately US\$80 million development programme of investment and technical assistance already planned and the achievement of all the government's objectives relating to the FIS following one of the proposed strategies. The complete programme includes specific policy recommendations affecting each component of the system that would be necessary for the programme to succeed. These policies include the establishment of a fisheries management system, establishment of fixed licence fees, the opening of credit lines for private enterprises and co-operatives, the conclusion of co-operative management or joint venture agreements and the possible establishment of temporary subsidies to promote the utilization of under-used resources.

References:

1. Methodology for the assessment, programming and management of production and consumption systems, abridged version, Sectoral Studies Series No.27, (UNIDO/IS.643), UNIDO, 8 September 1986.
2. MEPS reference manual, (in Spanish), issued by JUNAC, Junta del Acuerdo de Cartagena, (the Andean Pact Secretariat) in a very limited number of copies.
3. Methodology for the assessment, programming and management of production and consumption systems, user's guide, Sectoral Studies Series No.33, (PPD.33), UNIDO, 24 April 1987.
4. The MEPS user's guide for team consultants, (in Spanish), currently being revised.
5. The MEPS user's guide to the computer model, (in English and Spanish), issued by JUNAC, currently being revised.
6. A programme for the integrated development of the Peruvian oils and fats production/consumption system, Sectoral Studies Series No.19, (UNIDO/IS.569), UNIDO, 14 October 1985.
7. Industrial development strategies for fishery systems in developing countries: presentation of the main results, Sectoral Studies Series No.31, (PPD.28), UNIDO, 30 March 1987.
8. Industrial development strategies for fishery systems in developing countries, Volume 1, Sectoral Studies Series No.32, (PPD.30), UNIDO, 3 April 1987.
9. The integration of women in the fisheries industrial system, (PPD.34), UNIDO, 15 May 1987.

Annex I

THE USEFULNESS OF BASE DIAGRAMS IN PROJECT DESIGN.

The usefulness of base diagrams in project design is illustrated in this Annex by specific cases in which the system approach has been applied to UNIDO projects during the design stage. The base diagrams that were prepared appear on the following pages.

