

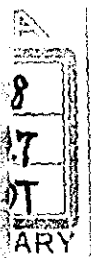
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Planning Project  
Reference Material-7

TECHNICAL COOPERATION PLAN  
FOR  
THE PROJECT  
ON  
SOUTH SULAWESI  
REGIONAL AGRICULTURAL DEVELOPMENT PLANNING  
(ATA-140)  
— Draft —

December 1976

JAPAN INTERNATIONAL COOPERATION AGENCY  
AGRICULTURAL DEVELOPMENT COOPERATION DEPARTMENT



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## I. OUTLINE OF COOPERATION PLAN

### 1. Objectives

This Project, with a view of contributing to promotion of regional agriculture, is intended to make over-all review of the plans for the development of agriculture in the Province of South Sulawesi, to give advisory guidances on them, to possibly improve methods and techniques of planning for the development of regional agriculture and thereby to improve the planning capabilities of the officials in charge.

### 2. Scope of Activities

A. The Project consists of the following four (4) stages:

- (1) Survey and analysis concerning agriculture in the Province of South Sulawesi,
- (2) Review of the Regional Development Plan formulated by the BAPPEDA and of other existing projects, and recommendations thereon,
- (3) Drawing-up of sector plans in conformity with the Plan mentioned in Paragraph (2),
- (4) Drawing-up of the implementation plans including project preparation and feasibility study for agricultural development projects in certain regencies in conformity with the said plans.

B. Training activity will be carried out throughout all the stages of the Project including observation tour and technical training in Japan.

### 3. Implementation System

The following activities will be conducted under the cooperation system instituted for the purpose of the present project (ATA140):

(1) Technical advices for project implementation:  
A Technical Supporting Committee is to be organized to make studies and offer advices on technical and specialized matters relating to the project implementation in collaboration with the Experts in the Project.

(2) Dispatch of experts:

The following Japanese experts will be dispatched for the Project:

Advisor .....	1
Team Leader .....	1
Expert(s) .....	2
Coordinator .....	1

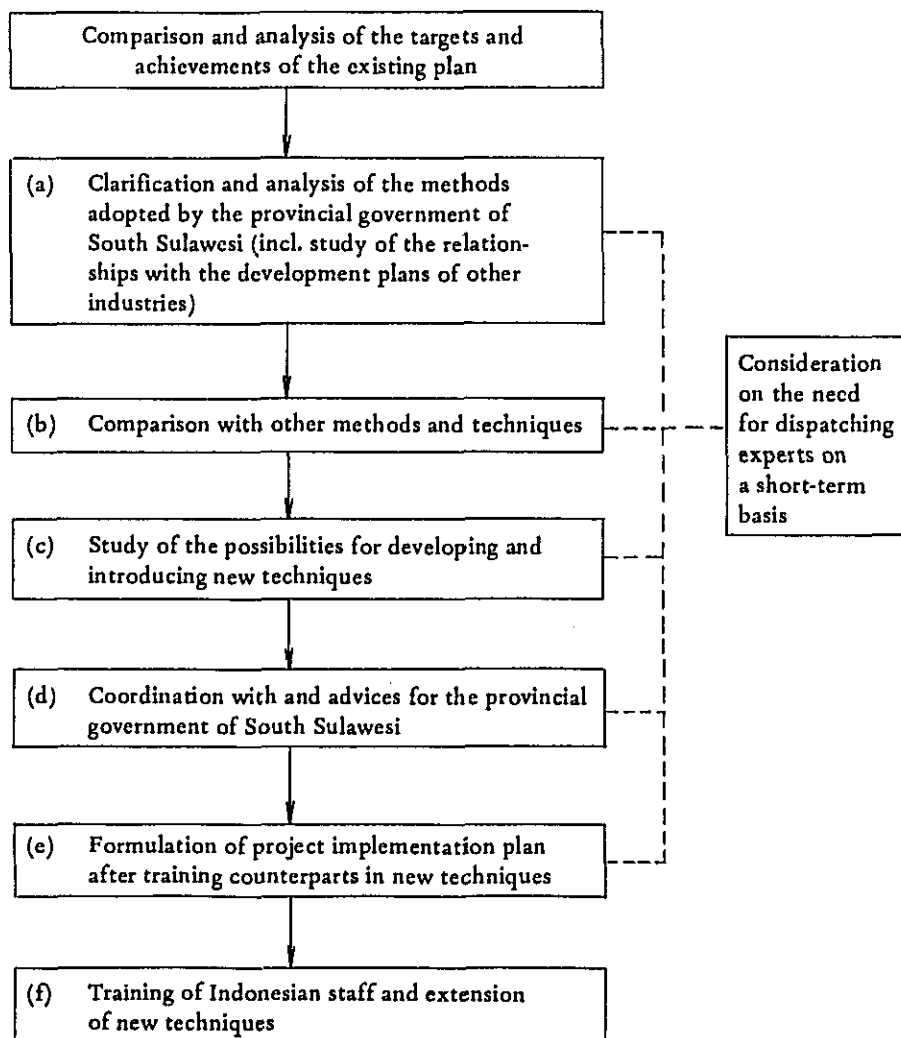
- (3) **Dispatch of survey teams:**  
Survey teams will be sent to the Project as need arises in each phase of project planning.
- (4) **Dispatch of short-term experts:**  
Dispatch of short-term experts will be considered as need arises in each phase of project planning.





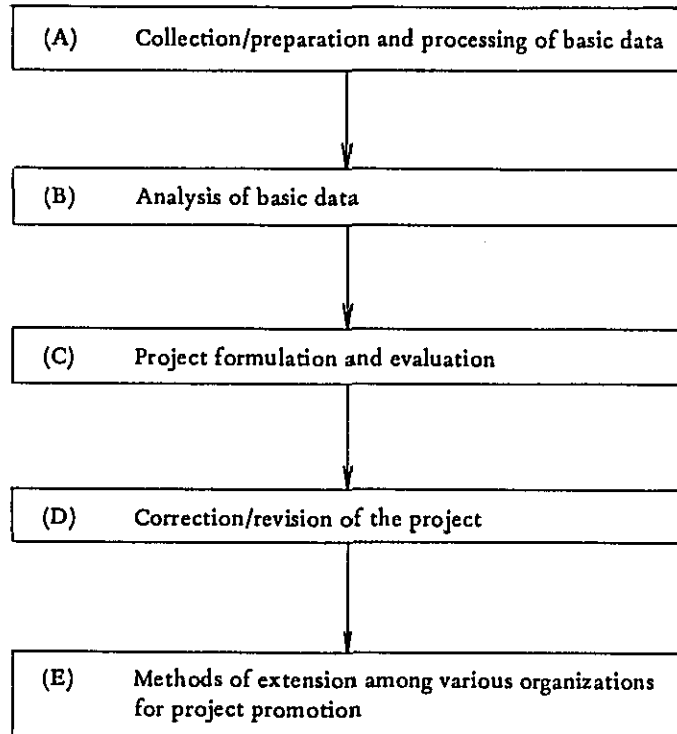
## 2. Plan of Operation

### (1) Basic Frame Work of Operation



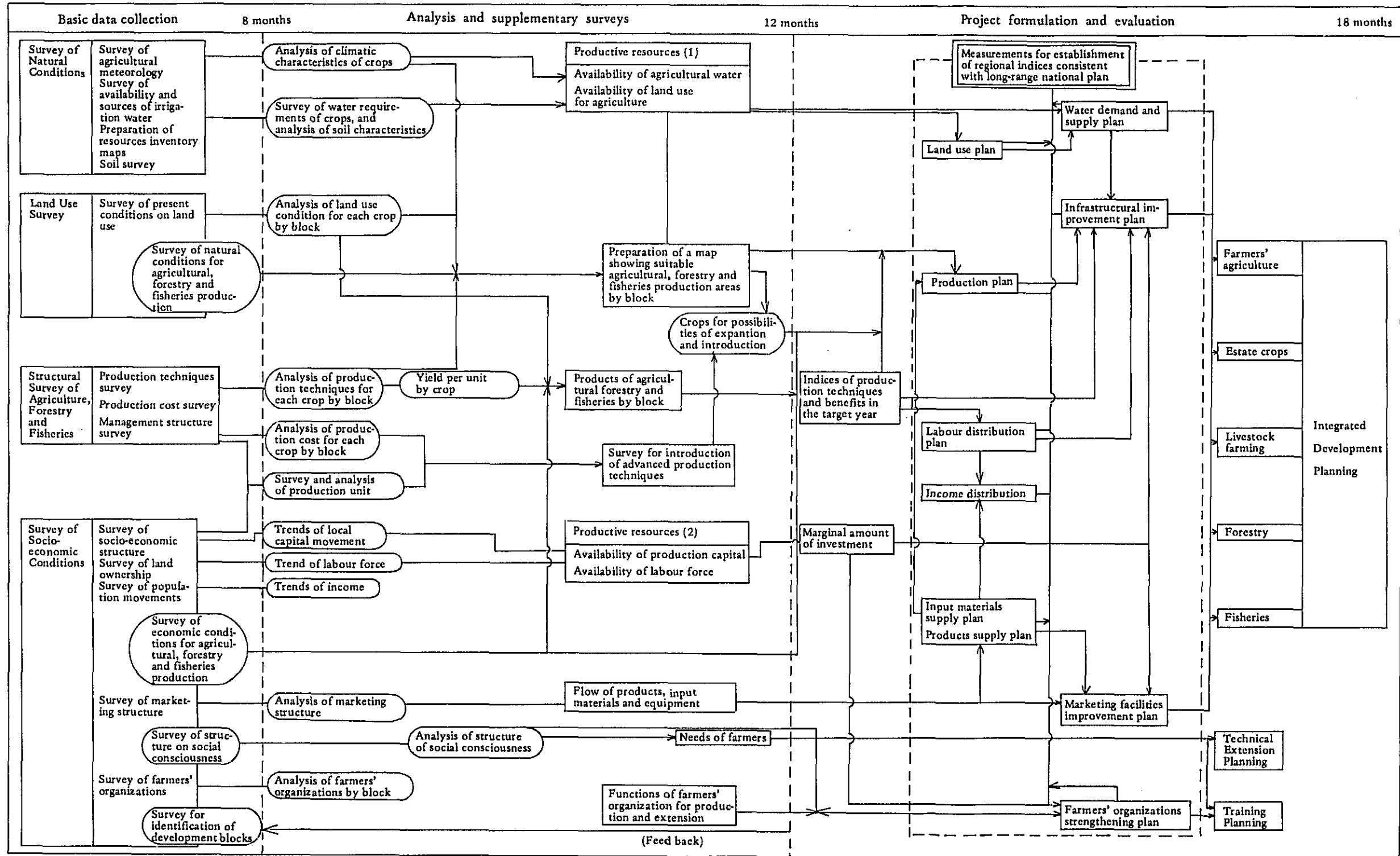


(2) Procedure of Training in Project Formulation

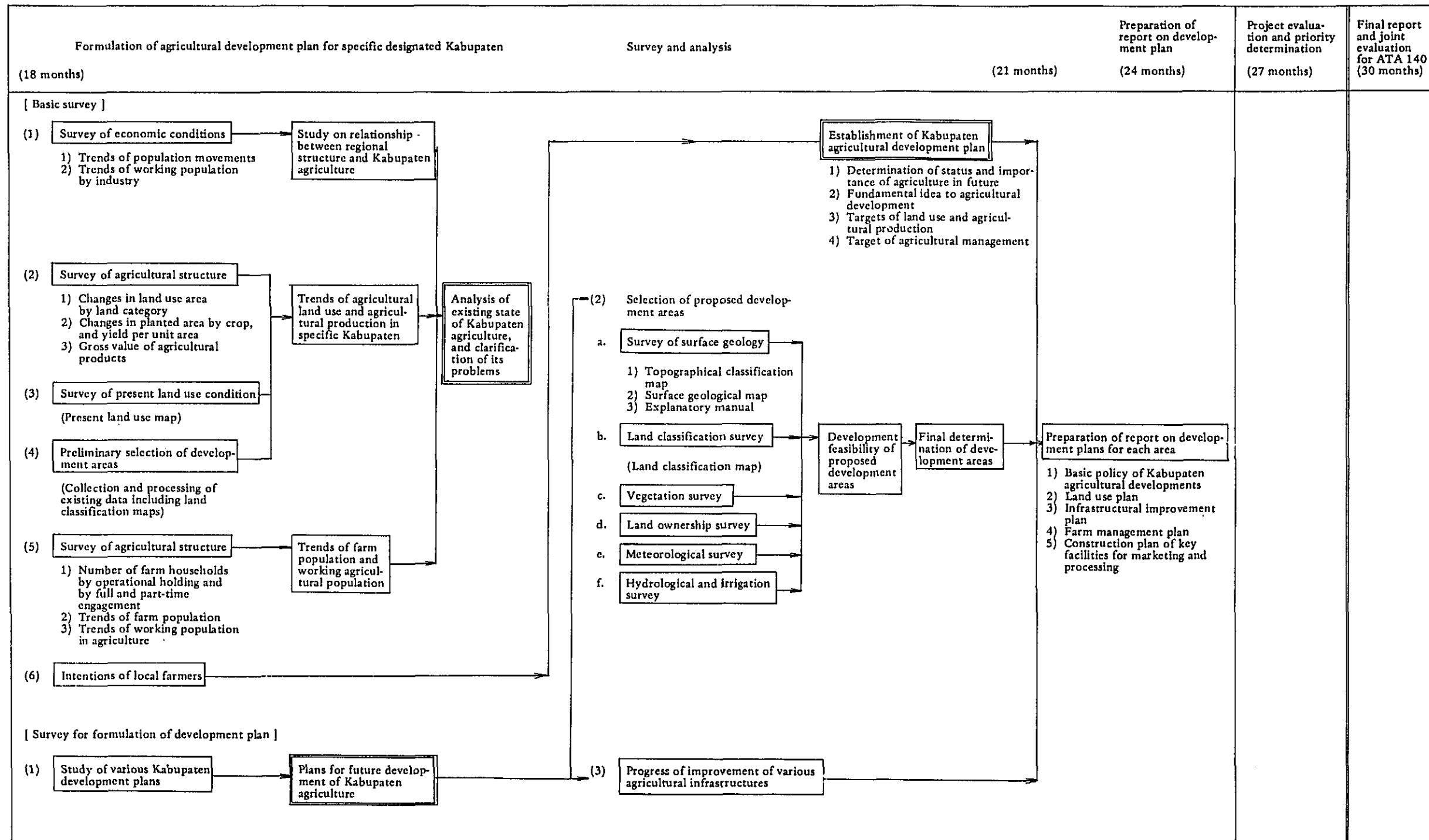


3. Standard Flow Chart for Formulation of Regional Agricultural Development Planning Project

(1) Master Plan for Provincial Agricultural Development Project



(2) Agricultural Development Plan for Specific Designated Kabupaten



4. **Formulation of Regional Agricultural Development Plan in South Sulawesi**  
(Accuracy: 1/500,000 Map)
  - A. **Basic Data Collection and Supplementary Survey**
    1. Survey of natural conditions (1)
      - Fig. 1 – Slope degree map (example)
    2. Survey of natural conditions (2)
      - Fig. 2 – Soil map (example)
    3. Land use survey
    4. Survey of socio-economic conditions (1)
      - Fig. 3 – Comparison of agricultural indices (example)
      - Fig. 4 – Comparison of social overhead capital indices (example)
    5. Survey of socio-economic conditions (2)
    6. Survey of socio-economic conditions (3)
    7. Survey of agricultural structure
  - B. **Analysis of Basic Data and Supplementary Survey**
    1. Productive resources (1)
      - Table 1 – Water duty and supply and main irrigation facilities in each block in the base year (example)
      - Table 2 – Acreage of planned land area by land category (example)
      - Table 3 – Acreage of available development area (example)
    2. Productive resources (2)
      - Table 4 – Constraints on labour force availability (example)
    3. Preparation of map showing suitable production area for each crop and each block (agricultural, forestry and fisheries production)
      - Fig. 5 – Map of area suited for sugar cane cultivation (example)
      - Table 5 – Cropping condition and cropping suitability by soil series (example)
      - Table 6 – Soil suitability to upland crops and grass (example)

