

2. Monitoring

2.1. Project implementation status

"Integrated Agricultural and Rural Development Project in Southeast Sulawesi Province" was implemented from March 1991 to February 1997 in 8 villages in 5 districts in Kendari, based on farmer participation from the planning stage to the implementation stage. The project comprised the following activities: 1) Land development, 2) Modernization of farming facilities, 3) Development of living environment facilities, and 4) Integrated agricultural and rural improvement measures such as introduction of farming technology. Further, "soft" project activities including farming guidance have been extended to February 1998.

The way in which local agriculture, farming villages, and farmers changed through the project was monitored by surveying how the local farmers responded to the project's implementation, and through surveys to gather and compare data on conditions prior to and following the project's implementation. The project's impact on the local agriculture and farming villages, the efficiency and validity of the project, as well as problems related to the project, were verified, and this data will be used for the future similar projects.

2.1.1. Comparison of project plans and results

The project plans and results of the implementation in the beneficiary villages in this project are shown in Table 3-15. The main statistics are 170 ha of planned farmland reclamation (paddy field) vs. 54.9 ha achieved, 60 ha. of planned agricultural land reclamation (upland fields) vs. 32 ha achieved, and 26.3 km of planned rural roads vs. 42.7 km achieved.

There is a considerable difference between the original project plans and the achieved results. This reflects the fact that this project was participatory development type of project implemented locally with the cooperation of farmers. Prior to the implementation of the project, the initial plan was explained to farmers. The farmers expressed various opinions, and as the result of deliberations among the provincial administration (district heads), provincial agricultural officers, village chief, etc., project plans were formed and then implemented. Thus the planning led to a "farmers' plan" drafted in consultation with farmers. During this time, counterparts conducted various surveys.

The project planning decision process is illustrated below taking the case of Kiaea Village as an example. The initial plan envisioned the reclamation of 20 ha of paddy fields and the construction of 2 km of rural roads. However, farmers of the Kiaea Village said that their village

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had been recently formed by immigrants, and thus still lacked roads. Therefore, they requested the funds to be used for the construction of additional roads, adding that if the project would develop water resources and canals for them, they would develop paddy fields on their own. As a result, the project did not work on land reclamation for paddy fields, instead building 9.58 km of roads instead of the 2 km previously planned. When the project started, paddy field covered a total area of 30 ha, but thanks to the development of water resources and canals, farmers were able to reclaim 145 ha of paddy fields, and thus Kiaea village now has a total paddy field area of 175 ha.

According to the explanations of PPLs, the villagers originally planned to perform land reclamation for paddy field, but the JICA project spurred them to expand their water resources. Among the reasons that the area's farmers wished to expand their paddy fields was that rice is the most stable agricultural product, that its production is more stable than upland paddy rice, and that the area was gradually shifting from sago starch to rice.

In Ranometo Village, water resources were limited from the start, and therefore as the project was being implemented and farmers began developing paddy field on their own, irrigation water started becoming scarce. However, deep wells newly installed by the provincial government are in the process of solving this problem.

The newly constructed rural roads have been received favorably for their agricultural use. In particular, Kiaea Village formerly did not have roads that could withstand heavy use, and the linking of newly constructed roads to existing paved roads was acclaimed by villagers as being very convenient as general roads. As a result, 60% to 70% of villagers purchased bicycles.

The construction of community wells as living environment facilities in every village has now been completed. They are now heavily used, not only for drinking water, but also for laundries, baths, children's amusement grounds, social gathering places, and so on.

Guidance on farming techniques was performed by mobilizing PPLs of the beneficiary villages and establishing experiment and demonstration farms for paddy field at each village. Highly interesting reports have been turned in in this respect, observing that although the area's paddy yields are not inferior to those of other Southeast Asian nations, yield increases require more rice heads and a larger number of grains per head. To promote rice cultivation and the extension of new techniques, illustrated calendars showing the results of experiments conducted the previous year are now being distributed to all farmers and PLLs have been mobilized for extension work.

