

3.3. Constrains and Directions of Agricultural Development

Constrains and directions of the agricultural development in each model area are clarified through the Study. Those are summarized as follows:

3.3.1 South Sulawesi Province (Irrigated Area)

(1) Development Needs and Constraints

This Province, because of rich in water resources, soil fertility, and human resources, is the most important region for rice production outside Java. Its rainfall pattern makes the paddy harvesting through out the year, which make it possible for constant supply and distribution of rice throughout the year. Under these circumstances, this Province plays an important role as the major rice producing and surplus production province in Eastern Indonesia.

Rice planted area in the province is 600,000 - 700,000 ha. About 25% of the planted area is irrigated in rainy season and 90% in dry season. Luwu, Bone, Sidrap and Pinrang districts are main irrigated areas in the Province.

Main Palawija crops (secondary food crops) cultivated in these areas are maize, soybean, peanuts, green gram, cassava and sweet potato. However, planted area of Palawija is remarkably smaller than that of rice except in Bone District where upland field area is larger than paddy field area. The profit per unit area by paddy cultivation is higher than that of Palawija cultivation. So farmers intend to cultivate rice as far as water resources are available. Due to there circumstances, cultivation of Palawija crops in paddy field is observed very rarely unless water resources become critically short. The farming practice of triple cropping (for example : paddy - paddy - Palawija) is observed to be rare due to the lack of enough labors for this intensive farming. In short, rice is the most profitable crop in irrigated area because of its high productivity. Therefore, an increase in rice production will contribute not only to improve the farmer's income but also to supply rice to the Eastern Indonesia.

The main constraints for agricultural development in this area are summarized as follows:

1) Shortage of Agricultural Labor Force and Mechanized Farming

In recent years, there is a shortage in agricultural labor force for regular farming practices, especially for transplanting and harvesting. This shortage of the labor force is to certain extent overcome by the labors from other districts. Therefore, the proportion of labor cost to the total cost of rice production becomes high as much as 50% including 10% for transplanting and 39% for harvesting.

2) Constraints of Agricultural Productivity

a. Lack of Farm Road/Bridge

Lack of sufficient farm road/bridge causes lower operational efficiency because of difficulty in tractor access to the field. In addition, transporting the harvested rice during the rainy season from the field to the major road is the most difficult operation among the post-harvest practices due to insufficient farm roads. These works are done using houses and locally developed Speda Taksi (bicycle taxi: strengthened bicycle for heavy duty) by contract basis at a rate of Rp. 3,000/200 kg of paddy.

b. Shortage of Certified Rice Seeds

This area is known for its a high quality rice production. The supply of high quality certified rice seed to farmers is not enough, even though it is produced in the area. This causes low quality rice production in this Area.

c. Unstable Supply of Fertilizer

Fertilizer is often not available to farmers at critical stages in rice cultivation. Consequently, attaining the yield increase by appropriate application of fertilizer is obstructed.

d. Rat Damage

A substantial damage to rice growing in the field is caused by rats and this is a critical issue on the loss of produce.

e. Shortage of Dryer for Paddy

Generally, the harvested un-dried rice is sold to public processing organizations, private rice mills or middlemen. The majority of rice mills are not equipped with dryers and fresh paddy is dried on dry yard under the sun.

During the time of exposure to the sun, the quality of paddy is often deteriorated due to rain.

3) Inefficient Use of Water Resources

In most of the model areas, the main irrigation system installation started in Dutch era. The improvement of tertiary irrigation system is still going on. As shown by the variation of paddy yield in Pinrang district (4.6 - 6.2 ton/ha), rice production is still affected by the rainfall because of incomplete irrigation system and improper water management.

(2) Proposed Basic Development Concepts

As described above, the Province is the rice bowl of the Eastern Indonesia, therefore the Province shall maintain and develop the rice production for the increasing rice demand in accordance with population increase and increase in unit consumption of rice together with regional economic growth. The productivity of rice in the Area shall be maintained and improved for the stable supply for the Eastern Indonesia by effective inputs for production such as agricultural machinery/equipment, qualified seeds, fertilizer/chemicals, etc.

1) Promotion of Appropriate Mechanized Farming System

Among many field operations in rice cultivation, transplanting and harvesting need the most labor force. At present, labor force of these two operation relies on the labors from the other areas. The development and the extension of labor saving cultivating technique is the most important subject in this area. In this regard, direct seeding and mechanized rice cultivation which is based on labor saving of harvesting operation should be promoted. The final goal of labor saving of harvesting operation is introducing combines. However, it is preferred to introduce them in stages gradually after giving due considerations for the price of combines, economical efficiency and farmers' financial abilities.

Together with providing the sufficient environment for promotion of agricultural machinery, the appropriate farming system under the mechanized cultivation shall be studied.

2) Improvement of Agricultural Productivity

a. Improvement of Rural Infrastructures

In order to ensure the efficiency of agricultural production and accessibility to the farm land from main road, rural infrastructure such as farm/village road should be improved.

b. Promotion of Value-adding of Agricultural Products at Farmers' Level

In order to maintain the reputation of high quality rice of the Area, and to add value of other agricultural products at farmers' level, effort shall be made for the increase of farmers' income through the KUDs (village cooperatives).

c. Activation of Agricultural Extension Services

Without farmers participation to the agricultural development projects, the project targets can not be achieved. In order to promote the farmer's participation in the projects for the improvement of farmers living standard, the activation of agricultural extension service is important.

3) Maximization of Water Resources

The irrigation projects in the model area were completed gradually since Dutch era. Most of them are later handed-over to the provincial governments and farmers. Because of deteriorating condition of main and secondary irrigation systems, rehabilitation of there facilities and introduction of proper water management system are needed to ensure efficient agriculture especially rice production twice a year. In parallel to the rehabilitation of main/secondary irrigation system and completion of tertiary development, the promotion of water management for the maximum utilization of water resources shall be promoted.

4) Integrated Agricultural Management

a. Study for Diversification of Agricultural Crops

After completion of above developments, the diversification of agricultural crops could be possible. Therefore, it is necessary to study the adaptability of appropriate crops in the area including not only Palawija but also vegetables.

b. Development of Livestock

There are few appropriate conditions for introducing livestock in irrigated areas. However, high potential for livestock development has been observed in sloping areas adjacent to irrigation area and in Bone District where irrigated paddy field, farm land and grassland are co-existing. Study on this livestock potential should be conducted for the diversification and integrated agriculture.

(3) Required Actions for the Development

In order to achieve the above mentioned development directions, the following actions shall be made;

1) Promotion of Mechanized Farming

(Component : 2-23-231, 3-34-342 & 6-61-611, see Table 4.1.1)

In order to cover the shortage of agricultural labor forces, and to promote agricultural mechanization, the following activities are considered to be necessary:

- a. developing and improving machinery that is suitable for local conditions,
- b. expansion and activate financial / credit system of KUD for the farmers' or farmer group's procurement of agricultural machinery, and
- c. establishing cultivation system that utilize the developed machinery.

2) Improvement of Agricultural Productivity

a. Improvement of Rural Infrastructure (Component : 8 & 4-42-421)

For the promotion of agricultural mechanization, providing sufficient environment such as the following facilities/infrastructure are required:

- i) construction of farm and village roads together with bridges crossing the irrigation canals,
- ii) improvement of drainage facilities in rice field to maintain the trafficability of machinery, and
- iii) if possible, readjustment of land to appropriate size.

**b. Promotion of Value-Adding of Agricultural Products at Farmers' Level
(Component 2)**

To promote the value-adding of agricultural products at farmers' level the following activities of KUD and other agencies shall be strengthened;

- i) producing high quality rice by strengthening and improving quality seed inspection and distribution system,
- ii) increasing the quantity and quality of produce by realizing the stable supply of farm inputs such as fertilizer and pesticide,
- iii) purchasing harvested paddy at appropriate price, and
- iv) executing post harvest processing to minimize the losses.

c. Agricultural Extension Services (Component 3-32 &33)

Activating and educating extension officers regarding following subjects are required:

- i) new cultivating techniques accompanied by agricultural mechanization
- ii) techniques for eradication of rats
- iii) knowledge necessary for value-adding of agricultural products

3) Maximization of Water Resources (Component 2-24 &4)

In order to maximize the use of water resources, the following activities are required;

- a. rehabilitation of existing main and secondary irrigation facilities
- b. completion of tertiary development
- c. strengthening the water users association and their rearrangement
- d. review of water management
- e. technical guidance of water management to the gate watchmen and water user
- f. review of master plan of basin water resources development including inland fishery development and water quality control

4) Integrated Agricultural Management (Component : 2-22-221)

For integrated agricultural development in this area, it is necessary to diversify the crop production from the present rice mono-culture. Suitability of not only Parawija but also other vegetables need to be studied in order to increase the farmers' income.

Based on the above discussed points, development concepts in South Sulawesi are summarized in Fig. 3.3.1

3.3.2 West Java (Highland Area)

(1) Development Needs and Constraints

1) Development Needs and Constraints for Vegetable Production

According to the statistical data of 1992, production of major vegetables * in West Java is estimated as 162 million ton and shares 32% of total production in Indonesia. The model area including Bandung, Cianjur, Sukabumi and Kuningan districts constitute 59% of highland and 30% of lowland. Highland vegetable production in the model area is equivalent to 20% of total production in Indonesia.

Remark * : Statistical data include 18 kinds of vegetable and they are classified as follows;
Highland vegetable : Tomato, Snap bean (buncis), Radish, Carrot, Cabbage, Chinese cabbage, Leek (bawang daun), Garlic (bawang putih), Potato
Lowland vegetable : Swamp cabbage (kangkung), Amaranth (bayam), Eggplant, Cucumber, Yardlong bean, Red kidney bean, Chili, Shallot (bawang merah), Pumpkin/ Chayote

As indicated above, the model area plays an important role in supplying fresh vegetables to the urban areas in West Java and Jakarta, especially supplying highland vegetables introduced from temperate zones.

In general, the vegetable production areas are located on the slope of mountains. The complex topographical configurations of mountains cause sub-district and village level difference in vegetable farming conditions. Further, the way of marketing is strongly influenced by the marketing ability of farmers' leader and business mind of farmers.

Based on the survey results, the needs and constraints for the development of vegetable farming are summarized as below :

a) Needs and constraints of production aspects

i) Difficulty in acquiring quality seed

Any effort to improve vegetable production cannot be accomplished if high quality seeds are not available. Most of high quality seeds are hybrid and are imported from Japan, Korea, USA, Taiwan, Germany and other countries. Small farmers still have difficulties in acquiring high quality seeds because of its high cost.

ii) Shortage of irrigation water in dry season

Generally, mountain stream or spring water are utilized for irrigation in dry season. However, each water resource is small and sporadic. In addition to it, the complex topographical configuration increases the difficulty of utilizing water. These are one of the reasons that limit vegetable cultivation in dry season in some areas.

iii) Inappropriate use of fertilizer and pesticide

In highland areas, moderate climate throughout the year suits not only for multiple cropping of vegetables but also breeding of various pests. Therefore, pest control is very important and hand sprayer is an indispensable tool for vegetable production in the model area. Many farmers do not have proper understanding of usage of fertilizer and pesticide. They seem to be prejudiced with an idea that more fertilizer and more pesticides application will result in higher yields and tend to disregard the concepts of balancing nutrients and food safety. Also, these over application adds to extra costs of production.

iv) Insufficient extension services

High productivity can be achieved through proper crop management practices. Not only the fundamental techniques such as use of chemicals and cropping system but also many kinds of crop management technologies for specific agroecological zones have been reported. However, many farmers claimed that they did not know about these technologies. Thus farmers need intensive and continuous guidance. But, generally the agricultural extension service workers have been trained only in rice and secondary food crop technologies with few trained personnel available in

horticultural technology. In addition, present extension services are mainly focused on production aspects although the support for marketing management is very important for the farmers.

b) Needs and constraints of marketing aspects

i) Marketing system

It is the customary practice that the farmers sell their produce to field traders in their farm yards and marketing is out of their hands. Most prevailing market channels of vegetables for urban centers have long channel including 4-5 intermediaries due to scattered production sites. Those intermediaries play important roles and functions in marketing vegetables, for example collecting, distributing, transporting, cleaning, grading, packaging, pricing and risk burdening. However, it is widely believed by farmers that shorter channels would improve their income. This idea is created by paying attention to the difference between retail price and farm gate price.

ii) Post-harvest

At present in most cases, post-harvest practices necessary for fresh produce to be sold in market, such as cleaning, grading, packaging, storing and transporting, are done by the intermediaries. To shortening the market channel, it is necessary to have farmers to conduct these practices by themselves.

iii) Information services

Market price information can be obtained through the Price Information Service which broadcasts vegetable prices daily and also through the price information board installed at some collection points. But most of farmers expect more detailed marketing information regarding their sales activities such as "where", "when" and "how much" to sell, because it is difficult to judge market conditions from prevailing price information services.

iv) Quality standards

At present, only the supermarkets impose their own standards on fresh vegetables. Due to lack of definite standards in other market channel to

evaluate the quality of produce, farmers are distrustful of pricing. The lack of proper standards reduces efficiency of pricing, especially in wholesale trading.

c) Needs and constraints of Socioeconomic aspects

i) Lack of business motivation among farmers and their leader

For majority of farmers who have no business experience and whose individual production scale is small, it is very difficult to establish direct business relations with the merchants in urban areas. As an example of successful vegetable production, some business minded farmers are always found. These farmers establish business relations with supermarkets and/or wholesalers in urban area and maintain stable relations by satisfying the customer's demand successfully. They unite other farmers for cooperative works in production and marketing and are playing role of collectors/village traders. Though it is very difficult to find a good and powerful leader among farmers, it is essential to develop farmers' group for realizing shorter market channel and for acquiring the bargaining power.

ii) Price fluctuation

The price fluctuations of vegetables are large and show different patterns for each commodity in each year. It is important to have right selection of vegetables and adopt a proper crop combination for gaining maximum benefit from limited area of cultivating land. But these uncertain fluctuation patterns increase the difficulty of determining the cropping plan.

iii) Credit

At present for small scale farmers, non-commercial credit (local and trade short term trade credit, average 20% interest) is the only available credit. To promote vegetable production and farm level agro-business, the farmers expect low interest rate and easy application procedure for crediting.

iv) Inadequate infrastructure for transport

9% of total villages in West Java Province have no access roads. Even if access roads are provided, in some areas the road condition is extraordinarily improper for transporting the produce. This improper condition limits the

access to the markets and prevents farmers from producing vegetables.

2) Development Needs and Constraints for Livestock

In areas where there exists facilities for milk marketing, cow milking is becoming an important source of income for small farmers. In total, nearly one-third the dairy cattle in the country are found in West Java. The highest number of cows is recorded in Bandung district followed by Garuit, Bogor, Kuningan, Sukabumi and Cianjur districts.

Based on the survey results, the needs and constraints for the development of livestock farming are summarized as follows :

a) Improper feed management

In highland areas, mainly zero grazing system (cut and carry system) is practiced by small holding farmers. The management of livestock feeding varies widely due to difference in KUD's extension services. There is a great need to develop and popularize the grass chopping system using the special tools to increase feeds efficiency. There is very low utilization of high energy feeds such as by-products of cereals, root crops and miscellaneous concentrates which are abundant in this region. High grass yield through proper management has already been recognized

b) Improper health management

Ticks and other external parasites cause substantial losses in cattle, especially in exotic breeds.

c) Marketing system

At present, marketing and transportation system of various livestock products, except fresh milk, are not well organized. There is a need to establish a quality control system for livestock products which will create an incentive for the farmers to raise high quality livestock products.

(2) Proposed Basic Development Concepts

It is expected that further increase in population and development of economy in urban areas of West Java and Jakarta will accelerate and diversify the food demand.

Therefore, the principal direction of agricultural development in highland area is determined so as to enhance/diversify the production of vegetables and livestock by taking advantage of cool climate in tropical zone. Although it is necessary to undertake various countermeasures against the constraints to increase farmer's income, important subjects are summarized as follows;

1) Improvement of productivity

To obtain the maximum profit from limited land, it is essential to improve productivity. And production techniques of farmers should be improved. In case of vegetables, techniques related to proper usage of chemicals, reducing damage by pests, reducing post-harvest losses shall be improved. In case of livestock, technique related to increase feed efficiency, utilizing available feed materials and reducing damage by parasites shall be improved. On the other hand, in some areas, it is necessary to take countermeasures against other production limiting factors such as shortage of irrigation water in dry season, improper condition of farm road to increase production.

2) Strengthening the market-oriented production

Due to the fundamental characteristics of vegetable production such as seasonal cultivation, scattered production sites and shortage in storage facilities, it is very difficult to control the supply of vegetables to the market. And these characteristics leads to large price fluctuation and cheap selling price in certain seasons. Taking advantage of cool climate of highland area, which suits for producing various vegetables throughout the year, it is necessary to strengthen the market-oriented production by means of diversifying cropping pattern to introduce new crop/variety and adding value to maintain its dominance in the market.

3) Improvement of marketing system and strengthening the bargaining power

At present, most of farmers are just "persons who produce" and sell their produce at farmyard or at collecting points to field traders. It is considered that direct marketing system to urban consumer/intermediates from farmers would increase the farmers' income. To realize direct marketing system, it is necessary to promote farmers' business mind and to perform post-harvest practices by themselves. Group activity of collecting and shipping is considered as necessary to strengthen the bargaining power of farmers and to improve the efficiency of

marketing.

When implementing the development activity/input of vegetable and livestock farming, the following points need to be considered;

- Economical impact on the people who are engaged with the present marketing system.
- Possibility of induced land surface erosion and development of counter measures in steep topography.
- Possibility and countermeasure to water contamination caused by inadequate treatment of animal droppings and muck in slaughterhouses.

(3) Activities for Development

Based on the proposed basic concepts, the following activities will be required.

1) For vegetable farming

a) Improvement of productivity

i) Dissemination of production technology

- Promotion of extension activities for production and post-harvest processes (321)

Strengthen the extension activities on vegetable cultivation and post-harvest technology necessary to reduce production cost and to improve the quality of produce.

ii) Development of small scale irrigation and drainage systems (412).

Develop small scale irrigation and drainage system necessary to increase upland vegetable production in dry season.

b) Improvement and strengthening of marketing activities.

i) Strengthening of extension activities for marketing to PPL (321)

Marketing activities such as market-oriented management guidance, opening up of new field of post-harvest practice shall be added to the PPL's conventional extension activities. It shall include education of agribusiness and management knowledge about processing which adds value to

products.

ii) Promotion and strengthening of farmers' organization (6)

- Strengthening the activities of agricultural cooperatives (61)

Introduce or strengthen the post-harvest activities by group of farmers and/or with the KUD as a nucleus for contriving efficient marketing and strengthening of bargaining power.

- Development of farmers' group (62)

Foster talents of leading farmers who shall be the leader of farmers' group and contrive adoption of joint collection and marketing.

iii) Strengthening the marketing information.

Strengthen the system and activities of marketing information services to small farmers.

iv) Development of standardization (721).

Introduce standards system (quality standards), necessary for the efficient flow of merchandise and fair pricing. The standards must contribute to the profit of both producers and consumers.

v) Development of post-harvest processing and marketing facilities (712)

Improve marketing facilities necessary to promote cooperative works in collection and post-harvest treatment by farmers' group in advantageous ways.

vi) Improvement of sub-district and village roads (821)

Improve transportation infrastructure (roads) necessary to enhance vegetable production and encourage group collection, treatment and marketing by farmers.

vii) System development and fund preparation for agricultural credits (51)

Improve existing official financing system to facilitate easy financing of low interest loans necessary to increase vegetable production and to encourage farmers independence in marketing.

2) For Livestock farming

- a) Improve the overall productivity of livestock by improving the availability of high quality breeding stock;
- b) Organize and improve stock raising activities of small scale farmers through demonstration of effects of model farms as well as provision of training and technical extension services.
- c) Promote livestock feeding systems through improvement of fodder crop and pasture grass production, production of supplementary feed and the encouraging to grow protein crops; and
- d) Establish intensive systems of stock raising, especially in high population density areas.

Above mentioned agricultural development concepts in West Java are summarized in Fig. 3.3.2.

3.3.3 West Nusa Tenggara (Lowland [rainfed] Area)

(i) Development Needs and Constraints

According to statistical data of 1994, approximately 27,000t of rice, 25,600t of soybean, 10,000t of maize, 4,500t of mung bean and 2,800t of peanut are shipped to other provinces. Considering the population increase in Indonesia, NTB is expected to become one of main agricultural production supply base for Indonesia. On the other hand, limited irrigation water in dry season is recognized as one of the limiting factors for agricultural development. Concerning the water resource development, several projects have been implemented.

Rice, soybean, maize, mung bean, peanut and fruit trees are mainly cultivated in NTB and, according to statistical data of 1994, approximately 748,000t, 130,300t, 51,700t, 16,500t, and 24,100t of these are produced respectively. There is approximately 318,000 ha of cultivated area in NTB (167,000 ha in Lombok, 151,000 ha in Sumbawa) and 201,000 ha (122,000 ha in Lombok, 79,000 ha in Sumbawa), 63% of cultivated area is used for paddy. Remaining area is mainly used for inter cropping of

Palawija and fruit trees and 5% of cultivated area is used for upland rice.

Even though established irrigation system is available for more than 80% of paddy fields, due to no availability of sufficient irrigation water, Palawija is planted at most of paddy field during the dry season. The cropping pattern expected to be followed in paddy field is "rice→rice→Palawija". However, "rice→Palawija" is followed in 60% of irrigated paddy fields due to lack of irrigation water. Recently, planting of chili, soybean, tobacco and mung bean as second crop are increasing.

Although "rainfed agriculture" is commonly defined as production system without irrigation facility, rainfed agriculture in NTB can be described as production system relying on rainfall and the present agricultural area in lowland is considered as the model area for the Program.

Based on the results of field survey, the development constraints in NTB are summarized as below:

1) Shortage of Agricultural Labor Force and Agricultural Machinery

a) Shortage of agricultural labor force in Sumbawa

For the production of Palawija crops after rainfed paddy in dry season, it is necessary to seed them before the commencement of dry season when the soil moisture is sufficient for germination and initial growth of crops. Therefore, it is necessary to finish the harvesting work of rainfed paddy as soon as possible. But in Sumbawa island, farming labor force is insufficient for harvesting work and seasonal labor from Lombok island are employed. Consequently harvesting cost becomes comparatively high as compared with Lombok island (1/6 of total production cost in Sumbawa, 1/10 in Lombok).

b) Insufficiency of Agricultural Machinery

There is a rental system operated by P.T.Pertani for agricultural machinery such as tractor, hand tractor, thresher etc. However, as shown below, the present number of machinery available through the system is absolutely insufficient compared with the area of paddy field in NTB (201,000 ha).

Machinery	Units
4 wheel tractor	52 unit(1 unit/4,000ha)
Hand tractor	600 unit(1 unit/340ha)
Power thresher	222 unit(1 unit/2,000ha)

On the other hand, there is 16,000 ha of rainfed paddy field with alluvial grom soil in the Central and Eastern Lombok Districts where due to drying up cracks of soil are observed in dry season. For the rainfed paddy with direct seeding, it is necessary to finish the plowing and seeding before the first rain at the commencement of rainy season. But in this area, it is impossible to plow by cattle or by hand tractor, therefore, the farmers take the traditional way for plowing such as digging up the soil with iron pole and crushing hard soil core with wooden hammer. The cost of this operation is estimated as Rp.300,000/ha. In case of using large tractor such as of 65HP, the cost for plowing is estimated as Rp.175,000/ha. However, there are only 23 large tractors (procured through the KR2 program) possessed by P.T.Pertani and the number of machinery is not sufficient for completing the plowing within limited period.

2) Constraints for improving productivity

a) Insufficient Irrigation Water Supply in Dry Season

Although Palawija is the main crop in dry season, at present farmers intend to introduce cash crops such as chili, tobacco etc. However, insufficiency of the irrigation water in dry season limits the introduction of those crops. Concerning the potentials for water resources development, small scale water development projects such as construction of small reservoirs, installation of ground water system and improvement of water management system have suggested through the studies and some of them have already been implemented. But those projects do not cover the whole island.

b) Insufficiency of Agricultural Extension System

Due to the lack of extension officers, facilities and equipment, farmers cannot obtain required integrated extension service, information and technology for appropriate farming practice. Under present conditions, farmers are losing their will to introduce the new technology.

c) Shortage of Farm Management Fund

In this area there are a lot of small scale farmers with a land holding size of 0.3 ~ 0.5 ha per household. For these small scale farmers, it is difficult to make an initial investment needed for new actions such as introducing the new promising crops (chili, pineapple and etc.), mechanization with new machinery and etc.. Therefore, most of such farmers are forced to cultivate with the traditional production system.

(2) Proposed Basic Development Concepts

Considering the above mentioned conditions in NTB, the agricultural development stage in NTB is clarified as follows:

- Agricultural infrastructures and farming system for traditional farming practice has been improved.
- Farmers are ready for the next development stage.
- Farmers face problem of lack of information and funds.