- Fig. 6 — Plan for human habitation area and for improvement of living environment facilities (example)
- Table 7 — Cropping suitability by block

4. Products by crop

- Fig. 7 — Present land use map (example)
- Table 8 — Changes in agricultural products (example)
- Table 9 — Pattern of farm management (1) (example)
- Table 10 — Pattern of farm management (2) (example)
- Table 11 — Land and labour productivity (example)

5. Survey for introduction of advanced production techniques

- Table 12 — Production process (collective farming by introduction of large farm machinery) (example)
- Table 13 — Capital for agricultural management (example)
- Table 14 — Main organizations for collective utilization of facilities (example)
- Table 15 — Table of main farm management facilities (example)
- Table 16 — Progress of improvement works for farming facilities (example)

6. Survey of marketing

- Fig. 8 — Production and marketing system (sales and shipment system) (example)
- Fig. 9 — Production and marketing mechanism (example)
- Table 17 — Shipments of vegetables and fruits by town and crop (example)
- Fig. 10 — Progress of farming facilities improvement (example)

7. Farm labour force requirement by block

- Table 18 — Changes in working population and number of households (example)
- Fig. 11 — Population distribution by age (example)
- Table 19 — Outline of agricultural income (example)
- Table 20 — Savings and loans of farm households (example)

C. Project Formulation and Evaluation

1. Production plan of each block in the target year

- Fig. 12 — Target land use (example)

- Table 21 – Land use plan (example)
  - Fig. 13 – Breakdown of income by block and crop (example)
  - Table 22 – Total income of each block (example)
  - Table 23 – Income per capita (example)
  - Table 24 – Absorbable working population by block (example)
  - Table 25 – Monthly required working hours by block (example)
2. Investment plan for the target year
    - Fig. 14 – Comprehensive development plan of rural communities (example)
    - Fig. 15 – Land infrastructure improvement plan (example)
    - Table 26 – Water requirement of each crop (example)
    - Table 27 – Cost of modernized farming facilities by management pattern (example)
    - Table 28 – Facilities for joint farming units (example)
  3. Annual extension plan up to the target year
  4. Provincial development targets consistent with the long-range national plan
5. Formulation of Agricultural Development Plan in Specific Kabupaten (Accuracy: 1/50,000 Map)
    - A. Basic Data Collection and Supplementary Survey
      1. Survey of natural conditions (1)
      2. Survey of natural conditions (2)
      3. Land use survey
      4. Survey of socio-economic conditions (1)
      5. Survey of socio-economic conditions (2)
      6. Survey of socio-economic conditions (3)
      7. Survey of agricultural structure
    - B. Analysis of Basic Data and Supplementary Survey
      1. Productive resources (1)

2. Productive resources (2)
  3. Preparation of map showing suitable production area for each crop and each block (agricultural, forestry and fisheries production)
  4. Products by crop
  5. Survey for introduction of advanced production techniques
  6. Survey of marketing
  7. Farm labour force requirement by block
- C. Project Formulation and Evaluation
1. Production plan of each block in the target year
  2. Investment plan for the target year
  3. Annual extension plan up to the target year
  4. Kabupaten development targets consistent with the long-range provincial plan
6. Preparation of Reports
1. Semi-annual report:  
A progress report will be prepared semi-annually on the collected data and their analysis as well as providing recommendations.
  2. First phase report:  
The first phase report including recommendations is to be submitted to the Committees based on the study, for the whole 18-month period, on South Sulawesi Province Development Project prepared by BAPPEDA.
  3. Second phase report:  
The second phase report will be prepared to present implementation plans (including project preparation and feasibility study) by sector for specific Kabupaten with their priority order.

### III. PLAN OF OPERATION BY SURVEY ITEM

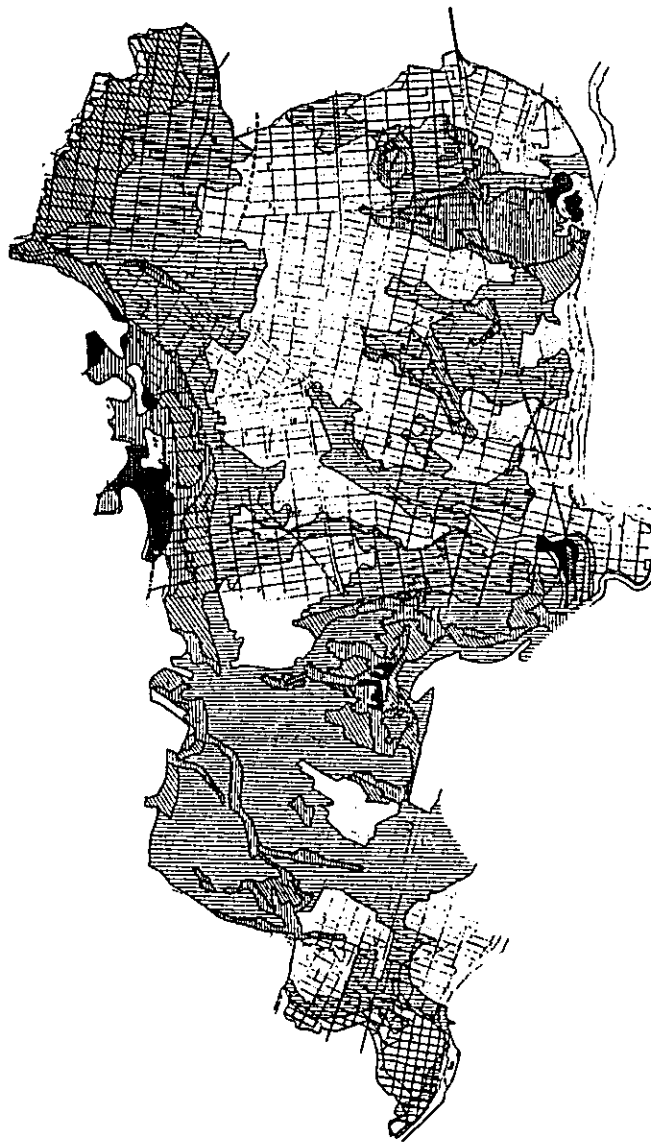
#### A. Basic Data Collection and Supplementary Survey

##### A-1. Survey of Natural Conditions (1)

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	Survey of agricultural meteorology	i) Collection of data of meteorological conditions such as rainfall and temperature which affect the crop cultivation
	Survey of availability of irrigation water and water resources	ii) Collection of data on hydrological conditions and water basin with which to determine the availability of irrigation water
	Preparation of resources map	iii) Collection of slope and topographic data for determination of land suitability to agricultural, forestry and fisheries production
b) Comparison with other methods and techniques	Preparation of map showing distribution of land suited to forestry	i) Analysis of land suited to forestry
	Preparation of map showing distribution of areas suited to fisheries	ii) Analysis of areas suited to fisheries
c) Development and introduction of new techniques	- ditto -	Study to be made by the staff of the provincial government, Japanese experts, and experts engaged in Item (b)
d) Coordination with, and recommendations to, the provincial government of South Sulawesi	- ditto -	Method of data collection or preparation is to be discussed with the provincial government or Kabupaten offices of South Sulawesi on the basis of the study made in (c)
e) Drilling in new techniques (Report making is to be prepared by counterparts)	- ditto -	When a new technique is developed, drilling in the method of preparation and data processing is to be conducted in the whole or part of the project area to examine the extension plan
f) Education and training for local staff, and extension of techniques	Content of training	Method of data processing on agricultural meteorology, irrigation and water sources, and the method of utilizing natural resources map
	Method of training	Seminars in the project area, and partially training in Japan for the techniques of resources map preparation
	Number of trainees	Staff of the provincial government and Kabupaten offices
	Period of training	To be determined according to the situation in the project area



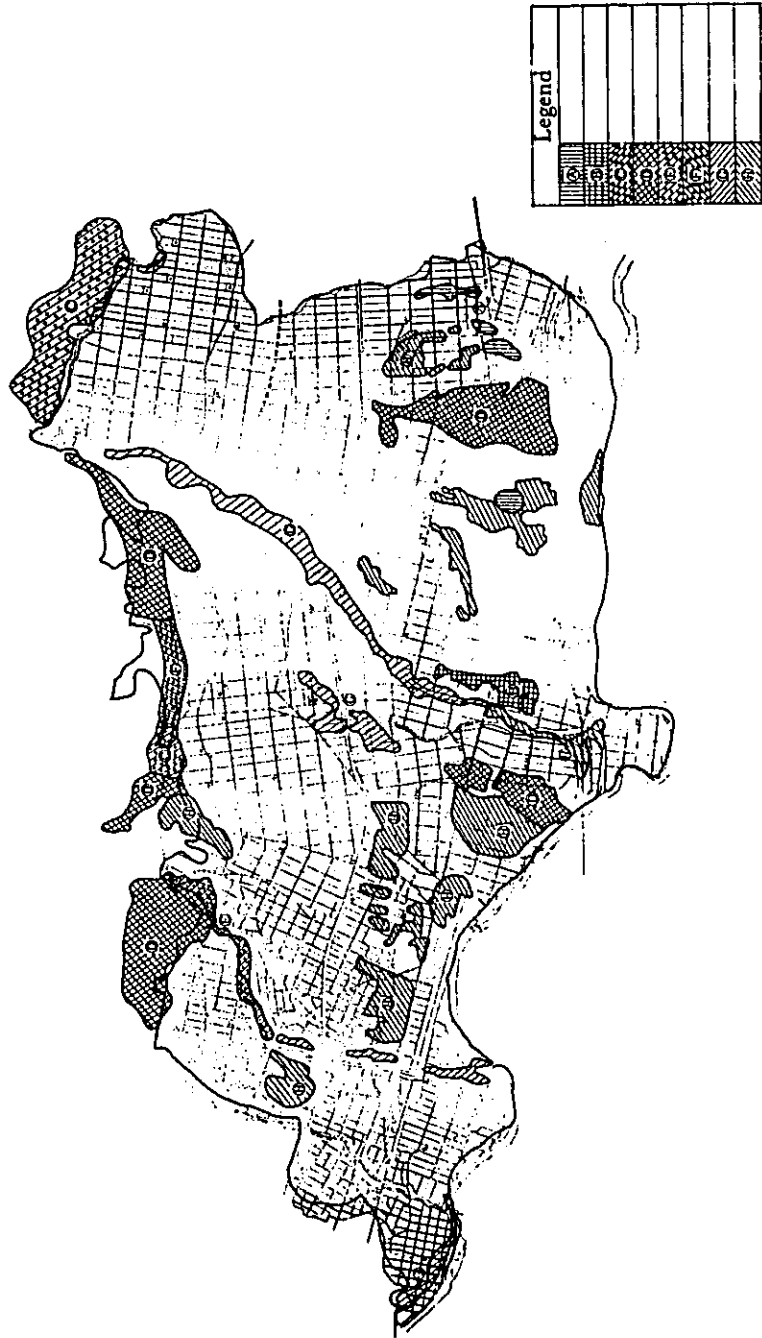
Fig. 1 Slope Map (example)



A-2. Survey of Natural Conditions (2)

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	Soil survey	i) Collection of data on soil characteristics and distribution which affect the selection of crops and forestry products
b) Comparison with other methods and techniques	Preparation of map of suitable agricultural land distribution	i) Analysis of land suitability by crop
c) Development and introduction of new techniques	- ditto -	To be studied by the officials of the provincial government, Japanese experts engaged in Item (b)
d) Coordination with, and recommendations to the provincial government of South Sulawesi	- ditto -	Method of data collection/preparation to be discussed with the provincial government or Kabupaten offices on the basis of the study in step (c)
e) Drilling in new techniques (report making is to be prepared by counterpart)	- ditto -	Drilling in the method of preparation and consolidation of relevant data to be conducted in the whole or part of the project area to establish the extension plan
f) Education and training for local staff, and extension of techniques	Content of training Method of training Number of trainees Period of training	Method of data preparation and processing Seminars in the project area Staffs of the provincial government and Kabupaten offices To be determined according to the situation in the project area

Fig. 2 Soil Map (example)



A-3 Land Use Survey

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	Present land use survey  Survey of natural conditions for agriculture, forestry and fisheries products	i) Collection of the data for clarifying the present land use condition and for classifying the cropping pattern according to the socio-economic factors  ii) Collection of the data for studying the suitability and distribution of land for crop cultivation in each block
b) Comparison with other methods and techniques		Apply as soil survey
c) Development and introduction of new techniques		- ditto -
d) Coordination with, and recommendations to the provincial government		- ditto -
e) Drilling in new techniques (report making is to be prepared by counterparts)		- ditto -
f) Education and training for local staff and techniques	Content of training Method of training Number of trainees Period of training	- ditto -

A-4. Survey of Socio-economic Conditions (1)