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Table 3 - 13 Infrastructure development results by village wise with work type in the project (As of January 1997)

Works - Village	Ranometo	Palanga	Kiaca	Lapulu	Lalobao	Iacya	Sabulakoa	Onewila	Total
Planned (ha)									
a) Paddy field area	35	60	30	139	-	-	-	7	271
b) Upland field area	271	488	473	422	603	627	1,262	341	4,787
c) Developable paddy field area	150	120	200	100	120	-	250	100	1,040
d) Developable upland area	-	80	70	80	50	180	-	-	460
Currently (ha)									
a) Paddy field area	178.0	127.5	175.0	279.6	7.0	-	20.0	14.0	800.8
b) Upland field area	262.2	510.8	488.0	423.5	628.0	676.0	1,300.0	653.0	4,941.5
c) Paddy field area reclaimed by themselves	121.1	52.5	145.0	135.0	-	-	15.0	6.0	474.6
d) Autonomous paddy development	121.1	52.5	145.0	85.0	-	-	15.0	6.0	366.5
e) Rainfed paddy field	-	-	-	50.0	-	-	-	-	50.0
f) Upland field area reclaimed by themselves	17.1	40.0	40.0	47.0	25.0	32.0	38.0	10.0	249.1
From upland field to paddy field (ha)	30.0	30.7	30.5	45.5	-	-	-	-	126.7
Project									
1. Farm land reclamation									
Farm land reclamation (paddy field) (ha)	(25.0)	(20.0)	(20.0)	(30.0)	(25.0)	(-)	(30.0)	(20.0)	(170.0)
No. of participating farms	31	39	-	9	15	-	23	4	121
Area per farm (ha)	0.7	0.4	-	0.6	0.6	-	0.2	0.3	0.5
Farm land reclamation (upland fields, etc.) (ha)	(-)	(10.0)	(10.0)	(10.0)	(10.0)	(20.0)	(-)	(-)	(60.0)
No. of participating farms	4.1	3.5	5.5	-	-	17.0	-	1.9	32.0
Area per farm (ha)	-	-	-	-	-	0.4	-	-	-
2. Agricultural infrastructure development									
Intake weirs									
(Newly constructed)	(2)	(1)	(2)	(2)	(1)	-	(2)	(1)	(11)
(No. of locations)	4	2	1	-	-	-	-	-	7
(Renovated)	1	-	3	1	1	-	2	-	8
Irrigation canals (km)	(2.50)	(1.30)	(4.00)	(4.00)	(3.50)	-	(2.50)	(4.00)	(24.80)
(Unlined)	1.84	1.18	1.91	1.60	1.36	-	2.50	2.83	13.45
(Farmer)	-	-	2.20	0.70	-	-	-	-	2.90
(Fully lined)	-	0.016	0.028	0.08	0.039	-	0.133	0.02	0.516
Diversion work (No. of locations)	(6)	(3)	(7)	(6)	(6)	-	(7)	(5)	(40)
(No. of locations)	7	3	4	3	7	-	8	6	38
Drop (No. of locations)	(2)	(3)	(17)	(5)	(9)	-	(12)	(2)	(50)
(No. of locations)	7	2	5	3	1	-	6	-	23
Aqueducts (No. of locations)	(-)	(-)	(-)	(-)	(-)	-	(-)	(-)	(-)
(No. of locations)	-	-	-	-	-	-	-	-	-
Drainage canals (km)	(1.50)	(-)	(-)	(-)	(-)	-	(-)	(4.00)	(5.50)
(No. of locations)	-	-	-	-	-	-	-	-	-
Roads (km)	(3.80)	(1.70)	(2.00)	(3.50)	(2.60)	(6.20)	(5.00)	(2.00)	(26.3)
(No. of locations)	3.76	5.54	9.58	5.50	3.50	4.20	7.20	3.50	42.78
Roads (bridge construction) (No. of locations)	(5)	(2)	(3)	(4)	(4)	(5)	(1)	(6)	(30)
(Culverts) (No. of locations)	1	4	1	1	1	1	1	1	7
3. Farming facilities development									
Seed storage facilities	(1)	(1)	(-)	(1)	(-)	(1)	(1)	(-)	(5)
(No. of locations)	2	-	1	1	-	1	1	-	6
Rice mills	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(8)
(No. of locations)	1	1	1	1	1	1	1	1	7
Drying facilities	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(40)
(No. of locations)	1	1	1	1	1	1	1	1	6
Training centers	(2)	(2)	(1)	(2)	(1)	(2)	(2)	(1)	(13)
(No. of locations)	2	2	2	2	2	1	2	1	14
Livestock markets	(1)	(-)	(-)	(-)	(-)	(1)	(-)	(1)	(2)
(No. of locations)	1	-	-	-	-	1	-	1	2
Demonstration fattening yards	(1)	(1)	(-)	(1)	(-)	(1)	(1)	(-)	(5)
(No. of locations)	1	1	-	1	-	1	1	-	4
Community wells	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(40)
(No. of locations)	4	6	8	5	5	5	4	4	41