With the consideration of the above points, following basic concepts of agricultural development are proposed.

1) Development of appropriate mechanization

To introduce 4-wheel tractor appropriate for the soil condition in the area and strengthening the group activity for managing the machinery to shorten the period for land preparation work.

2) Improvement of productivity

a) Improvement of water management

To improve irrigation facilities and water management system based on the potentiality of water resources for diversification of second crop in dry season.

b) Strengthening of supporting activities

To extend and enforce the supporting systems for the farmers in order to improve their agricultural management skills.

- extension of farming technology

- improvement of marketing system including agribusiness
 - strengthening of sufficient fund for farm management
 - enforcement of farmers' organization
 - others.
- c) **Research and development of dryland farming and appropriate crops**
 To conduct research and introduce suitable crops and farming technology for the areas where the potentiality of irrigation water resources does not exist.

(3) Activities for Development

Based on the proposed concept, following activities or program will be required.

- 1) **Development of appropriate mechanization**
 Mechanization of plowing and harrowing work in rainfed-direct sowing paddy area and, paddy harvesting and threshing works in labor shortage areas
 - a) Strengthen the rental system of P.T.Pertani
 - b) Extension technology for utilizing and management of machinery

- 2) **Improvement of productivity**
 - a) **Improvement of irrigation facility and water management**
 Expansion of small scale irrigation facilities and improvement of water management for diversification of second crops
 - i. Development of ground water irrigation system
 - ii. Construction of small scale reservoirs
 - iii. Guidance to water users association on water management

 - b) **Strengthen the extension activities**
 Dissemination of new technology to farmers and improvement of farming system
 - i. Practical training to the extension officers
 - ii. Preparation of extension materials and transportation means
 - iii. Guidance to farmers through setting up demonstration field and providing practical training in the field

- c) Improvement of marketing system
 - Establishment of group activity for collecting and shipping of produce
 - i. Establishment of collecting and shipping facility
 - ii. Extension of information on farm management

- d) Improvement of credit system
 - Improvement of the credit service for effective farm management
 - i. Expansion of credit service for introduction of new commodities, mechanization and livestock
 - ii. Dissemination of knowledge on the use the credit service
 - iii. Establishment of cooperative farm management system

- e) Enforcement of farmers' organization
 - Promotion of farm organization for the group activities such as introduction of new technology, marketing of produce, purchase of agricultural materials and management of machinery.
 - i. Strengthen the activity of KUD
 - ii. Development of farmers' leader

- f) Research and extension of new crops/farming technology
 - Implement the research and extension of suitable and profitable crops and its farming technology
 - i. Selection of crops, cropping system and demonstration
 - ii. Propagation and distribution of quality seeds/seedlings
 - iii. Pest and disease control

3.3.4 South Kalimantan (Swamp Area)

(1) Agricultural Development Needs and Constraints

South Kalimantan receives the highest annual rainfall among all the provinces studied. Flat area with less undulations is widely distributed except in the mountainous regions extending from the central part of the province to the North. Under these natural conditions, rice is the main crop, occupying 60% of total cultivated area in the province. Other crops cultivated are estate crops (coconut, rubber), and tropical fruits (orange, banana, rambutan). Some of them are exported to other provinces.

In the model area rice cultivation occupies over 70% of the total cultivated area, higher percentage than that in the province. This high portion of paddy field is one of the specific characteristics of the area due to wide distribution of swamps. Single cropping using local varieties is widely practiced as a traditional method. On the other hand double cropping is practiced by the combination of improved IRRI varieties in Tapin and a part of the Banjar district. Palawija and horticultural crops are mainly cultivated on the Sorjan (local name), wider levee of 2-3m width.

According to the 1994 year statistics of DIPERTA, in the model area, swamps occupy about 200,000 ha and more than 30% is undeveloped area. Under the circumstances, rice-self reliance is frightened by overpopulation and also progressive devastation of farmlands by industrialization in the Java Island. So, the attention of government of Indonesia is focused on swamp area which has high potential for agricultural production. However, at farmers' level, agricultural productivity is low and possibility for new kind of crops/cultivation area is limited due to prevailing severe constraints.

Basically, rice cultivation in these areas is practiced in small farmlands and that also mainly for self-consumption. Consequently the living conditions of farmers are poor compared to other provinces.

Through the results of field survey, the following constraints were identified.

1) Constraints of natural condition

a. Poor drainage conditions and saline water intrusion

The farmlands in swamp area is either flooded or wetted throughout all the seasons due to its poor drainage conditions. This forces farmers to have limited choice of crops. Besides, since most of the fields are located in tidal swamp area, they are easily influenced by the sea water level and it is difficult to drain water when the field is flooded. That causes the farmers much burden in field management. In addition to that, coastal swamp area contains saline water and it causes stress to the growing crops.

b. Soil condition

Most of soils present in the area are peat or alluvial soil which are accumulated with coastal plants and sediments in the sea. The pH of the soil is

found to be 4-5, due to the presence of sulfate and potential sulfate acids. Under water scarce conditions, sulfate acid can not be leached out and potential sulfate acid (pyrite) is activated. Consequently, soil acidity rises to extremely high level causing severe damages to the crops. Also, shortage of mineral nutrients and existence of harmful substance (FeS) in soil become common problem in this area.

2) Socio- economic constraints

a. Shortage of labor

Population density in the model area is 69 persons/km². Comparing to the national average value of 93 persons/km², this figure shows that there is a shortage of labor population needed for agricultural development. Since farming works rely on the traditional tools, labor productivity is low. Most of the farmers who cultivate more than one hectare of rice need to hire labor from other places during tilling, transplanting, harvest and post-harvest works.

b. Characteristics of local people

Since fishery is one of the most important industries in the area, for not only getting cash income but also as a source of valuable protein, most of the farmers engage in fishery together with rice cultivation. Besides, 60% of farm households do not have their own land. Also one third of land holding farmers are absentee land owners. Under these circumstances, many local people do not pay much attention to their land and do not have the sense of uniting themselves.

c. Lack of finance

Most of farmers lack the required finance to buy agricultural inputs and equipment. Current finance system operated by BUD or KUD is not effective because of difficult procedures and also lack the consciousness among the farmers to repay the interest.

3) Technical constraints

a. Poor rural infrastructure and water management system

Constraints on infrastructure are summarized as follows ;

- Deterioration of irrigation/drainage facilities
- Poor management of control structures and lack of water management skills
- Lack of farm roads
- Lack of water and electricity supply

b. Post-harvest management

When double cropping of rice is practiced, farmers are forced to harvest the first crop in rainy season in order to make the land ready for second crop. Both quantity and quality loss occurs mainly due to the difficulty in drying the harvests.

c. Rat control

Rats often cause serious damage to the harvests. Though an integrated rat control system is established through technical assistance of JICA, the problem still remain unsolved in most parts of the study area. Cooperative control at regional level is strongly required.

(2) Proposed Basic Development Concept

Until now, agricultural development in this area is mainly focused on land reclamation and improvement of the infrastructure facilities including irrigation, drainage and farm roads without giving much consideration for environment and farming conditions. As a result, land sedimentation and soil acidity became serious problems. Also, agricultural technology was left behind. On the other hand, as mentioned in item (1), much development needs and constraints exist in the area. Therefore it can be said that implementation of simple project does not necessarily contribute to increase in farmers' income. It is important to achieve the integrated agriculture and rural development from a long-term perspective.

(3) Newly Suggested Directions

From the above mentioned viewpoints, the following directions are proposed:

1) Study on integrated agricultural and rural development in tidal swamp area
(Component 2, 3, 4, 8)

This study aims to provide a master plan which clarifies the directions of agricultural and rural development in swamp area. Barito river basin which has a typical large swamp with potentials for agricultural development could be suggested as the study area.

2) Improvement of the capability of the research institutes on swamp area
(Component 2)

The research institute for food crops which belongs to Ministry of Agriculture was re-organized in 1995 to focus its research on swamp area. The research institute (RIFSA) conducts research regarding the improvement of crop variety and agricultural technology including soil management, pest control and post-harvest technology. On the other hand, Ministry of Public Works plans to establish a research institute with engineering perspective.

Therefore it is necessary to improve their research activities through strengthening the relationship between these two institutes to support the development of integrated agricultural technology. It is recommended that these institutes demonstrate the research findings on the farmers' level such as pilot farms operated by 'Riam Kanan Irrigation Project' and exchange the opinions on the results.

Based on the constraints mentioned above, the following research activities shall be focused on to deal with current major problems in study area.

- Improvement of irrigation and drainage systems
- Improvement of varieties appropriate to local conditions
- Improvement of soil management / introduction of appropriate crops based on soil analysis
- Improvement of post-harvest technology
- Improvement of appropriate technology for farm mechanization to solve labor shortage together with improvement of productivity
- Diversification of agricultural management by combining cash crop, livestock and fishery

3) Improvement of agricultural extension system (Component 3)

Agricultural extension activities hold an important role in improving the farmers' technology. Since BLPP (Training Center for Agriculture Officials) in Binuang of Tapin district provides training to the agricultural officials, extension workers and farmers, extension system in model area shall be improved in the center of BLPP in cooperation with research institutes mentioned above.

4) Consideration for Environment

Due to the environmental-sensitive nature of swamp area, the following considerations are required for agricultural development.

a. Protected Species

The protected species include 30 plant species, 19 mammal species, 19 birds species, 6 reptile species and 4 fish species in South Kalimantan.

b. Bio-diversity

Wetlands are breeding areas for many animals, especially fish and waterbirds. They are also essential habitats for the survival of many endangered species such as the Sumatra Tiger, the Java Rhino and etc. The loss of wetlands leads not only into drastic changes in bio-diversity but also prolongation of dry seasons, increase of frequency / harshness of flooding and decrease of fish catch. Therefore it can be said that agriculture in the study area directly or indirectly depends on the bio-diversity and the environmental functions of nature. Careful considerations to prevent the bio-diversity is required for sustainable agricultural development.

c. Soil condition

Two types of soil, namely the peat soil and alluvial soil are distributed in swamp areas of South Kalimantan. Normally the peat soil has a high amount of water content, sometimes nearly 3/4 of total volume. Therefore, subsidence caused by drainage, which is a process in agricultural management is a serious problem. Such as the case in South Kalimantan, subsidence brought by drainage has reached 50 cm after 6 years. In addition, soil having a thick peat layer often brings a poor rice harvest caused by sterility. Besides, acid sulfate soil which frequently exist below peat soil often effect severe damage to the crops.

In South Kalimantan there are a lot of transmigrated farmers from Java under governmental transmigration plan. However, low productivity of the land is attributable to the existence of low nutrient soils. This accelerates illegal logging by the farmers. During one third of a month, the farmers in the study area are engaged in fishery. The decrease of water quality caused by acid soil affects not only the quality of drinking water but also aquatic ecosystem, causing a decrease of fish species and fishery net.

As seen above, areas which can be immediately exploited are not so large due to soil limiting factors such as poor nutrient and high acidity. In order to avoid irreversible deterioration, exploitation of wetland soils must be carried out according to well designed plan and an intensive soil survey.

Based on the above discussed points, agricultural development concepts in South Kalimantan are summarized as Fig. 3.3.4

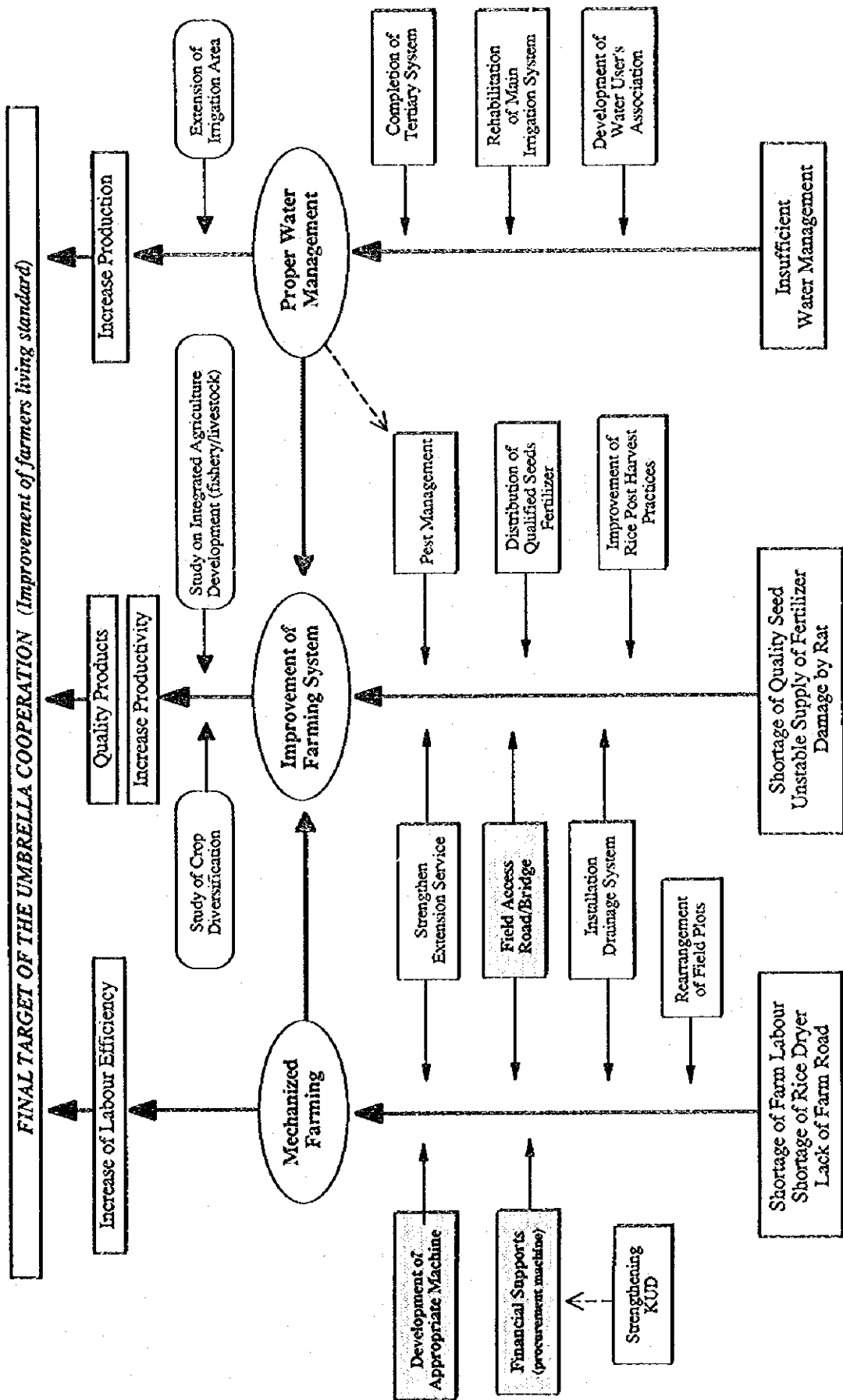


Fig. 3.3.1 Direction of Agricultural and Rural Development in South Sulawesi (Irrigated Area)

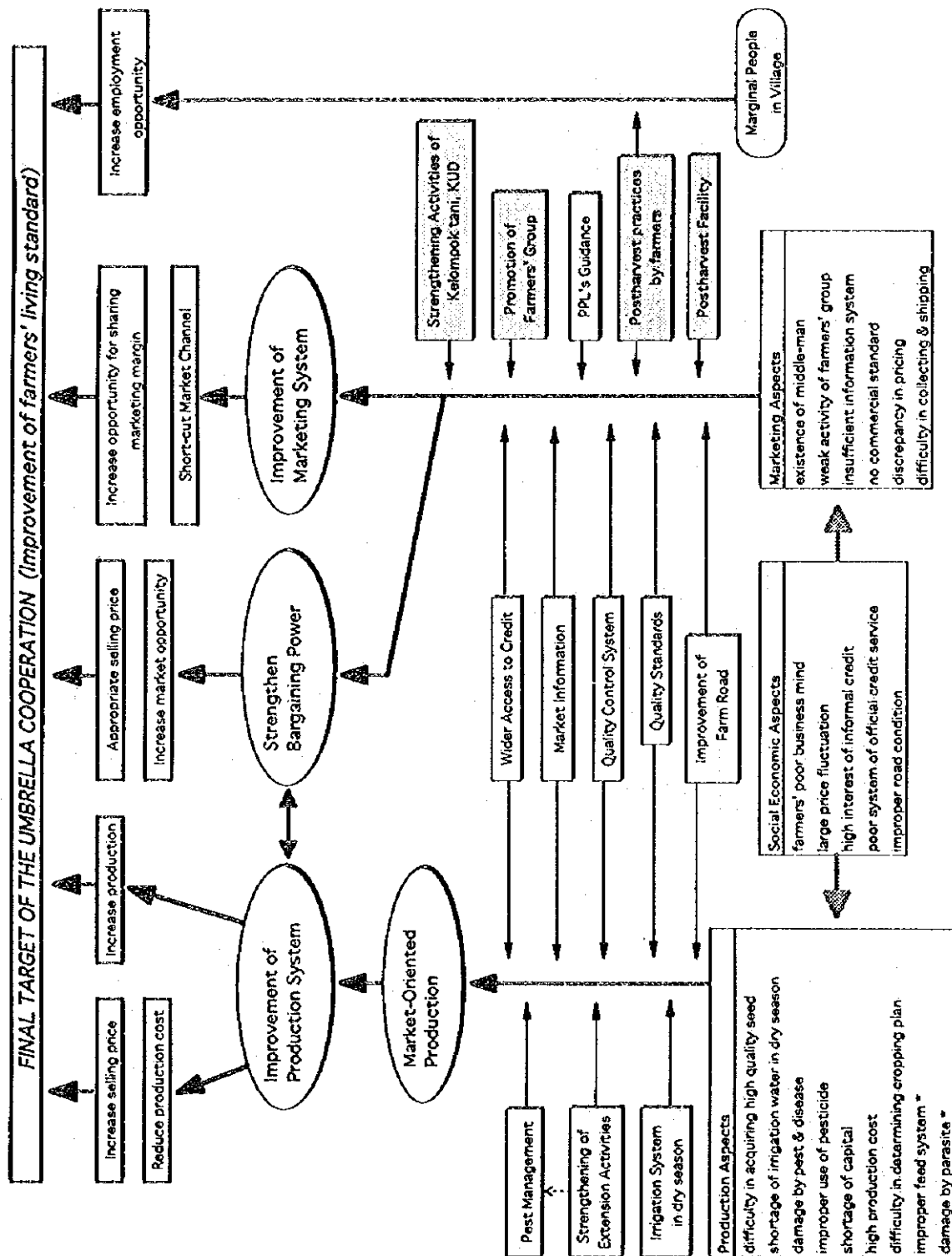


Fig. 3.3.2 Direction of Agricultural and Rural Development in West Java (Highland Area)

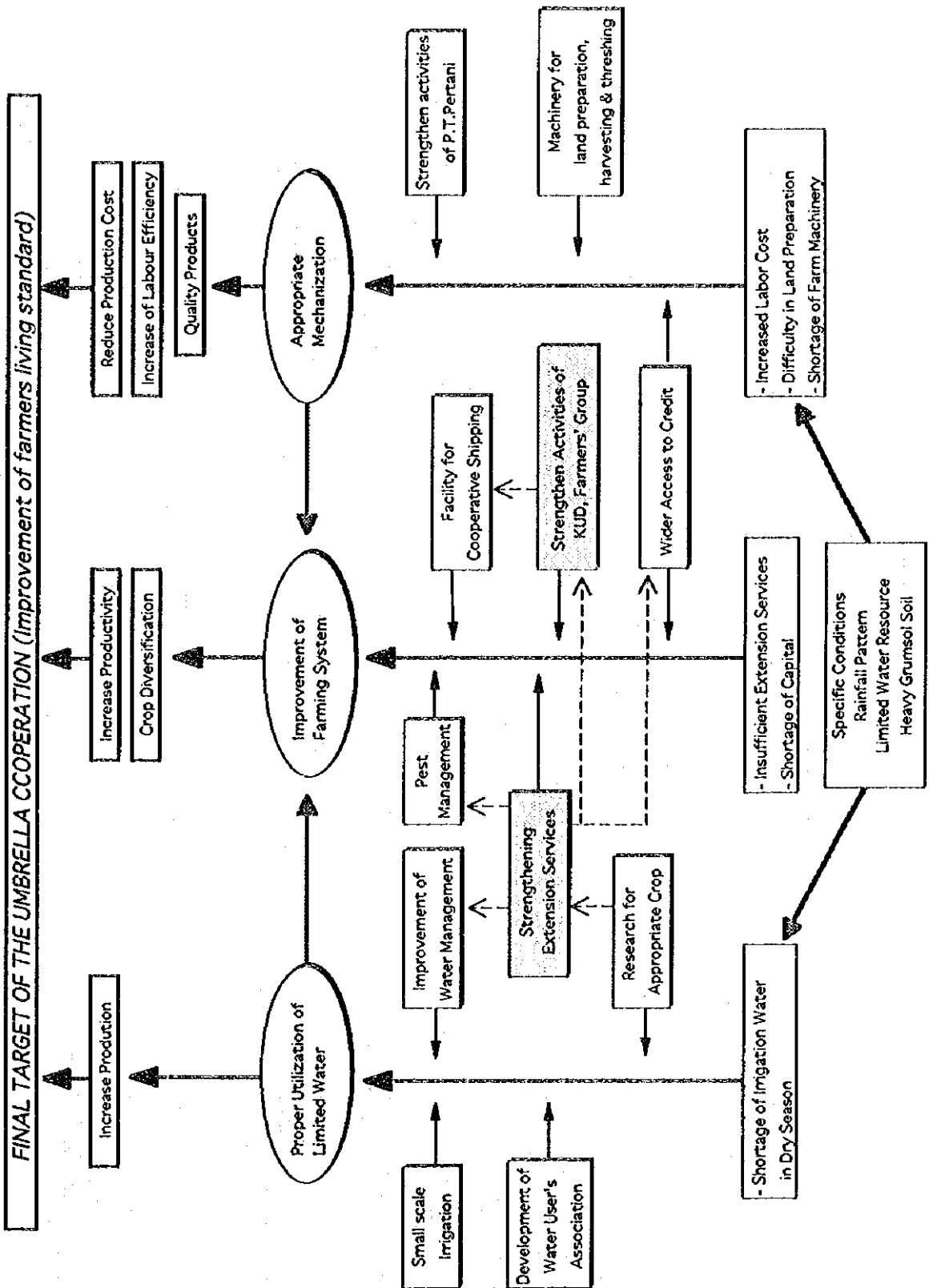


Fig. 3.3.3 Direction of Agricultural and Rural Development in West Nusa Tenggara (Lowland [Rain-fed] Area)