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	<p>Survey of population movement</p> <p>Survey of socio-economic structure</p> <p>Survey of socio-economic conditions for agriculture, forestry and fisheries</p>	<p>Collection of the data for clarifying population increase/decrease and labour force availability by block (or by local community)</p> <p>Collection of the data for clarifying the outline of local economy involving agriculture, forestry, fisheries and other industries and for clarifying the local capital movement</p> <p>Collection of the data for the economic background and distribution of crop production</p>
b) Comparison with other methods and techniques	<p>Estimation of population movement by age</p> <p>Analysis of farm management and land rent by operational holding</p> <p>Survey of the world market tendencies</p>	<p>Study of the applicability of cohort and trend methods to project area</p> <p>Analysis of farm management and land rent chiefly by counterpart</p> <p>Analysis of the differences between farmer's agriculture and estate agriculture</p>
c) Development and introduction of new techniques	<p>Preparation of basic development chart by plotting on maps population distribution by age and physical distribution estimated for 10 years ahead</p>	<p>Study to be made by the staff of the provincial government, Japanese experts, and experts engaged in Item (b)</p>
d) Coordination with, and recommendations to the provincial	<p>Estimation of working population by age and sex in each block for 10 years ahead</p> <p>Study and adjustment of the correlation between commodity distribution and infrastructural improvement</p>	<p>Method of data collection and preparation to be discussed with the provincial government or Kabupaten offices on the basis of the study made in Step (c)</p>
e) Drilling in new techniques (Report making is to be prepared counterparts)	<p>Study of the relationship between farmers' needs and the present plan for each block</p>	<p>Review of the present plan through organizations of Kabupatens on the basis of population estimation by age and farmers' needs (to be conducted by short-term experts for specific Kabupatens having drill survey to obtain data for the feasibility study in the later stage)</p>
f) Education and training for local staff and extension of techniques	<p>Content of training</p> <p>Method of training</p> <p>Number of trainees</p> <p>Period of training</p>	<p>Staff of the provincial government and Kabupaten offices to be drilled in the method of clarifying population movement and in the measurement of population characteristics of respective Kabupatens</p> <p>30 persons</p> <p>To be determined according to the situation in the project area</p>

Fig. 3 Comparison of Agricultural Indices (example)

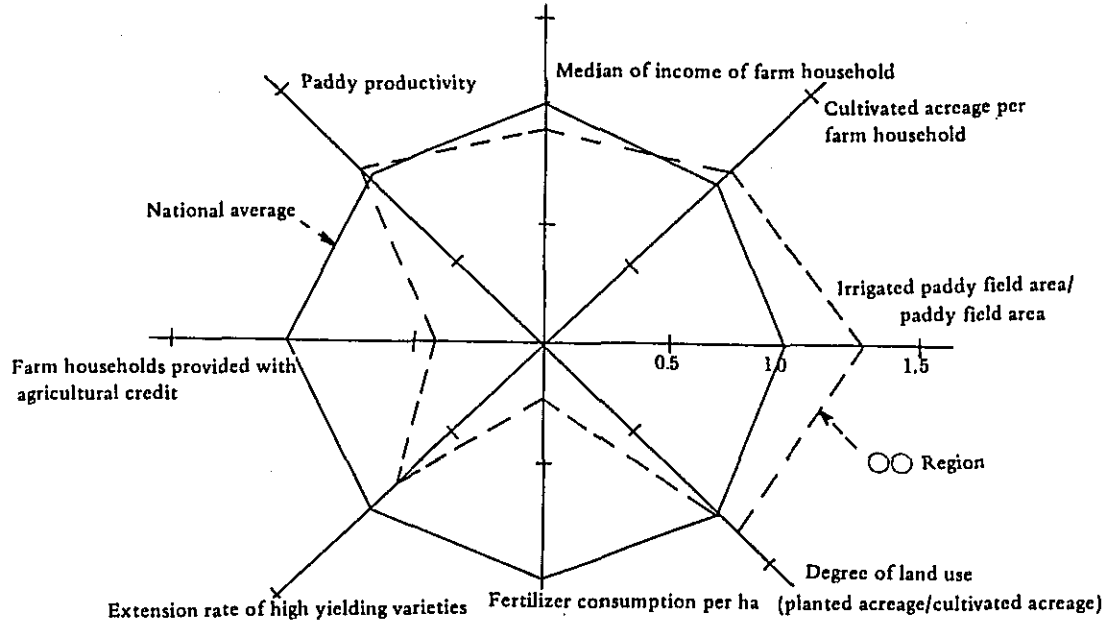
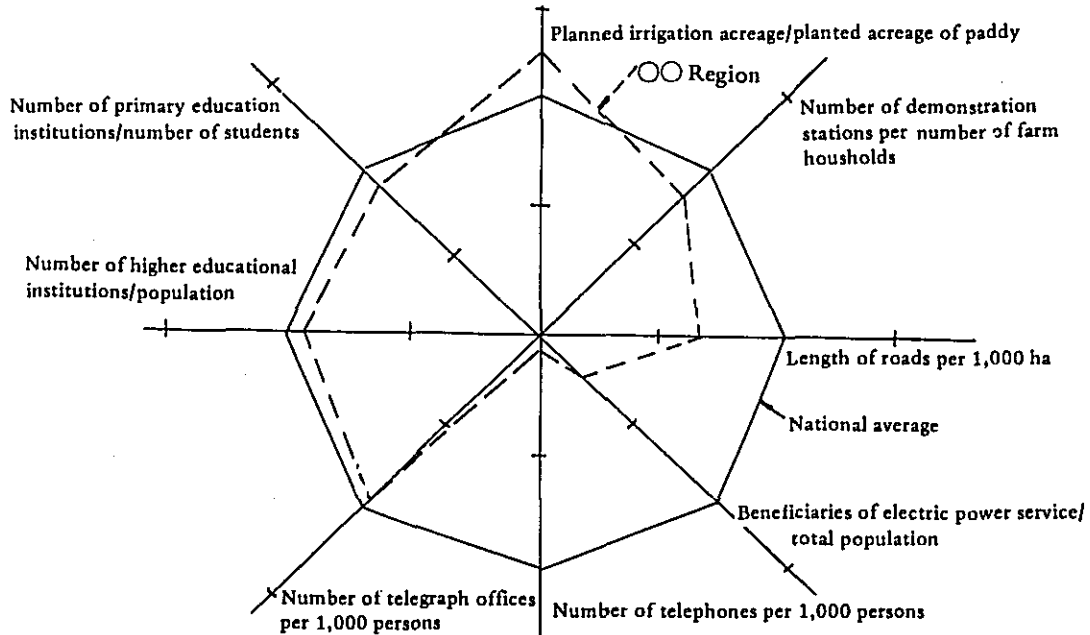


Fig. 4 Comparison of Social Overhead Capital Indices (example)



A-5. Survey of Socio-economic Conditions (2)

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	Survey of marketing mechanism	iv) Collection of the data for judging merits and demerits of agricultural, forestry and fisheries products brought into/out of the project area as well as merits and demerits of the marketing mechanism of relevant input materials and equipment v) Collection of the data for clarifying demand-supply situation of agricultural, forestry and fisheries products and relevant input materials and equipment brought into/out of the project area
b) Comparison with other methods and techniques	Clarification of problems of storage processing and transportation for food crop marketing in the dry and wet seasons; opinions to be collected from Indonesian staff for estate crops	Study for establishment of investment and guidance plans to be executed by stages considering time lag for the stabilized production and marketing of rice, taking into consideration of the price prediction method of IBRD
c) Development and introduction of new techniques	Plotting of marketing facilities on maps	Study to be made by the staff of the provincial governments, Japanese experts, and experts engaged in item (b)
d) Coordination with, and recommendations to, the provincial government of South Sulawesi	- ditto -	
e) Drilling in new techniques (report making is to be prepared by counterparts)	- ditto -	Study for stabilizing production and marketing of paddy and other food crops in each Kabupaten
f) Education and training for local staff, and extension of techniques	Content of training Method of training Number of trainees Period of training	Study of the method of stabilizing production and marketing of paddy and other crops (estate crops) Staff of provincial and Kabupaten office 30 persons To be determined according to the situation in the project area

A-6 Survey of Socio-economic Conditions (3)

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	Survey of social consciousness  Survey of farmers' organizations and agricultural extension network	i) Collection of the data for clarifying by strata (owner or tenant) and landless farmer ii) Collection of the data for clarifying the structure and existing state of farmers' organizations contributing to or participating in the project implementation and engaged in the operation and maintenance of the necessary facilities and for directing the future development of farmers' organizations as the main executive body of the project
b) Comparison with other methods and techniques	Study of the local residents' valuation and their desires for the project Reinforcement of management and operation of irrigation facilities and strengthening of agricultural cooperative associations	Study of actual condition by block and Desa (with special emphasis on the study in the two specific Kabupatens) Improvement of maintenance service for terminal irrigation efficiency in areas provided with irrigation facilities
c) Development and introduction of new techniques	Study of the principles of water charge and method of its collection Farm product marketing organization	Clarification of the whole project area by the provincial and Kabupaten staffs on the basis of the study in the two designated Kabupatens
d) Coordination with, and recommendations to, the provincial government	- ditto -	Discussion on the adjustment of the present plan on the basis of Step (c)
e) Drilling in new techniques (report making is to be prepared by counterparts)	- ditto -	Concentrated drilling and extension in two specific Kabupatens
f) Education and training for local staff and extension of techniques	Content of training Method of training  Number of trainees Period of training	Study of the expansion for paddy double corpping (fund requirement for introduction of techniques and construction of facilities), and for accelerated production of other crops 30 persons To be determined according to the situation in the project area



#### A-7. Survey of Agricultural Structure

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	<p>Survey of production techniques</p> <p>Survey of production cost</p> <p>Survey of management structure</p>	<p>i) Collection of the data for clarifying the present level of production techniques by crop and block</p> <p>ii) Collection of the data for clarifying the present production cost and present requirement of input materials and equipment by crop and block</p> <p>iii) Collection of the data for judging merits and demerits of the pattern and structure of farm management by crop</p>
b) Comparison with other methods and techniques		Full utilization of the data available in Indonesia, with studies by Japanese experts and provincial staff, if necessary
c) Development and introduction of new techniques		- ditto -
d) Coordination with, and recommendation to, the provincial government		
e) Drilling in new techniques (Report making is to be prepared by counterparts)		Data processing for macro-economic analysis to be made in the utilization and analysis of the existing data
f) Education and training for local staff and extension of techniques	<p>Content of training</p> <p>Method of training</p> <p>Number of trainees</p> <p>Period of training</p>	<p>Method of processing data for macro economic analysis</p> <p>Seminars</p> <p>Staff in charge of production cost survey at respective offices and organizations</p> <p>To be determined according to the situation in the project area</p>

B. Analysis of Basic Data and Supplementary Survey

B-1. Productive Resources (1)

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	Measurement of irrigation water availability Measurement of land availability	i) Measurement of irrigation water availability based on the analysis of the data of agricultural meteorology, irrigation and water sources mentioned (A-1) ii) Measurement of land availability based on the analysis of the data of agricultural meteorology and topography (A-1), soil survey (A-2), and land use and natural conditions for agriculture, forestry and fisheries (A-3)
b) Comparison with other method and techniques	Measurement of irrigation water availability	i) Data analysis and measurement ii) Data analysis and measurement
c) Development and introduction of new techniques	- ditto -	Study to be made by the provincial staff, Japanese experts, and experts engaged in item (b)
d) Coordination with, and recommendations to, the provincial government	- ditto -	Recommendations to be offered to the provincial government on the basis of the study made in in item (c)
e) Drilling in new techniques (Report making is to be prepared by counterparts)	- ditto -	Implementation of actual measurement in the two specific Kabupatens
f) Education and training of local staff, and extension of techniques	Content of training Method of training Period of training	Method of measuring irrigation water availability and land availability Seminars in the project area, and partial training in Japan in the measurement of land availability Staff of the provincial government

Table 1 Water Duty and Supply and Main Irrigation Facilities in Each Block in the Base Year (1962) (example)

Amount of water supply	Water supply			Water duty			Main irrigation facilities		Excess/shortage of water supply
	Name of river	Catchment area	Amount of water supply	Irrigation water requirement	Water requirement for river maintenance	Water requirement for existing municipal water	Type	Storage capacity	
River discharge		km <sup>2</sup>	m <sup>3</sup>	m <sup>3</sup>	m <sup>3</sup>	m <sup>3</sup>	Dam Weir 3	m <sup>3</sup>	m <sup>3</sup>
River discharge							Dam Weir 1 3		
River discharge							Estuary lake 4		
River discharge							Estuary lake 1		
River discharge							Dam 1		
River discharge							Dam, Estuary lake 1		
River discharge							Estuary lake 2		
River discharge							Dam, Estuary reservoir 1		
River discharge							Distributing reservoir 1		
River discharge							Estuary lake 1		
River discharge							Estuary lake 1		
Groundwater							Well Distributing reservoir 1		
Groundwater							Well Distributing reservoir 6		
Groundwater							Well Distributing reservoir 1		
Stream and river discharge							Well 3		
							Estuary lake Distributing reservoir 2		

Table 2 Planned Land Acreage by Land Category (example)

Land category Block	Paddy field			Tree garden		Ordinary upland field	Grassland	Remarks
	A	B	C	A (incl. plateau)	B (100-200)			
Block No.1								
Block No.2								
Block No.3								
Block No.4								
Block No.5								
Total								

Table 3 Acreage of Planned Development Area (example)

Land category Block	Upland field (incl. tree garden)				Grassland reclamation	
	Conversion from paddy field	Utilization of national forest	Reclamation of private upland field	Total	Utilization of national forest	Reclamation of private grassland
Block No.1						
Block No.2						
Block No.3						
Block No.4						
Block No.5						
Total						

**B-2. Productive Resources (2)**

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	Availability of labour force  Availability local capital	i) Estimation of labour force availability based on the analysis of data of population movement and socio-economic structure mentioned (A-4)  ii) Estimation of local capital availability based on the analysis of the data of socio-economic structure mentioned (A-4)
b) Comparison with other methods and techniques		Apply the data mentioned (A-4)
c) Development and introduction		Apply the data mentioned (A-4)
d) Coordination with, and recommendations to, the provincial government		Apply the data mentioned (A-4)
e) Drilling in new techniques (Report making is to be prepared plan by counterparts)		Apply the data mentioned (A-4)
f) Education and training of local staff, and extension of techniques	Content of training Method of training Number of trainees Period of training	Apply the data mentioned (A-4)

Table 4 Restraints on Labour Force Availability (example)

Labour force Block	Agricultural working population			Full time workers engaged in agriculture			Increase/decrease rate		Agricultural working population in 1985 (A)	Full time workers engaged in agri- culture in 1985 (B)	Upper limit of labour force ((A)-(B)) x 2,500hr.
	1960	1965	1970	1960	1965	1970	1970 /1960	1970 /1965			
Block No.1											
Block No.2											
Block No.3											
Block No.4											
Block No.5											
Total											

**B-3. Preparation of Map Showing Suitable Production Area for Each Crop and Each Block  
(agricultural, fishery and fisheries production)**

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	Map of distribution of suitable natural conditions  Map of distribution of suitable socio-economic conditions	i) Preparation of suitability map for each crop based on the analysis of the data of agricultural meteorology, irrigation, water sources and productive resources (A-1), soil survey (A-2) and land use condition (A-3) ii) Preparation based on the analysis of the data of socio-economic conditions for agriculture, forestry and fisheries (A-4)
b) Comparison with other methods and techniques		i) Apply A-1, A-2 and A-3 ii) Apply A-4
c) Development and introduction of new techniques		- ditto -
d) Coordination with, and recommendations to, the provincial Government		- ditto -
e) Drilling in new techniques (Report making is to be prepared plan by counterparts)		- ditto -
f) Education and training of local staff, and extension of techniques	Content of training Method of training Number of trainees Period of training	- ditto -