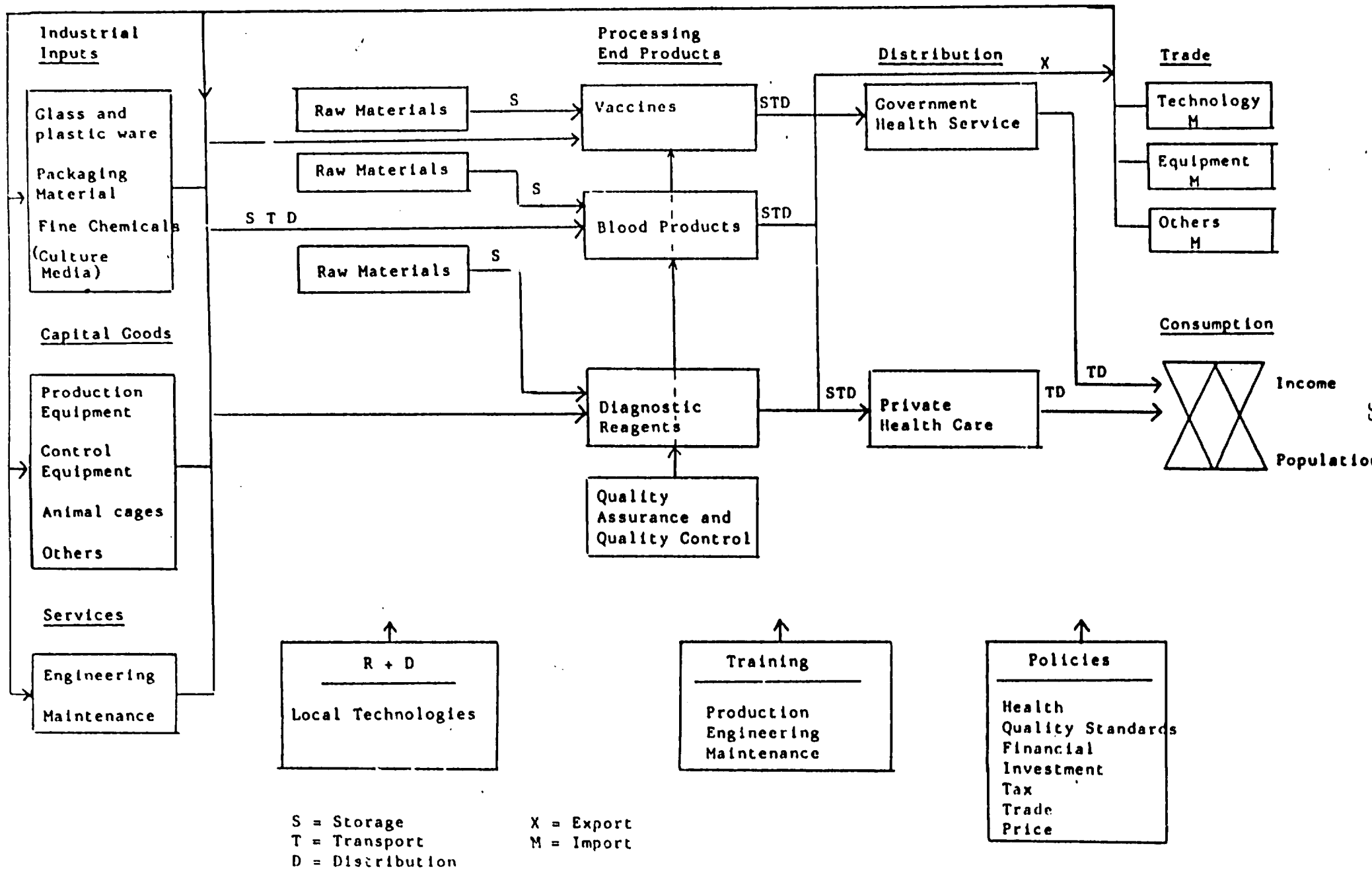


Case 1. Integrated Industrial System for the Production of Biologicals

The original project proposal provided a list of components to be analysed in different countries. Although the analysis of the system was implicit, the linkages and interdependence among the components of the system were not explicitly stated.

A base diagram was prepared in cooperation with the backstopping officer, that made the terms of reference for the experts clearer and more precise, thus ensuring standardized outputs for each country being studied, which could be incorporated into a regional programme for the production of biologicals.