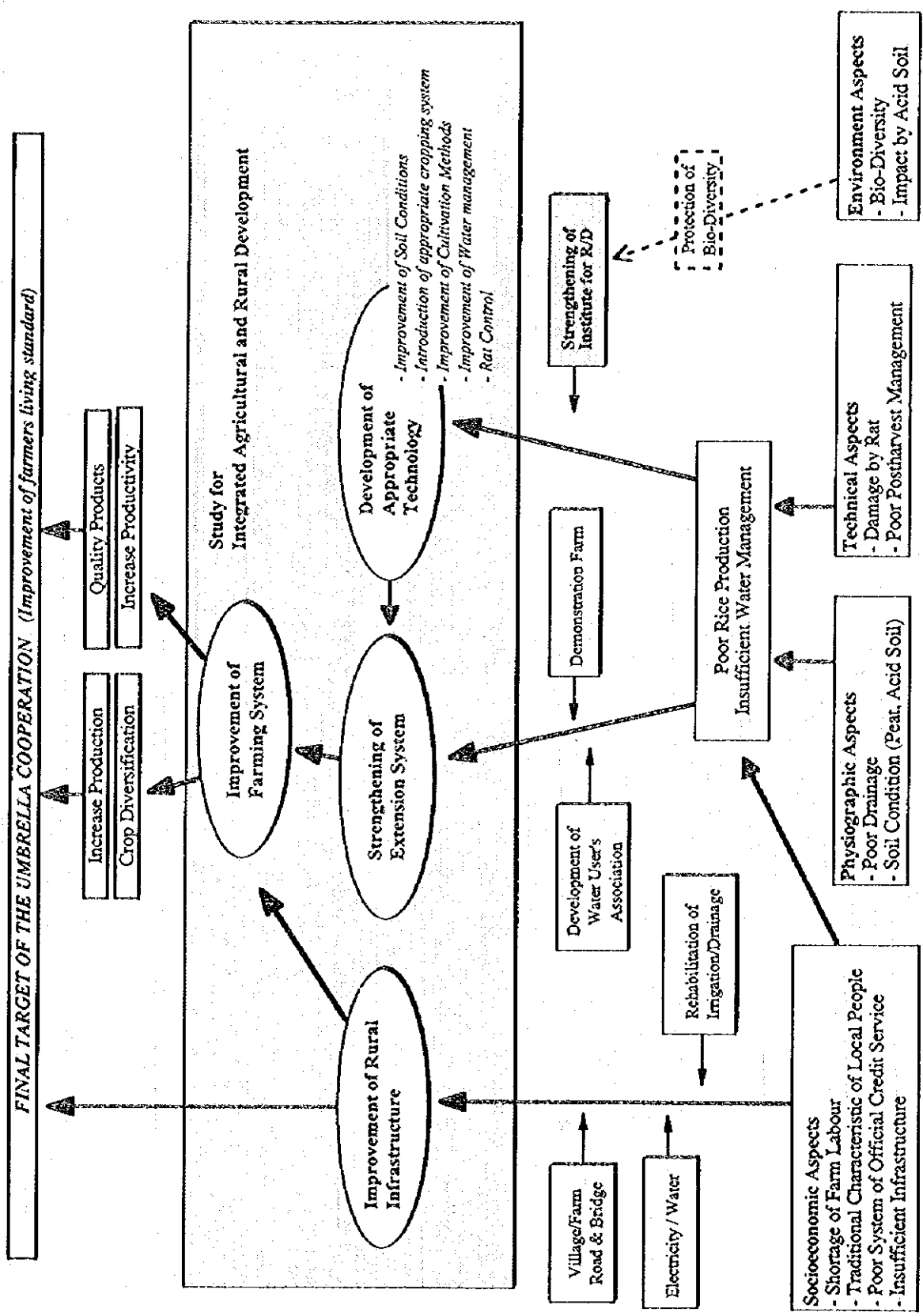
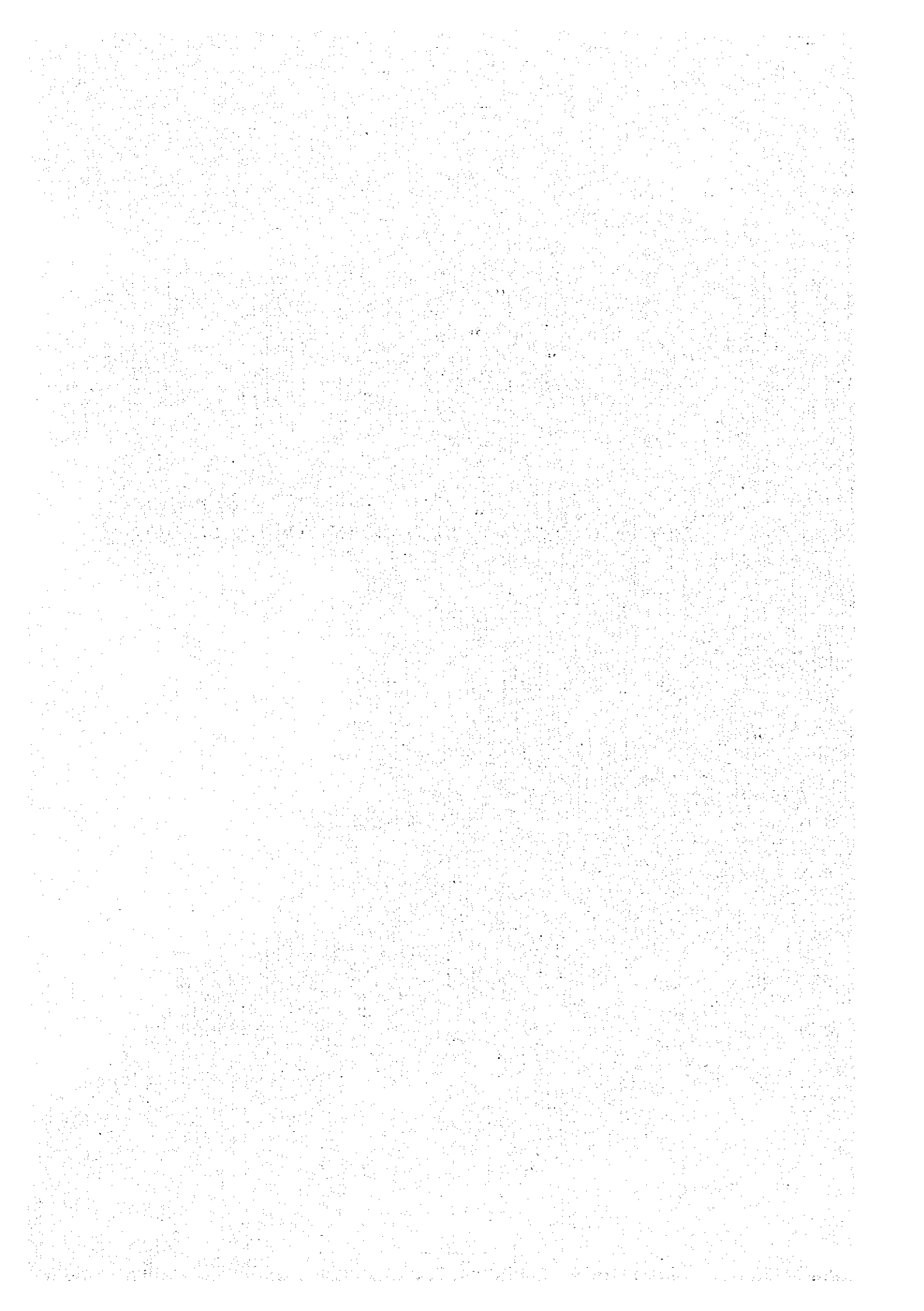


Fig. 3.3.4 Agricultural and Rural Development in South Kalimantan (Swamp Area)

CHAPTER 4 :
METHODOLOGY OF PRIORITIZATION FOR THE PROJECTS



CHAPTER 4 : METHODOLOGY OF PRIORITIZATION FOR THE PROJECTS

4.1 Introduction

4.1.1 The Projects for the Third Umbrella Cooperation

The projects for the Third Umbrella Cooperation are the integrated agricultural and rural development projects for four agro-ecosystems viz. irrigated area [South Sulawesi], highland area [West Java], lowland (rainfed) area [West Nusa Tenggara] and swamp area [South Kalimantan] as model areas of their field of activity. The implementation agencies of these projects are four ministries of the central government, which are the Ministry of Agriculture (the leading agency), the Ministry of Public Works, the Ministry of Cooperatives and Small Enterprises Development and the Ministry of Transmigration and Forest Squatters Resettlement; and respective provincial governments. They include the on-going projects, those under request, those yet to be registered, and new ones. They belong to either central or regional government's category, and comprise one or more components of eight activities defined by the R/D. The relationship between the eight components of the activities and the four ministries and the four provincial governments can be arranged in a format as shown in Table 4.1.1.

To examine the eligibility of the project, first, a list of projects was submitted by respective Ministries and the provincial governments, then their eligibility was confirmed by referring to the four agro-ecosystems and the eight components of activities. Further, redundant projects were either eliminated or amalgamated by comparing their nature, objectives, and contents. A few projects were proposed by the study team based on the results of the field survey. Some projects lack detailed study on their contents of activities or requirements for their implementation, yet, they are regarded as the projects for the Umbrella Cooperation, if their objectives match with those of the Umbrella Cooperation since their implementation are judged as not impossible. Those projects which have not yet been implemented have to be appraised in detail at the time of implementation. Further, for those projects to be submitted in the future shall be examined for their realization if they are judged eligible by applying the method that is proposed in this study. The projects collected in this study are listed in Tables 5.1.1 and 5.1.2.

Table 4.1.1 Eight Components of Activities and Implementing Agencies

Objectives	Major Activities	Activities	Leadng Agency	Related Agency							
				MPW	MISED	ATRSD	MOA	Others			
1 Human resource and system development of central and local government to improve planning and administrative capabilities (Planning & admin)	11 Improvement of information collection and analysis	111 Improvement of systems and technologies for information collection and analysis on agriculture	MOA		SG		AQC				
		112 Improvement of capability on analysis for the development of agriculture	MOA								
		113 Improvement of capability on crop development plan	DGRCH				DGE				
	2 Improvement of capability in research to support development of appropriate production technologies (R&D)	14 Strengthening of capability for plan formulation of regional agricultural development	141 Improvement of planning capability for regional development	MOA		DGRCD	DGSE				
			142 Improvement of breeding and multiplication technology for chicken	AARD				DGS			
			143 Development of biotechnology for increased livestock production	DGS				AARD			
		3 Development of agricultural extension system in order to improve farm management and to promote diversification in agricultural production (Extension)	21 Improvement of breeding and multiplication technologies	211 Strengthening of research on crop production	AARD						
				212 Strengthening of research on livestock	AARD						
				213 Strengthening of research on fresh water fish production	AARD						
			4 Development of irrigation and drainage facilities and resources management systems (W.R.)	22 Development of production technologies	221 Strengthening of research on agricultural machinery	AARD					
					222 Strengthening of research on appropriate agricultural machinery	AARD					
223 Strengthening of research on irrigation and drainage technologies					DGWRD				DGCH	BSC	
5 Development of system for effective promotion of agricultural credits (Agricultural finance)				23 Development of farming technologies	311 Training and extension of seed production technologies	DGRCH				AATE AEC DGE AFC DGF DGLS	
					312 Inspection of animal quarantine, medicines and feeds, and their stable supply	AQC					
	313 Extension of dairy farming technologies at farm level				DGS				AEC		
	6 Development and strengthening of the activities of farmers' organization (Farmers' organization)			24 Development of technologies for irrigation and drainage	321 Strengthening and promotion of extension activities	AATF				DGCH AEC AARD DGE AAT AARD DGE	
					322 Extension of integrated technology for agriculture	AFC					
		331 Strengthening of training for youth farmers and women			AAET		SG		AEC		
		7 Development of post harvest activities including handling, processing and marketing of agricultural products to improve and add value to farm products (Postharvest)		31 Modernization of extension materials	332 Training on operation & maintenance of facilities by farmer's organization	DGWRD				AAET DGCH AEC	LG
					341 Provision of agricultural materials and equipment and farm machinery	311 Provision of supply of farm input	DGRCH		DGRCD		DGE
			342 Provision of farm machinery		DGRCH		DGRCD	SG	AARD AAET DGE		
			8 Improvement of rural infrastructure (Rural Infrastructure)	41 Irrigation and drainage development and had development	411 Expansion of irrigation field	DGWRD				DGCH	
					412 Development of small scale irrigation and drainage systems	DGWRD				DGCH	
421 Rehabilitation and improvement of existing irrigation and drainage facilities					DGWRD				DGCH		
9 Improvement of rural infrastructure (Rural Infrastructure)				51 System development and fund preparation for agricultural credits	511 Strengthening of agricultural credit system	DGRCD		DIF DGUCD		DGF DGE BIMAS	LG
					512 Preparation of fund for agricultural credit	DGRCD		DIF		DGE	
	611 Expansion and strengthening of activities of agricultural cooperatives				DGRCD		DGU'D		DGS DGE DGF		
	10 Improvement of rural infrastructure (Rural Infrastructure)			62 Development and strengthening of farmer's group	612 Establishment of model agricultural cooperatives	DGRCD			SG	AAB DGE DGF	
					621 Development of farmer's group	AAET		DGIAC		AEC DGF DGF DGRCH DGLS	
		711 Promotion of post harvest processing and marketing of agricultural products based on the consumer's needs			AAB		DTRD DGSED	DGMD	AARD DGE DGS DGL AAET		
		11 Improvement of rural infrastructure (Rural Infrastructure)		72 Increase of value of marketed agricultural products through total quality management	712 Development of post harvest processing and marketing facilities	DGRCD		DGRCD		AAET AARD DGE DGF DGLS	
					721 Development of standardization	AAB		DGSED DGRCD		AAET AARD DGF DGLS DGE	
			811 Improvement of rural water supply		DGRPIS			DGSE	DGF	LG	
			12 Improvement of rural infrastructure (Rural Infrastructure)	82 Improvement of sub district level infrastructure	812 Improvement of Rural Road	DGR			DGSE		LG
					821 Improvement of sub district road	DGR					LG

Note:

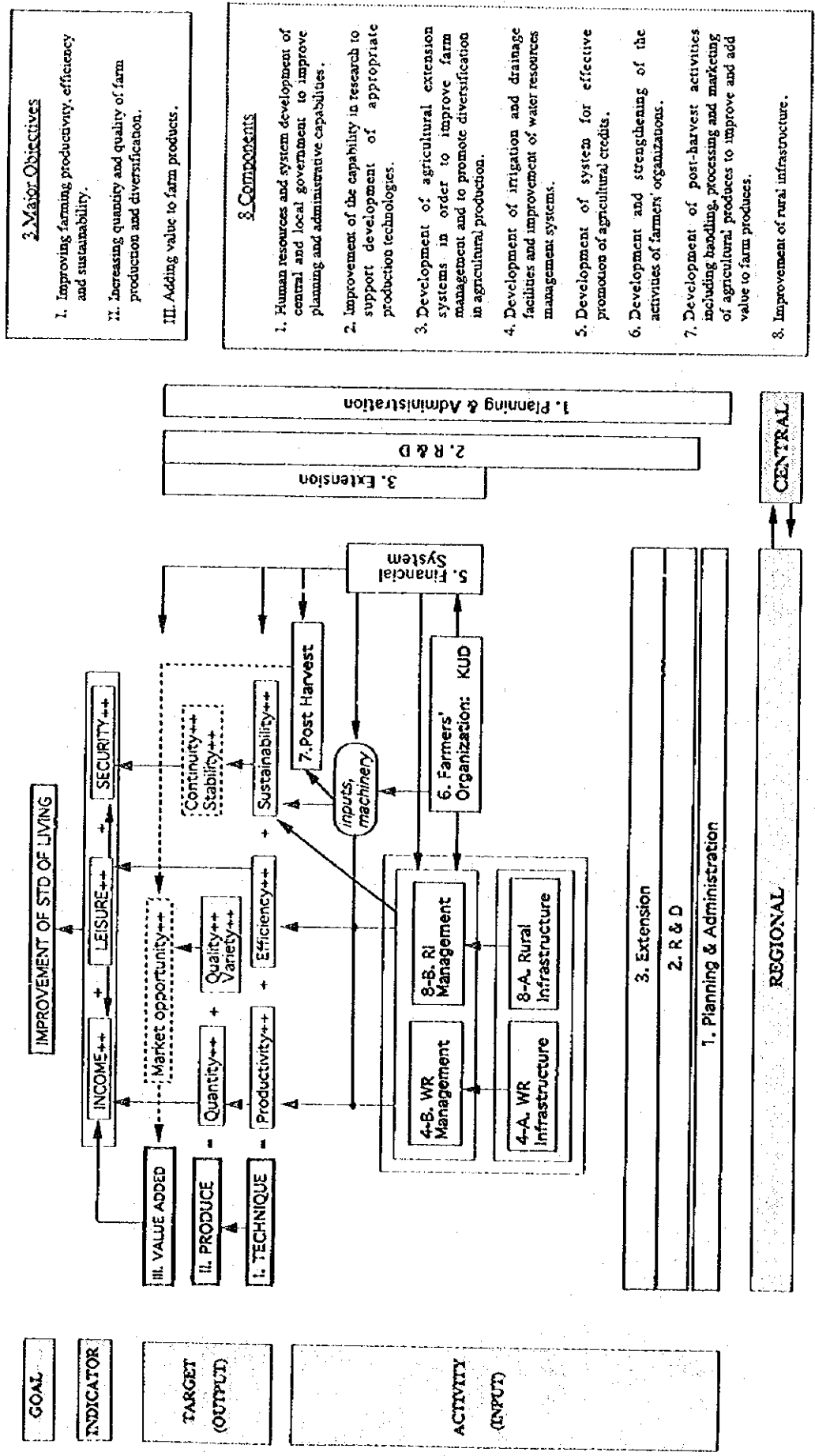
- MPW: Ministry of Public Works**
- DGR: Directorate General of Road
- DGRPIS: Directorate General of Regional Planning and Human Settlement
- DGRWD: Directorate General of Water Resources Development
- BSC: Irrigation Engineering Service Center
- MISED: Ministry of Transmigration and Forest Squatters Recruitment**
- DGSE: Directorate General of Settlement and Environment
- DGMD: Directorate General of Mobilization and Development
- MUSED: Ministry of Cooperatives and Small Enterprise Development**
- DGRCD: Directorate General of Rural Cooperatives Development
- DGU'D: Directorate General of Urban Cooperative Development
- DGSD: Directorate General of Small Enterprises Development

- MOA: Ministry of Agriculture**
- AAB: Agency for Agribusiness
- AAET: Agency for Agricultural Education and Training
- AARD: Agency for Agricultural Research and Development
- DGE: Directorate General of Estate Crops
- DGF: Directorate General of Fishery
- DGRCH: Directorate General of Cattle Crop and Horticulture
- DGS: Directorate General of Livestock
- SG: Secretariat General
- ADC: Agricultural Data Center
- AFC: Agricultural Extension Center
- AQC: Agricultural Quarantine Center
- LC: Local Government

4.1.2 One Goal, Three Targets and Eight Components of Activities

Ranking of the projects is difficult when their backgrounds are totally different from each other in terms of their beneficiary, scale, nature, formulation stage, etc. However, efforts are made to prioritize the projects in the framework of the four agro-ecosystems that are in different development stages. The basic concept of the Third Umbrella Cooperation consists of two layers of objectives and eight components of activity. The projects to be examined are placed in this framework based on their degrees of importance and urgency with relation to the Third Umbrella Cooperation at the time of study, then accordingly their summarized priorities are to be assessed. Fig. 4.1.1 is a two dimensional expression of the above mentioned framework of the Umbrella Cooperation. In preparing this figure, due consideration on the agribusiness system development has also been given. The structure of this two dimensional expression is explained below.

- The eight components in a given region are stratified and grouped at the lower part of the diagram.
 - **Component 1: Planning and administration**
Planning and administration themselves form into the base of all other activities, so they are placed at the bottom of the diagram.
 - **Components 2, 3: Research and Development (R&D) and extension**
R&D is placed at the second lowest layer, then comes extension. R&D and extension works are in close cooperation. Any result of a R&D cannot be disseminated to farmers without proper extension effort, so they adhere each other.
 - **Components 4 and 8: Irrigation (W.R.) and rural infrastructure**
Components 4 and 8 are further divided into two categories, A (operation and maintenance) and B (facilities), and influence the lowest layer of the three targets, namely production technique (productivity, efficiency and sustainability).
 - **Component 5: Agricultural finance**
Agricultural finance has relationship with all the farmers' independent activities as well as two layers of the targets.
 - **Component 6: Farmers' organization**
Farmers' organization influences mainly operation and maintenance works of the infrastructure, agricultural finance, input and machinery.
 - **Component 7: Post-harvest**
Post-harvest influences mainly value added through increasing market opportunity.



++ : Verifiable indicator
 WR : Water Resource
 RI : Rural Infrastructure

Fig. 4.1.1 AGRICULTURAL SECTOR: THE III UMBRELLA COOPERATION
 Basic Diagram for Orienting Projects in '1-3-8' Goal-Target-Activity Matrix

- **Input, machinery**

An auxiliary component is provided to understand the flows of influence more easily. "Input, machinery" placed in the activity matrix correspond to the major activity number 34 under the component 3 (see Table 4.1.1). As mentioned above, the component 3 influence all the eight components except 4A and 8A, it is an exceptional measure, therefore, it is to pick up this major activity of number 34, namely, "input, machinery" from the component 3 and place it in the matrix together with the five components. "Input, machinery" is influenced by "Farmers' organization" (component 6) and "Agricultural finance" (component 5). On the other hand, "Input, machinery" itself influences "Postharvest" (component 7) and "Sustainability" (one of three factors in Target I: Technique), and it together with "Rural infrastructure" (component 8) also influence "Efficiency" (one of three factors in Target I: Technique). Furthermore, it together with "W.R." (component 4) also influence "Productivity" (one of three factors in Target I: Technique). As shown in Fig. 4.1.1, this arrangement saves placing several arrows from going back to the component 3, and allows them to show the relationship between the target matrix and the activity matrix more clearly and precisely.

- Components 1,2,3 influence all the other five components, so an arrow which indicates the source and target of the influence is omitted. (exception: component 3 does not influence components 4A and 8A)
- Central activities are limited to the three components, and placed at the right side of the diagram. Their relationship with other activities are considered to be as follows.
 - **Central component 1: Planning and administration**
It covers the activities that belong to central components 2 and 3, and all regional components.
 - **Central component 2: R&D**
It covers the activities that belong to all regional components except component 1.
 - **Central component 3: Extension**
It covers the activities that belong to all regional components except component 1, 2, 4A, and 4B.
- The goal and the three targets are placed in the upper part of the diagram. Two auxiliary items, namely "market opportunity" and "continuity and stability" are placed in the target layers to show the flows of relationship more easily.
 - [Market opportunity] is placed between the target [Value added] and the component 7, as the value-added cannot be realized without the existence of a

market.

- [Continuity+stability] is placed between the target [sustainability] and the indicator [security] which is to measure the effect of the target [sustainability]. These auxiliary items represent the two aspects of [security], namely, stability (at present) and continuity (as the future stability), and are placed there in order to facilitate the understanding of the relationship between sustainability (of agriculture) and security (of life).
- Between the goal and the targets, three indicators are brought in with an intention to measure quantitatively the effects of activities towards the goal. The plan is proposed to measure three indicator categories; income, leisure and security, which correspond to the three types of technique, namely productivity, efficiency and sustainability.
 - Stratified three targets consist of (I) (agricultural) technique, (II) produce, and (III) value-added. (I) influences (II) directly, (II) influences (III) indirectly via “market opportunity”.
 - “Technique” is further divided into three elements, namely, productivity, efficiency, and sustainability. “Produce” is further divided into three elements, namely, quantity, quality and variety.
 - Between elements, “productivity” influences “quantity” directly, “quality and variety” influences “value-added” indirectly via “market opportunity”.
- There is a stratified relationship among the three targets directly and indirectly: for example, technique influences production as shown in the diagram.
 - [income] as selected as indicator can be measured through the elements of “quantity” and “value added”, similarly indicator [leisure] can be measured through the element [efficiency], and indicator [security] can be measured through the element [sustainability]
 - An arrow placed from the indicator[leisure] to [income] indicates that some of the gained leisure are transformed into a source of income, and an arrow placed from the indicator[leisure] to [security] indicates that some of the gained leisure are transformable into the improvement of living condition.
- An item at which an arrow-head is pointed is influenced by an item at which the other end of the arrow is located.

The relationship between the central projects and regional projects is explained in the section 4.2 later in this chapter, Prioritization of potential projects is explained in the section 4.3, and Indices in the section 6.2.

4.1.3 Identification, prioritization, and appraisal

The sequence of the "project cycle" can be divided into six acts, i.e.: identification, preparation and analysis, appraisal, negotiation, implementation and monitoring and evaluation (see Fig. 4.1.2).

The activity defined by the term "prioritization" used in this report appears in the second act, namely preparation and analysis. As it is understood that all the listed projects in this report have cleared the identification stage, prioritization will have no power to eliminate them from their status of projects for the Third Umbrella Cooperation.

The appraisal act comes after the preparation and analysis act (such as F/S) in the project cycle (see Fig. 4.1.2). It conducts a comprehensive and systematic examination of the projects that have passed through the previous stages. So all the potential projects will have to pass through the appraisal stage before entering into the implementation stage.

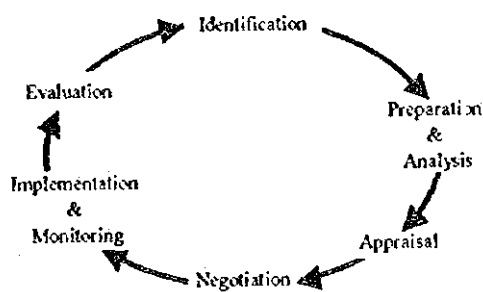


Fig.4.1.2 Project Cycle

4.2 The Relationship among the Potential Projects and Synergism

4.2.1 The Relationship among the Projects

The Umbrella Cooperation is expected to increase the degree of attainment toward the goal by integrating individual projects within the program. By considering the present course of development, an example of how the projects are arranged within each agro-ecosystem is made and presented in Fig. 4.2.1.

4.2.2 Central Projects and Regional Projects

The R/D has defined and divided the projects into two categories of central projects and regional projects. The contents of them are as follows:

- The central projects:
 - (1) Study, policy making and master plan formulation,

- (2) Research for the development of basic and applied technologies,
- (3) Development of training and extension strategies and techniques,
- (4) Development and strengthening of cooperatives and other farmers' organization,
- (5) Capability and institution development.

- The regional projects:

- (1) Production, processing and marketing of prospective agricultural commodities,
- (2) Appropriate technology development to suit the local environment,
- (3) Demonstration and extension of farming technologies and management,
- (4) Agricultural support system for integrated rural development,
- (5) Capacity and institutional development of agricultural services of the local government.

The relationship between the central projects and the regional projects are illustrated in Fig. 4.2.1, and its basic concept is already illustrated in Fig. 4.1.1.

Central activities mainly consist of the three components, namely planning and administration, R&D and extension. The activity of planning and administration covers not only the activities of other two central activities, namely, R&D and extension but also covers all the eight regional components and the three targets. The activity of R&D covers the five components of regional activities and the three targets, and the activity of extension covers the same area as that of R&D except the construction of infrastructure related to water resources, rural road, and rural water supply.