Fig. 5 Area Suited for Sugar Cane Cultivation (example)

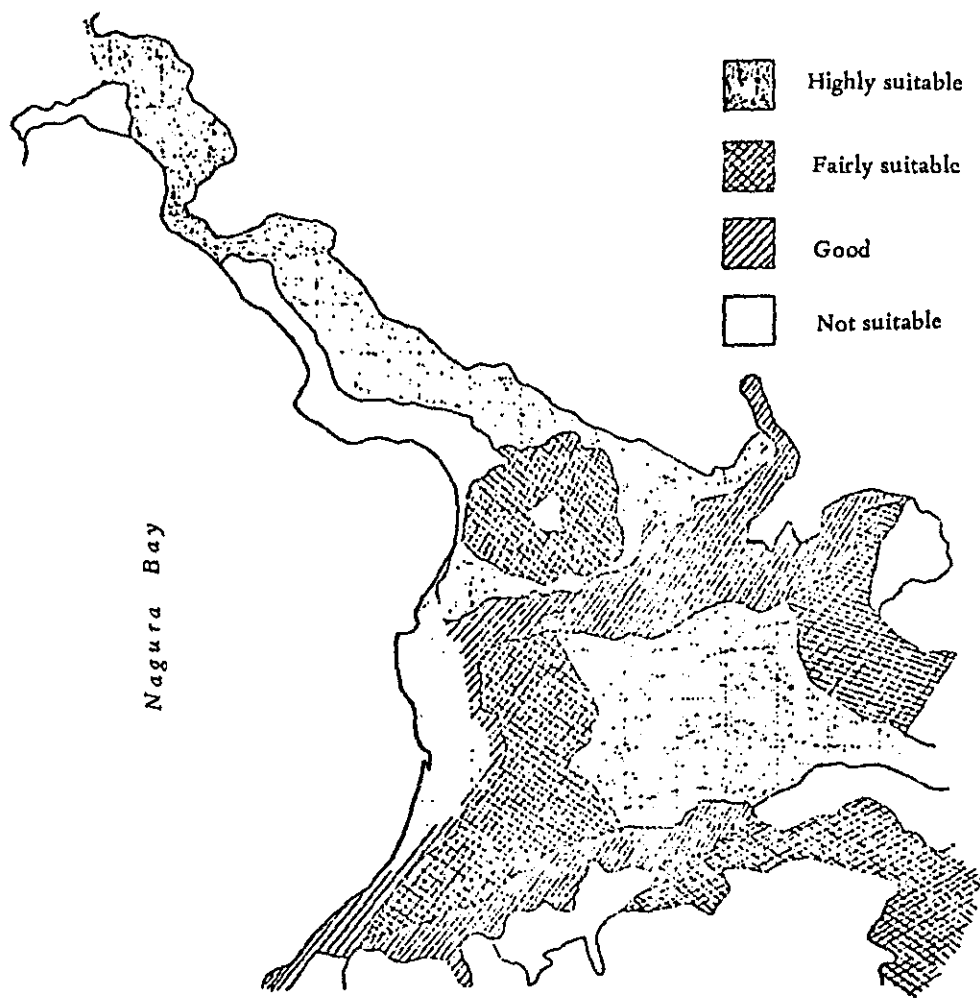




Table 5 Cropping Suitability by Soil Series (example)

Soil group	Soil series	Main crops				Other crops		
		Sugar cane	Pineapple	Sweet potato	Paddy	Mandarine orange	Tobacco	Leaf vegetables
Reddish brown soil		—	Fairly suitable	Fairly suitable	Not suitable	Fairly suitable	Fairly suitable	Highly suitable
		Fairly suitable	Fairly suitable	Fairly suitable	Fairly suitable	Highly suitable	Fairly suitable	Good
		Fairly suitable	Good suitable	Fairly suitable	—	Fairly suitable	Good	Good
		Highly suitable	Highly suitable	Fairly suitable	Fairly suitable	Fairly suitable	Highly suitable	Fairly suitable
		Highly suitable	Fairly suitable	Highly suitable	Fairly suitable	Highly suitable	Fairly suitable	Fairly suitable
		Fairly suitable	Fairly suitable	Highly suitable	Fairly suitable	—	—	Fairly suitable
Brown soil of lowlying land		Good	Good	Fairly suitable	Not suitable	Fairly suitable	Fairly suitable	Fairly suitable
		Good	Not suitable	Fairly suitable	Fairly suitable	Not suitable	Not suitable	Fairly suitable
		Fairly suitable	Not suitable	Fairly suitable	Fairly suitable	Not suitable	Not suitable	Highly suitable

Table 6 Soil Suitability to Upland Crops and Grass (example)

Crop	Fertility			Acidity			Soil texture			Underdrainage			Suitability	
	High	Medium	Poor	Acid	Neutral	Alkaline	Coarse	Medium	Fine	Good	Medium	Poor		
Upland crop	Sugar cane	H	M	L	M	H	L	H	H	H	M	L	Suitable	
	Pineapple	H	M	L	H	O	M	H	M	H	L	O	Suitable	
	Sweet potato	M	H	L	M	M	M	H	M	H	M	O	Suitable	
	Paddy	H	M	L	M	M	L	M	H	L	M	H	Suitable	
	Tobacco	M	H	L	L	H	M	H	L	H	L	O	Suitable	
	Leaf vegetables	H	M	L	L	H	M	H	M	H	H	M	Suitable	
	Banana	H	M	M	M	H	M	L	H	H	M	L	Suitable	
	Papaya	H	M	M	M	M	M	L	H	M	H	M	Suitable	
	Mandarine orange	H	H	M	H	M	M	M	H	M	H	L	O	Suitable
	Others	H	M	M	M	H	L	L	H	M	H	M	L	Suitable
	Grass	Napier grass	H	O	O	O	H	M	H	H	H	M	L	Perennial
Pangola grass		H	H	O	M	H	M	H	H	H	H	L	Herbage	
Rye grass		H	M	O	L	H	L	H	M	H	M	O	Annual	
Green cut maize		H	M	O	L	H	L	H	M	H	M	O	Grass	
Alfalfa		H	M	O	O	H	M	H	H	M	L	O	Leguminous crop	
Ladino clover		H	M	O	O	H	L	M	H	H	H	M	Leguminous crop	

Notes: Leaf vegetables include cabbage, lettuce and spinach.

Fig. 6 Plan for Human Habitation Area and Improvement of Living Environment Facilities (example)

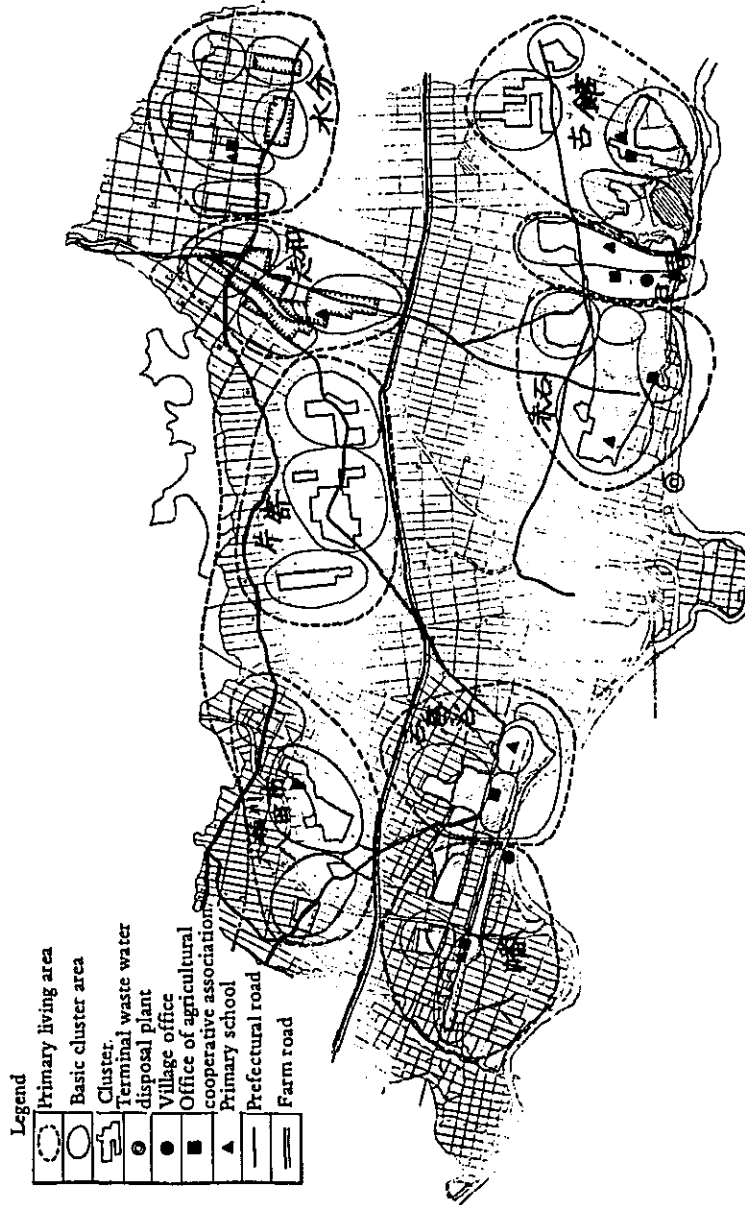


Table 7 Cropping Suitability by Block (example)

Cropping Suitability by Block:

Crop	Block No. 1	Block No. 2	Block No. 3	Block No. 4	Block No. 5
Paddy, large type A	○	○	○	○	○
Paddy, large type A'	○	○	○	○	○
Paddy, medium type B	○	○	○	○	○
Paddy, small type	○	○	○	○	○
Open-field vegetables (1)	○				
Open-field vegetables (2)	○				
Open-field vegetables (3)			○	○	
Open-field vegetables (4)			○	○	
Grape	○	○	○	○	
Vegetables in protected facilities	○		○		
Apple (1)		○	○	○	
Apple (2)		○	○	○	○
Apple (3)		○	○	○	○
Apple (4)		○	○	○	
Apple (5)		○	○	○	○
Apple (6)		○	○	○	
Apple (7)		○	○	○	
Apple (8)		○	○	○	
Apple (9)		○	○	○	○
Apple, small type		○	○	○	○
Dairy farming (1), existing grassland			○		○
Dairy farming (1), grassland reclamation					○
Dairy farming (2), existing grassland			○		○
Dairy farming (2), grassland reclamation					○
Beef cattle raising (1), existing grassland	○	○	○		○
Beef cattle raising (1), grassland reclamation					○
Beef cattle raising (2), existing grassland			○		○
Beef cattle raising (2), grassland reclamation					○
Hog raising	○	○	○	○	
Poultry		○	○	○	

#### B-4. Products by Crop

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	Land use condition  Production techniques by crop	i) Clarifying planted acreage on the basis of the land use survey data (A-3) ii) Clarifying production techniques by crop on the basis of the data of production techniques and production cost survey (A-6); and crop yield by unit to examine the productivity of blocks
b) Comparison with other methods and techniques		Full utilization of data available in Indonesia, with studies by the Japanese experts and provincial staff if necessary
c) Development and introduction of new techniques		- ditto -
d) Coordination with, and recommendations to, the provincial government		
e) Drilling in new techniques (Report making is to be prepared plan by counterparts)		Apply A-6
f) Education and training of local staff, and extension of techniques	Content of training Method of training Number of trainees Period of training	Apply A-6

Fig. 7 Present Land Use Map (example)



Table 8 Changes in Agricultural Products (example)

Year Item Crop	1960			1965			1970		
	Planted acreage	Products (Unit)	Value of products (million yen)	Planted acreage (ha)	Products (Unit)	Value of products (million yen)	Planted acreage (ha)	Products (Unit)	Value of products (million yen)
	(ha)	(Unit)	(million yen)	(ha)	(Unit)	(million yen)	(ha)	(Unit)	(million yen)
Paddy	3,850	19,010	1,285	4,002	20,200	2,128	3,830	21,700	3,002
Wheat and barley	841	2,076	45	438	1,043	24	206	555	27
Miscellaneous cereals	739	980	46	443	593	34	247	345	34
Potatoes	80	1,317	7	90	1,562	18	85	1,495	47
Vegetables	240	3,400	62	211	2,637	80	346	5,879	313
Fruits	396	4,831	174	656	6,947	238	593	8,270	504
Flower			-			7			2
Industrial crops	73	134	25	121	247	116	108	254	144
Forage crops	292	6,244		427	11,135		463	15,745	
Seeds and seedlings			3	11		5		8	90
Total			647			2,650			4,163
Sericulture (mulberry)	10	4	2	5	2	1	4	2	2
Draft and beef cattle	2,029	2,544	19	2,120	3,189	126	1,895	2,902	115
Dairy cattle	331	568	32	342	881	88	304	855	108
Hog raising	326	484	22	657	3,057	104	455	4,135	336
Poultry	2,673	23,400	45	2,580	40,100	98	1,419	32,800	121
Other livestock products			10			10			2
Total			130			427			684
Processed agricultural products			19			-			-
Grand total			796			3,077			4,847

Table 9 Pattern of Farm Management (1) (example)

1.	Farm management pattern	Paddy, type A (mechanized farming system using large type equipment)												
2.	Characteristics	(1)	Crop: Paddy											
		(2)	Transplanting cultivation for mono-culture of paddy using riding tractor (45PS) and ordinary type combine. Post-harvest preparation including drying by country elevator on a commission basis.											
3.	Applicable area and grade	(1)	Grade of slope: Less than 1/100											
		(2)	Applicable area: Unit larger than 100 ha											
4.	Optimum area	(1)	Area: 40 ha											
		(2)	Labour force											
5.	Investment in main farm machinery and facilities													
	Classification	Type and size	Quantity	Purchasing price	Farmer's burden ratio	Durable	Depreciation expense							
	Tractor	45PS	1	1,570		8	196							
	Line sower	550 lr.	1	130		5	26							
	Manual spreader	22 m <sup>3</sup>	1	350		5	70							
	Rotary harrow	18 m	1	380		5	76							
	Paddy field harrow	20	1	94		5	19							
	Transplanting machine	4	6	665		5	133							
	Manual granule spreader		10	50		5	10							
	Pulling type power duster		1	650		5	130							
	Ordinary type combine	30 m	1	5,600		8	700							
	Trailer	2 t	1	250		5	50							
	Seedling grower and seedling case		1	300		5	60							
	Total			10,039			1,470							
	Machine shed		1	1,475		40	37							
	Repair cost													
6.	Labour force distribution													
	Paddy:	Monthly working hours												
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
					3,548	4,188	1,400	1,672	616	1,500	1,240			14,164
7.	Income and expenditure of management													
		Amount (¥)												
	Gross income	Income from sales of rice				41,280,000								
	Management expenditures	Seeds and seedlings				255,000								
		Fertilizers				997,000								
		Facilities				52,000								
		Farm equipment				1,972,000								
		Irrigation charge				377,000								
		Fuel and power				394,000								
		Plant protection				962,000								
		Rent and charges				900,000								
		Others				591,000								
	Total					6,500,000								
	Net income					34,780,000								