Project-related figures: Top line (): Planned, Bottom line: Actual results; "*" mark indicates inclusion of 74.5 ha corresponding to other water system.

2.1.2. Baseline survey (Economic assessment)

(1) Survey implementation

An grasping of the effects and results yielded by the implementation of this agricultural project was obtained through the measurement and assessment of results attributable to the implementation of the project, among changes in crop production amounts and livestock head count in areas participating in the project, changes in cropping and livestock, changes in production technology and cultivation management, changes in production quality, and changes in labor hours.

Grasping the effects and results brought about by this project requires that the unit yield (per ha) and other conditions prior to and after the project be compared, but no previous data was collected for the surveyed area. As an alternative assessment method, data was collected from fixed observation farms that were established for this purpose among both participating and non-participating farms.

a) Survey contents

The survey items of the baseline survey (Economic assessment) are as follows.

1)	Individual farmer surveys	
	1. Family make-up	Name, relationship, age, sex, occupation
	2. Farm land ownership status	Owned land, areas of villages and provincial land (for housing, paddy field, upland fields, land under perennial crops, others)
	3. Farm land use status	Areas for paddy cropping, upland field cropping, orchard, and cash crops (owned land, tenanted land, leased land, others)
	4. Farming equipment ownership status	Number of ploughs, harrows, hoes, sickles, forks, weeders, cutters, shovels
	5. Livestock farm ownership status	Number of cows, water buffaloes, chicken, goats, ducks
	6. Tenant farming lease conditions Farm labor conditions	Cash payment, payment in crops (crop name, sum or amount per ha)
	7. Condition of farm work	Gotong Royong, suwadaya, payment in crops (type of crop, number of hours)
2)	Economic farm survey	
	1. Gross farming income	Area, yield, yield per ha, amount sold (quantity, unit price, price), home use amount (quantity, unit price, price), labor payment amount (quantity, unit price, price), product value, etc., for the following: food crops (paddy field (one crop, two crops), upland fields, cassavas, onions, soybean, sweet potatoes, peanuts, green peas, etc.), cash crops (coconuts, cacao, cashew nuts, pepper, coffee, oranges, durian, mangoes, papayas, pineapples, bananas, guavas, etc.), vegetables (string beans, eggplants, spinach, cayenne peppers, sesame, etc.), livestock (cows, chickens, ducks, eggs), fish and others, and sago coconut starch
	2. Non-farming income	Income, agricultural product wages (fabric, etc.), other wages, non-farming gross income received as labor payment
	3. Non-farming expenses (monthly or yearly)	Unit price, quantity, outlays for house (lumber, roofing), fish, coconut oil, sugar, salt, fuel oil, electricity, soap, clothes, shoes, batik, sandals, bicycles, tobacco, toothpaste, school fees, sago starch, taxes
	4. Barter	Name of product, quantity, unit price, estimated price
	5. Earlier-than-usual sale	Name of crop, quantity, unit price, sales conditions

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3) Agricultural product cost survey 1. Seeds 2. Agricultural chemicals 3. Fertilizer 4. Farm work/stockbreeding costs 5. Water charges 6. Farm work wages 7. Others	Purchase, names of crops produced in-house, quantity, area, unit price, price Name of crop, area, unit price, price Chemical fertilizers, green manure, names of other crops, quantity, area, unit price, price Name of crop, area, unit price, price Regular fee, repair fee Name of crop for each work (plowing, grading, paddy transplantation, weeding, harvesting, etc.), area, number of days worked, unit price, price
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b) Verification contents

The following items were verified among the data through the survey.