All the central projects have the development objectives defined by the REPELITA VI as their background. All the four executing Ministries have different areas of activities in the agricultural sector on a national scale, and the results will be gradually disseminated into the target areas by extension services.

The central projects attempt to eliminate development constraints from their target subjects on a national scale, and their set target ought to be a starting point of the coming REPELITA VII.

The above mentioned characteristics of the central projects must be taken into account when the integration of the central and the regional projects are to be planned. Realization of optimal combination is the first step for a higher degree of attainment towards the goal.

South Sulawesi

Core Project and Its Supporting Project

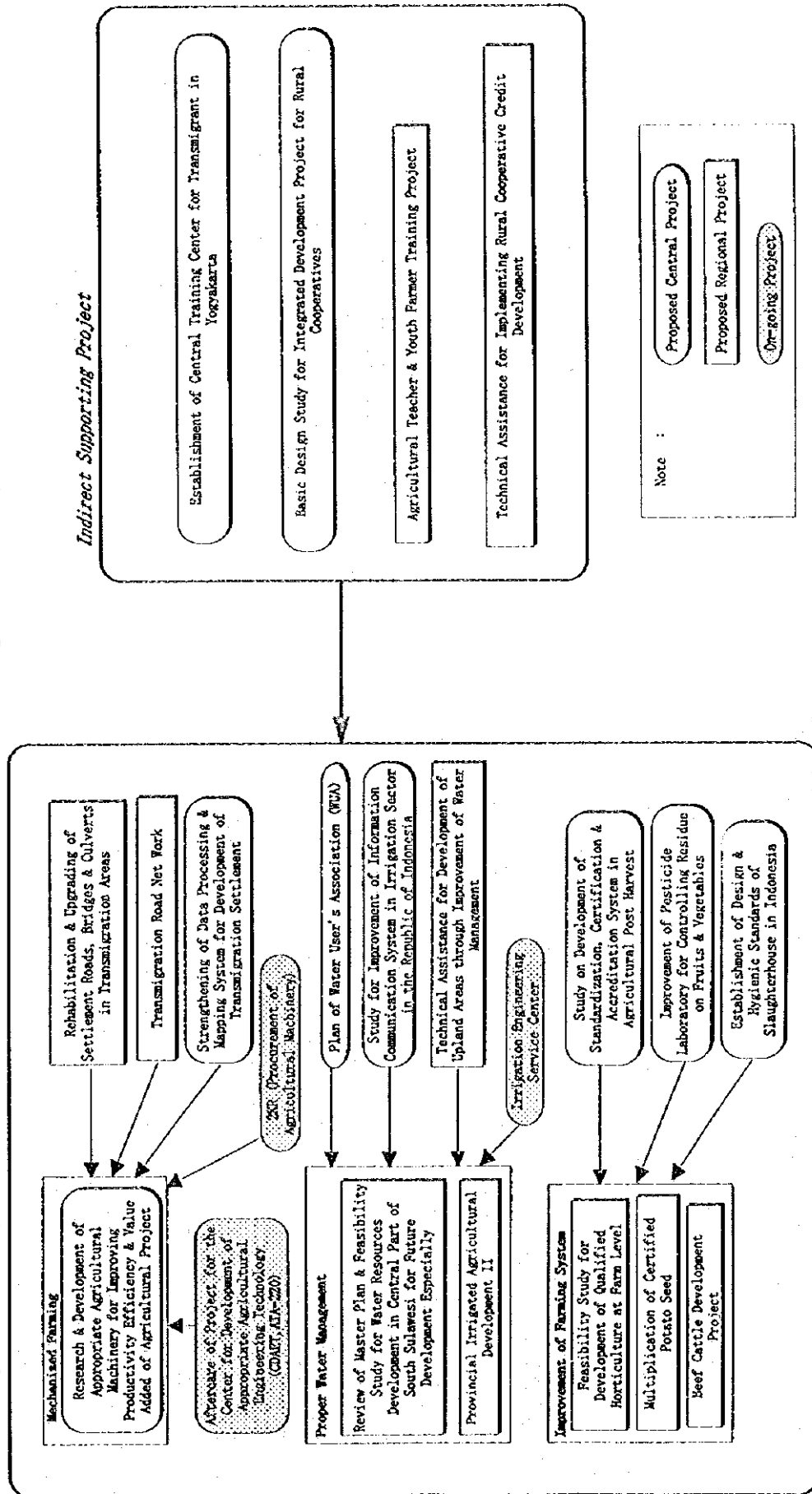
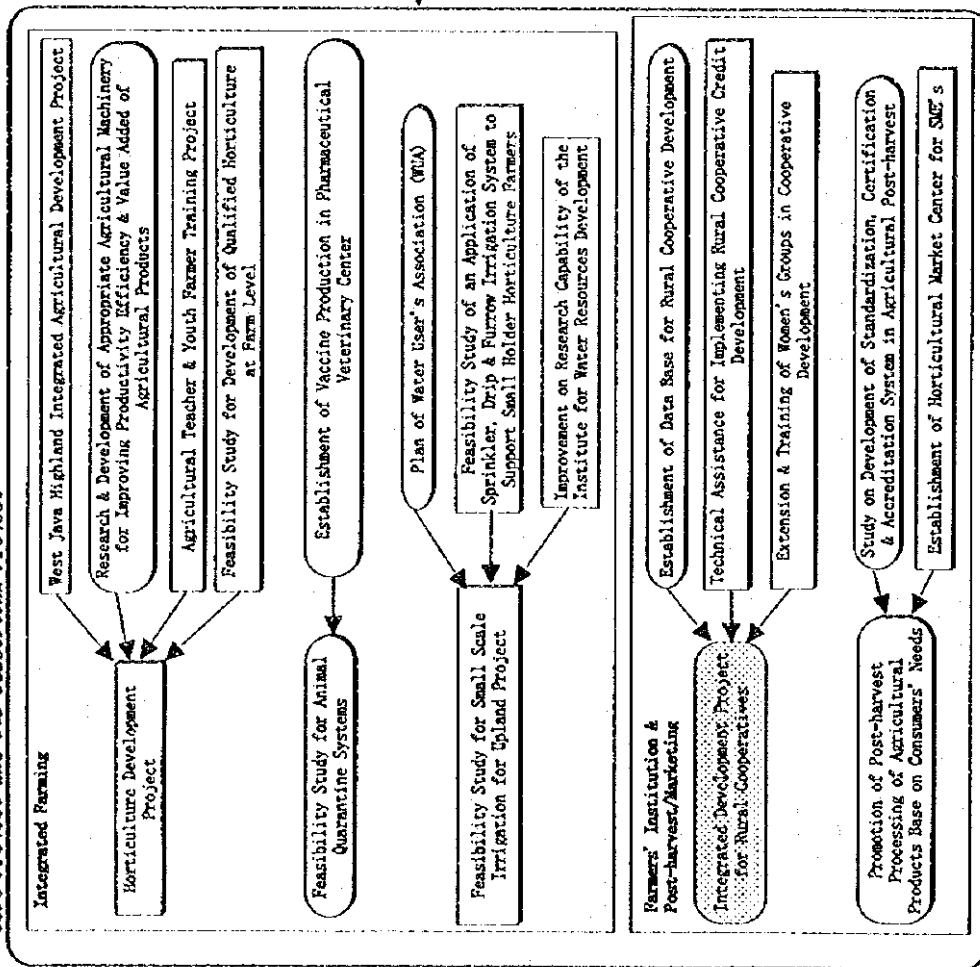


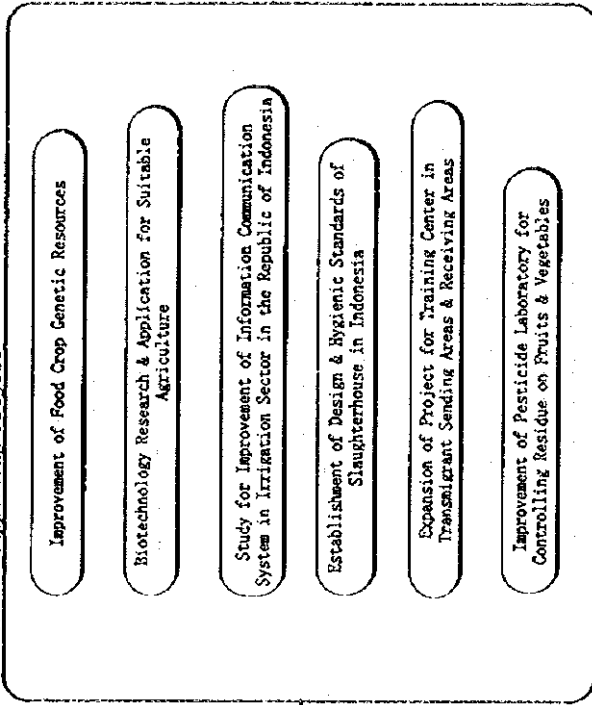
Fig. 4.2.1 Relationship among Potential Projects (1/4 South Sulawesi)

[West Java]

Core Project and Its Supporting Project



Indirect Supporting Project



Note :

- Proposed Central Project
- Proposed Regional Project
- On-going Project

Fig. 4.2.1 Relationship among Potential Projects (2/4 West Java)

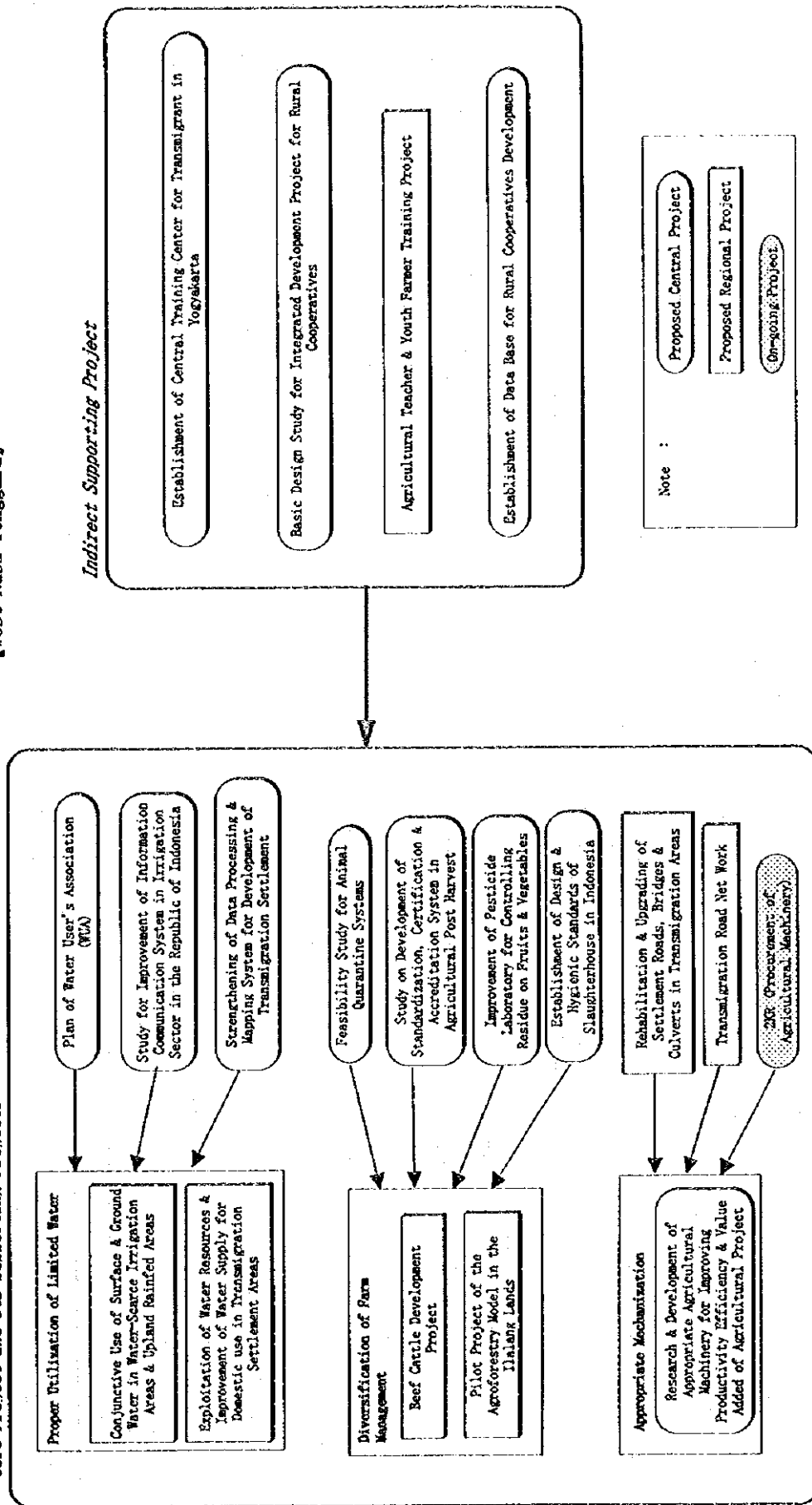
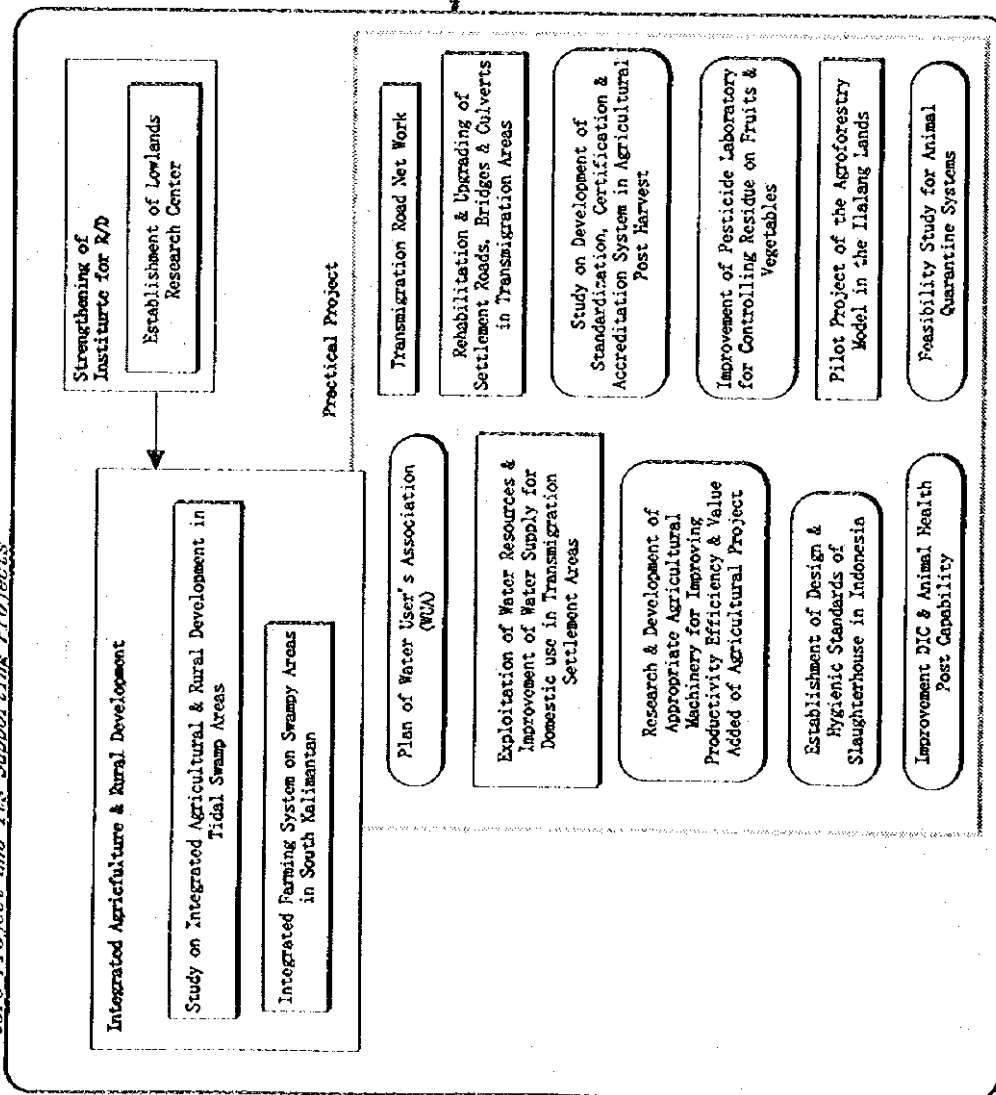


Fig. 4.2.1 Relationship among Potential Projects (3/4 West Nusa Tenggara)

Core Project and Its Supporting Projects

[South Kalimantan]



Indirect Supporting Project

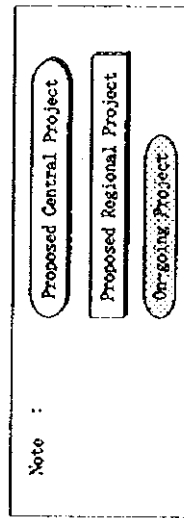
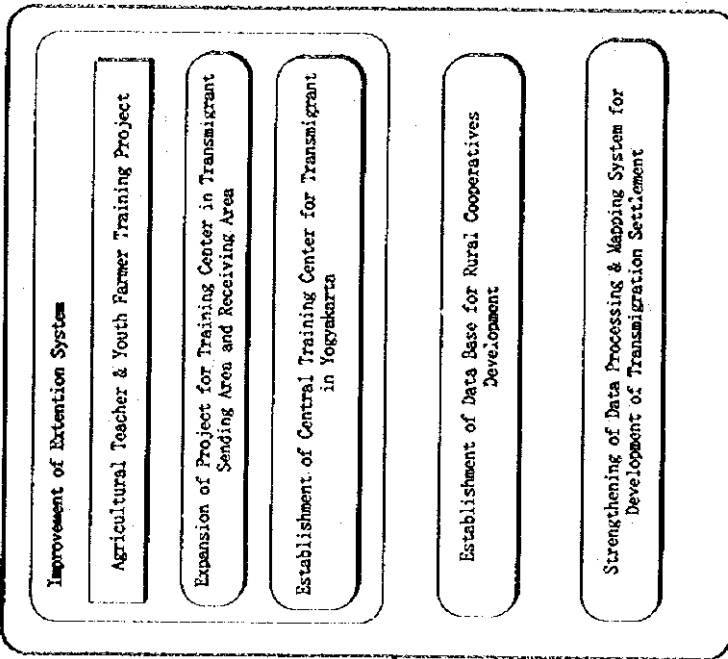


Fig. 4.2.1 Relationship among Potential Project (4/4 South Kalimantan)

4.2.3 Synergism

Synergism is a term used to define the phenomena in which the integrated effect of the combined plural elements is larger than the arithmetic sum of the effect of the single element. In the field of material science, synergism may be expected by combining different kind of materials which have different mechanism with each other. In the field of ecology, synergism is to denote the phenomena in which an organism shows various positive physiological changes when another organism exists close by.

Some of the synergism which can be expected from the integration of individual potential projects are increase of positive external effects, decrease of negative external effects as well as increase of positive internal effects.

Gross effect of synergism may be estimated quantitatively in the field of ecology but quite different from its net effect, as synergism is inevitably accompanied by antagonism.

4.3 Proposition of Prioritization of the Projects

4.3.1 Categorization of the projects

The projects for the Umbrella Cooperation can be divided into two categories, namely category 1 which include the projects being implemented or approved to be implemented, and category 2 which include the projects newly proposed projects (under application or under discussion). The projects in category 1 are excluded for prioritization in this Study. Those in the category 2 are classified into three priority groups namely (A), (B) and (C) (see Table 4.3.1) according to the priority given by the study for each agro-ecosystem. Prioritization of the potential projects which will newly be submitted after the completion of this study ought to be judged by the procedure proposed in this study.

Table 4.3.1 Classification of the Projects

Category	Prioritization
1. under implementation or to be implemented	-
2. newly proposed (under application or under examination)	(A) Projects whose objectives coincide with the most important components related to the model area (B) Projects whose objectives coincide with the important components related to the model area (C) Projects whose objectives do not coincide with most important and/or important components related to the model area

4.3.2 Procedure of Prioritization

Though all the eight components of the activity are equally important in the framework of the Umbrella Cooperation, the difference in the present development stage among the four agro-ecosystems results in the difference in the degree of urgency of some components over others in terms of attainment of the goal. A four step procedure for classification of the new potential projects is proposed. In this procedure, the different degrees of emphasis has been taken into account in development strategy in each agro-ecosystem which has been identified by the field survey conducted by the study team. Explanation of the procedure is described below:

Step 1: Identification of priority components of activity

The priority components of activity are identified according to the degree of emphasis in development strategy in the each agro-ecosystem. Although all the eight components are important for the integrated rural development, emphasis is placed on some of the specific components according to the present development stage and conditions in each model area. Based on the results of the field survey, the important components and the most important components, which are considered as the most urgently required measures to be taken, for each model area are selected as shown below.

Agro ecosystem	Important components	Most important components	Reasons for selection of most important components
Irrigated Area (South Sulawesi)	3: Extension (regional) 4A: W.R. infrastructure 4B: W.R. management 6: Farmers' organization	8A: Rural infrastructure Input, machinery	to solve the labour shortage problem by improving the efficiency of farming
Highland Area (West Java)	2: R&D (central, regional) 3: Extension (regional) 4A: W.R infrastructure 8A: Rural infrastructure	6: Farmers' organization 7: Postharvest	to establish a market-oriented farming system
Lowland Area (West Nusa Tenggara)	2: R&D (central, regional) 4A: W.R. infrastructure 4B: W.R management 5: Agricultural finance	3: Extension (regional) 6: Farmers' organization	to introduce and disseminate a new farming technology suitable for rain-fed farming
Swamp Area (South Kalimantan)	1: Planning & admi. 3: Extension (central & regional) 8A: Rural infrastructure	2: R&D (central, regional)	to establish and verify a development strategy for swamp areas

Step 2: Formation of ['1-3-8' Goal-Target-Activity Matrix]

All the important components and the most important components of each agro-ecosystem are placed in the ['1-3-8' Goal-Target-Activity Matrix] (Fig.4.1.1). Four diagrams of Fig. 4.3.1 are prepared as the results of this step. These relative importance among the components are based on the present status of the urgently required measures in each agro-ecosystem. They need to be revised in future according to the progress of the development or other external conditions.

Step 3: Confirmation of major activities of all the projects

After executing the close examination of the objectives and expected contents of activities of a project, its component(s) of activity are determined. If the project has multiple objectives, it has plural components. Though its fields of activity are limited to three components (components 1, 2, & 3), a central project is judged by its relationship with the components of the specific agro-ecosystem at which its activity is aimed.

Step 4: Prioritization of the potential projects

A project whose field of activity is fitted in one of the most important components is classified as "Priority A". A project whose field of activity is fitted in one of the important components is classified as "Priority B". A project whose field of activity is not fitted in either the most important component or the important components is classified as "Priority C".

The results obtained through the above mentioned procedure are given in Appendix M. A sample of examination sheet, one each from the central projects and regional projects are shown below.