Table 11 Land and Labour Productivity (1970) (example)

Unit: thousand yen

Agricultural income/10 ha Agricultural income per full time worker	Less than 20	20 - 30	30 - 40	40 - 55	55 - 72	72 - 88	88 - 100	More than 100
900 - 1,000								
850 - 900								
800 - 850								
700 - 800								
670 - 700								
550 - 670								
500 - 550								
400 - 500								
300 - 400								
Less than 300								

B-5. Survey for Introduction of Advanced Techniques

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	Survey and analysis of production unit  Survey for introduction of advanced production techniques	i) Study of merits and demerits of production unit by crop on the basis of the data of management structure (A-6) and social consciousness (A-7) to plan a desirable production unit for the future ii) Study of the possibility of expanding production units applying advanced production techniques
b) Comparison with other methods and techniques	Method of extension plan	Preparation to be based on the opinions of the provincial staff, administrative target, if any, should be filled
c) Development and introduction of new techniques		Apply C-3
d) Coordination with, and recommendations to, the provincial government		Apply C-3
e) Drilling in new techniques (Report making is to be prepared by counterparts)		Apply C-3
f) Education and training of a local staff, and extension of techniques	Content of training Method of training Number of trainees Period of training	Apply C-3

Table 12. Production Process (Collective Farming by Intorduction of Large Farm Machinery)  
(example)

No.	Crop	Acreage of collected unit	Remarks
1	Paddy, large type, A	40 ha	Large tractor and ordinary type combine
2	Paddy, large type, A'	40 ha	Large tractor and ordinary type combine
3	Paddy medium type, B	20 ha	Medium tractor and self-threshing combine
4	Paddy small type, B	5 ha	Tiller and binder
5	Open-field vegetables (1)	8 ha	(4 ha for water melone, 2 ha for Chinese yam, and 2 ha for green soybeans)
6	Open-field vegetables (2)	8 ha	(4 ha for water melon, 2 ha for Chinese yam, and 2 ha for Chinese cabagge)
7	Open-field vegetables (3)	6 ha	(2 ha each for radish, carrot and lettuce)
8	Open-field vegetables (4)	6 ha	(2 ha each for radish, lettuce and Chinese cabbage)
9	Grape	15 ha	Cambells Early
10	Vegetables in protected facilities	30,000 m <sup>2</sup>	(Spring tomato, autumn cucumber, and winter tomato)
11	Apple garden (1) - A	15	Dwarfing, flatland (Delicious combined with other varieties)
12	Apple garden (2) - B	15	Dwarfing, slope land (Delicious combined with other varieties)
13	Apple garden (3) - A	15	Non-dwarfing, flat land (Delicious combined with other varieties)
14	Apple garden (4) - B	15	Non-dwarfing, slope land (Delicious combined with other varieties)
15	Apple garden (5) - A	15	Dwarfing, flatland (combined)
16	Apple garden (6) - B	15	Dwarfing, slope land (combined)
17	Apple garden (7) - A	15	Non-dwarfing, flatland (combined)
18	Apple garden (8) - B	15	Non-dwaring, slope land (combined)
19	Apple garden (9) - A	15	Non-dwarfing, flatland (high class varieties)
20	Apple garden, small, B	5	Non-dwarfing, slope land (combined)
21	Dairy farming (1), existing grassland	178	240 heads
22	Dairy farming (1), grassland reclamation	178	240 heads
23	Dairy farming (2), existing grassland	2.7	10 heads
24	Dairy farming (2), grassland reclamation	2.7	10 heads
25	Beef cattle (1), existing grassland	126.8	300 heads
26	Beef cattle (1), grassland reclamation	126.8	300 heads
27	Beef cattle (2), existing grassland	80	280 heads
28	Beef cattle (2), grassland reclamation	80	280 heads
29	Hog raising	3	320 heads
30	Poultry	2	20,000 heads

Table 13. Amount of Fixed Assets (example)

Item	Main Farm Machinery										Main Cattle									
	Power plow and tractor (more than 10 PS)		Power sprayer		Power duster		Transplanting machine		Rice and wheat harvester		Self-threshing combine		Rice and wheat dryer		Dairy cattle		Beef cattle		Hog	
	Qty	No. of farm households	Qty	No. of farm households	Qty	No. of farm households	Qty	No. of farm households	Qty	No. of farm households	Qty	No. of farm households	Qty	No. of farm households	Qty	No. of farm households	Qty	No. of farm households	Qty	No. of farm households
Total	128	370	37	405	17	234	25	26	131	309	7	51	29	32	141	39	1,346	535	1,180	152
Number per each 100 farm households	16	-	4	-	2	-	3	-	15	-	1	-	3	-	17	-	163	-	180	-
Percentage of utilizing farm households	-	45	-	49	-	28	-	3	-	38	-	7	-	4	-	5	-	65	-	18
Total	326	1,237	361	1,169	165	1,288	18	31	382	889	23	117	60	91	817	292	3,880	1,983	4,286	394
Number per each 100 farm households	8	-	30	-	4	-	0	-	10	-	1	-	2	-	21	-	94	-	112	-
Percentage of utilizing farm households	-	33	-	31	-	34	-	1	-	23	-	4	-	2	-	8	-	52	-	10

Table 14. Main Organizations for Collective Utilization of Farm Machinery (example)

Name of Organization	Location	Number of Farm Households	Crop	Common Facilities	Coverage (ha)
			Paddy	5 tractors	
			Paddy	1 set of tractors and other machinery including 1 binder	
			Paddy	1 each of combine and dryer	
			Paddy	2 tractors	
			Paddy	1 tractor	
			Paddy	4 tractors, 5 binders and 3 transplanting machines	
			Paddy	1 tractor and 1 shed (joint investment for introduction of advanced techniques of collective farming)	
			Paddy	2 tractors, 4 binders, and 1 shed	
			Paddy	1 seed centre with a thresher	
			Cucumber	2 speed sprayers	
			Apple	1 speed sprayer	

Table 15. Main Farm Management Facilities (example)

Name of Facility	Kind of Work	Management Body	Coverage	Beneficial Area	Year of Starting Improvement Work	Remarks
Rice center	Improvement of agricultural structure			50 ha (15)	1967	
Agricultural machinery	Improvement of agricultural structure			(821)	1967	
Shiitake fungus drying station	Improvement of forestry			(12)	1967	
Cucumber selecting station	Cucumber production in designated area			20 ha (200)	1942	
Tractor	Cucumber production in designated area			107 ha (101)	1964	
Combine	Cucumber production in designated area			107 ha (101)	1964	

Table 16. Progress of Farm Management Facilities Work (example)

Name of Facility	Purpose	Location	Service Area	Operational Scale, Building Area and Quantity	Management Body	Date of Establishment	Remarks
Rice centre	Drying and processing of harvested paddy	Centre		1,000 ton per year		1967	
Agricultural machinery centre	Repair and maintenance	Centre		1 building, 1,150 m <sup>2</sup> (3,800 services per year)		1967	
Shitake fungus drying station	-	Centre		1 building, 173 m <sup>2</sup> (223 thousand a year)		1967	
Cucumber selection station	-	Centre		1 building, 800 m <sup>2</sup> (3 sets of fruit selector)		1972	
Tractor combine	Plowing and transport	Centre		4 (10 FS)		1964	
Other (warehouse)	Harvesting	Centre		3		1964	

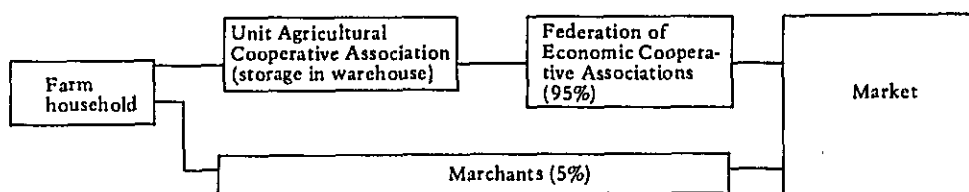


B-6. Survey of Commodity Distribution

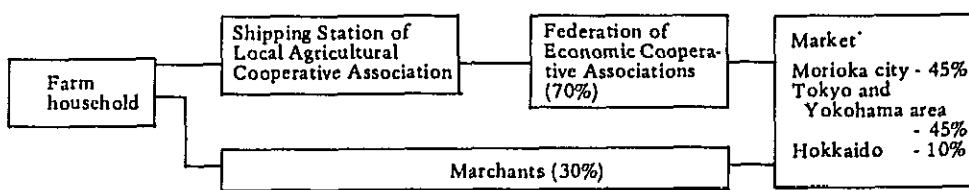
Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	<p>Analysis of commodity distribution mechanism</p> <p>Study of distribution of agricultural products and input materials and equipment</p>	<p>Clarification and analysis of the constraints of distribution system (separately for food crops and estate crops)</p> <p>Study of the pattern of commodity distribution, management body of transport media, road facilities, farm gate price, and broker's margin for clarification of their seasonal fluctuation in bumper and deficit year</p>
b) Comparison with other methods and techniques		Analysis of future prospect of each crop by Japanese experts taking into consideration of IRBD's "Price Forecast"
c) Development and introduction of new techniques	Preparation of chart of distribution mechanism and other charts	Study to be made by Japanese experts and provincial staff
d) Coordination with, and recommendations to, the provincial government		Recommendations to the provincial government on the basis of the study made in item (c) for adjustment and revision of the present plan
e) Drilling in new techniques (Report making is to be prepared by counterparts)		Measures to be devised by each crop and each Kabupaten on the basis of the data of actual inter-Kabupaten marketing pattern
f) Education and training of a local staff, and extension of techniques	<p>Content of training</p> <p>Method of training</p> <p>Number of trainees</p> <p>Period of training</p>	<p>Trainees to be sent for training at agricultural cooperative associations to study the existing state and development stages of the marketing system of rice and other specific crops</p> <p>2 persons</p> <p>To be determined according to the situation in the project area</p>

Fig. 8 Production and Marketing System (Shipping System) (example)

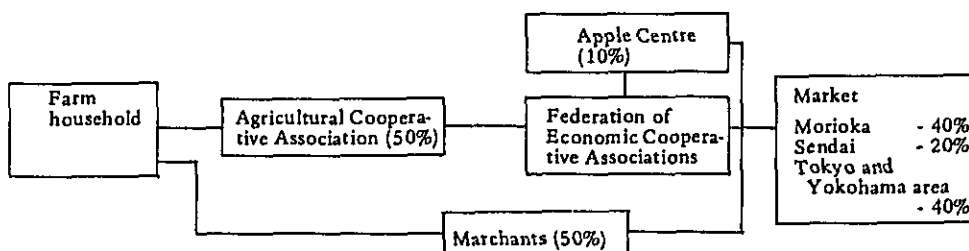
(Rice)



(Vegetables)



(Apple)



(Milk)

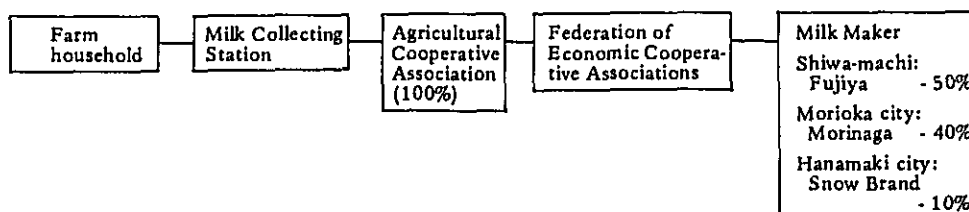


Table 17 Shipments of Vegetables and Fruits by Town and Crop (example)

Item Municipality	Crop	Shipments					Consumption within producing municipality	Self-sufficient for social consumption	Ratio of shipment to urban area
		Total	For direct consumption			For processing			
			Class 1 city	Class 2 city	Class 3 city				
		(1) t	t	t	t	t	(2) t	(3) =(1)+(2) t	(1)/(3) %
Shiwamachi	Radish	499	-	400	82	17	725	1,224	40.8
	Cabbage	349	-	349	-	-	501	850	41.1
	Cucumber	340	128	212	-	-	90	430	79.1
	Pumpkin	289	49	107	133	-	53	342	84.5
	Musk melon	120	-	120	-	-	35	155	77.4
	Open-field melon	120	-	120	-	-	35	155	77.4
	Potato	788	220	458	110	-	344	1,132	69.6
	Apple	5,652	2,355	2,457	734	106	467	6,119	92.4
	Pear	236	-	99	48	89	45	281	84.0
	Grape	550	195	236	119	-	35	585	94.0
Peach	240	-	-	-	240	20	260	92.3	
Ishidoriyamachi	Apple	1,555	1,065	212	268	10	443	1,998	77.8
Yahabamachi	Egg plant	156	-	156	-	-	72	228	68.4
	Tomato	286	88	198	-	-	54	340	84.1
	Cucumber	390	176	214	-	-	87	477	81.8
	Pumpkin	165	33	127	5	-	40	205	80.5
	Potato	380	-	321	59	-	178	558	68.1
	Apple	3,463	1,313	1,128	864	158	256	3,719	93.1

Notes:

1. Actual shipments of vegetables and fruits in 1970.
2. Class 1 cities are the cities having a population of more than one million and other large cities with equivalent importance (Sendai, Sapporo and Tokyo).
3. Class 2 cities are the cities ranging in population from 200 thousand to one million (Aomori, Morioka, Akita, Yamagata and Fukushima).