DIAGRAM 1. INTEGRATED INDUSTRIAL SYSTEM FOR THE PRODUCTION OF BIOLOGICALS

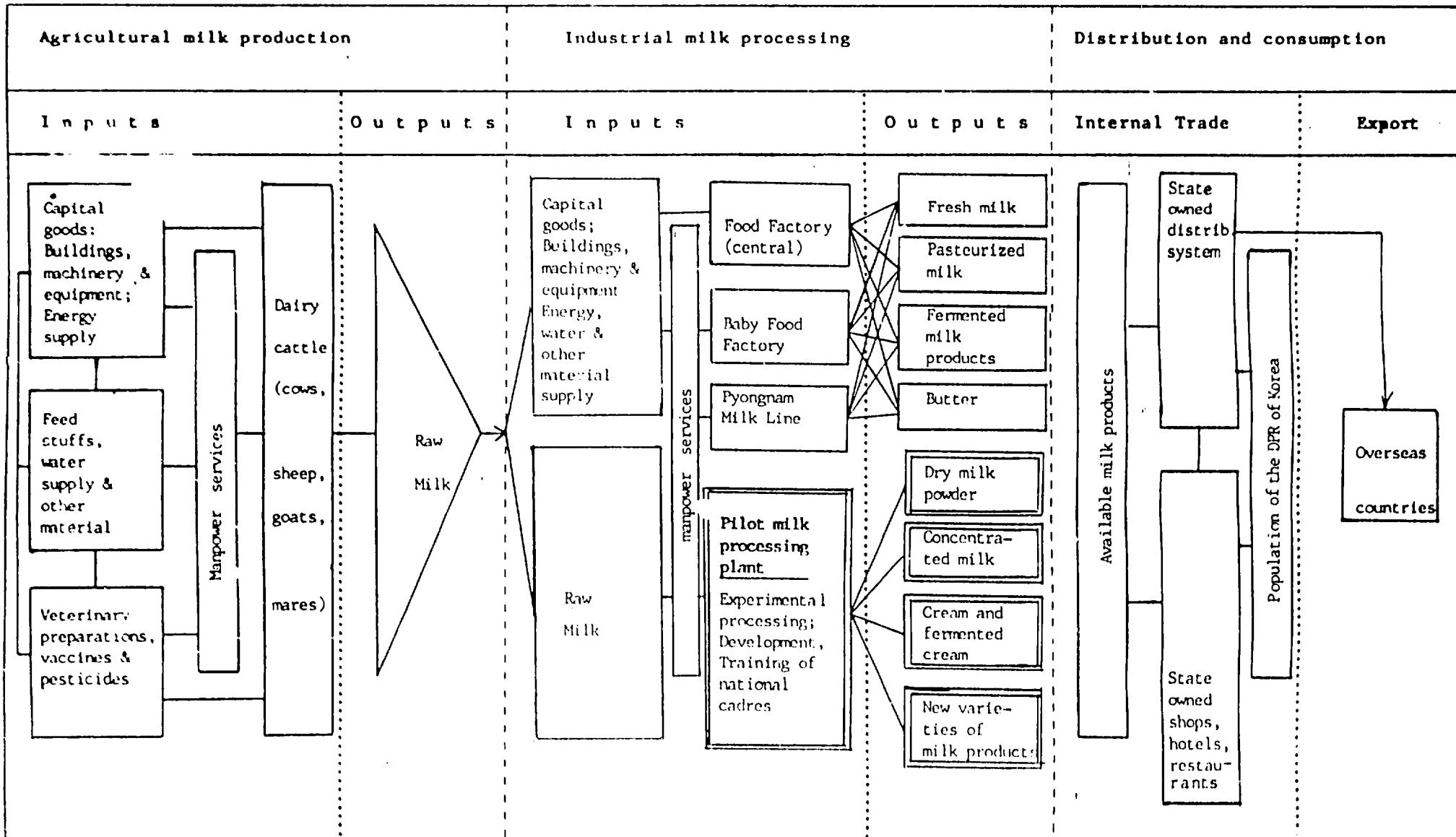


Case 2. Pilot milk-processing plant

The proposed project foresaw the installation of a pilot milk-processing plant to carry out experimental processing, project development and training of national personnel. As the project was originally presented, it was difficult to understand the links between the pilot plant and the rest of the sector. A base diagram was prepared by the backstopping officer that made these linkages clear.

\_\_\_\_\_ Existing status  
 \_\_\_\_\_ Proposed status

Location and role of the pilot milk processing plant

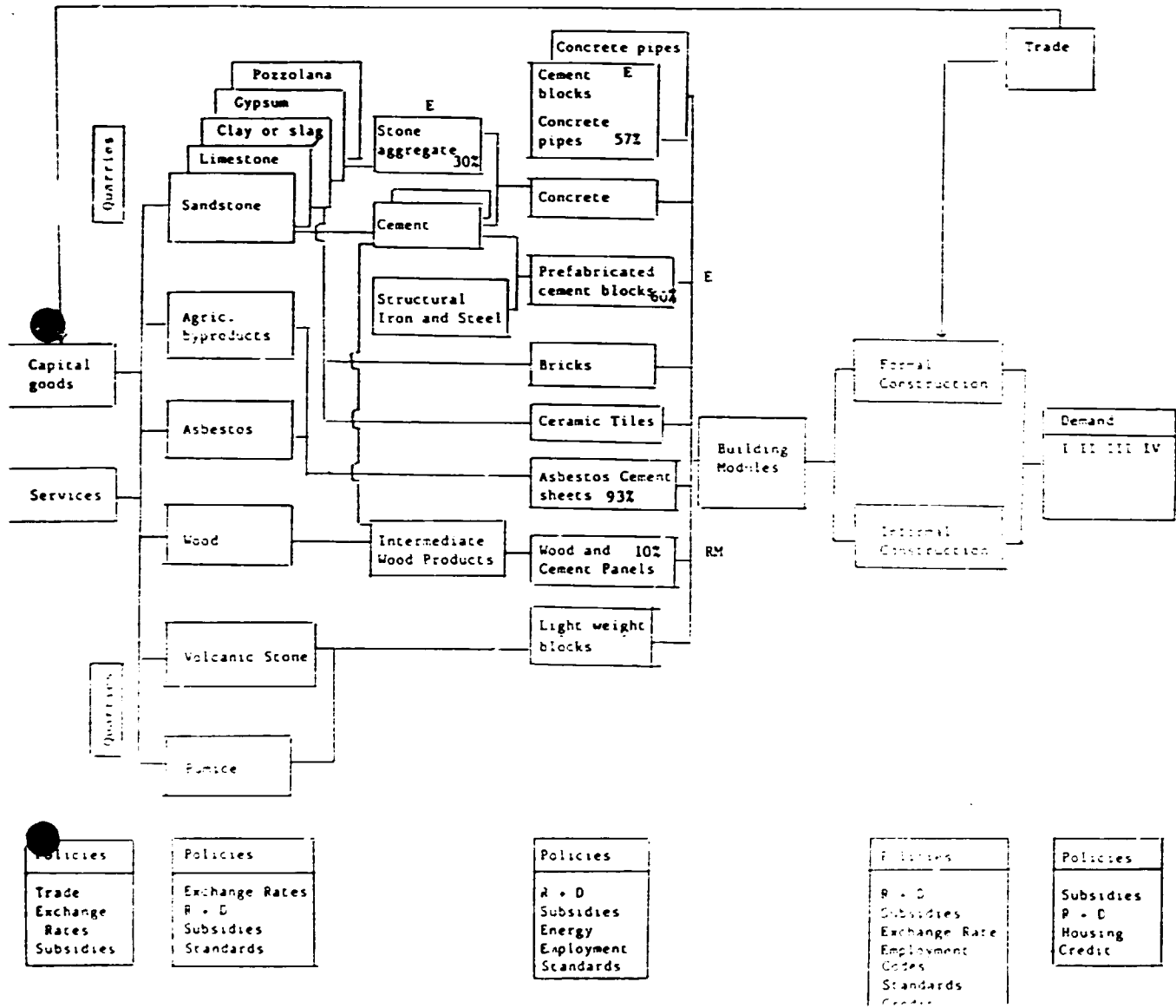


Case 3. The construction and building materials system

The government requested a programme for the development of the building materials sector and provided some information on levels of capacity utilization in the sector and on existing production equipment. The projects proposed were to provide assistance to the quarries and a pilot plant for the use of pumice and volcanic stone.