Central Project

Name: Project Sample 1
 Level: Central
 Related Region: South Sulawesi, West Java
 Major objective: Technical trial study of horticultural crop
 Major activities: R&D of post-harvest processing technology
 (R&D is component 2)
 (the study object is component 7)
 (relationship with regional component)
 (component 7 of West Java is one of the most important component, so the project is classified as priority A)

Relation between Central and Regional

S.Sulawesi	W.Jawa	N.T.B	S.Kalimantan
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Components

1	2	3	4	5	6	7	8
	■						

S.Sulawesi

1	2	3	4	5	6	7	8
		■	■		■	■	■

W.Jawa

1	2	3	4	5	6	7	8
		■	■		■	■	■

N.T.B

1	2	3	4	5	6	7	8
	■	■	■	■		■	

S.Kalimantan

1	2	3	4	5	6	7	8
■	■	■					■

Priority

(A)	B	C
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Regional Project

Name: Project Sample 2
 Level: Regional
 Related Region: South Sulawesi
 Major objective: upgrading of regional infrastructure
 Major activities: improvement of farm road
 (regional component 8)
 (component 8 of South Sulawesi is one of the most important component)

Components

1	2	3	4	5	6	7	8
							■

S.Sulawesi

1	2	3	4	5	6	7	8
		■	■		■	■	■

W.Jawa

1	2	3	4	5	6	7	8
		■	■		■	■	■

N.T.B

1	2	3	4	5	6	7	8
	■	■	■	■		■	

S.Kalimantan

1	2	3	4	5	6	7	8
■	■	■					■

Priority

(A)	B	C
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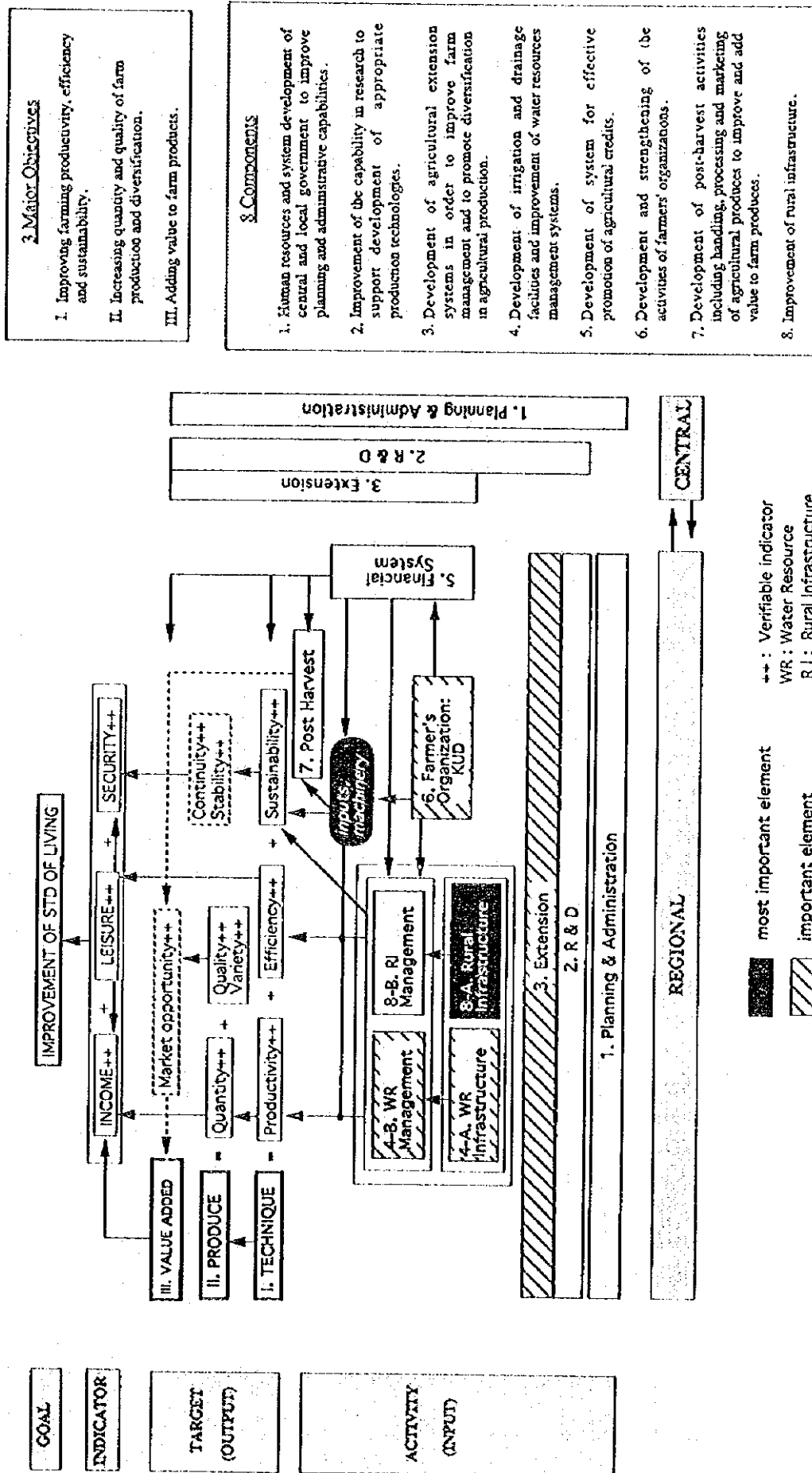


Fig. 4.3.1 AGRICULTURAL SECTOR: THE III UMBRELLA COOPERATION
 Basic Diagram for Orienting Projects in 1-3-8' Goal-Target-Activity Matrix
 for South Sulawesi Province (Irrigated Area)

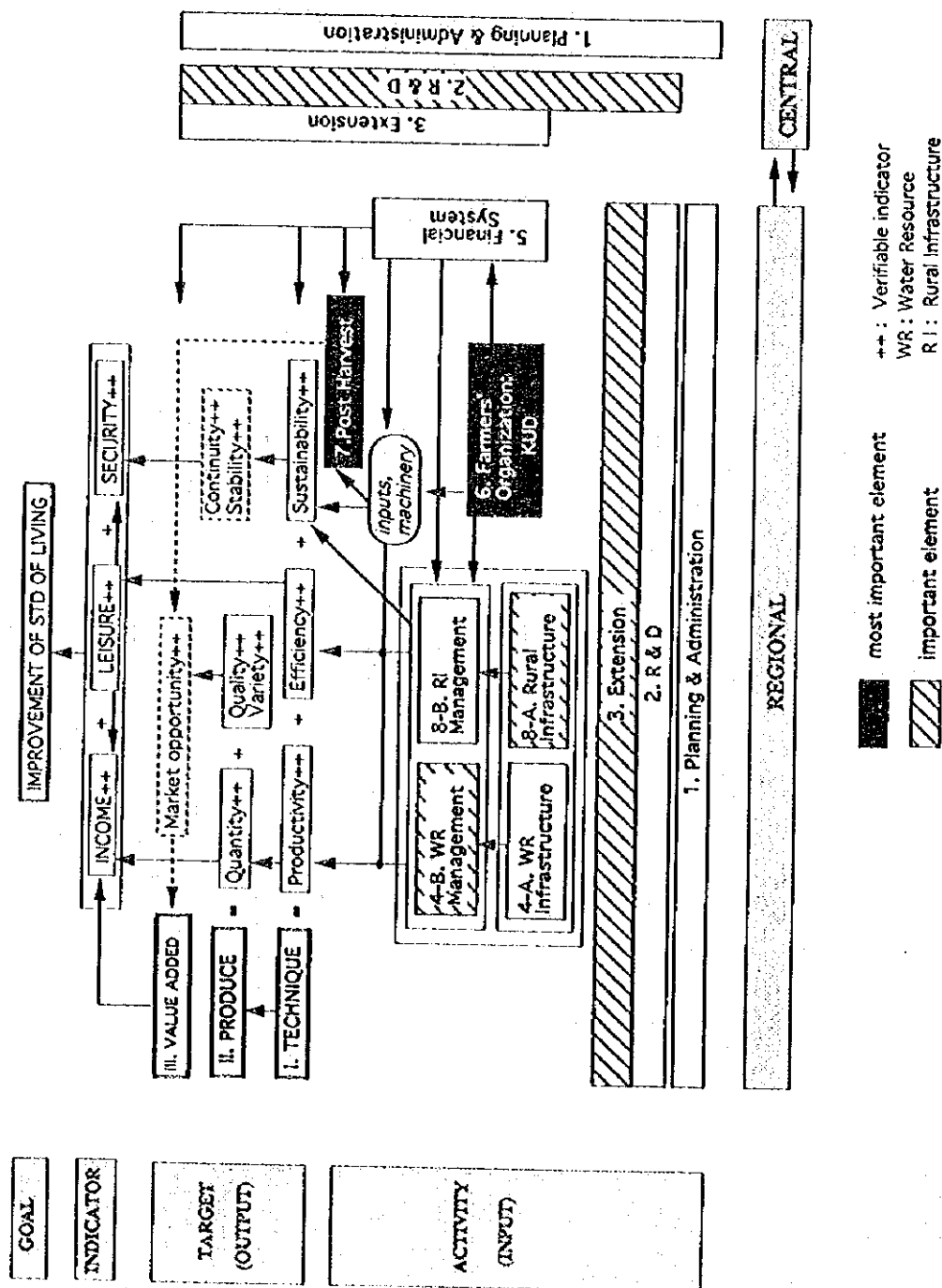
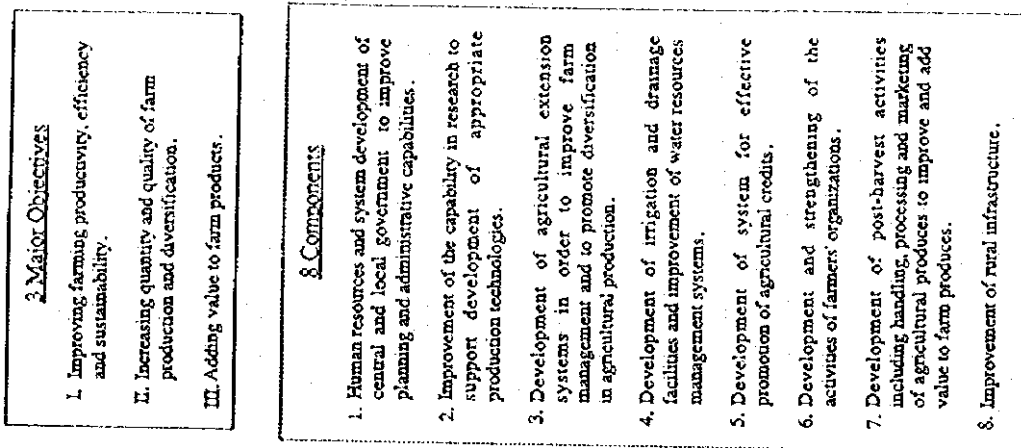


Fig. 4.3.1 AGRICULTURAL SECTOR: THE III UMBRELLA COOPERATION
 Basic Diagram for Orienting Projects in '1-3-8' Goal-Target-Activity Matrix
 for West Java Province (Highland Area)

- 3. Major Objectives**
- I. Improving farming productivity, efficiency and sustainability.
 - II. Increasing quantity and quality of farm production and diversification.
 - III. Adding value to farm products.
- 8. Components**
1. Human resources and system development of central and local government to improve planning and administrative capabilities.
 2. Improvement of the capability in research to support development of appropriate production technologies.
 3. Development of agricultural extension systems in order to improve farm management and to promote diversification in agricultural production.
 4. Development of irrigation and drainage facilities and improvement of water resources management systems.
 5. Development of system for effective promotion of agricultural credits.
 6. Development and strengthening of the activities of farmers organizations.
 7. Development of post-harvest activities including handling, processing and marketing of agricultural produces to improve and add value to farm products.
 8. Improvement of rural infrastructure.

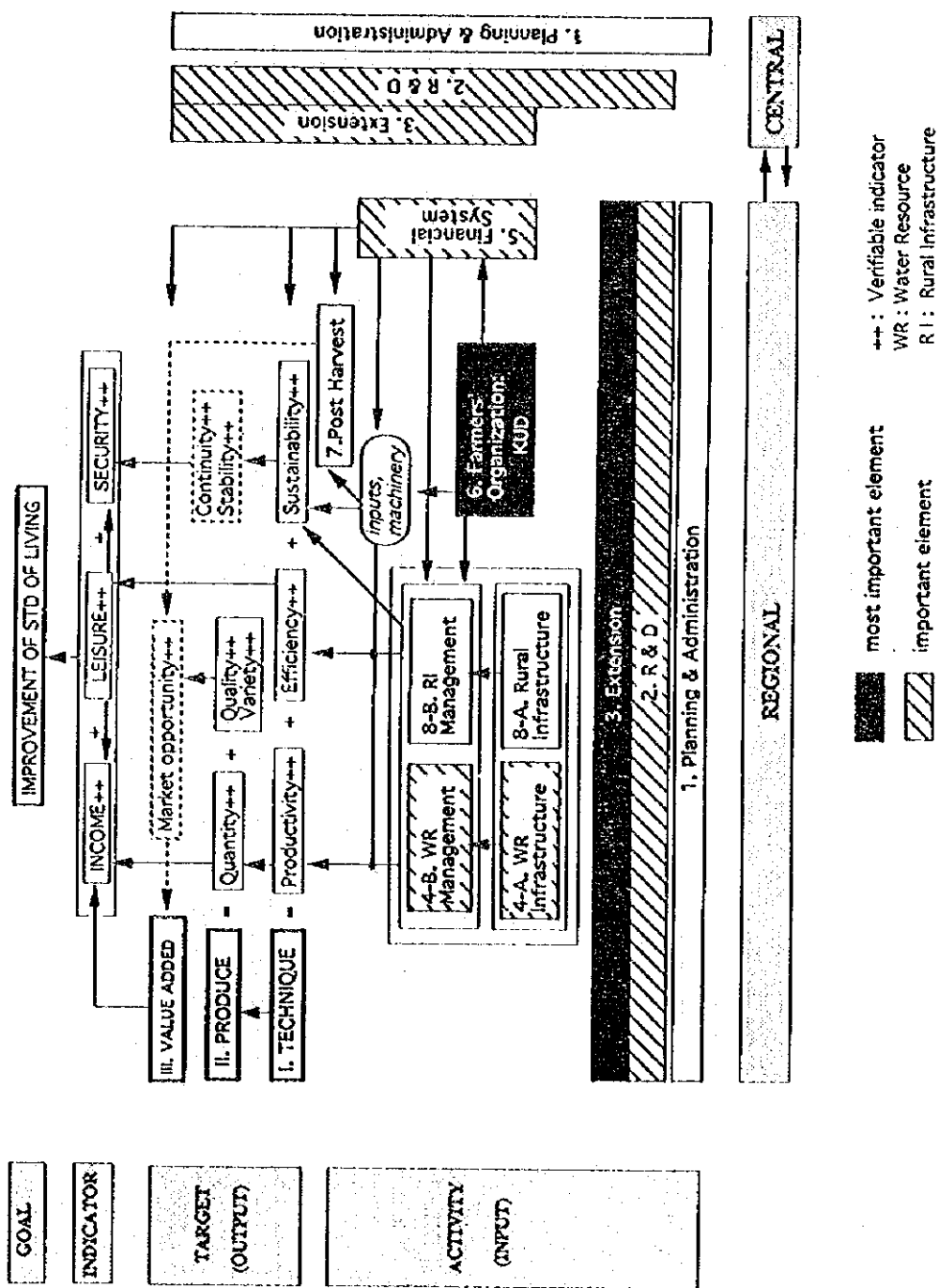


Fig. 4.3.1 AGRICULTURAL SECTOR: THE III UMBRELLA COOPERATION
 (3/4) Basic Diagram for Orienting Projects in '1-3-8' Goal-Target-Activity Matrix
 for West Nusa Tenggara Province (Lowland(Rain-fed) Area)

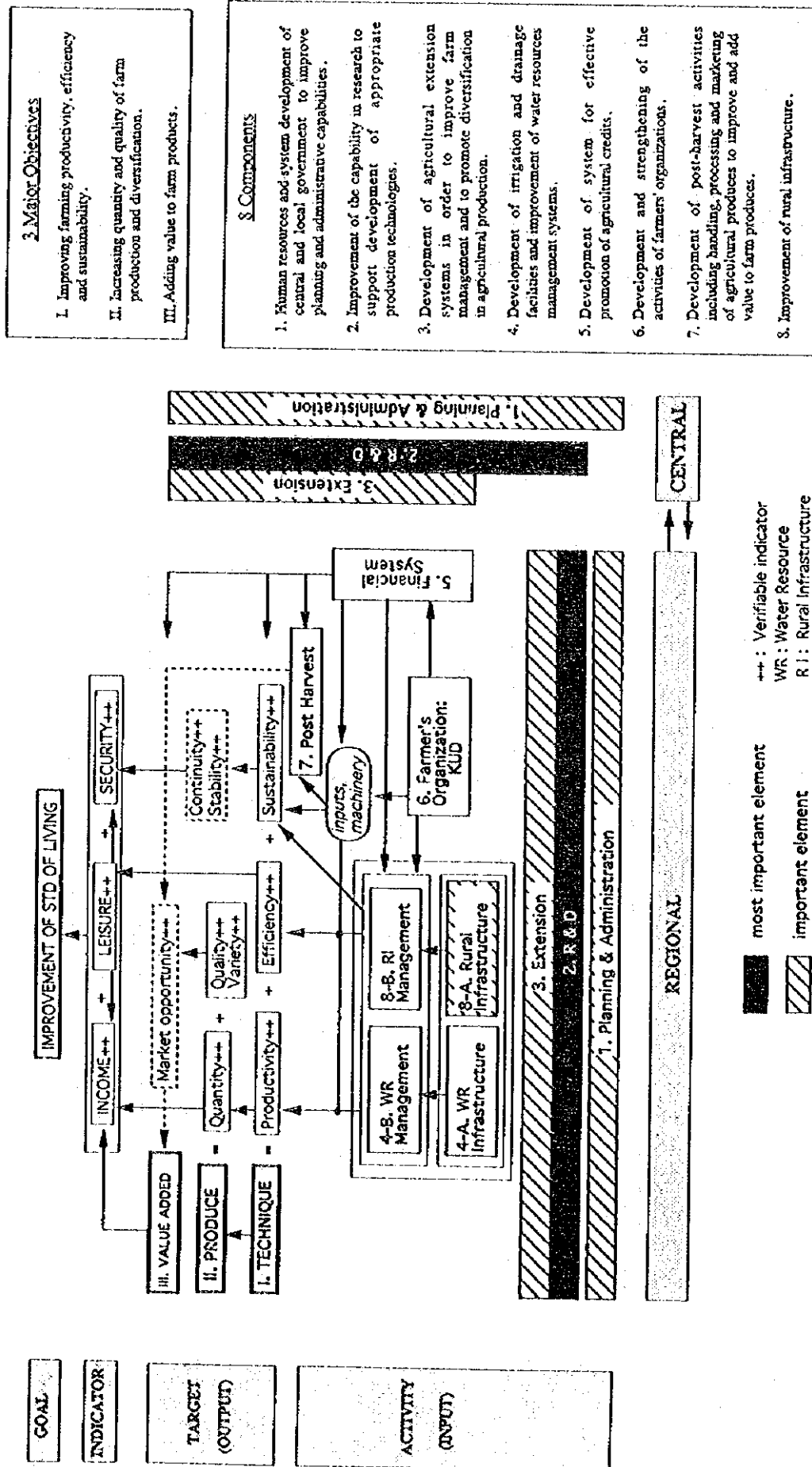


Fig. 4.3.1 AGRICULTURAL SECTOR: THE III UMBRELLA COOPERATION
 (4/4) Basic Diagram for Orienting Projects in '1-3-8' Goal-Target-Activity Matrix
 for South Kalimantan Province (Swamp Area)

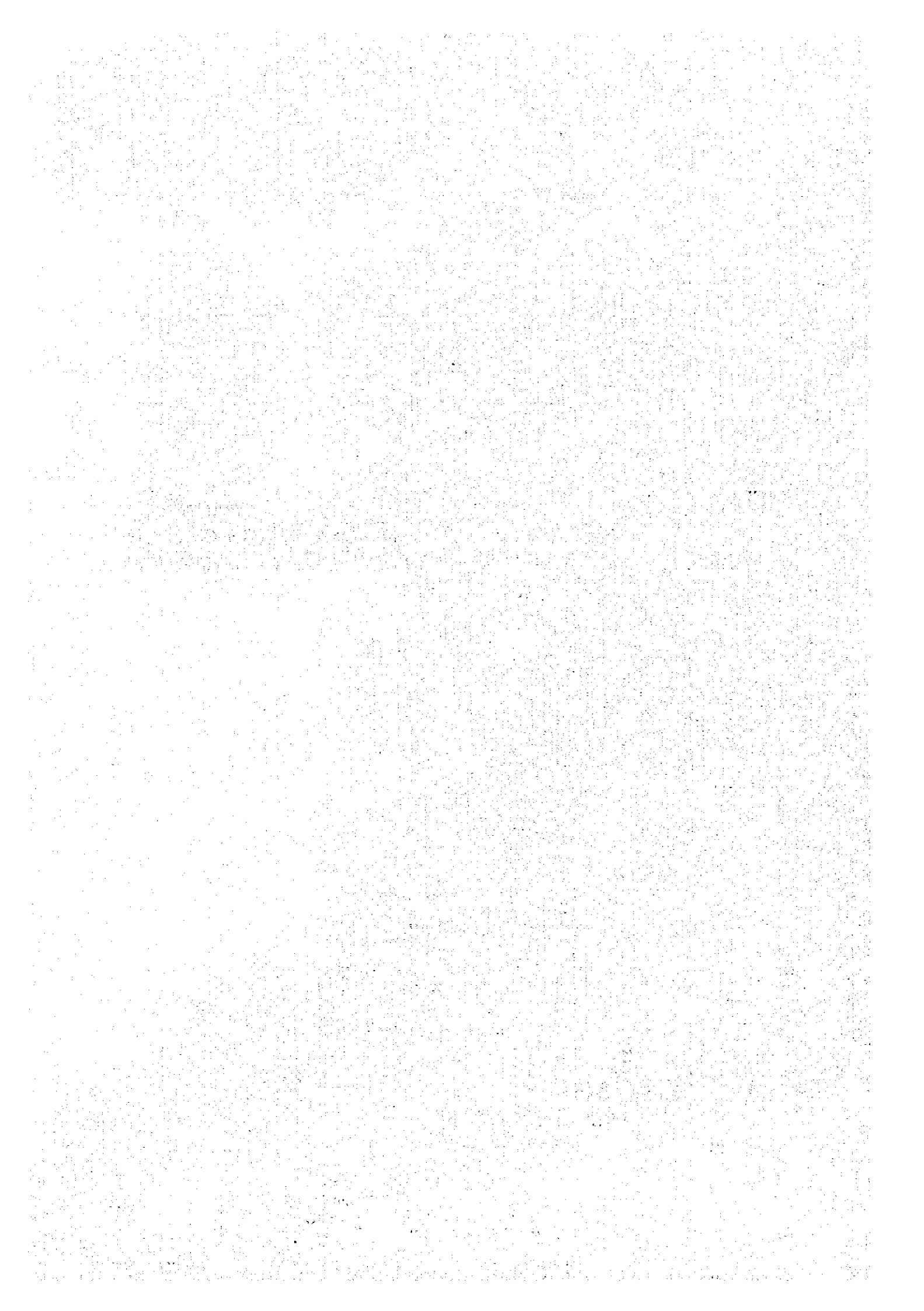
4.3.3 Characteristics of Proposed Prioritization Procedure

The prioritization procedure proposed in this study has taken into account of different degree of emphasis in development strategy in each agro-ecosystem which has been identified by the field survey conducted by the study team. It is crystallized in the diagram shown in Fig. 4.1.1. Although the diagram covers all of the framework defined in the R/D, and rightly reflects the development stages of the particular agro-ecosystem, paid on the present socio-economic situation. Therefore they are to be revised in future according to the progress of the development or other external conditions. This classification does not express absolute value of the projects, as the size, scale of effect etc. of the projects are not included in the items used in this prioritization.

This procedure favors those projects which cover wider geographical area or plural target areas. Also a small scale project which consists of a set of systems rather than machinery or facilities and of which effect is difficult to estimate can be treated as same as more large and solid projects.

In this study, even such project proposals without detailed study on their contents of activities or on requirement for their implementation are regarded as the potential projects, if their objectives are identified with those of the Umbrella Cooperation and their implementation are judged as not impossible. When time comes to examine the possibility of implementing these new projects, they will have to be scrutinized according to the formal appraisal procedures.

**CHAPTER 5:
STUDY OF PROJECTS FOR
THE THIRD UMBRELLA COOPERATION**



CHAPTER 5:
STUDY OF PROJECTS FOR THE THIRD UMBRELLA COOPERATION

5.1 Prioritization of Projects

5.1.1 Projects for the Third Umbrella Cooperation

All of the projects requested by the Government of Indonesia under the Third Umbrella Cooperation and the projects proposed by the Government within one (1) month after the submission of the progress report, were listed and reviewed for its justification and prioritization. Also, the projects proposed by the study team based on the results of this study were included in the list.

The project list consists of the projects of which implementation agencies are four ministries of the central government (the Ministry of Agriculture, the Ministry of Public Works, the Ministry of Cooperatives and Small Enterprises Development, and the Ministry of Transmigration and Forest Squatters Resettlement) or the four provincial governments. The projects are concerned with integrated agricultural and rural development for each model area of four agro-ecosystems i.e., South Sulawesi province as irrigated area, West Java province as highland area, West Nusa Tenggara province as lowland (rainfed) area and South Kalimantan province as swamp area. These projects are basically divided into two groups of central and regional projects, and their objectives and activities are classified by 8 components as described in R/D. Besides this grouping, these projects are categorized into "on-going projects" and "newly proposed projects".

On-going projects, which are under the implementation or approved for implementation at the end of April, 1996 and are considered as the projects in the above mentioned category, are selected as shown in Table 5.1.1 based on the following projects.

- Projects by ODA of Japan as mentioned in the Minutes of Meeting on Record of Discussion on the Third Umbrella Cooperation
- Projects which are executed by bilateral and multilateral assistance
- Projects noted in "Development Co-operation INDONESIA, 1994 Report" by UNDP
- Projects which are executed by Central and/or Provincial Government of Indonesia

- Projects approved for implementation but not yet executed

Table 5.1.1 shows the present condition of the on-going projects and these projects are not justified and prioritized. On-going projects are also treated as a precondition for the recommendation of high priority projects, and those are referred for the study of prioritization of newly proposed projects for four model areas.

The newly proposed projects with the following conditions are summarized in Table 5.1.2.