- 1) Changes in agricultural output, farmers' lifestyles, etc., in project implementation district
 - i) Changes in agricultural output
 - Changes in crop production amount and No. of livestock
 - Diversification in crops and livestock, increases in commercial crops
 - Changes in production methods and advances in mechanization
 - Changes in production techniques and cultivation management (including grasping of changes in farming as the result of farming guidance)
 - Changes in products costs (paddy, upland paddy, upland crops, estate crops, livestock)
 - Changes in labor hours (paddy, upland paddy, upland crops, estate crops, livestock)
 - Movements in arable land area
 - ii) Changes in distribution of agricultural products (processing and distribution changes)
 - Rice: Shift from sales of unhulled rice to polished rice
 - Cashew nuts: Shift from sales of nuts on trees, unhulled nuts, to hulled nuts
 - iii) Change in organization of agricultural production and farmer movements
 - Changes in agricultural customs, including farm work
 - Advances in side jobs (Labor saving and side jobs through mechanization of agriculture)
 - iv) Changes in farmers' lives
 - Movements in farmers' income

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- Movements in farming income
 - Changes in ratio of self-sufficient crops and eating habits
- v) Changes in consumption patterns
- 2) Economic assessment
- i) Economic results as achievements
 - ii) Economic results forecast during planning (comparison with achievements)
 - iii) Future development of economic effects
- (2) Survey results
- a) Changes in agricultural production and farmers' lifestyles in project implementation district
- 1) Changes in crop and livestock production, diversification of crops

The largest change in agricultural production that resulted from this project was the rapid expansion of paddy cropping. The first remarkable change was the 300% growth in the total paddy area since the start of the project. The area directly reclaimed through the project was 54.9 ha, but the area developed by farmers themselves was 474.6 ha in the same river basin and 74.5 ha in two vicinity river basins.

The second one was the rise in manuring practice through the stabilization of irrigation water. In particular, the unit yield increased through the farming change represented by the rising use of chemical fertilizers. Production costs (fertilizers, pesticides) rose, but yields rose even more (based on farmer survey).

The rice production amount is estimated to have grown approximately four times due to the expansion in cultivated area and the rise in unit yield.

While this expansion of paddy cropping is remarkable, estate crops still account for the largest share in land use. Stockbreeding is traditionally done around the farm by letting livestock roam about freely, and while it is increasing, it does not represent a conspicuous change.

The diversification of crops is steadily occurring as farmers start cultivating vegetables and peanuts under the guidance of experts, although these remain small-scale crops. One factor behind this is that since consumption on the Kendari market is limited, large-volume production is not desirable. Efforts to develop the market are thus required.

2) Production methods, changes in methods, and status of mechanization and plowing by cow

In four villages where the paddy field area rose as the result of tractors provided through the project, privately owned tractors have started appearing. However, plowing is still mainly done using cows. The Tolaki people do not have the custom of using cows, and use hoes instead. However, they too have recently started reclaiming land for paddy field, and some farmers now have 2 ha of paddy field, and as a result there is a growing inclination toward plowing using cows. There are examples of some farmers have learned plowing using cows from a Belgian NGO, while others have learned the technique from immigrants in neighboring areas. If land reclamation for paddy field had not been performed through this project, these things in all likelihood would not have happened.

3) Changes in production technology and cultivation management

Changes in production technology and cultivation management consisted in an increase in the amount of fertilizer used and the number of farmers using agricultural chemicals. This change is due to the fact that through the project, irrigation water supplies have become stable, worries about droughts have abated, and farmers now feel safer about using expensive chemical fertilizers. Due to the combined effects of having secured irrigation water and the resulting improvement in cultivation management, the unit yield of paddy field has considerably increased. For instance, in Lapulu village, favoured with fertile soil, the yield has grown from approximately 3,000 kg/ha to 5,000-6,000 kg/ha.

Moreover, as part of the project, demonstrations of direct sowing of paddy field were also done, and continue to be done even now by a portion of farmers.

The unit yield for upland paddy field has also increased a little. This increase is attributed to the fact that upland paddy field are plowed during seeding, which contributes to favorable growth during the initial period. The use of urea as fertilizer is also spreading under the guidance of experts. Cultivation techniques for upland field crops such as peanuts and corn on newly reclaimed farm land are currently being studied by farmers, and initial efforts have been so successful that brokers have started visiting producing areas.