After preparing a base diagram at UNIDO on the basis of the information provided by the government, it appeared that a more integrated technical assistance programme would probably be preferable to those projects originally proposed. Therefore, a preparatory assistance mission was proposed to analyse the system and provide the basis for designing an integrated development programme that would include the rehabilitation of some existing plants.

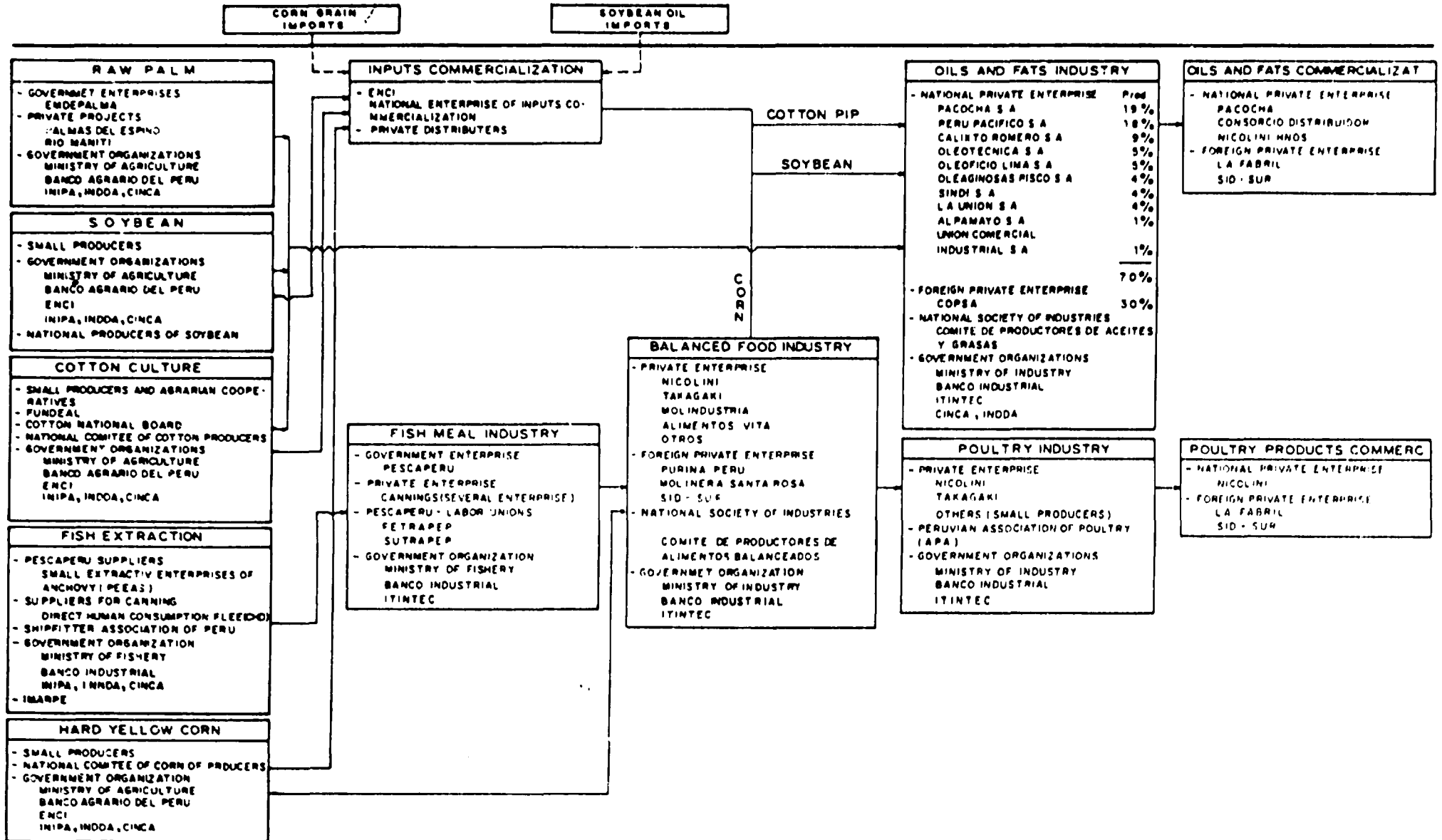
Partial Base Diagram



Case 4. Oils and Fats System

- a) The first base diagram is taken from a full application of MEPS; however, it could have been produced with data collected during a preparatory assistance mission. It is useful for the analysis of the system because it shows the degree of vertical and horizontal integration as well as the level of enterprise concentration. It also facilitates finding the most appropriate location for technical assistance projects in the institutional framework.
  