- Projects requested by MOA, MOPW, MOCSED, MOTFSR and four provincial governments concerned in the program of Third Umbrella Cooperation (the projects requested after May, 1996 are excluded)
- Projects in relation with the Program of Third Umbrella Cooperation as noted in blue-book by BAPPENAS
- Projects having higher priority in addition to the on-going projects that are considered
- Projects newly proposed by the Study Team

Summary of newly proposed projects are shown in APPENDIX : M. Some projects lack detailed study on their contents of activities or requirements for their implementation, yet, they are regarded as the projects for the Umbrella Cooperation, if their objectives match with those of the Umbrella Cooperation since their implementation are judged as not impossible.

5.1.2 The review of the prioritization of the projects

(1) Most important components for model areas of four agro-ecosystems

Based on identification of specific development needs and constraints, the basic development directions for the four model areas of agro-ecosystem were proposed and categorized as "most important component" and "important components". These components are summarized as below;

Agro ecosystem	Most important components	Important components
Irrigated Area (South Sulawesi)	8A: Rural infrastructure Input, machinery	3: Extension (regional) 4A: W.R. infrastructure 4B: W.R. management 6: Farmers' organization
Highland Area (West Java)	6: Farmers' organization 7: Postharvest	2: R&D (central, regional) 3: Extension (regional) 4A: W.R. infrastructure 8A: Rural infrastructure
Lowland Area (West Nusa Tenggara)	3: Extension (regional) 6: Farmers' organization	2: R&D (central, regional) 4A: W.R. infrastructure 4B: W.R. management 5: Agricultural finance
Swamp Area (South Kalimantan)	2: R&D (central, regional)	1: Planning & admi. 3: Extension (central & regional) 8A: Rural infrastructure

(2) Grouping by prioritization

The priority of project under this program is classified into the following three groups.

Priority "A": Projects whose objectives coincide with the most important components related to the model area

Priority "B": Projects whose objectives coincide with the important components related to the model area

Priority "C": Projects whose objectives not coincide with most important and/or important components related to the model area

Based on their grouping, there are 30 central projects and 56 regional projects. Some of the regional projects are covering two or more provinces. The breakdown of numbers of the projects is summarized below.

	No. of projects	Priority A	Priority B	Priority C
Total No.	86	47	34	5
Central	30	19	10	1
Regional	56	28	24	4
Irrigated area (S.S)	22	13	7	2
Highland area (W.J)	23	14	8	1
Lowland area (NTB)	21	9	11	1
Swamp area (S.K)	18	10	8	0

Project	Priority	MOA	MOPW	MOCSED	MOTFSR
Central	A	12	2	2	3
	B	7	1	2	-
	C	-	-	-	1
South Sulawesi	A	5	2	1	5
	B	5	-	-	2
	C	2	-	-	-
West Java	A	7	4	3	-
	B	6	1	-	1
	C	-	-	1	-
NTB	A	4	1	-	4
	B	5	3	-	3
	C	1	-	-	-
S. Kalimantan	A	2	3	-	5
	B	1	2	-	5
	C	-	-	-	-
TOTAL	A	30	12	6	17
	B	24	7	2	11
	C	3	-	1	1

The results of priority study for each project are summarized in Table 5.1.2 and its details are shown in APPENDIX : M.

5.2 Recommendation of the High Priority Projects

Based on the study of prioritization, the projects in the priority group "A" are recommended as high priority projects for necessity and urgency of action in the Program of the Third Umbrella Cooperation. The priority "A" projects include those need to be assisted not only by the Government of Japan but also other donors/agencies and the Government of Indonesia. However, each project of the priority "A" is not committed by every donor/agency including Government of Indonesia, thus the implementation of each project should be arranged and confirmed through usual procedures by concerned officials.

5.3 Recommendation for Implementation Schedule

Based on the results of the prioritization study of each project, implementation schedule for the priority "A" projects was recommended in consideration of urgency of individual projects, maximizing the interrelation and synergistic effects among projects. Implementation schedule for the project "A" is shown in Fig. 5.3.1. This implementation schedule has been planned considering only time and duration of projects and their financial resources, hence a more detailed review is required to include budgeting aspects.

Fig. S.1.1 List of On-Going Project under the Third Umbrella Cooperation (1/7)

No	Name of Project	Duration	Country /Donor	Type/Terms	Executing Agency	Remarks
1	Integrated Development Project for Rural Cooperatives	95 - 98	JPN/JICA	ITC/Grant	MCSED	Formulation of a general strategy for activation of KUD, formulation of master plans for seven provinces to activate KUD and implementation of a feasibility study in order to formulate the most appropriate plan of KUD activities in two model areas
2	Veterinary Drug quality improvement Project	94 - 96	JPN/JICA	FTC/Grant	MOA	Dispatch of Experts for Project
3	The Seed Potato Multiplication and Training Project	92 -97	JPN/JICA	FTC/Grant	MOA	Dispatch of Experts for Project
4	Irrigation Engineering Service Center Project	94 - 99	JPN/JICA	FTC/Grant	MOPW	Development and improvement of technical standards, guidelines and manuals necessary for the appropriate implementation of irrigation projects
5	Agricultural Statistical Technology Improvement and Training Project	94 - 99	JPN/JICA	FTC/Grant	MOA	Dispatch of Experts for Project
6	Dairy Technology Improvement at Farmer's Level	96 - 01	JPN/JICA	FTC/Grant	MOA	To promote appropriate feeding, management techniques to the farmers
7	Establishment of Quality Control of Livestock products and Veterinary Public Health Institute	96 - 00	JPN/JICA	FTC/Grant	MOA	To establish livestock products safety standards and veterinary public health for livestock products
8	Strengthening Feed Asses Laboratory	95 - 98	JPN/JICA	FTC/Grant	MOA	To improve evaluation, research capabilities of commercial livestock feed ingredients
9	Biotechnology Development for Animal Production	94 - 97	JPN/JICA	FTC/Grant	MOA	Dispatch of Experts for Mini-Project
10	Follow-up of Technical Cooperation for Riam Kanan Pilot Farm Development	95 - 96	JPN/JICA	FTC/Grant	MOA	Dispatch of Individual Experts
11	Increase Food Production Aid (KR-2)	95	JPN/JICA	Grant	GOI	Grant Aid
12	Agricultural Equipment and Machinery (KR-2)	96	JPN/JICA	Grant	GOI	Grant Aid
13	Multiplication and Distribution of Soybean High Quality Seed Project	93 - 99	JPN/JICA	FTC Grant	MOA	Grant Aid
14	Bila Irrigation Project (I) (II)	90 - 98	JPN/OECF	IPA Loan	DGWRD MOPW	To increase the agricultural production and improve farmer's living standards through the construction and/or rehabilitation of irrigation facilities on 9,524 ha of land along the Bila River in the central part of South Sulawesi province
15	Rural Area Infrastructure Development Project	94 - 98	JPN/OECF	IFT Loan	BAPPENAS	To contribute to reducing poverty through self-sustaining development of villages by constructing/improving village access infrastructure in backward villages

Fig. 5.1.1 List of On-Going Project under the Third Umbrella Cooperation (2/7)

No	Name of Project	Duration	Country /Donor	Type/Terms	Executing Agency	Remarks
16	Agricultural Development Project	93 - 99	JPN/OECF	IPN/Loan	DGWRD MOPW	To contribute to the economic/social dev. in rural areas through: - land development, rehabilitation of roads in NES sites, - establishment of small holders group processing, - estate crops dev. in special areas, - construction of fish landing places
17	Small Scale Irrigation Management Project (I) (II)	89 - 2000	JPN/OECF	IPT/Loan	DGWRD MOPW	Construction of irrigation facilities covering 13,927 ha and ground water development for 2,600 ha in NTB, NTT and S. Sulawesi
18	Agricultural Engineering (Agrocivil Engineering)	93 - 95	JPN/JICA	FTC/Grant	MOA	Dispatch of Individual experts
19	Strengthening of Planning Capability for Cooperative	92 - 96	JPN/JICA	FTC/Grant	MCSSED	Dispatch of Individual experts
20	Irrigation Water Management Engineering	92 - 96	JPN/JICA	FTC/Grant	MOA	Dispatch of Individual experts
21	Planning and Management of Food Crop Agricultural Development	94 - 95	JPN/JICA	FTC/Grant	MOA	Dispatch of Individual experts
22	Livestock Development Advisor	94 - 96	JPN/JICA	FTC/Grant	MOA	Dispatch of Individual experts
23	Rural Development Planning for the Transmigration Program	93 - 96	JPN/JICA	FTC/Grant	MTFSR	Dispatch of Individual experts
24	Ground Water Engineering	94 - 96	JPN/JICA	FTC/Grant	MOA	Dispatch of Individual experts
25	Water Management Especially on Rice Cultivation	94 - 97	JPN/JICA	FTC/Grant	MOA	Dispatch of Individual experts
26	Irrigation Planning	92 - 96	JPN/JICA	FTC/Grant	MOPW	Dispatch of Individual experts
27	Senior Advisor for Integrated Agricultural and rural Development	95 - 97	JPN/JICA	FTC/Grant	MOA	Dispatch of Individual experts
28	Seed Production, Processing and Distribution	92 - 96	JPN/JICA	FTC/Grant	MOA	Dispatch of Individual experts
29	Multiplication and Distribution of Soybean High Quality Seed Project	92 - 96	JPN/JICA	FTC/Grant	MOA	Dispatch of Individual experts
30	Fisheries Development Planning	95 - 97	JPN/JICA	FTC/Grant	MOA	Dispatch of Individual experts

Fig. S.1.1 List of On-Going Project under the Third Umbrella Cooperation (3/7)

No	Name of Project	Duration	Country /Donor	Type/Terms	Executing Agency	Remarks
31	Agricultural Education and Training	95 - 97	JPN/JICA	FTC/Grant	MOA	Dispatch of Individual experts
32	Improvement of Irrigation Project	96 - 98	JPN/JICA	FTC/Grant	MOPW	Dispatch of Individual experts
33	Inland Fisheries Development Planning	95 - 97	JPN/JICA	FTC/Grant	MOA	Dispatch of Individual experts
34	Strengthening Research on Diseases of Industrial Crops	93 - 97	JPN/JICA	FTC/Grant	MOA	Dispatch of Individual experts
35	Statistical Information System for Agriculture	96	JPN/JICA	FTC/Grant	MOA	Training Courses
36	Embryo Transfer for Cattle	96	JPN/JICA	FTC/Grant	MOA	Training Courses
37	Twinning and In vitro Fertilization Technology for Cattle	96	JPN/JICA	FTC/Grant	MOA	Training Courses
38	Farm Machinery Testing	96	JPN/JICA	FTC/Grant	MOA	Training Courses
39	General Agriculture (OISCA Social Training Course)	96	JPN/JICA	FTC/Grant	MOA	Training Courses
40	Women Leaders of Farm household Development	96	JPN/JICA	FTC/Grant	MOA	Training Courses
41	Integrated Pest Management for Plant Protection	96	JPN/JICA	FTC/Grant	MOA	Training Courses
42	Agricultural Land and Water Resources Development II	96	JPN/JICA	FTC/Grant	MOA	Training Courses
43	Distribution of Fresh Fruits and Vegetables	96	JPN/JICA	FTC/Grant	MOA	Training Courses
44	Post-Harvest Rice Processing	96	JPN/JICA	FTC/Grant	MOA	Training Courses
45	Agricultural and Rural Development with Environment Conservation	96	JPN/JICA	FTC/Grant	MOA	Training Courses

Fig. 5.1.1 List of On-Going Project under the Third Umbrella Cooperation (4/7)

No	Name of Project	Duration	Country /Donor	Type/Terms	Executing Agency	Remarks
46	Soil Analysis and Improvement	96	JPN/JICA	FTC/Grant	MOA	Training Courses
47	Farm Machinery Design	96	JPN/JICA	FTC/Grant	MOA	Training Courses
48	Farm Mechanization II	96	JPN/JICA	FTC/Grant	MOA	Training Courses
49	Agricultural Machinery Management	96	JPN/JICA	FTC/Grant	MOA	Training Courses
50	Agricultural Cooperative II	96	JPN/JICA	FTC/Grant	MOA	Training Courses
51	Agricultural Extension service for Leader II	96	JPN/JICA	FTC/Grant	MOA	Training Courses
52	Application of Symbiotic Microorganisms in Tropical Agriculture and Forestry	96	JPN/JICA	FTC/Grant	MOA	Training Courses
53	Rice Research Techniques	96	JPN/JICA	FTC/Grant	MOA	Training Courses
54	Poultry Production and Breeding Technology	96	JPN/JICA	FTC/Grant	MOA	Training Courses
55	Bioindustries	96	JPN/JICA	FTC/Grant	MOA	Training Courses
56	Industrial Biotechnology	96	JPN/JICA	FTC/Grant	MOA	Training Courses
57	Introductory Gene Manipulation for Agriculture	96	JPN/JICA	FTC/Grant	MOA	Training Courses
58	Forage Production and Utilization Technology for Ruminant Animals	96	JPN/JICA	FTC/Grant	MOA	Training Courses
59	Laboratory Diagnosis of Poultry Diseases	96	JPN/JICA	FTC/Grant	MOA	Training Courses
60	Implementation Support for Integrated Area Development Project in Barru District, South Sulawesi 95 - 99	95 - 99	JPN/JICA	FTC/Grant	MOHA	Dispatch of Junior Experts (JOCV)

Fig. 5.1.1 List of On-Going Project under the Third Umbrella Cooperation (5/7)

No	Name of Project	Duration	Country /Donor	Type/Terms	Executing Agency	Remarks
61	Indonesian Cooperative Development Assistance Program	93 - 99	CAN/CIDA	FTC/Grant	C.C	To support the strengthening of the Indonesian people based cooperative movement
62	Sulawesi Regional Development Project, Phase II	91 - 96	CAN/CIDA	FTC/Grant	MOHA	To assist in the improvement of the welfare and quality of life of the rural population of selected areas in four provinces of Sulawesi
63	Water sector Technical Assistance Fund	90 - 96	CAN/CIDA	FTC/Grant	MOPW	To contribute to the improvement of the ministry of public works five year investment programme
64	Small Scale Agroindustry and Agribusiness Development Project	92 - 98	GFR/GTZ	FTC/Grant	MOA	
65	Upland Farming Systems Development	91 - 97	GFR/GTZ	FTC/Grant	MOA	To develop integrated dryland farming systems in 3 provinces of Kalimantan and improve extension services
66	Land Use Planning and Mapping Project	91 - 97	GFR/GTZ	FTC/Grant	NALA	To enable planners to use maps and land use information
67	Development of a Methodology to facilitate Cost Effective Rehabilitation and Modernization of Irrigation System	93 - 96	UK/ODA	FTC/Grant		
68	Agribusiness Development Project	91 - 97	USA/USAID	FTC/Grant	MOA	To enhance public sector support to agribusiness and strengthen the private agribusiness sector, especially agribusiness organizations
69	Agriculture and Rural Sector Support Program (assist policy design and implementation related to the sector)	87 - 97	USA/USAID	FTC/Grant	MOA	Support the GO's efforts to increase employment and incomes through agricultural diversification, trade deregulation, domestic resource mobilization, financial deregulation and improved environmental and natural resource management
70	Strengthening institutional Development	91 - 97	USA/USAID	PBB/Grant	GOI	To enhance the participation of independent PYOs and strengthen their capacities
71	Management of Small Scale Irrigation	88 - 96	USA/FF	FTC/Grant	MOPW	To encourage the land over of management responsibility for small scale irrigation from government to farmers
72	Integrated Irrigation sector Project	90 - 96	ADB	IPA/Loan	DGWRD	
73	Second Integrated Irrigation sector Project	94 - 00	ADB	IPT Loan	DGWRD	To improve the productivity of irrigated agriculture a view to raising the farm income of the rural population and improving their living conditions
74	Establishment of Construction Quality Panel	94 - 98	ADB	FTC/Grant	DGWRD	To organize a construction quality panel which will advise DGWRD in formulating and implementing effective measures to improve construction quality of irrigation works
75	Tree Crops Smallholder Project	92 - 98	ADB	IPA/Loan	MOA	

Fig. 5.1.1 List of On-Going Project under the Third Umbrella Cooperation (6/7)

No	Name of Project	Duration	Country /Donor	Type/Terms	Executing Agency	Remarks
76	Upland Farmer Development Project	93 - 99	ADB	IPA/Loan	MOA	Introducing improved farming systems aimed at increasing production of perennial and crops on a suitable basis. project would contribute to stabilizing land and protecting forest resources through soil and water conservation
77	Smallholder Tree Crop Processing Project	93 - 99	ADB	IPA/Loan	MOA	To alleviate poverty by improving the income and employment prospects of rubber and tea Smallholder and landless rubber tappers of whom over fifty percent are living below poverty line
78	Income Generating Project for Marginal Farmers and Landless	89 - 96	IFAD	IPT/Loan	GOI	To increase incomes of 287,500 household with incomes below the poverty level by initiating a range of income-generating activities off and on-farm
79	Income Generating Project for Marginal Farmers and Landless	89 - 96	UNDP	FTC/Grant	MOA	To initiate income-generating activities and to develop grassroots level small farmers groups
80	Soybean Seed Production and Development	94 - 97	UNDP	FTC/Grant	MOA	
81	Cooperative/ KUD Self-Reliance	94 - 97	UNDP	FTC/Grant	MCSSED	Strengthen self-reliance of the village unit cooperative (KUD) structure by developing commodity/activity
82	Fertilizer Restructuring Project	91 - 97	IBRD	Loan		
83	Provincial Irrigated Agriculture Development Project	91 - 96	IBRD	Loan	MOA	
84	Agricultural Financing Project	91 - 98	IBRD	Loan		
85	Tree crops Smallholder Development Project	92 - 98	IBRD	Loan	MOA	
86	Integrated Pest Management Training	93 - 98	IBRD	Loan		
87	Integrated Swamps Development Project	94 - 2000	IBRD	Loan	MOA	
88	Java Irrigation Improvement and Water Management	94 - 2000	IBRD	Loan		
89	Land Administration Project	94 - 2000	IBRD	Loan		
90	Groundwater Development Project	93 - 99	IBRD	Loan	MOA	

Fig. 5.1.1 List of On-Going Project under the Third Umbrella Cooperation (7/7)

No	Name of Project	Duration	Country /Donor	Type/Terms	Executing Agency	Remarks
91	Support to IFAD Assisted Project for the Development of Ramified Agriculture	91 - 96	WFP	FOA/Grant	MOA	To increase incomes and improve living standards of poor farming households in the project areas
92	Transmigration Project	91 - 96	GOI	-	MOTFSR	South Sulawesi, South Kalimantan, NTB
93	Development and Conservation of Water Resources Project	94 - 99	GOI	-	MOPW	
94	Irrigation Improvement Project	94 - 99	GOI	-	MOPW	
95	Spring Water and Flood Control Project	94 - 99	GOI	-	MOPW	

Note: Acronyms of Type are explained in followings

FTC (Free-standing Technical Cooperation) - The provision of resources aimed at the transfer of technical and managerial skills and know-how or of technology for the purpose of building up national capacity to undertake development activities, without reference to the implementation of any specific investment project(s). FTC includes pre-investment activities, such as feasibility studies, when the investment itself has not yet been approved or funding not yet secured.

ITC (Investment-related Technical Cooperation) - The provision of resources, as a separately identifiable activity, directly aimed at strengthening the capacity to execute specific investment projects. Included under ITC would be pre-investment type activities directly related to the implementation of an approved investment project.

IPA (Investment Project Assistance) - The provision of financing, in cash or in kind, for specific capital investment projects, i.e. projects that create productive capital which can generate new goods or services. Also known as capital assistance. Investment project assistance may have a technical cooperation component (in which case the code is IPT).

PDB (Programme/Budgetary aid or Balance-of-Payments support) - The provision of assistance which is not cast in terms of specific investment or technical cooperation projects but which is instead provided in the context of broader development programmes and macro-economic objectives and/or which is provided for the specific purpose of supporting the recipient's balance-of-payments position and making available foreign exchange. This category includes non-food commodity input assistance in kind and financial grants and loans to pay for commodity inputs. It also includes resources ascribed to public debt forgiveness.

FOA (Food Aid) - The provision of food for human consumption for developmental purposes, including grants and loans for purchase of food. Associated costs such as transport, storage, distribution, etc., are also included in this category, as well as donor-supplied, food-related items such as animal food and agricultural inputs related to food growing when these are parts of a food aid programme.

Table 5.1.2 List of Proposed Projects under the Third Umbrella Cooperation (1/3)

No.	Project Title	Agency	Level	Relation	Priority
1	Improvement of Food Crop Genetic Resources (related to ATA-378)	MOA	Central	Four provinces	A
2	Biotechnology Research and Application for Sustainable Agriculture (for Cocoa, Species and Medicine Crops, Food Crops, Fruits Crops)	MOA	Central	Four provinces	A
3	Feasibility Study for Development of Qualified Horticulture at Farm Level	MOA	Regional	S.Sulawesi, W.Jawa	A
4	Feasibility Study for Income Generating Project for Marginal Farmers and Landless (P4K)	MOA	Central	Four provinces	A
5	Soybean Varietal Improvement and Equipment Maintenance	MOA	Regional	S.S, W.J, NTB	B
6	Decentralized agricultural Extension Management Project	MOA	Central	Four provinces	B
7	Technical Assistance for Development of Upland Areas through Improvement of Water Management	MOA	Regional	S.Sulawesi, NTB	A
8	Horticulture Development Project in Upland Area	MOA	Regional	S.S, W.J, NTB	A
9	Horticulture and Agribusiness Development	MOA	Regional	S.Sulawesi, W.Jawa	B
10	Feasibility Study for Second Upland Farmer Development Project	MOA	Regional	NTB	B
11	Feasibility Study for Sustainable Agriculture Development Project (SADP) in Maluku	MOA	Regional		C
12	Feasibility Study for Integrated Agricultural Development in IDT Village	MOA	Central	S.Sulawesi, NTB	A
13	Feasibility Study for Rainfed Agriculture Development	MOA	Regional	NTB	B
14	Agroecological Technology for Sustainable Agriculture and Environmental Training Extension and Action Research (Agroeko) Project	MOA	Regional	W.Jawa, NTB	B
15	Strengthening Development of Seed Industry in Indonesia	MOA	Regional	NTB	B
16	Study of the Establishment and Designing on Rural Market through Agribusiness System	MOA	Regional		C
17	Study of the Enhancing Partnership between Agro-industry and Small Scale Farmers	MOA	Central	Four provinces	B
18	Feasibility Study for Improving Facility and Infrastructure of Agribusiness Development in Dry land Area	MOA	Regional	NTB	C
19	Feasibility Study for Partnership between Cooperatives and Farmers Group on Agribusiness Development in Rural Areas	MOA	Central	Four provinces	B
20	Development of Statistic Indicator for Agribusiness	MOA	Central	Four provinces	B
21	Strengthening the Capability of Environmental Impact Assessment in Agribusiness Agency	MOA	Central	Four provinces	B
22	The Establishment of the Center for Investment Promotion in Agribusiness	MOA	Central	Four provinces	B
23	Feasibility Study for Small Scale Irrigation for Upland Project	MOA	Regional	W.Jawa	A
24	Research and Development of Appropriate Agricultural Machinery for Improving Productivity Efficiency and Value added of Agricultural Product	MOA	Central	Four provinces	A
25	Integrated Agriculture Development in Tidal Swamp Areas	MOA	Regional	S.Kalimantan	B
26	Promotion of Postharvest Processing of Agriculture Products Base on the Consumer's Needs	MOA	Central	Four provinces	A
27	Feasibility Study for Establishment of Model Agriculture Cooperatives	MOA	Central	Four provinces	B
28	Agricultural Teacher and Youth Farmer Training Project	MOA	Regional	W.Jawa, NTB	A
29	Study on Development of Standardization, Certification and Accreditation System in Agricultural Post Harvest	MOA	Central	Four provinces	A

Table 5.1.2 List of Proposed Projects under the Third Umbrella Cooperation (2/3)