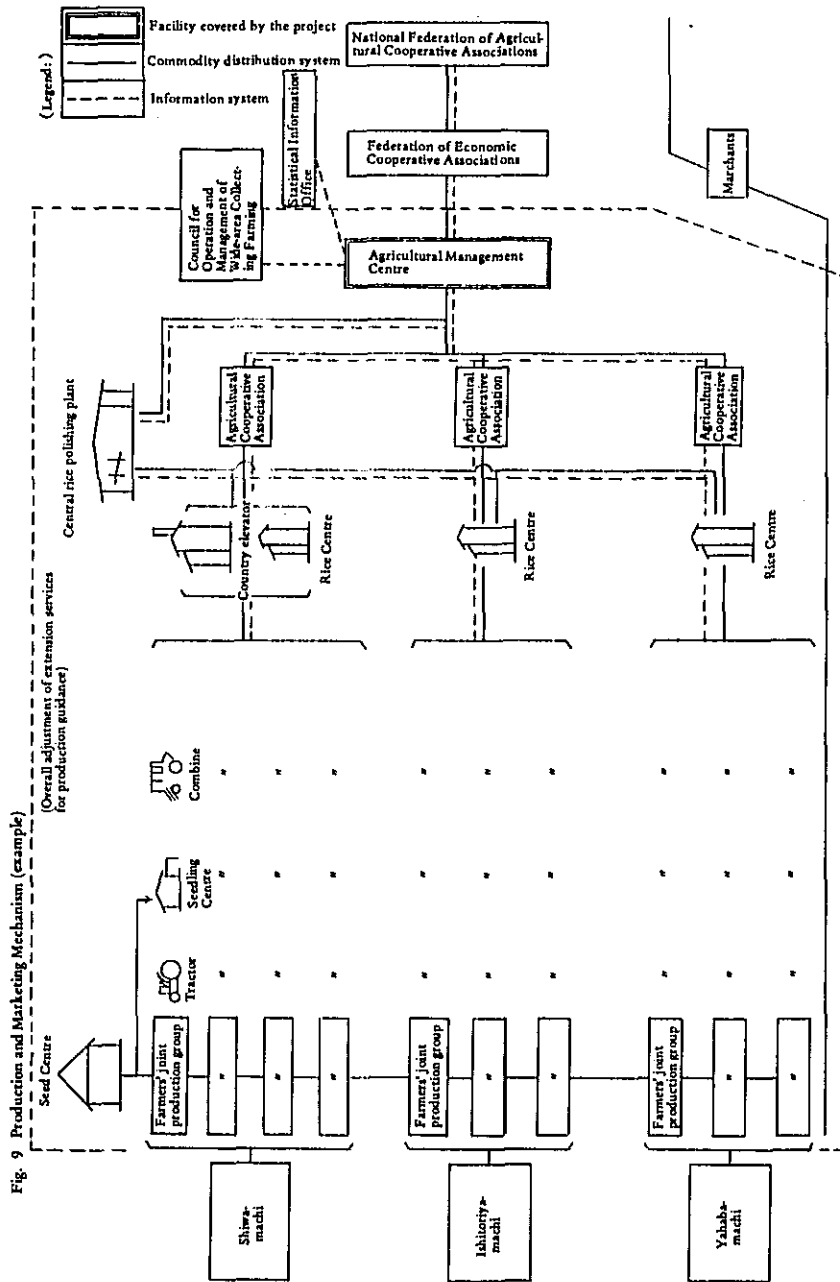
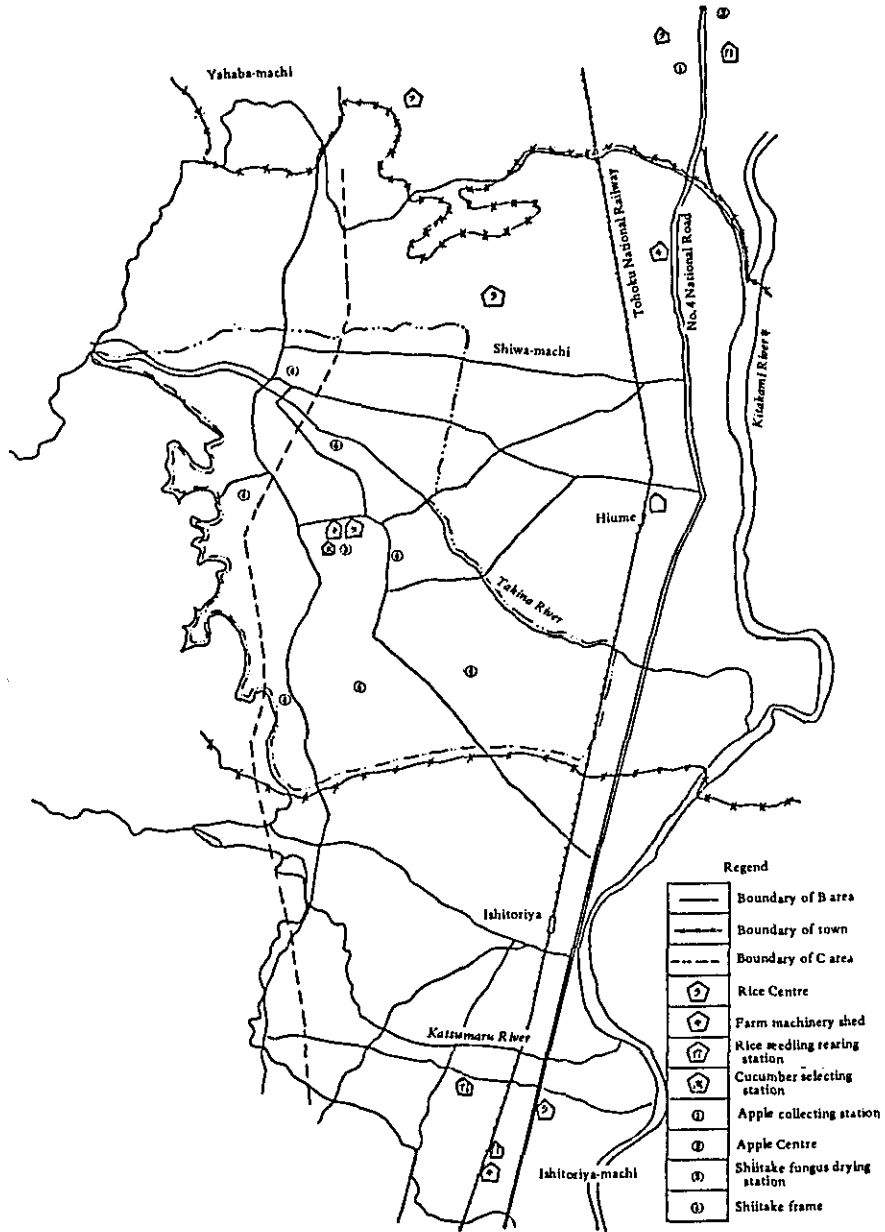


Fig. 10 Progress of Farming Facilities Improvement (example)



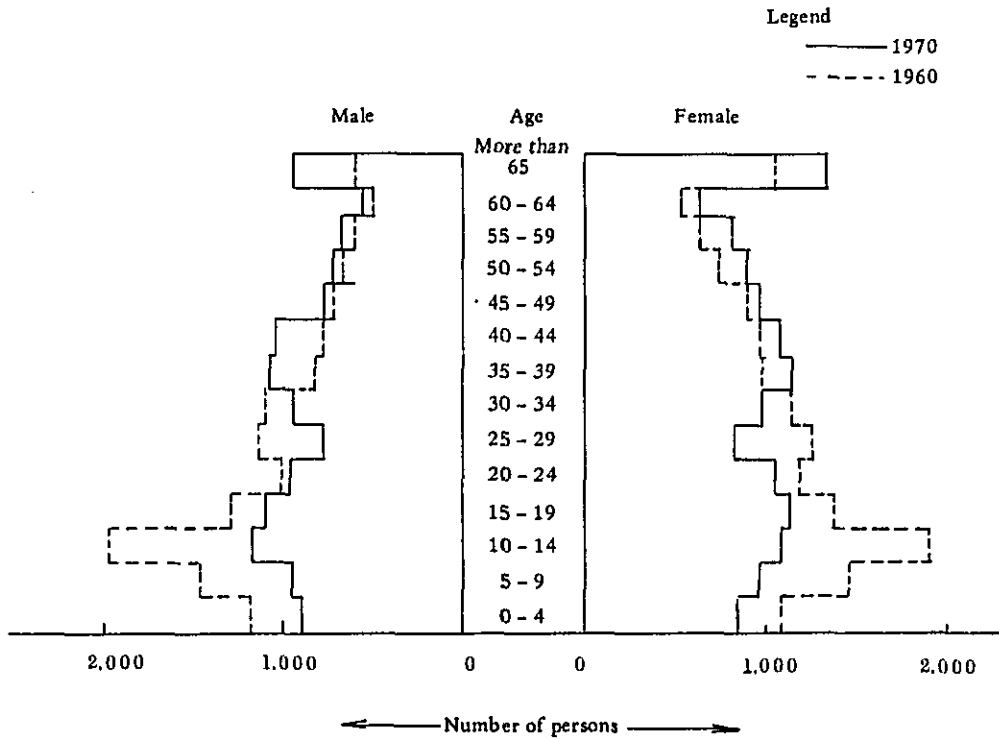
B-7. Farm Labour Requirement by Block

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	Trends of labour force by industry  Trends of income by industry	Analysis of demand supply situation of labour force (in and out of the project area), unemployment and underemployment by industry for clarification of farm labour requirement in each block in the target year Study of annual, seasonal and daily income disparity and labour movement between industries and of labour force movement between the project area and other areas
b) Comparison with other methods and techniques		Introduction of high-yielding cultivation techniques resorting to labour intensive method is to be studied while reviewing the possibility of introducing labour-saving or mechanized farming techniques in blocks short of farm labour
c) Development and introduction of new techniques	Introduction of labour-intensive cultivation techniques and agro industry to provide increased employment opportunities and to attain improvement in quality	Study to be made with agricultural extension workers
d) Coordination with, and recommendations to, the provincial Government		Recommendations to be offered to the provincial government based on the study made in item (c) for establishment of extension policy
e) Drilling in new techniques (Report making is to be prepared plan by counterparts)		Study to be made for each crop
f) Education and training of a local staff, and extension of techniques	Content of training Method of training  Number of trainees Period of training	Trainees to be sent for training in labour-intensive as well as labour-saving cultivation techniques 4 persons 6 months

Table 18 Changes in Population and Number of Households (example)

Item		Population			Number of households		
		1960	1965	1970	1960	1965	1970
Model area	Total	5,812	5,205	4,942	1,014	1,020	1,031
	Index	100%	90%	85%	100%	101%	102%
Shiwa-machi	Total	29,327	27,449	26,459	5,316	5,568	5,839
	Index	100%	94%	90%	100%	105%	110%

Fig. 11 Population Distribution by Age by Sex (example)  
(Shiwa-machi)



Source: National Census

Table 19 Outline of Agricultural Income per Farm Household (example)

Unit: thousand yen, %

Item	1965				1970				
	Agricultural income	Non-agricultural income	Income of farm household	Dependency on agriculture	Agricultural income	Non-agricultural income	Income of farm household	Dependency on agriculture	
Model area	531	485	1,016	52.2	1,154	1,181	2,335	49.5	
Shiwa-machi average	479	437	916	52.2	974	996	1,970	49.4	
Prefectural average	389	298	687	56.6	540	652	1,191	45.3	
Ratio	Model area/ Average of Shiwa-machi	110.9	111.0	110.9	-	118.5	118.6	118.5	-
	Model area/ Prefectural average	136.5	162.8	147.9	-	213.7	181.1	196.1	-

Notes: The averages of the model area and Shiwa-machi are the values used in estimation of the average income of the people living in the town, whereas the prefectural average is based on the survey of farm household economy by the Ministry of Agriculture and Forestry. Some discrepancy is noted between the two data.

Table 20 Savings and Loans of Farm Households Based on Data of Agricultural Credit Service (example)

Unit: thousand yen

Item	Savings		Loans	
	Total	Time deposit	Total	Short-term loans
Shiwa Agricultural Cooperative Association	981,523 (1,190)	690,917 (837)	1,019,730 (1,236)	245,439 (298)

Notes: 1. Prepared from "Guide to Agricultural Cooperative Association in Iwate Prefecture, 1971".  
2. Figures in parentheses are the average per farm household obtained by dividing the total amount by the number of households having a regular member of Shiwa Cooperative (825 households).



**C Project Formulation and Evaluation**

**C-1. Production Plan for Each Block in the Target Year**

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	Production plan Marketing plan Land use plan Income distribution plan Labour force distribution plan	Preparation of the plans to be based on full utilization of the productive resources data (B-1 & B-2) and on the analysis of soil suitability for each crop (B-3) and introduction of advanced techniques (B-5). (Selection of production system and crops is subject to change by whether the government gives priority to the increase of income or to that of employment opportunities)
b) Comparison with other methods and techniques		i) Study of the method using electronic computer (apply C-4) ii) Manual calculation method to be studied by the Japanese experts and provincial staff
c) Development and introduction of new techniques		i) Apply C-4
d) Coordination with, and recommendations to, the provincial government		i) Apply C-4
e) Drilling in new techniques (Report making is to be prepared plan by counterparts)		i) Apply C-4 ii) Drilling to be conducted in the whole of South Sulawesi province and specific Kabupaten method
f) Education and training of a local staff, and extension of techniques	Content of training Method of training  Number of trainees  Period of training	Seminars in the project area on the computerized method and manual calculation method Staff of the provincial government and pertinent Kabupaten offices To be determined according to the situation in the project area

Fig. 12 Land Use Plan (example)

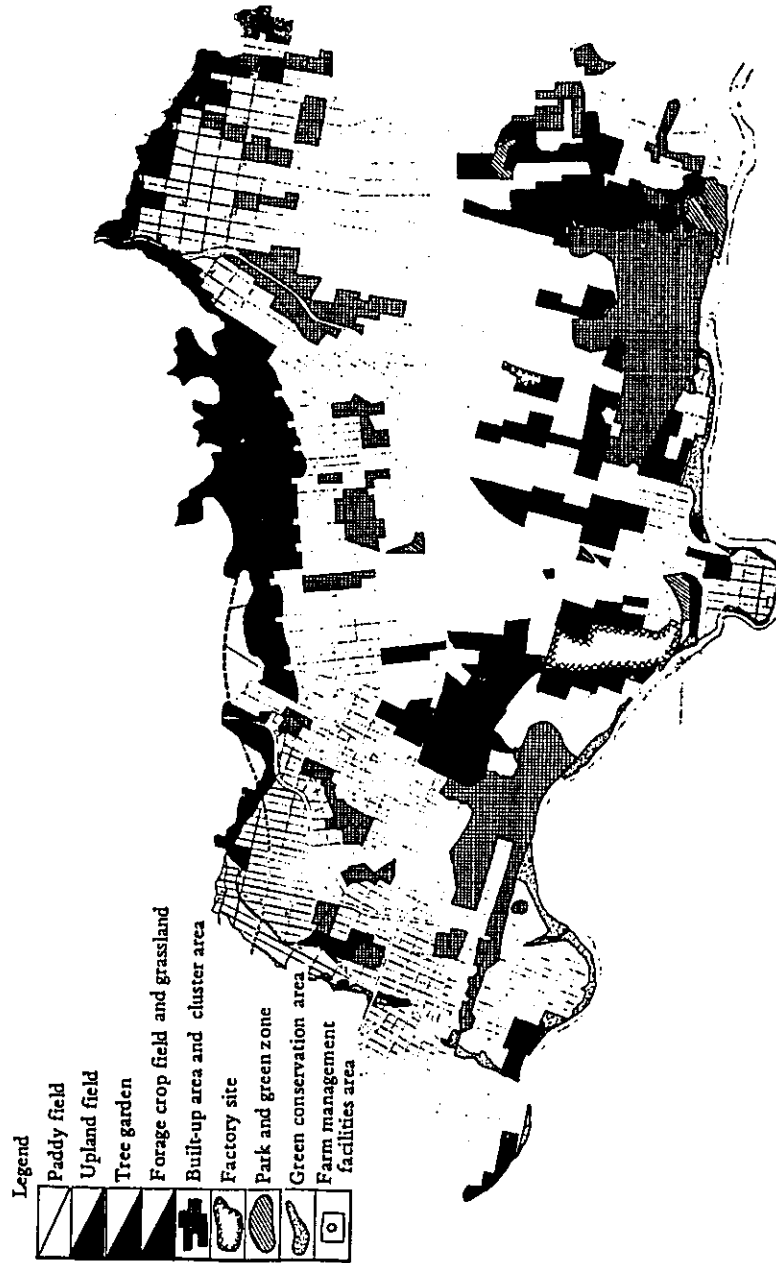


Table 21 Land Use Plan (Example)