- b) The second base diagram shown for this system indicates the economic profitability and capacity utilization for each component. It illustrates that in certain components, probably due to the high level of enterprise concentration in the industry, the profitability is very high despite very low capacity utilization.

# BASE SCHEME OF THE AGENTS OF THE PRODUCTION AND CONSUMPTION SYSTEM OF OILS AND FATS

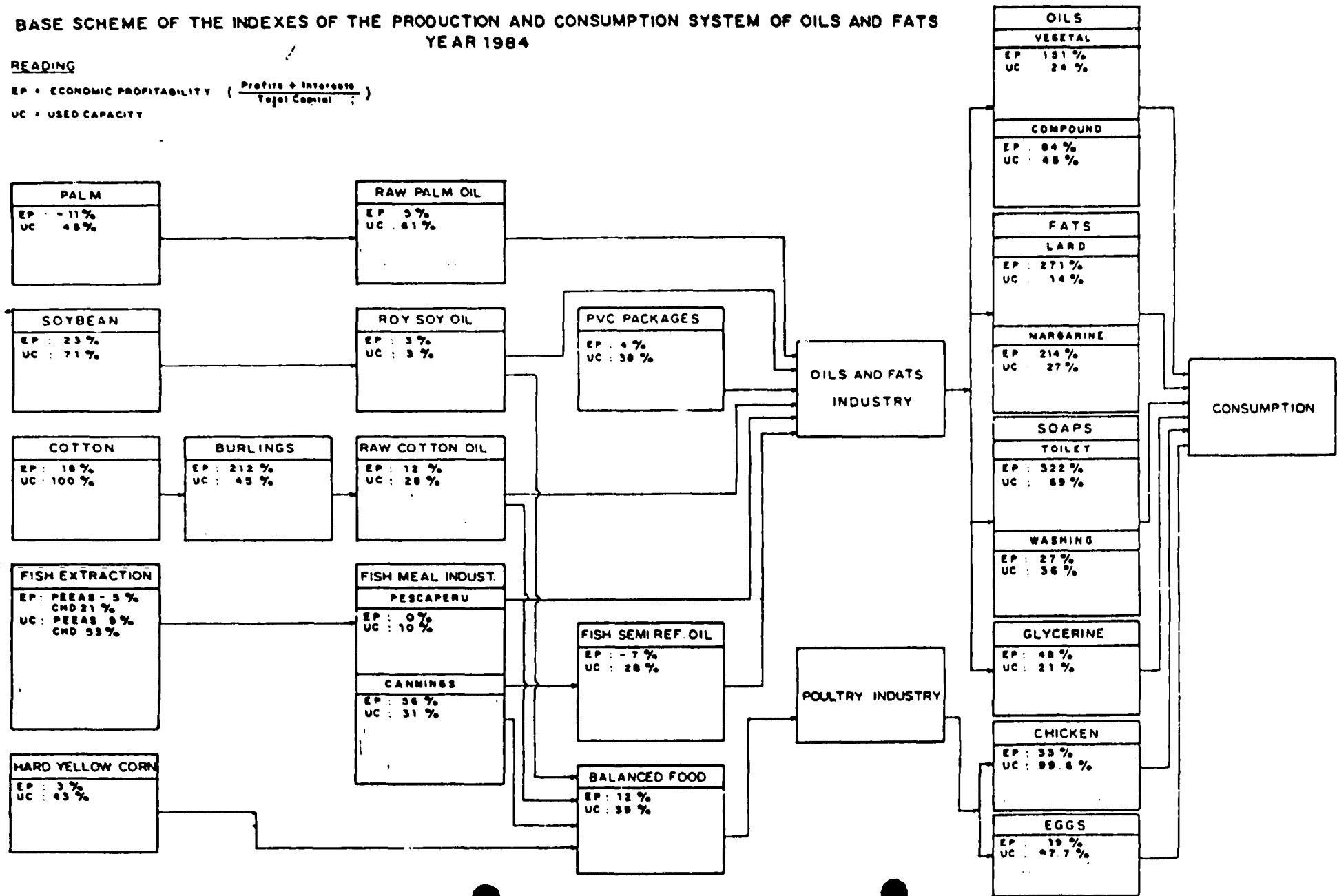




# BASE SCHEME OF THE INDEXES OF THE PRODUCTION AND CONSUMPTION SYSTEM OF OILS AND FATS YEAR 1984

## READING

EP = ECONOMIC PROFITABILITY  $\left( \frac{\text{Profits} + \text{Interests}}{\text{Total Capital}} \right)$   
 UC = USED CAPACITY