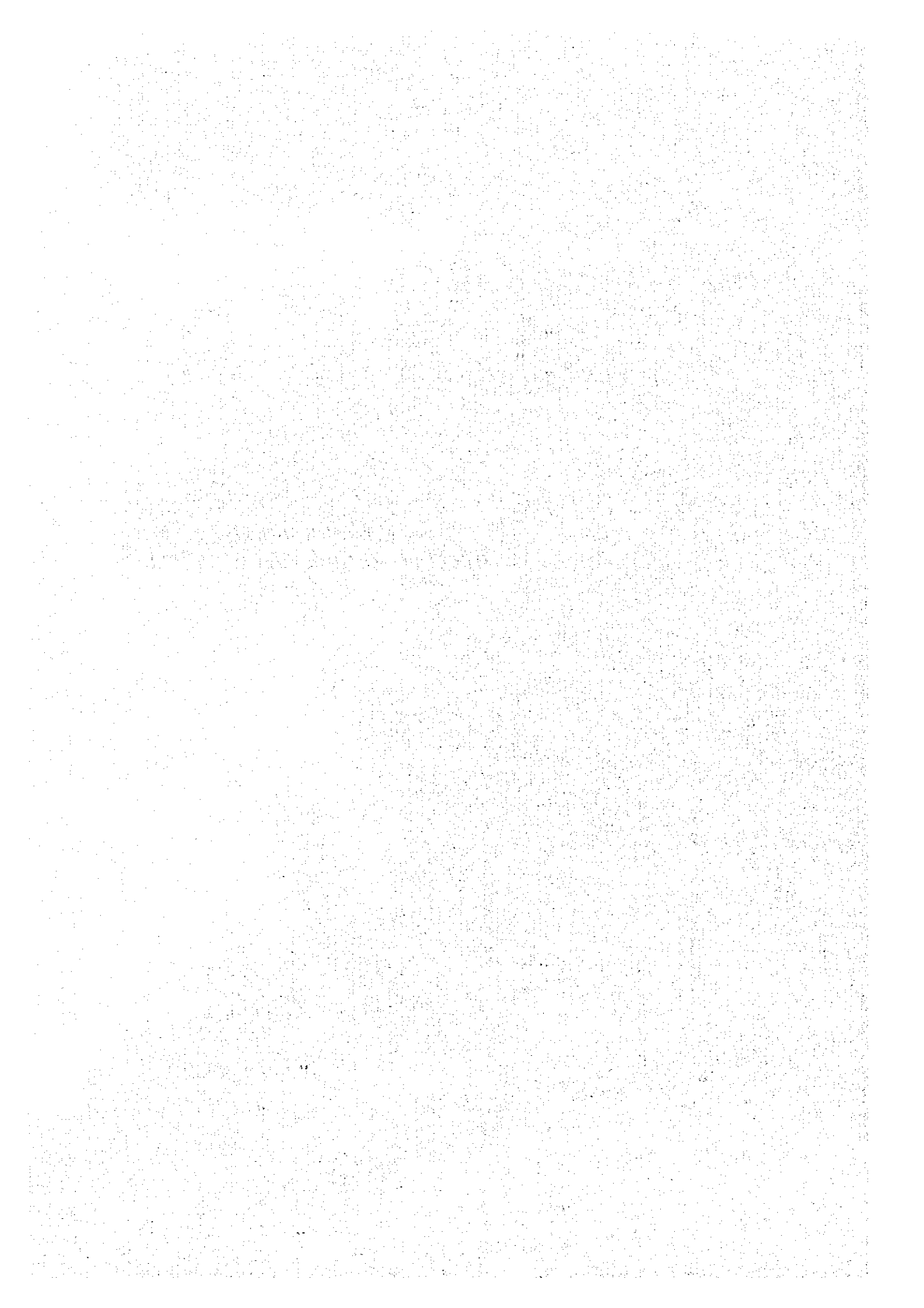
No.	Project Title	Agency	Level	Relation	Priority
30	On farm Development on Newly Developed Paddy Land	MOA	Regional	S.Sulawesi	B
31	The Improvement of Rice Post Harvest and Marketing in Farmer Group	MOA	Regional	S.Sulawesi, W.Jawa	A
32	Improvement of Pesticide Laboratory for Controlling Residue on Fruits and Vegetables	MOA	Central	Four provinces	A
33	Technical Cooperation for the Utilization of Paddy Straw	MOA	Regional	S.S, W.J, S.K	B
34	Development of Quarantine Technology for Horticultural Products and Plants	MOA	Regional	W.Jawa	B
35	The Study on Integrated Agricultural and Rural Development in Tidal Swamp Areas	MOA/ MOPW	Regional	S.Kalimantan	A
36	Multiplication Project of Certified Potato Seed	MOA	Regional	S.Sulawesi	B
37	Beef Cattle Development Project	MOA	Regional	S.S, W.J, NTB	A
38	Feasibility Study for Animal Quarantine Systems	MOA	Central	Four provinces	A
39	The Establishment of Vaccine Production in Pharmaceutical Veterinary Center	MOA	Central	Four provinces	A
40	The Establishment of Design and Hygienic Standards of Slaughterhouse in Indonesia	MOA	Central	Four provinces	A
41	Development of the Agricultural In-Service Training Center Capability	MOA	Regional	W.Jawa	B
42	Improvement DIC and Animal Health Post Capability	MOA	Central	Four provinces	A
43	West Jawa Highland Integrated Agriculture Development Project	MOA	Regional	West Jawa	A
44	Integrated Farming System on Swampy Areas in South Kalimantan	MOA	Regional	S.Kalimantan	A
45	Conjunctive Use of Surface and Ground Water in Water-Scarce Irrigation Areas and Upland Rainfed Areas	MOPW	Regional	NTB	A
46	The Study on Scattered Medium and Small Scale Irrigation Rehabilitation and Development Project	MOPW	Regional	W.Jawa, S.Kalimantan	B
47	Plan of Water Users' Association (WUA)	MOPW	Central	Four provinces	A
48	Study for Improvement of Information Communication system in Irrigation Sector in the Republic Indonesia	MOPW	Central	Four provinces	A
49	Feasibility Study of an Application of Sprinkler, Drip and Furrow Irrigation System to Support Small Holder Horticulture Farmers	MOPW	Regional	W.Jawa	A
50	Master Plan and Feasibility Study for Volcanic countermeasures in Lombok Island	MOPW	Regional	NTB	B
51	Feasibility Study for Groundwater Reservoir	MOPW	Regional	NTB	B
52	Review of Master Plan and Feasibility Study for Water Resources Development in Central Part of South Sulawesi for Future Development Especially	MOPW	Regional	S.Sulawesi	A
53	Sustainable Ground Water Development for Irrigation in Indonesia	MOPW	Central	Four provinces	B
54	Provincial Irrigated Agricultural Development II	MOPW	Regional	S.Sulawesi	A
55	Improvement on Research Capability of the Institute for Water Resources Development	MOPW	Regional	West Jawa	A
56	Construction of Sprinkler Irrigation System	MOPW	Regional	West Jawa	A
57	Construction of Farm Roads	MOPW	Regional	West Jawa	A
58	Basic Analysis of Groundwater in Northern and Eastern Lombok Island	MOPW	Regional	N.T.B	B

Table 5.1.2 List of Proposed Projects under the Third Umbrella Cooperation (3/3)

No.	Project Title	Agency	Level	Relation	Priority
59	Establishment of the Lowlands Research Center	MOPW	Regional	S Kalimantan	A
60	Riam Kanan Irrigation Project (Stage II)	MOPW	Regional	S Kalimantan	A
61	Rehabilitation of existing swamp reclamation infrastructure to Support Promotion of Mixed farming Program	MOPW	Regional	S Kalimantan	B
62	Establishment of Data Base for Rural Cooperatives Development	MOCSED	Central	Four provinces	A
63	Development of Consumer Cooperative	MOCSED	Central	Four provinces	B
64	Basic Design Study for Integrated Development Project for Rural Cooperatives	MOCSED	Central	S.S, W.J, NTB	A
65	Development of Indonesia Design Center	MOCSED	Regional	W Jawa	C
66	Extension and Training of Women's Groups in Cooperative Development	MOCSED	Regional	W Jawa	A
67	Technical Assistance for Implementing Rural Cooperative Credit Development	MOCSED	Regional	S.Sulawesi, W Jawa	A
68	Establishment of Center for SME's Export Commodities Quality Control	MOCSED	Central	Four provinces	B
69	Establishment of Horticulture Market Centre for SME's	MOCSED	Regional	W Jawa	A
70	Expansion of Project for training Center (BALATRANS) in Transmigrant Sending Areas and Receiving Areas	MOTFSR	Central	Four provinces	A
71	Establishment of Central Training Center for Transmigrant in Yogyakarta	MOTFSR	Central	Four provinces	A
72	Strengthening of Data Processing and Mapping System for Development of Transmigration Settlement	MOTFSR	Central	Four provinces	A
73	Master Plan Study of Integrated Regional Development in Kalimantan Central Area	MOTFSR	Regional	S Kalimantan	A
74	Integrated Rural Settlement Development Program for Transmigration areas (IRSDP)	MOTFSR	Regional	S.Sulawesi	A
75	Comparative Study on the Tidal Swamp Land Management by the Farmers in China, Japan, Thailand and PT. Sambu Group, Riau	MOTFSR	Central		C
76	Inventory of Water Resources for Transmigration Development	MOTFSR	Regional	S.S, NTB, S.K	B
77	Pilot Project of the Agroforestry Model in the Ilalang Lands	MOTFSR	Regional	S.S, NTB, S.K	A
78	New Design of Transmigration and Settlement on the Reclaimed Swamp Lands	MOTFSR	Regional	S Kalimantan	B
79	Campaign on the Practices of Soil Conservation Farming System	MOTFSR	Regional	S Kalimantan	B
80	Transmigration Road Net Work	MOTFSR	Regional	S.S, NTB, S.K	A
81	Water Resources for Transmigration Programme	MOTFSR	Regional	S.S, NTB, S.K	B
82	Exploitation of Water Resources and Improvement of Water Supply for Domestic use in Transmigration Settlement Areas	MOTFSR	Regional	S.S, NTB, S.K	A
83	Rehabilitation and Upgrading of Settlement Roads, Bridges and Culverts in Transmigration Areas	MOTFSR	Regional	S.S, NTB, S.K	A
84	Procurement of Vehicle for Information Services	MOTFSR	Regional	West Jawa	B
85	Hydrological Study of Water Exploration for Household and Agriculture	MOTFSR	Regional	N.T.B	B
86	Inventory of the Tidal Behavior in the Swamp Area	MOTFSR	Regional	S Kalimantan	B

Note: Although the candidate projects are prioritized as mentioned above, it should be understood that not all of the candidate projects are committed by the Government of Japan.

**CHAPTER 6 :
MONITORING AND EVALUATION
OF THE THIRD UMBRELLA COOPERATION**



CHAPTER 6:
MONITORING AND EVALUATION OF THE THIRD UMBRELLA COOPERATION

6.1 Introduction

Monitoring a project's implementation, is a part of evaluation process. It is to give the project manager the information required for attending problems caused by the change of various circumstances. Evaluation is basically conducted at the last stage of the project cycle for the betterment of future project formulation. It is also conducted at the middle stage of a project under implementation to correct or redirect the course towards the set target of the project.

Above mentioned concept is applicable to an individual project. For the Umbrella Cooperation which consists of about a hundred individual projects with different nature and quality, a comprehensive method of monitoring and evaluation ought to be introduced. The method of monitoring and evaluation ought to be reasonable in terms of time and economy.

6.2 The Method of Monitoring and Evaluation

6.2.1 Method of Monitoring

(1) Purpose of Monitoring in the Umbrella Cooperation

Monitoring is to be carried out on the umbrella cooperation which consists of about a hundred individual projects with quite different quality in terms of scale, type, period of implementation etc. Idealistically all the individual projects ought to be monitored using standard method, but it requires enormous amount of manpower, money and time.

On the other hand, a function of monitoring individual projects has been routinely carried out by the executing agencies, though there are discrepancies in consistency among the agencies. So a compromise may be established in order to fulfill the minimum requirements of monitoring the overall Umbrella Cooperation.

(2) Procedure of monitoring

It is indeed impossible for a monitoring staff to collect information regarding some hundreds of individual projects of the umbrella cooperation by himself/herself. A reasonable alternative for the monitoring staff of the umbrella cooperation is to get information about the individual projects from monitoring staff of the respective executing agencies in order to grasp the overall flow of the umbrella cooperation program. As a rule of thumb, conduct monitoring as simple as possible for the routine checking of an individual project, but once any phenomenon that foreshadows a problem is detected, then scrutinize that project for any sign of waywardness.

Considering its purpose of grasping the overall trends of the umbrella cooperation which consists of many individual projects of different characteristics, monitoring had better be carried out by using as many common items as possible, which requires lot of time and resources. On the other hand, if accuracy of information is taken into account, contents of items had better be generalized and its number had better be reduced as less as possible. To sum up, required characteristics of monitoring are (1) easy to understand, (2) less number of items, (3) easy to process, and (4) sufficient enough to follow the trend of overall umbrella cooperation. Therefore a two step procedure of monitoring is proposed as a realistic and feasible solution.

The first step: items to be monitored under normal conditions are the original budget and the actual expenditure of all the projects that are under the umbrella cooperation.

The second step: when unusual disparity is found between the budget and expenditure, detailed information on the concerned project is to be collected, its cause is to be examined, and its impact to be assessed.

In the second step, number of items to be examined changes according to the characteristics of the individual project concerned. The examples are given below.

1. Projects for construction
 - a. documents (contract and permit)
 - b. facilities and machines
 - c. goods and material

- d. contractors and laborers (ability, logistics, manpower shortage)
 - e. infrastructures (roads, transport, energy, water etc.)
 - f. expenditure
 - g. management coordination (with the executing or concerned government agencies, and related project(s))
 - h. abnormal climate
 - i. natural disaster
2. **Projects for study**
 This type of projects are found in different stages of project cycle than the others, namely a stage of preparation and analysis. Monitoring is carried out by a field-study team which is conducting a full-scale study.
- a. change of situation in the background of the study
 - b. S/W, M/M, and other reports
3. **Dispatching of experts or junior experts, and receiving of trainees**
- a. candidate (eligible person not found, delay)
 - b. condition of receiving (contents of job, environment regarding training, living etc.)
4. **Grant aid (facilities, equipment), the second KR**
- a. E/N
 - b. condition for implementation
 - c. change in the background of receiving
5. **Project-type technical cooperation**
 Project-type technical cooperation is a combination of the above mentioned several types of technical cooperation, namely dispatching of experts, receiving of trainees, grant aid (equipment). Additional items to be monitored besides those required for the individual types are:
- a. R/D
 - b. coordination among component types of technical cooperation
 - c. a project design matrix, if it has been prepared (conflicts among input items, external conditions, preconditions)

Flow of the monitoring procedure is summarized as shown in Fig. 6.2.1.

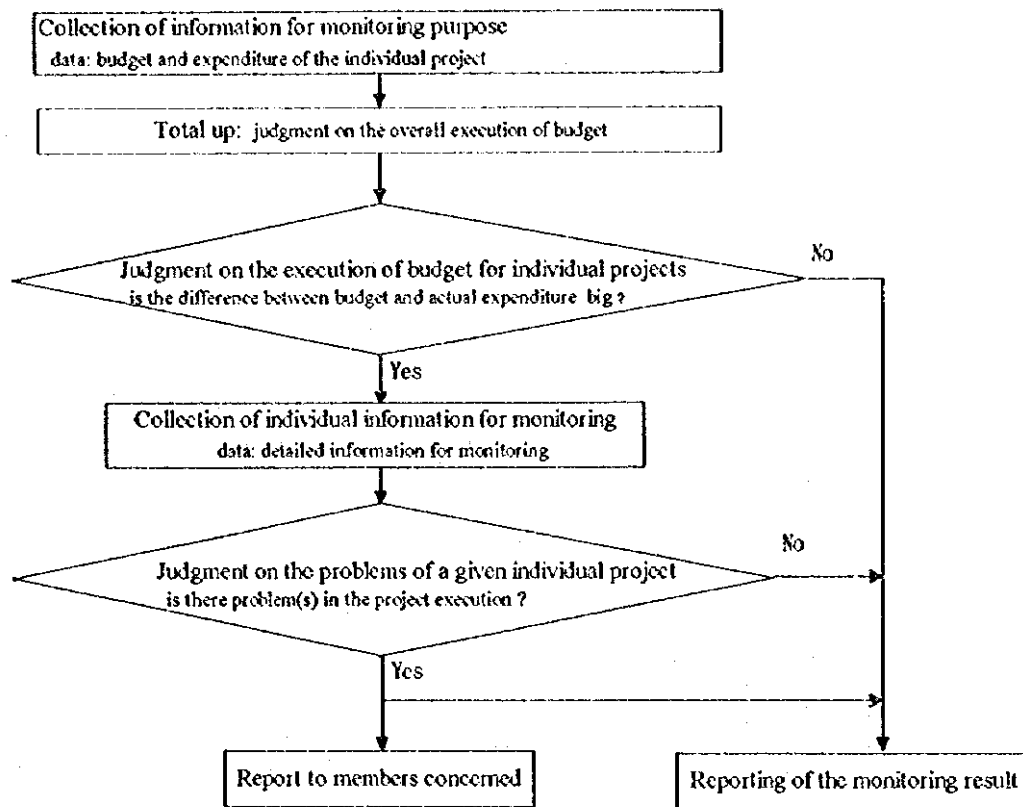


Fig. 6.2.1 Monitoring Procedure for the Third Umbrella Cooperation

6.2.2 Method of evaluation

(1) Purpose of evaluation

Evaluation of the overall umbrella cooperation will be carried out three times during the lifetime of the Third Umbrella Cooperation, namely, at the mid-term of implementation period, after the implementation period, and sometime in the post-project period so that the effect of the Third Umbrella Cooperation can be assessed and judged at each stage. It is also important to identify the problems which the umbrella cooperation faces, and to give guidance to the planning and the system of operation of the umbrella cooperation.

The goal of the third umbrella cooperation is "improvement of farmers' standard of living", on which various component projects will have an integrated effect. So it is rather difficult to evaluate the effect by quantitatively adding up all the internal causes, external causes and synergistic effects. It may be possible to find a method to judge the quantitative improvement in farmers' standard of living by means of detailed information on the individual projects, socio-economical statistics etc., but it can not be applied to evaluate the Umbrella Cooperation if total expected requirement of manpower, time, and money are taken into account.

In this study, a method is proposed to evaluate the improvement of farmers' living standard, based on the hypothesis written below, relied on the information collected by a farm survey conducted by this study team, and analyzing the change of indicators which are direct abstraction from three targets, namely, (1) improvement of agricultural techniques (productivity, efficiency, and sustainability), (2) improvement of produce (quantity, quality, and variety), and (3) increase of value-added.

- **A working hypothesis;**

"There may be a difference in , for example, an increase rate of net agricultural income after the end of the life of the umbrella cooperation between a group incorporated with it and another group without it"

Each evaluation at the mid-term, after the implementation period, and in the post-project period will have to give due considerations to the specific aspects of the study. Probable items need to be checked are mentioned below.

- **Mid-term evaluation**

confirmation of baseline data (necessity of improving the questionnaire)

necessity of increasing the number of samples

practicability of evaluation procedure

consistency with information collected by monitoring (necessity of improving monitoring procedure and system)

- **Evaluation at the end of implementation**

confirmation of baseline data (necessity of improving the questionnaire)

necessity of extending the duration of monitoring

a proposal for the timetable of a post-project evaluation

- **Post-project evaluation**
a proposal for the improvement of the planning and the system operation of the umbrella cooperation
final assessment on the effect of the Third Umbrella Cooperation

(2) Indicators used for evaluation

Evaluation of the integrated effect of the Third Umbrella Cooperation projects on the pre-set goal of "improvement of farmers' living standard" can be done by comparing the target and non target component projects with the following indicators:

- I. indicators related to income**
- II. indicators related to leisure**
- III. indicators related to security**

These indicators are the major elements which constitute living standard, and at the same time each of them corresponds to productivity, efficiency, and sustainability, as shown in Fig. 4.1.1.

a) indicators related to income

Income is the most basic element that support the standard of living under market economy, and they are the easiest thing that can be estimated quantitatively. Estimation of [net agricultural income] is the central theme.

b) indicators related to leisure

Leisure is the length of time saved resulted from improved farming efficiency. The saved hours can be spent for other activities such as; employment inside/outside the sector, more attention to own farmyard, more time for community service, sale of produce to nearby housing area, more time for general household affairs including child care, more time for activities of women's association. At present, the leisure time is used to get extra income through other opportunities than working in the farm. The Umbrella Cooperation will be expected to be instrumental in transforming more part of leisure into the elements of security.

c) indicators related to security

Indicators related to security consists of two elements. The first is related to the stability and continuity of the physical living environment, such as geomorphology, soil fertility, quality of irrigation and drinking water, farm road and paved main roads, form of energy use, processing of farm wastes, etc. The second is related to the stability and continuity of the social living environment, such as housing environment, life and stability of social bond in the rural community, etc.

The information collected through the farm survey of this study team forms the basic socio-economic data of the target areas on which efforts of the Umbrella Cooperation are focused. It is feasible to pick up a target group incorporated with the umbrella cooperation and another group for comparison within these data, and make them serve as a baseline data to assess the integrated effect of the umbrella cooperation which also includes synergistic effect.

The first indicator = income: This is the most important indicator, as its increase straightforwardly indicates the degree of attainment of the goal; its numerical data can be collected. [Net agricultural income] which shows the degree of contribution by the income from the agriculture sector can be estimated from the questionnaire by the following equation,

$$[\text{net agricultural income}] = [Q9-1] + [Q9-2] - [Q10-2]$$

Then, the comparison of the increased ratio of [net agricultural income] of both groups becomes possible. Further, the comparison of the following items are also possible utilizing such information available in the questionnaires as unit production, number of crops, processing method of post harvest, sales method etc.

- degree of contribution of umbrella cooperation to the fairer distribution of income by categorization of agricultural income and comparison of income growth ratio between different categories
- increase of overall productivity
by [cost-sales ratio] = $[Q10-1]/[Q9-1]$

- promotion of diversification
by changing the number of crops
- a trend regarding quality and value added
by an analysis of sales increase, though it cannot be estimated directly from the questionnaires because of market intervention.

The second indicator = leisure: It can be estimated from efficiency. Efficiency can be estimated from the data on the reduction of working hours spent in cultivation, transport of inputs and produce etc. Items related to this in the questionnaire are farm road, irrigation water, farming equipment and machinery, farm facilities, draft animal, hired labour. A part of transformation from the second indicator to the first and the third may be traceable by analyses of income, efficiency and attendance to the community works during the farming season.

The third indicator = security: A part of it can be derived from the sustainability of farm land. The sustainability may be estimated to certain extent from the questionnaires regarding environment of farm production. Another part of it, which consists of stability and continuity of life and social binding in a rural community, may be derived from the questionnaires regarding housing and farmers' intention. Other related items include diet, living condition, willingness to improve the production environment, number of social and educational facilities in the village.

Theoretically, the overall effect of the Umbrella Cooperation on the set goal can be estimated by comparing the difference of indicators between the two groups at a certain time span, namely between the baseline study and the evaluation studies which will be carried out at the prescribed interval. However, comparison will require careful scrutiny because obviously both groups have always been influenced by other socio-economic elements than the umbrella cooperation and there is always possibility of exchange of information between the two.

On the other hand, attention ought to be paid in the case of South Kalimantan where the activities tend to concentrate on the components 1, 2, 3, 8A. As these activities do not have much direct effects on the targets, the integrated effect and its difference between the groups may be too subtle to detect by any method, especially at the mid-term and the end of implementation period.

(3) Procedure of evaluation

Evaluation will be carried out at the mid-term, at the end of the implementation of the umbrella cooperation, and in the post-project period. Its procedure is shown in Fig.6.2.2. It is appropriate to conduct evaluation by an expert study team.

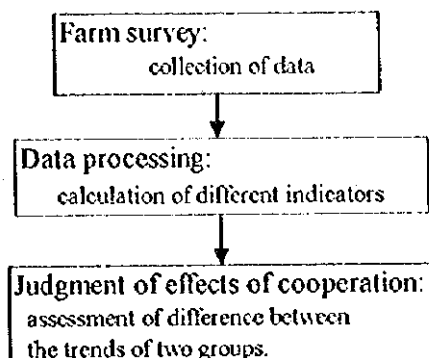


Fig. 6.2.2 Evaluation procedure for the overall umbrella cooperation

6.3 System and Schedule of Implementation

6.3.1 System and schedule of monitoring

(1) System of monitoring

As shown in Fig. 6.3.1, a monitoring section is set up in the secretariat of the umbrella cooperation. And monitoring is to be carried out with the support of the four executing ministries and the four concerned regional governments.

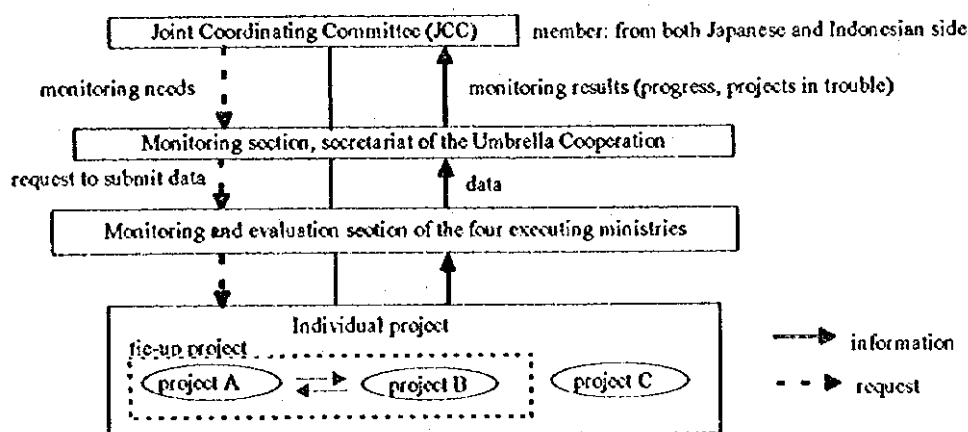


Fig. 6.3.1 System of Monitoring

Monitored information of the individual projects will be collected by the concerned ministries, translated in English, and submitted to the secretariat of the umbrella cooperation. Thus the positive function of supporting arrangement on the part of the four executing ministries is indispensable.