Unit: ha, %

Land Category	Classification	Farmland				Residential Land				Forest Land and Waste Land	Others	Total		
		Cultivated Land		Meadow and Pasture	Total Farmland Area	Farming Facilities Area	Factory Site	Others	Total Residential Land Area					
Item														
Farmland	Present Acreage	4,666	561	224	5,451	23	5,474	10	5	637	727	841	7,694	
	Component ratio	60.6	7.3	2.9	70.8	0.3	71.1	0.1	0.1	8.3	9.5	10.9	100.0	
	Planned acreage	4,312	938	272	5,522	-	5,522	105	109	932	253	773	7,694	
	Component ratio	56.1	12.2	3.5	71.8	-	71.8	1.1	1.4	12.1	3.3	10.0	100.0	
	Increase/Acreage	Δ 354	377	48	71	Δ 23	48	95	104	295	494	Δ 474	Δ 68	± 0
	Decrease/Component ratio	Δ 4.5	4.9	0.6	1.0	Δ 0.3	0.7	1.3	1.3	3.8	6.4	Δ 6.2	Δ 0.9	± 0.0
Hilly Land	Present Acreage	-	11	-	11	-	11	-	-	-	137	4	152	
	Component ratio	-	7.2	-	7.2	-	7.2	-	-	-	90.2	2.6	100.0	
	Planned acreage	-	131	-	131	-	131	10	-	-	-	11	152	
	Component ratio	-	86.2	-	86.2	-	86.2	6.6	-	-	-	7.2	100.0	
	Increase/Acreage	-	120	-	120	-	120	10	-	-	Δ 137	7	± 0	
	Decrease/Component ratio	-	79.0	-	79.0	-	79.0	6.6	-	-	Δ 90.2	4.6	± 0.0	
Total	Present Acreage	4,666	572	224	5,462	23	5,485	10	5	637	864	845	7,846	
	Planned Acreage	4,312	1,069	272	5,653	-	5,653	115	109	932	253	784	7,846	

Fig. 13 - Breakdown of Income by Crop and Block (example)

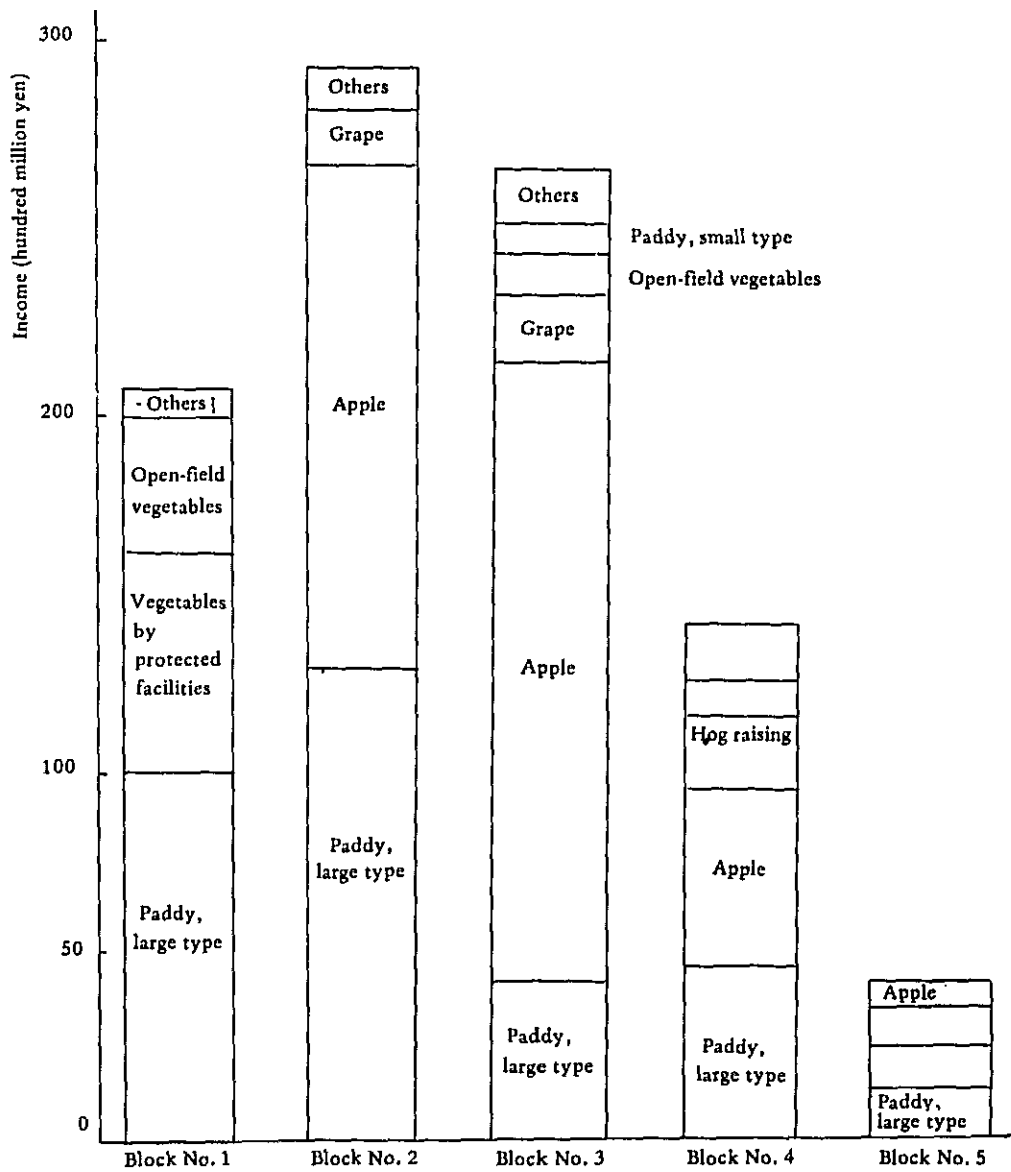


Table 22 Aggregate Income of Each Block (example)

Unit: hundred million yen

(1) Investment Restraint of 80 Billion Yen

Block No.	No. 1	No. 2	No. 3	No. 4	No. 5	Total of Region Area
Income						
Production Income in Each Block	172,071	286,900	218,397	97,652	48,327	823,347
Water Supply Cost	0.305	1.270	1.743	0.256	0.168	3.742
Income of Each Block	171,766	285,630	216,654	97,396	48,159	819,605

(2) Investment Restraint of 100 Billion Yen

Block No.	No. 1	No. 2	No. 3	No. 4	No. 5	Total of Region Area
Income						
Production Income in Each Block	205,622	286,877	231,452	118,772	48,327	891,050
Water Supply Cost	0.305	1.067	1.756	0.242	0.168	3.538
Income of Each Block	205,317	285,810	229,696	118,530	48,159	887,512

Unit: hundred million yen

(3) Investment Restraint of 120 Billion Yen

Income	Block No.					Total of Region Area
	No. 1	No. 2	No. 3	No. 4	No. 5	
Production Income in Each Block	206,841	285,399	259,247	137,667	49,595	938,749
Water Supply Cost	0	1,088	2,414	0,242	0,154	3,898
Income of Each Block	206,841	284,311	256,833	137,425	49,441	934,851

(4) No Investment Restraint

Income	Block No.					Total of Region Area
	No. 1	No. 2	No. 3	No. 4	No. 5	
Production Income in Each Block	206,654	279,994	281,335	140,148	41,888	950,019
Water Supply Cost	0,001	0,945	2,888	0,435	0	4,269
Income of Each Block	206,653	279,049	278,447	139,713	41,888	945,750

Table 23 Income per Capital (example)

(1) Investment Restraint of 80 Billion Yen

Block No.	Block No.					Total of Region Area
	No. 1	No. 2	No. 3	No. 4	No. 5	
Income						
Income of Each Block (billion yen)	172	286	217	97	48	820
Absorbable Population (person)	11,100	17,500	17,884	10,084	3,096	59,664
Income per Capita (thousand yen)	155	163	121	96	155	137

(2) Investment Restraint of 100 Billion Yen

Block No.	Block No.					Total of Region Area
	No. 1	No. 2	No. 3	No. 4	No. 5	
Income						
Income of Each Block (billion yen)	205	286	230	119	48	888
Absorbable Population (person)	13,308	17,500	17,688	10,408	3,096	62,000
Income per Capita (thousand yen)	154	163	130	114	155	143

(3) Investment Restraint of 120 Billion Yen

Block No.	Block No.					Total of Region Area
	No. 1	No. 2	No. 3	No. 4	No. 5	
Income						
Income of Each Block (billion yen)	207	284	257	137	49	935
Absorbable Population (person)	14,600	17,500	18,740	10,364	3,176	64,380
Income per Capita (thousand yen)	142	162	137	132	154	145

(4) No Investment Restraint (Total investment amount - 135,845.3 million yen)

Block No.	Block No.					Total of Region Area
	No. 1	No. 2	No. 3	No. 4	No. 5	
Income						
Income of Each Block (billion yen)	207	279	278	140	42	946
Absorbable Population (person)	14,468	17,500	19,024	10,776	3,028	64,796
Income per Capita (thousand yen)	143	159	146	130	139	146



Table 24 Absorbable Population by Block (example)

(1) Investment Restraint of 80 Billion Yen

	Absorbable Population		
	Full time Labour Force in 1960	Annual Employment of Labour Force	Total
	person	person	person
Block No. 1	11,100	0	11,100
Block No. 2	17,500	0	17,500
Block No. 3	15,900	1,984	17,884
Block No. 4	9,700	384	10,084
Block No. 5	1,900	1,196	3,096
Total	56,100	3,564	59,664

(2) Investment Restraint of 100 Billion Yen

	Absorbable Population		
	Full time Labour Force in 1960	Annual Employment of Labour Force	Total
	person	person	person
Block No. 1	11,100	2,208	13,308
Block No. 2	17,500	0	17,500
Block No. 3	15,900	1,788	17,688
Block No. 4	9,700	708	10,408
Block No. 5	1,900	1,196	3,096
Total	56,100	5,900	62,000

(3) Investment Restraint of 120 Billion Yen

	Absorbable Population		
	Full time Labour Force in 1960	Annual Employment of Labour Force	Total
	person	person	person
Block No. 1	11,100	3,500	14,600
Block No. 2	17,500	0	17,500
Block No. 3	15,900	2,840	18,740
Block No. 4	9,700	664	10,364
Block No. 5	1,900	1,276	3,176
<b>Total</b>	<b>56,100</b>	<b>8,280</b>	<b>64,380</b>

(4) No Investment Restraint

	Absorbable Population		
	Full time Labour Force in 1960	Annual Employment of Labour Force	Total
	person	person	person
Block No. 1	11,100	3,368	14,468
Block No. 2	17,500	0	17,500
Block No. 3	15,900	3,124	19,024
Block No. 4	9,700	1,076	10,776
Block No. 5	1,900	1,128	3,028
<b>Total</b>	<b>56,100</b>	<b>8,696</b>	<b>64,796</b>

Table 25 Monthly Required Working Hours by Block (example)

Investment restraint: 120 billion yen

	Block No. 1			Block No. 2			Block No. 3			Block No. 4			Block No. 5			Total		
	Self-employed Labour	Employed Labour	Sub-total	Self-employed Labour	Employed Labour	Sub-total	Self-employed Labour	Employed Labour	Sub-total	Self-employed Labour	Employed Labour	Sub-total	Self-employed Labour	Employed Labour	Sub-total	Self-employed Labour	Employed Labour	Sub-total
January	101.4		101.4	4.5		4.5	11.4		11.4	36.6		36.6	12.5		12.5	166.4		166.4
February	123.0		123.0	12.2		12.2	24.2		24.2	36.7		36.7	10.9		10.9	207.0		207.0
March	82.0		82.0	34.7		34.7	69.0		69.0	62.3		62.3	17.6		17.6	265.6		265.6
April	217.3		217.3	192.4		192.4	177.9		177.9	137.0		137.0	38.0	0.5	38.5	762.6	0.5	763.1
May	222.0	87.5	309.5	293.2		293.2	318.0		318.0	194.0	13.9	207.9	38.0	31.9	69.9	1,065.2	133.3	1,198.5
June	221.3		221.3	289.5		289.5	381.6	47.2	428.8	232.8	16.6	249.4	45.6	0.4	46.0	1,170.8	64.2	1,235.0
July	235.8		235.8	197.1		197.1	211.1		211.1	144.8		144.8	41.8		41.8	830.6		830.6
August	120.8		120.8	60.3		60.3	102.7		102.7	82.4		82.4	45.6		45.6	391.8		391.8
September	109.3		109.3	192.1		192.1	190.7		190.7	138.7		138.7	27.1		27.1	657.9		657.9
October	137.5		137.5	319.7		319.7	381.6	71.0	452.6	232.8	9.9	242.7	45.6	7.6	53.2	1,117.2	88.5	1,205.7
November	77.4		77.4	141.1		141.1	318.0		318.0	194.0		194.0	35.1		35.1	765.6		765.6
December	55.9		55.9	7.5		7.5	16.4		16.4	36.0		36.0	10.9		10.9	126.7		126.7
<b>Total</b>	<b>1,703.7</b>	<b>87.5</b>	<b>1,791.2</b>	<b>1,744.3</b>	<b>0</b>	<b>1,744.3</b>	<b>2,202.6</b>	<b>118.2</b>	<b>2,320.8</b>	<b>1,528.1</b>	<b>40.4</b>	<b>1,568.5</b>	<b>348.7</b>	<b>40.4</b>	<b>389.1</b>	<b>7,527.4</b>	<b>286.5</b>	<b>7,813.9</b>