Case 5. Animal Feed Industrial System

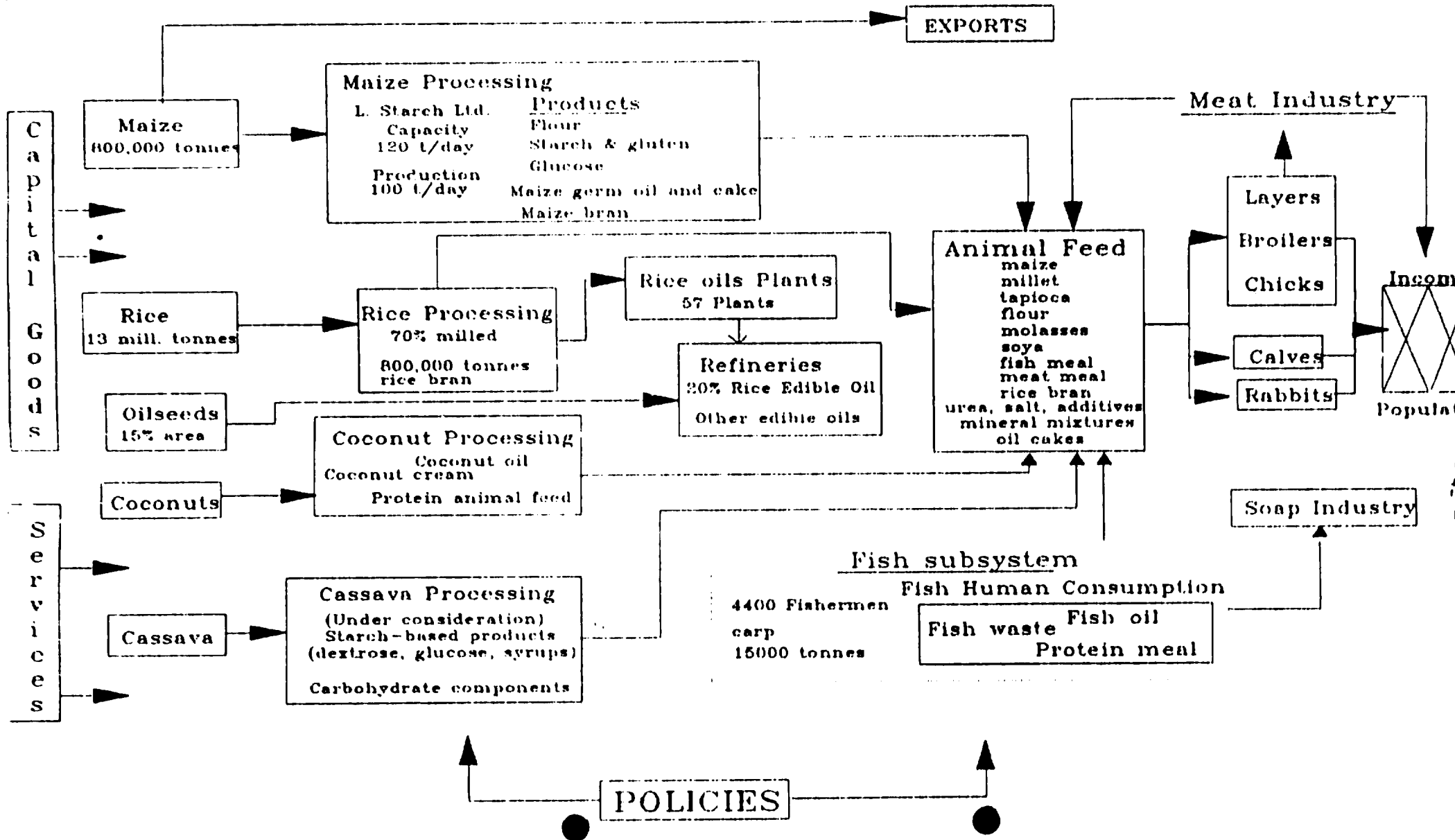
The animal feed system of a province is to be studied within the context of an agroindustrial development plan.

It has been proposed to make detailed techno-economic reviews of the animal feed industry, the fish processing industry, the maize processing industry, the vegetable oil industry and the cassava processing industry in order to produce a comprehensive report with specific recommendations for development actions supported by sufficient economic data. The report would provide the basis for the formulation of large-scale UNIDO technical assistance projects.

The analysis of the information provided as background for the project allowed us to draw the attached base diagram. This diagram pictures the system to be analyzed and provides some preliminary data. With appropriate terms of reference and a joint briefing at UNIDO, the six consultants to be hired could make a first assessment of the system in a coordinated and systematic manner and prepare an indicative programme for the integrated development of the system.

The indicative programme would provide, in addition to the techno economic analysis, a package of technical assistance and investment project concepts together with policy advice, thus facilitating decisions relating to further activities by UNIDO, the government, and potential donors.

# Animal Feed System



Internal Training on a Programme Approach to Project  
Identification and Formulation

REPORT ON THE FIRST SERIES OF FOUR WORKSHOPS:  
SEPTEMBER - OCTOBER 1988

Project Appraisal Section  
9 November 1988

Internal Training on a Programme Approach  
to Project Identification and Formulation

1. Introduction

UNIDO has developed a comprehensive method to analyze and assess industrial development problems at specific sectoral or subsectoral levels through the application of a systems approach.