(2) Schedule of monitoring

Monitoring will be carried out once in every six months. If any anomaly is detected, procedure of step 2 will further be carried out.

6.3.2 System and schedule of evaluation

(1) System of evaluation

An evaluation team will be dispatched at mid-term, at the end of implementation of the umbrella cooperation, and in the post-project period. The secretariat of the umbrella cooperation will coordinate the evaluation with the support of the four executing ministries and the four concerned regional governments. The system is shown in Fig.6.3.2.

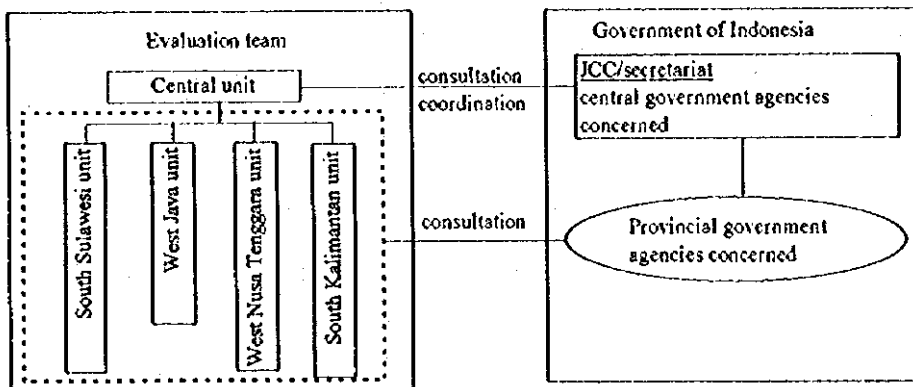


Fig. 6.3.2 System of Evaluation

(2) Schedule of evaluation

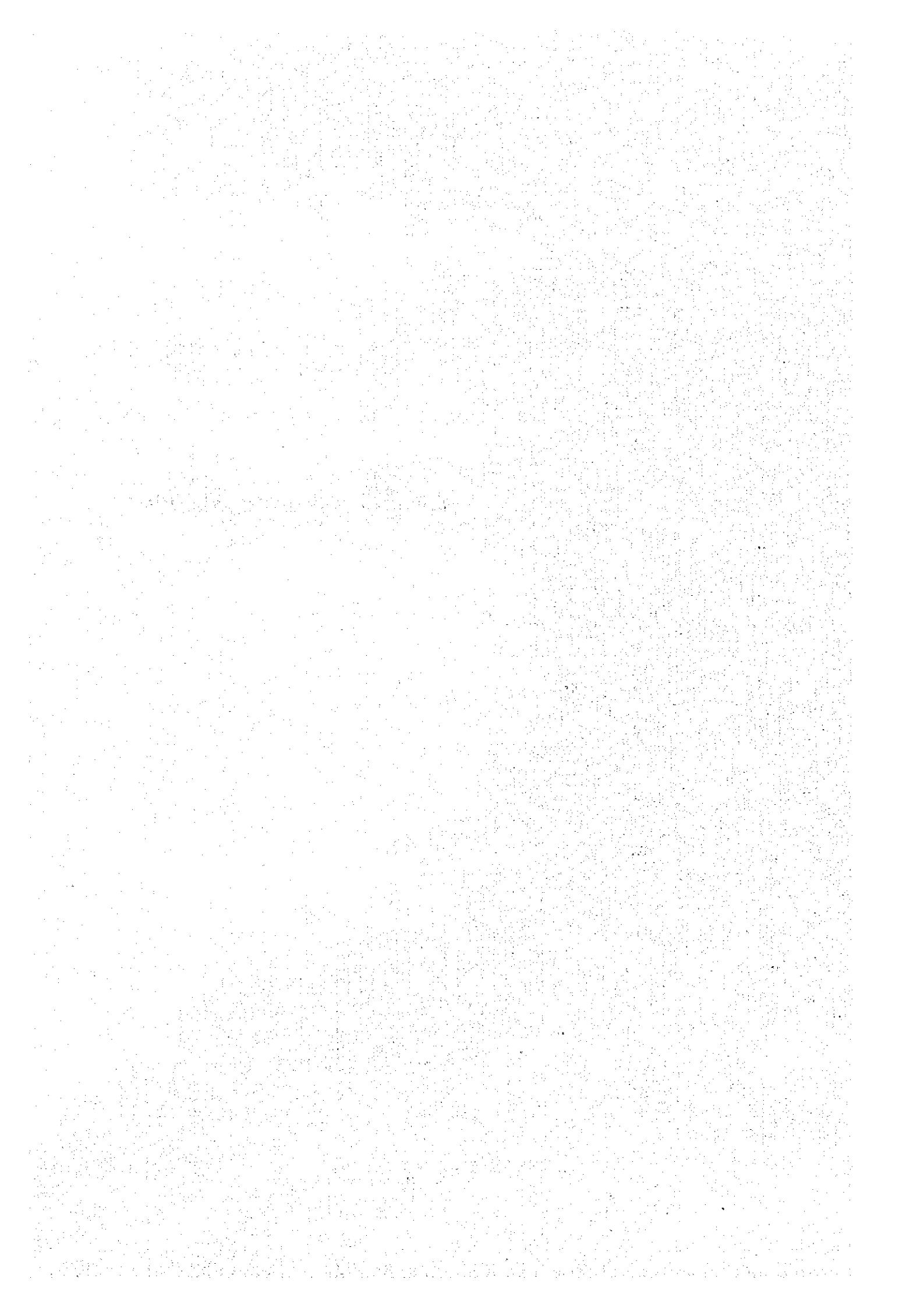
Proposed schedule of evaluation is as follows.

Mid-term: Two years before the end of the implementation stage of the third umbrella cooperation

End of implementation: At the end of the implementation period

Post-project: At the time proposed by the evaluation team carried out at the end of the implementation period

CHAPTER 7 : RECOMMENDATIONS

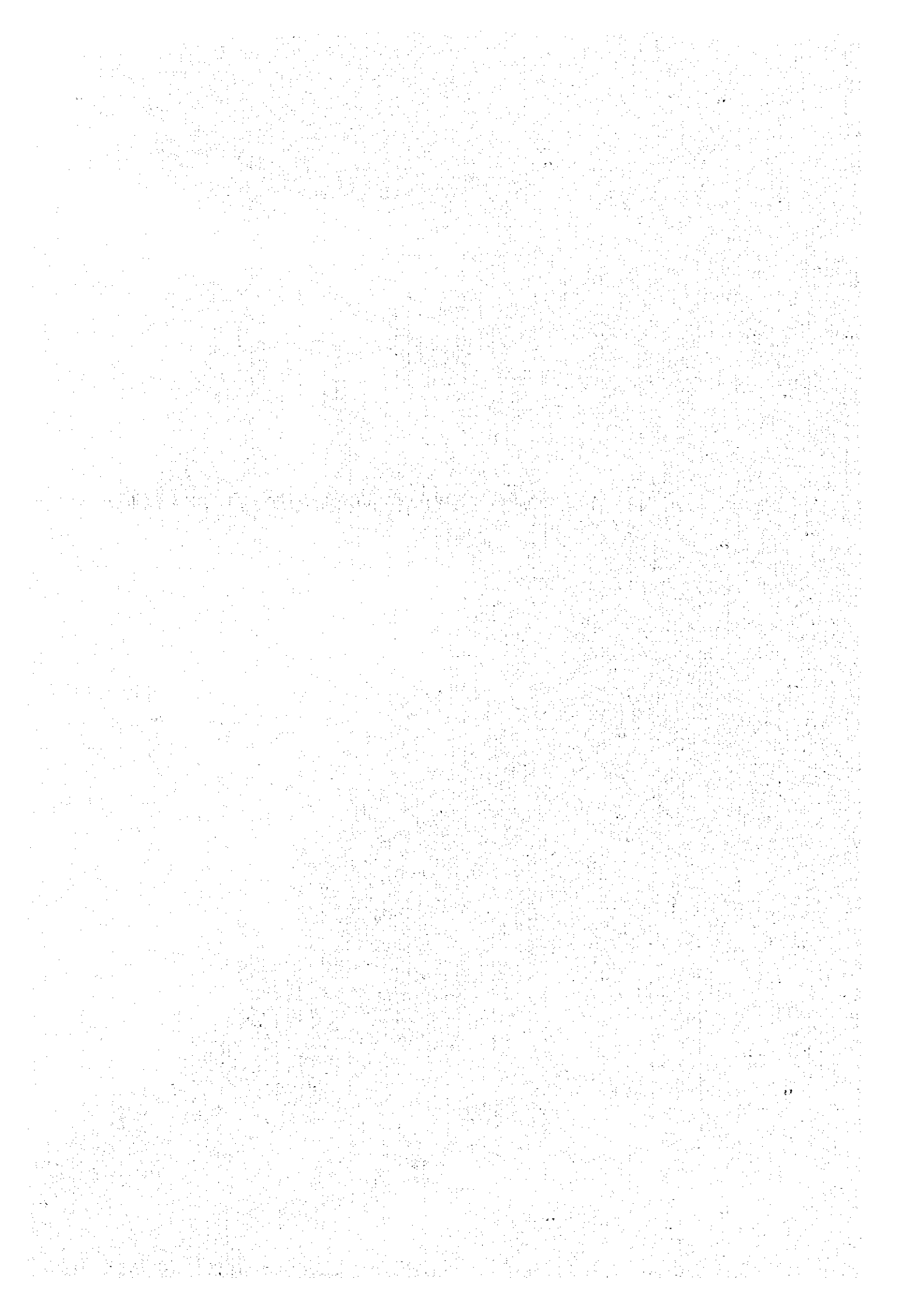


CHAPTER 7: RECOMMENDATIONS

1. The priority projects and their implementation plans proposed in this report are the most appropriate ones under the prevailing conditions. In case of change in those conditions, the priority of projects need to be changed or new project are to be added to the cooperation scheme and at each time those projects should be examined under the method proposed in this report. For the adoption of the project proposed or suggested, the conventional procedures should be applied.
2. Since the ['1-3-8' Goal-Target-Activity Matrix] (Fig.4.1.1) used in the projects grouping is produced based on the present status of the urgently required measures in each agro-eco system, the relative importances among the components showed in the matrix are to be revised in future in accordance with the progress of the development and/or other external conditions.
3. The study on the economy of agricultural households and intentions of farmers made in this study shall be a base line to measure the socio-economic development and also to trace the development course of the villages to be benefitted by the projects in the future, as well as to understand the present conditions and the intentions of the agricultural households in the object areas of the study. In the future, the areas to be benefitted by the project and similar areas in the vicinity shall be selected for each project, and similar study as mentioned above shall be conducted continually at regular intervals. So that the effects of the project shall be evaluated in an unbiased manner.
4. In case the Farm Household and Farmers' Intention Survey need to be conducted in the future, it is recommended that the time and man-power necessary for collecting and analyzing the data shall be fully considered at the planning stage of the survey itself.
5. It is important to further strengthen the cooperation between Indonesian and Japanese side in the promotion of the umbrella type cooperation. It is specially important to have close functional cooperations and adjustment among various departments and ministries in the Indonesian Government.

6. In carrying out monitoring and evaluation of the umbrella type cooperations, the positive cooperation of the four ministries with the Secretariat of Umbrella Cooperation is indispensable. It is necessary to build a system in which the persons in charge in these four ministries can respond quickly to the requests made by the Secretariat of the Umbrella Cooperation.

ANNEX A : SCOPE OF WORK AND MINUTES OF MEETING



I. INTRODUCTION

In response to the request of the Government of the Republic of Indonesia (hereinafter referred to as "the Government of Indonesia"), the Government of Japan has decided to conduct the Study on the Third Umbrella Cooperation for Integrated Agricultural and Rural Development in the Republic of Indonesia (hereinafter referred to as "the Study"), in accordance with the relevant laws and regulations in force in Japan.

Accordingly, Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, will undertake the Study in close cooperation with the authorities concerned of the Government of Indonesia.

The present document sets forth the Scope of Work with regard to the Study.

II. OBJECTIVES OF THE STUDY

The objectives of the Study are:

1. to formulate an integrated master plan for the Third Umbrella Cooperation.
2. to transfer skill and knowledge, which is used for this study, to the Indonesian counterpart personnel through on-the-job training in the course of the Study.

III. STUDY AREA

For the regional projects, the Study concentrates on areas representing each targeted agro-ecosystem in four provinces as follows (See location map attached as ANNEX I):

- Irrigated Area South Sulawesi province
- Highland Area West Java province
- Lowland Area West Nusa Tenggara province
- Swamp Area South Kalimantan province

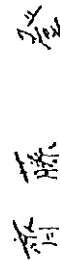
SCOPE OF WORK
FOR
THE STUDY
ON
THE THIRD UMBRELLA COOPERATION
FOR
INTEGRATED AGRICULTURAL AND RURAL DEVELOPMENT
IN
THE REPUBLIC OF INDONESIA

AGREED UPON
BETWEEN
NATIONAL DEVELOPMENT PLANNING AGENCY
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

JAKARTA, 6 DECEMBER, 1995



Dr. Mardiana Nasution
Deputy Chairman for
Economic Affairs,
National Development Planning Agency



Mr. Noboru SAITO
Leader,
Preparatory Study Team,
Japan International Cooperation Agency

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IV. SCOPE OF THE STUDY

In order to achieve above objectives, the Study will consist of field work in Indonesia and home office work in Japan:

1. Field work in Indonesia
 - 1-1. to collect and review:
 - relevant data and information
 - relevant plan and projects
 - 1-2. to conduct field survey and investigation in four provinces with regard to:
 - A. natural condition
 - B. social and economic condition
 - C. agricultural condition
 - agro-ecosystem
 - production and post harvest technology
 - land use and production systems (crops, livestock and inland fisheries)
 - processing
 - demand
 - marketing and distribution systems
 - infrastructure, facilities and maintenance
 - farmers' economy
 - farmers' organization
 - supporting system (institutional system, extension system, rural financial system, etc.)
 - others
 - D. linkage between central and regional projects
 - E. other related information
- 1-3. to clarify concepts of the agro-ecosystems.
- 1-4. to identify development needs, constraints and potential for four provinces.
- 1-5. to recommend basic concepts of integrated agricultural and rural development in four provinces.

1-6. to review central and regional existing and possible priority projects considering the linkage among them.

1-7. to review existing and possible ways and means for the monitoring and evaluation of the overall cooperation.

2. Home office work in Japan

2-1. to recommend central and regional priority projects considering the linkage among them.

2-2. to propose possible ways and means for the monitoring and evaluation of the overall cooperation.

V. STUDY SCHEDULE

The Study will be carried out in accordance with the attached tentative schedule. (See ANNEX II)

VI. REPORTS

JICA shall prepare and submit the following reports in English to the Government of Indonesia.

1. Inception Report
Thirty (30) copies at the commencement of the field study in Indonesia.
2. Progress Report
Thirty (30) copies at the end of the field study in Indonesia.
3. Draft Final Report
Thirty (30) copies after the end of the home office work in Japan. The Government of Indonesia will provide JICA with its comments on the Draft Final Report within one (1) month after receipt of the Draft Final Report.
4. Final Report
One hundred (100) copies within two (2) months after receipt of the Government of Indonesia's comments on the Draft Final Report.

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VII. UNDERTAKING OF THE GOVERNMENT OF INDONESIA

1. To facilitate smooth conduct of the study, the Government of Indonesia shall take necessary measures:
 - 1-1. to secure the safety of the Japanese study team,
 - 1-2. to permit the members of the Japanese study team to enter, leave and sojourn in the Republic of Indonesia for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees,
 - 1-3. to exempt the members of the Japanese study team from taxes, duties, fees and any other charges on equipment, machinery and other materials brought into the Republic of Indonesia for the conduct of the Study,
 - 1-4. to exempt the members of the Japanese study team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese study team for their services in connection with the implementation of the Study,
 - 1-5. to provide necessary facilities to the Japanese study team for the remittance as well as utilization of the funds introduced into the Republic of Indonesia from Japan in connection with the implementation of the Study,
 - 1-6. to secure permission for entry into private properties or restricted areas for the implementation of the Study, when it is required,
 - 1-7. to secure permission for the Japanese study team to take necessary data and documents (including photographs and maps) related to the Study out of the Republic of Indonesia to Japan and
 - 1-8. to provide medical services as needed. Its expense will be chargeable on the members of the Japanese study team.
2. The Government of Indonesia shall bear claims, if any arises, against the members of the Japanese study team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Japanese study team.

3. National Development Planning Agency (Badan Pertanahan Pembangunan Nasional, hereinafter referred to as "BAPPENAS") shall act as coordinating organization in relation with Ministry of Agriculture (hereinafter referred to as "MOA"), Ministry of Cooperatives and Small Enterprise Development (hereinafter referred to as "MOSESD"), Ministry of Public Works (hereinafter referred to as "MPW"), Ministry of Transmigration and Forest Squares Reclamation (hereinafter referred to as "MTFSR") and local Governments concerned for the smooth implementation of the Study.

4. BAPPENAS, MOA, MOSESD, MPW and MTFSR shall act as counterpart agencies to the Japanese study team and also as implementing agencies. They shall, at their own expenses, provide the Japanese study team with the following, in cooperation with other organizations concerned:

- 4-1. available data and information related to the Study,
- 4-2. counterpart personnel, mainly consisted of the members of technical group and Secretariat,
- 4-3. suitable office spaces with necessary equipment and furniture in Jakarta, West Java, South Sulawesi, West Nusa Tenggara and South Kalimantan and
- 4-4. credentials or identification cards.

VII. UNDERTAKING OF JICA

For the implementation of the Study, JICA shall take the following measures:

1. to dispatch, at its own expense, study team to the Republic of Indonesia, and
2. to pursue transfer of skill and knowledge to the Indonesian counterpart personnel in the course of the Study.

IX. CONSULTATION

JICA and BAPPENAS shall consult with each other in respect of any matter that may arise from or in connection with the Study.

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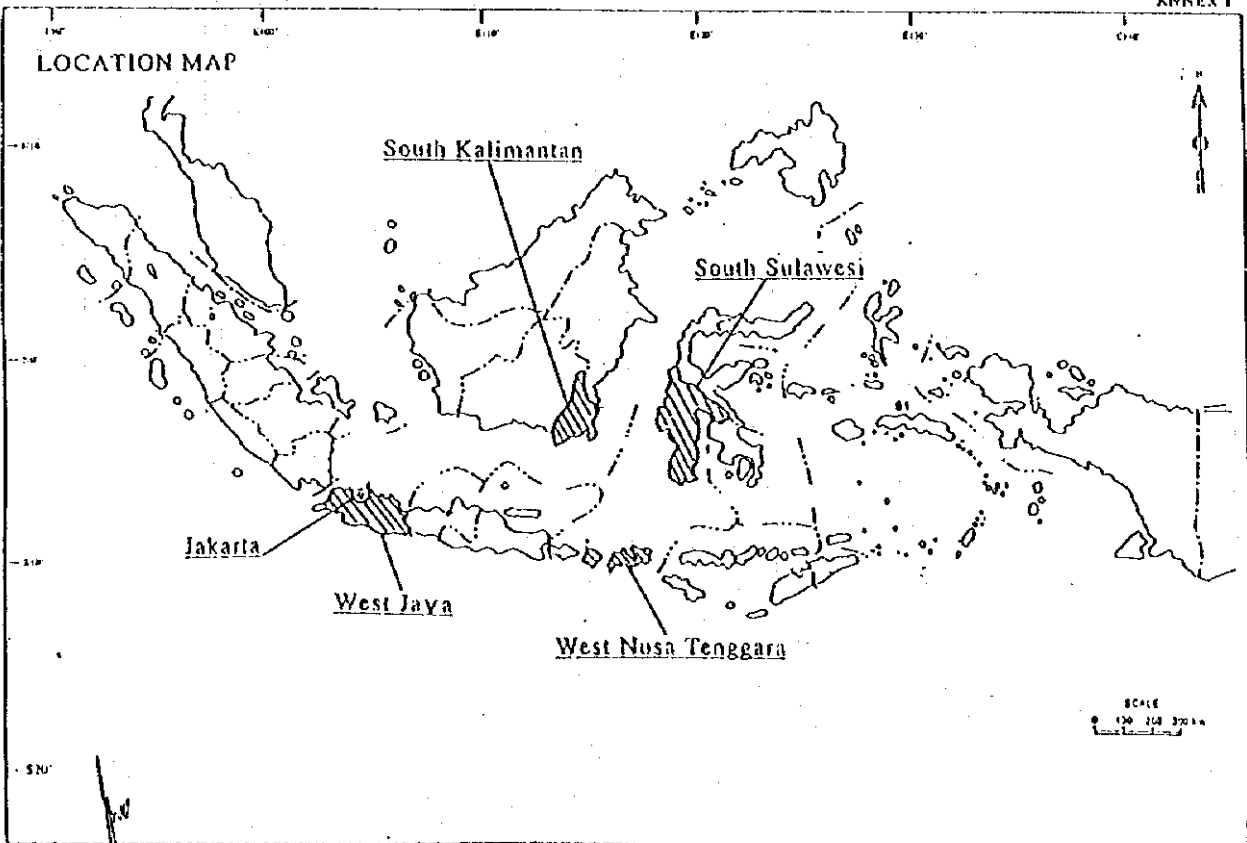
ANNEX II

TENTATIVE SCHEDULE

Month \ Item	1	2	3	4	5	6	7	8	9
Work in Indonesia		■	■		■				
Work in Japan		□			□	○			
Reports	△ IC/R		△ P/R		△ DF/R		△ F/R		

(Remarks) IC/R : Inception Report P/R : Progress Report
 DF/R : Draft Final Report F/R : Final Report
 ○ : Comments on DF/R by the Indonesian side

ANNEX I



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MINUTES OF MEETING
FOR

SCOPE OF WORK
FOR

THE STUDY
ON

THE THIRD UMBRELLA COOPERATION
FOR

INTEGRATED AGRICULTURAL AND RURAL DEVELOPMENT
IN

THE REPUBLIC OF INDONESIA

AGREED UPON
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AND

JAPAN INTERNATIONAL COOPERATION AGENCY

JAKARTA, 6 DECEMBER, 1995

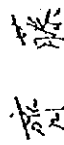


Dr. M. Anwar Wardani

Chief,

Bureau of Agriculture, Food and Forestry,

National Development Planning Agency



Mr. Noboru SAITO

Leader,

Preparatory Study Team,

Japan International Cooperation Agency

The preparatory study team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA"), and headed by Mr. Noboru SAITO, visited the Republic of Indonesia from December 3 to 9, 1995 for the purpose of discussing and confirming Scope of Work for the Study on the Third Umbrella Cooperation for Integrated Agricultural and Rural Development in the Republic of Indonesia.

The Team had a series of discussions and exchanged views with the officials concerned on Scope of Work for the Study. The list of participants in the meetings is attached in the Annex.

As a result of the discussions, the Indonesian side and the Team agreed on Scope of Work for the Study.

The following are the main issues discussed and agreed upon by both sides in relation to Scope of Work for the Study.

1. The Team requested that counterpart personnel to the Japanese study team, necessary for smooth and effective implementation of the Study, be assigned in four provinces and central area. The Indonesian side agreed with the idea and promised to be responsible for the assigning.
2. The Indonesian side requested that the vehicles necessary for the Study be procured by JICA and the Team promised to convey the request to the JICA headquarters in Tokyo.
3. The Indonesian side requested counterparts training in Japan. The Team promised to convey the request to the JICA headquarters.
4. The Indonesian side requested to hold the workshop which explains the result of the Study.
5. Both sides agreed that the Study will start in 1996.
6. Both sides expressed the view that the first session of JCC should be held as soon as possible for the smooth implementation of the Third Umbrella Cooperation.



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LIST OF PARTICIPANTS

INDONESIA

Dr. M. Aswar Wardani

Chief, Bureau of Agriculture, Food and Forestry

Mr. Andi Noviano

Staff, Bureau of Agriculture, Food and Forestry

MOA

Mr. H. Subaryo Husea

Director, International Cooperation Bureau

Mr. Juwariab

Staff of International Cooperation Bureau

MPW

Dr. Suzuki

Staff of Directorate of planning and programming, DGWR

The Firm

Mr. Noboru Saito

Leader

Mr. Hiroyuki Kawano

Member

Mr. Hiroyuki Hatohi

Member

Mr. Hideyuki Sasaki

Member

Mr. Hideo Osawa

Member

Embassy of JAPAN

Mr. Kenichi Kawamoto

First Secretary

JICA Experts

Mr. Naotoshi Kakiya

Secretariat Office

Mr. Tetsuya Oomoto

Secretariat Office

Dr. Toshiki Saito

MPW

Mr. Hiroshi Kudo

MPW

Dr. Yoshizo Mochizuki

MTFSR

INDONESIA Office

Mr. Tomoyuki Tada

Assistant Resident Representative

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