All	Self-employed labour	7,527.4
Region	Employed labour	286.5
Area	Total	7,813.9



C-2. Investment Plan for the Target Year

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	Cost of infrastructural improvement for production Cost of improving production and marketing facilities	i) Establishment of guiding principles in determining the implementation policy of the project formulated in C-1 stage is to ensure systematic government and private investment for improvement of production infrastructure and facilities and consolidation of marketing system
b) Comparison with other methods and techniques	Extent of improvement of production facilities and marketing system	Cooperation of relevant Indonesian organizations in the technical estimation of the extent of improvement to production in infrastructure and marketing system to be adopted
c) Development and introduction of new techniques		
d) Coordination with, and recommendations to, the provincial government		
e) Drilling in new techniques (Report making is to be prepared plan by counterparts)		
f) Education and training of a local staff, and extension of techniques	Content of training Method of training Number of trainees Period of training	

Fig. 14 Comprehensive Rural Communities Development Plan (example)

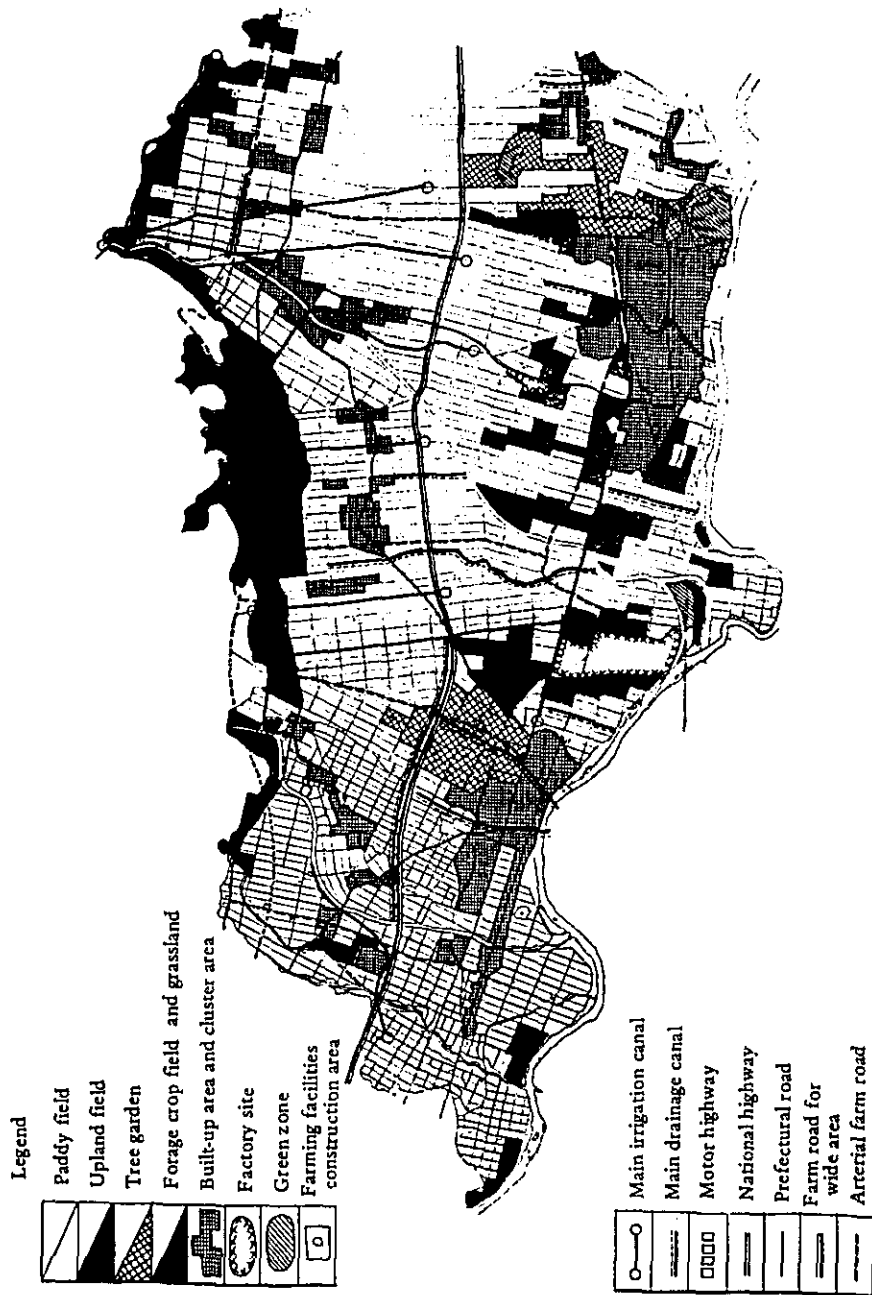


Fig. 15 Land Infrastructure Improvement Plan (example)

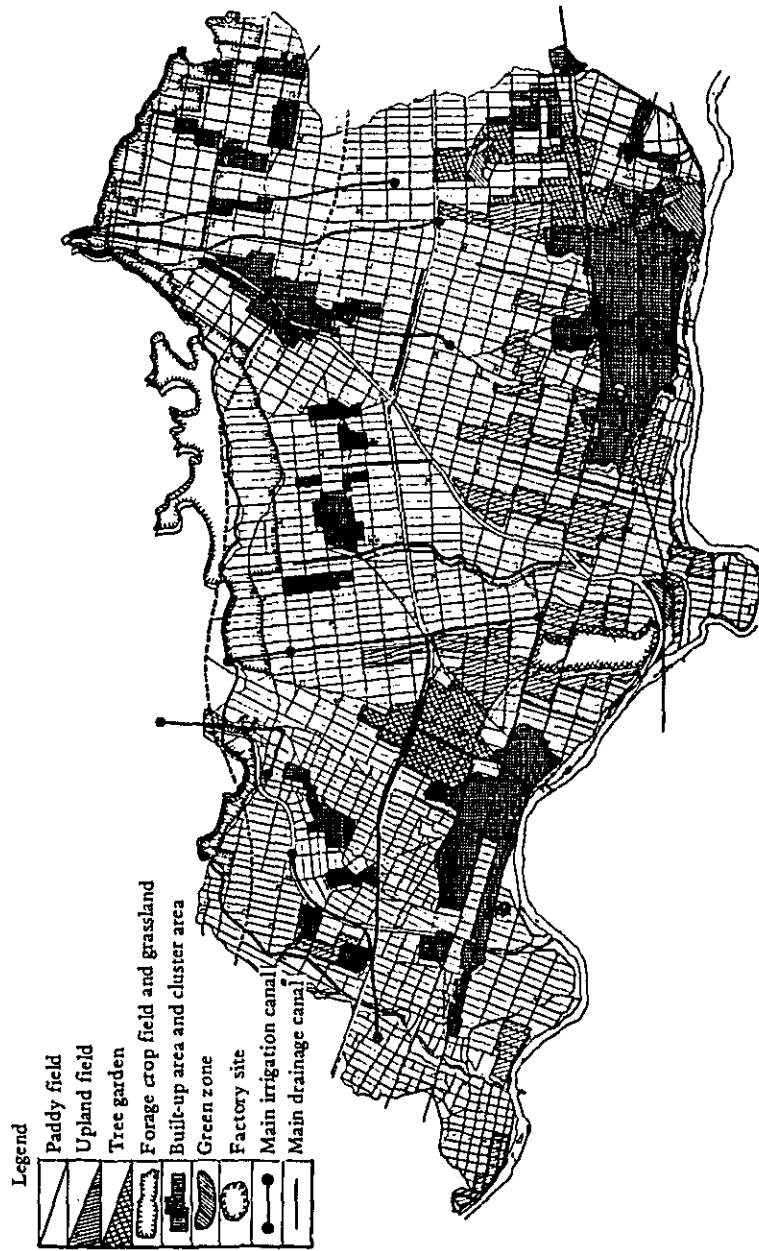


Table 26 Water Duty of Each Crop (example)

Investment restraint - 80 billion yen;  
water duty-in 10 thousand m<sup>3</sup>

Block No. 1				Block No. 2				Block No. 3			
Crop	Level	Unit Water Requirement	Total Water Requirement	Crop	Level	Unit Water Requirement	Total Water Requirement	Crop	Level	Unit Water Requirement	Total Water Requirement
Grape	10.0	48.0	480	Grape	3,333	48.0	160	Apple 5	24,995	48.0	1,200
				Apple 5	26,861	48.0	1,289	Apple 5	0.938	48.0	45
				Apple 5	2.0	48.0	96				
				Apple 6	2,333	48.0	112				
				Apple 6	0.667	48.0	32				
				Apple 9	6,472	48.0	311				
			480				1,968				1,245

Block No. 4				Block No. 5				Total			
Crop	Level	Unit Water Requirement	Total Water Requirement	Crop	Level	Unit Water Requirement	Total Water Requirement	Crop	Level	Unit Water Requirement	Total Water Requirement
Apple 5	3,333	48.0	160	Apple 5	3,067	48.0	147				
Apple 9	0.195	48.0	9	Apple 5	2.0	48.0	96				
				Apple 6	0.472	48.0	23				
			169				266	Grand Total			4,128





C-3. Technical Extension Plan up to the Target Year

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	Technical extension plan Training plan  Reinforcement plan for farmers' organizations and extension system	Preparation of technical extension and training plans necessary for smooth project implementation  Reinforcement of farmers' organization and extension system to be planned if necessary
b) Comparison with other methods and techniques		Study on the preparation of technical extension plan
c) Development and introduction of new techniques		Study to be made by the provincial staff, Japanese experts, and experts engaged in the study in item (b)
d) Coordination with, and recommendations to, the provincial government		Coordination with the provincial and Kabupaten governments on the basis of the study in item (c)
e) Drilling in new techniques (report making is to be prepared plan by counterparts)		
f) Education and training of a local staff, and extension of techniques	Content of training Method of training  Number of trainees  Period of training	Method of preparing extension plan Seminars in the project area and training in developed region Staff of the provincial government and pertinent Kabupaten offices To be determined according to the situation in the project area

C-4. Establishment of Provincial or Kabupaten Development Targets Consistent with Long-range National Plan

Step	Item	Remarks
a) Clarification and analysis of the methods adopted by the provincial government of South Sulawesi	Production plan Investment plan	Macro-economic analysis to ensure that the project implementation plans for the whole South Sulawesi province or for specific designated Kabupatens in C-1, C-2 and C-3 are consistent with the long-range national plan
b) Comparison with other methods and techniques	Macro-economic analysis	Study of the method of macroscopic analysis
c) Development and introduction of new techniques		Studies to be made by the provincial staff, Japanese experts, and experts, and experts engaged in the study in item (b)
d) Coordination with, and recommendations to, the provincial government		Coordination with the provincial government
e) Drilling in new techniques (Report making is to be prepared <i>palan</i> by counterparts)		Drilling in the development of South Sulawesi province
f) Education and training of a local staff, and extension of techniques	Content of training Method of training  Number of trainees Period of training	Macro-economic analysis Seminars in project area and training in several causes Several experts To be determined according to the situation in the project area

Table 27. Cost of Modernized Farming Facilities by Farming Pattern (example)

Facility	Farming Pattern	Crop	Cost per Basic Joint Farming Group			Cost per Local Joint Farming Group			Remarks
			Facilities Cost	Number of Member Households	Cost per Household	Number of Joint Farming Groups	Total Facilities Cost	Acreage of Joint Farming	
			thousand yen		thousand yen		thousand	ha	
Basic Joint Farming Facilities	Monoculture of paddy	Paddy-field rice plant	28,166	8	3,521	33	929,478	15.36	Notes: 1. Number of farm households Total: 3,511 (key farmers - 988)  2. Cost of paddy cultivation facilities for composite management = One half of the cost incurred by monoculture of paddy is taken for all farming patterns.
		Paddy	14,083	—	—	—	—	—	
	Paddy + Vegetables	Vegetables	23,759	—	—	—	—	—	
		Total	37,812	10	3,784	26	983,892	9.45	
	Paddy + Apple	Paddy	14,083	—	—	—	—	—	
		Apple	14,543	—	—	—	—	—	
		Total	28,626	10	2,863	9	345,780	3.00	
	Paddy + Shiitake fungus	Paddy	14,083	—	—	—	—	—	
		Shiitake fungus	11,611	—	—	—	—	—	
		Total	25,694	10	2,569	11	282,634	14.40	
	Paddy + Beef cattle	Paddy	14,083	—	—	—	—	—	
		Beef cattle	29,179	—	—	—	—	—	
		Total	43,262	8	5,408	20	865,240	20.80	
	Paddy + Fattening hog	Paddy	14,083	—	—	—	—	—	
	Fattening hog	25,259	—	—	—	—	—		
	Total	39,342	8	4,918	6	236,052	3.08		
Paddy + Breeding hog	Paddy	14,083	—	—	—	—	—		
	Breeding hog	69,519	—	—	—	—	—		
	Total	83,602	8	10,450	7	585,214	2.64		
Other Facilities	Comprehensive facility	Centre facilities	—	—	—	—	138,165	0.10	
	Paddy	Country elevator and others	—	—	—	—	1,246,356	10.34	
	Vegetables	Fruit selector and other	—	—	—	—	181,675	Included in joint farming area	
	Apple	—	—	—	—	existing facilities	—	—	
	Total	—	—	—	—	—	10.44		
<b>Total</b>		—	—	—	112	5,794,552	79.17		

Table 28 Facilities of Core of Local Joint Farming Unit (example)

Comprehensive facilities				Facilities for paddy				Facilities for vegetables				Facilities for apple				Remarks (Acreage of facilities construction site in ha)
Facility	Quantity	Unit cost	Amount	Facility	Quantity	Unit cost	Amount	Facility	Quantity	Unit cost	Amount	Facility	Quantity	Unit cost	Amount	
Agricultural Management Centre	1			Country elevator with a capacity of 3,000 t/year	3	216,000	648,000	Fruit selecting and shipment station				(Utilization of existing facilities)				Management Centre – 0.1 ha
Planning and Management facilities			18,086	Rice Centre with a capacity of 1,521 t/year	9	35,084	315,756	Tomato selection (7,500/ha)	13	7,258	94,354					Country elevator – 0.32 x 6 = 1.92 ha
Computer facilities			68,822	Cold storage with a capacity of 1,500 t/year	9	20,000	180,000	Cucumber selection (1,200/ha)		6,717	87,321					Machinery – 0.2 ha
Communication facilities			33,330	Large rice mill with 2 sets of 120 PS machines exhibiting a capacity of 6 t/hr	1	102,600	102,600	Sub-total			181,675					Rice Centre – 0.16 x 12 = 1.92 ha
Sub-total			120,238	(Refer to the paddy shipment plan)												Cold storage – 0.5 x 12 = 6 ha
Mechanization Centre	1															Rice mill – 0.30 ha
Buildings	1 set		10,300													
Mechanical facilities	1 set		9,877													
Sub-total			20,177													
<b>Total</b>			<b>138,165</b>	<b>Total</b>			<b>1,246,356</b>	<b>Total</b>			<b>181,675</b>					<b>10.44 ha</b>