Using this method, it is possible to design integrated technical assistance programmes that include investment promotion activities and policy recommendations to the governments concerned. The advantages of such an approach would be:

- (a) increased impact of UNIDO's activities on the industrialization of developing countries,
- (b) enhanced mobilization of financial resources from donor countries, UNDP in the next programming cycle, and from other sources.
- (c) Integrated sectoral programmes would respond more fully to the needs of many developing countries and could also take account of the geographical and sectoral priorities that donor countries might have.
- (d) The preparation of integrated sectoral programmes would increase UNIDO's capacity for development, approval and execution of projects.

Following discussions of an initial proposal for a programme approach at a meeting of the Executive Management Committee (EMC) in December 1987, the Director-General decided that UNIDO should progressively adopt a programme approach to project identification and formulation, in addition to continuing to respond to individual technical assistance requests from developing countries.<sup>1/</sup>

Special meetings with donor countries were organized through the PRC Secretariat early in 1988 in order to brief them on the sectoral programming approach; UNDP has been informed of this approach, which UNIDO would use in relation to the forthcoming programming cycle; a programme approach has been reflected in the Medium-Term Plan 1990-95. In addition, an in-house working group has been applying this approach to the fisheries industrial system in Guinea and a group of other West African countries. This work will be completed shortly; it comprises programmes of technical assistance and industrial investment projects designed to develop the fisheries industrial system in those countries.<sup>2/</sup>

- 1/ It is important to note that the proposed approach would not exclude UNIDO's response to individual requests from developing countries. Rather, it would be of a complementary nature.
- 2/ See the Report of the Core Group on a programme approach to project identification and formulation.

The Director-General also decided that UNIDO staff should be familiarized with the systems approach to programme and project design, so that it can be increasingly employed in a concerted and coordinated effort by staff from different technical units. To make this possible, an extensive training effort involving PPD, IO and IPCT staff should be undertaken in 1988 and 1989.<sup>3/</sup>

Following the advice of the Deputy Director-General, DPPD, a series of workshops on the subject of sectoral programme approach for PPD, IO and IPCT staff was organized by PRA/APP.

## 2. Objectives of the workshops

- To familiarize UNIDO staff with the use of a systems approach for the design of integrated sectoral programmes.
- To introduce interdivisional groups to the various applications of the approach through specific cases.
- To ascertain the specific needs of UNIDO staff where the systems approach could be useful and to elaborate recommendations on how the approach could be applied in UNIDO's work.

## 3. Organization of the workshops

### Number of Workshops

The first series of four workshops were carried out in September and October. The following industrial systems were considered:

- a) Leather and leather products
- b) Agrofood industries and related subsectors
- c) Building materials/construction
- d) Pharmaceuticals and biologicals

The Work Plan followed is included in Annex I.

3/ Memoranda of the Director General to DDG, DPPD, dated January 28 and March 1, 1988.

#### 4. Participation

Each workshop focussed on one industrial system. Staff were therefore selected on the basis of their functions (Area programme officers) and industrial area of expertise (technical officers).

The first session of the workshops aimed at allowing the participants to express the practical daily problems confronted by them in project identification and formulation. The presentation of the systems approach was then made to a great extent in response to the problems raised by the participants. In this first session, staff from AREA were the most vocal to suggest ways to strengthen UNIDO capacity to propose technical assistance programmes or to provide a better response to individual requests.

The second session concentrated on the industrial system selected, so that DIO staff, in particular, worked with APP to identify and describe the industrial system's components and to elaborate the corresponding base diagrams. For AREA officers, it became apparent that with information organized in this way they would have a basic knowledge of the industrial system which would facilitate their identification of areas of technical assistance and provide a basis for any kind of programming mission.

The third session was dedicated to examining some actual requests from developing countries recently received by AREA in order to assess whether a programme approach could be applied. The following list gives examples of some potential applications of the programme approach identified by the participants:

- Wood and wood products industry in Bolivia
- Industrial rehabilitation in Afghanistan
- Industrial rehabilitation in Iraq
- Programming priority sectors (electronics) in Indonesia in preparation for the Fourth Country Programme (1992-1996).
- Reconstruction of the building materials sector in Sudan
- Industrial typology of the building materials system in Asian countries (making use of and expanding the existing network of 13 countries)
- A global typology of women's participation in industry
- Programming the subregional development of the cement industry in PTA countries
- Preparing UNIDO consultations on industrial subsectors
- the animal feed industrial system in one state of India
- Programming of IDDA/UNPAAERD activities for 1990-91
- Pharmaceutical industry in the Philippines.

The ways and means, including organizational changes, required to implement the programme approach were then discussed extensively.

## 5. Conclusions

It was concluded that the programme approach should be applied by Area Programmes Division in two major ways:

(a) In preparing for country programming missions. Sectoral analysis and country typologies, and the ensuing indicative sectoral programme for groups of countries could provide a sound basis for this work.

(b) In responding to individual country requests to develop or rehabilitate a given sector of industry, such as those mentioned above by the participants.

Additional points made by AREA officers were:

(a) The programme approach was a powerful tool for more effective co-ordination between UNIDO, UNDP and other agencies, as well as the host government regarding the industrial component of its overall technical co-operation programme. It would increase UNIDO's capacity to negotiate and influence the country programme at the time of its formulation.

(b) The programme approach will make it possible to provide potential donors with complete packages of technical assistance and investment possibilities.

(c) UNIDO needs better organized and more relevant information on industrial sub-sectors in developing countries. Country studies prepared at UNIDO do not always provide information directly applicable to programming work.

(d) AREA and DIO officers need support services to provide them with required information on countries and sectors in a systematic way; even for the information that is available in the house there is not any systematic access and finding it often depends on personal relations. They would need support in the preparation of integrated sectoral programmes using the programme approach.

(e) Technical assistance projects often take an exclusively technical approach that fails to consider economic aspects, particularly consumption and demand.



(f) UNIDO officers in the field should provide adequate information to headquarters to enable AREA officers to develop technical assistance projects more effectively. For example, UNIDO often has difficulty in identifying the most appropriate counterpart institution within the country.

(g) Due to limited resources and working methods, UNIDO has difficulty in operating on a competitive basis vis-à-vis other organizations, both multilateral and bilateral; it also has no organized information on other multi- and bilateral assistance provided to industry in each developing country.

DIO officers made the following points:

(a) The programme approach at different levels is a useful tool for analysing and programming individual industrial systems. However, if applied to only one industrial system it does not by itself enable governments to determine whether scarce resources should be allocated to that system. Therefore, another tool would need to be applied to the identification of priority sectors in developing countries.

(b) The co-operation within the groups of staff which met in each workshop demonstrated that there is a strong will to work in an interdivisional team. This will is often hindered by the established organizational structures, particularly because at present no mechanism exists for splitting PADs between backstopping sections. This will remain an obstacle to co-operation between sections in applying the programme approach as long as DIO officers and sections are judged primarily by implementation figures.

(c) UNIDO needs coherent, well-defined policies on specific industrial sectors as well as on cross-sectoral issues such as the environment, women in industry, etc.

(d) The results of the application of the programme approach to one or more industrial systems can be directly incorporated into an industrial master plan being developed for an individual country (this is already being done in Guinea for the fisheries industry).

(e) UNIDO has at present insufficient expertise to provide advice on financing and other financial aspects of enterprises that are being assisted. This problem should be looked into further and a solution should be sought.

6. Suggestions for the effective application of the Programme Approach

A. The programme approach for improved preparation of programming missions

The following stages of the programme approach should be applied in a systematic way to priority subsectors: preparation of country typologies according to the characteristics of each subsector; formulation of indicative sectoral programmes for each group of countries; preparing a UNIDO position paper on subsectors' current characteristics and technical co-operation required. The results of each of these stages would contribute directly to the preparation of country programming missions by AREA and technical officers.

B. The programme approach for project formulation in response to specific Government requests to develop or rehabilitate a particular sector of industry

Even if indicative sectoral programmes are not available as a basis for preparing a response to Government request, some of the necessary (though probably not sufficient) information is available at UNIDO to carry out desk work to identify the sector's main characteristics and develop a preliminary base diagram reflecting its components and functioning.

A Preparatory Assistance project can then be undertaken, including a field mission, to verify the initial desk work and to finalize an integrated sectoral programme and corresponding project document for implementation thereafter. The sample project document for Preparatory Assistance and terms of reference for field work should be used (see attached).

C. Internal working arrangements

The preparation of integrated sectoral programmes requires the involvement of both AREA and technical officers who should work in interdivisional teams. It was suggested that AREA should make more use of its mandate (Director-General's Bulletin No. 40) to establish such teams to develop these programmes in preparation for the country programming exercise. Such an initiative from AREA should be promoted by providing it with systematic methodological support. In relation to the suggestion above, it would be necessary to identify the organizational unit in UNIDO which can provide that support to AREA Programmes.

In regard to suggestion B, APP can continue to provide case-by-case advice on the design and formulation of integrated sectoral programmes when requested by a particular country, but preferably from the early stages of project formulation. APP may require junior professional staff to assist in data analysis, preparation of base diagrams etc. in this connection.

The problems related to PAB allocation due to the "fight for PABs" need to be resolved; it was singled out as the main obstacle to the successful work of the inter divisional teams.

D Institutionalization of the programme approach

Finally, it would be most important to pursue discussions with UNDP, Special Purpose Donors to IDF, and other sources of finance in order to fully familiarize them with the UNIDO programme approach to the design and formulation of integrated sectoral programmes.