4) Changes in production costs and labor hours

Until now, farmers generally used minimal amounts of fertilizer and agricultural chemicals, and many didn't use any at all. This was due to the fact that irrigation water supplies were unreliable, droughts were frequent, and thus the efficiency of using fertilizer was not assured. The development of irrigation facilities resulted in securing a stable supply of irrigation water, simplified water management, and eliminated the labor until then required

for obtaining water.

According to farmers' surveys, the portion of total production costs represented by fertilizers and agricultural chemicals has increased. In particular, the use of fertilizers has trebled compared to three years before.

In the case of a farmer in Lapulu village (Tolaki people, 1-ha paddy), the yield increased from 3,000 kg/ha in 1993 to 6,000 kg for the single crop and 9,500 kg for the second crop in 1996 (the average for Tolaki farmers was 4,000 kg/ha). In 1993 the farmer used Rp3,500 worth of agricultural chemicals, and no fertilizer. In 1996, he was using Rp35,000 of agricultural chemicals and Rp91,400 of fertilizers.

Moreover, the use of small farm implements and plowing by cow has increased and the use of tractors is no longer uncommon, a trend that is reducing labor hours. In the case of upland paddy field, production costs and labor hours remain almost unchanged.

5) Changes in distribution of agricultural products

- Rice: The construction of rice mills has enabled farmers, who formerly could sell only rice in its unhusked form, to sell polished rice, resulting in a 30% increase in revenues. Although there are differences among villages, the usage of rice mills is favorably increasing.
- Cashew nuts: Formerly, farmers used to almost always ship unshelled cashew nuts, the main estate crop of the project district. However, under the leadership of farmers' organizations, farmer representatives went on a survey tour of advanced areas shipping shelled cashew nuts. Through this tour, they realized that shelled cashew nuts fetched twice the price of unshelled ones, and that the shelling tools the other farmers employed were superior to the tools available in Kendari. As a result, a movement arose among local farmers to start shipping shelled cashew nuts.

b) Economic assessment

1) Achieved economic results

i) Conditions for measurement of results

The economic assessment of the project's results at this time was performed under the following conditions.

- Economic results indicate the internal rate of return.
- Agricultural production consists of the unit yield currently achieved.
- The area for which results are measured is the area directly under the supervision of the project and the area developed using funding from the Ministry of Public Works

in relation to this project.

- Project costs consist of this project's costs, costs of projects related to the Ministry of Public Works, and costs incurred by the farmers themselves.
- This project costs consist in the following two items: 1) Total costs, and 2) Costs excluding allowances for counterparts on Indonesian side, etc.
- The value of project costs of the past fiscal year are adjusted to present value.

ii) Measured results

The achieved economic results were as follows.

- Using total costs IRR=7.58%
- Subtracting allowance for counterparts on Indonesian side IRR=17.43%

2) Economic results forecast during planning stage

i) Conditions for measurement of results

The following conditions were set for the economic assessment during the planning stage.

- Economic results indicate the internal rate of return.
- Two types of planned unit yields are to be used in agricultural production plans.
- The area for which results are measured is the area directly under the supervision of the project.
- Projects costs consist of total project costs including local costs on the Indonesian side.

ii) Measured results

The economic results forecast during the planning stage were as follows.

- Higher unit yield for Kendari district IRR=11.9%
- Targeted unit yield for REPELITA-V IRR=14.14%

3) Future development of economic effects

The economic effects based only on achieved unit yield as measured immediately after the implementation of the project amounted to very large figures. The reason that the farmers worked hard together at land reclamation for paddy fields is understandable.

The unit yield for paddy field set as a target during the planning stage has already been exceeded. In a matter of a few years, farmers will have mature paddy fields and mature

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upland, more experience in cultivation management and water management for paddy field, and as a result their agricultural production will rise as will their income.

i) Plan

• Plan data (production plan)

Table 3 - 14 Project Plans

Crops	Crop area (ha)			Unit yield (kg/ha)			Annual net profit gain (1000Rp)
	Planned area requiring improvement (ha)	Second crop area (ha)	Development area (ha)	Planned unit yield (kg)	Planned unit yield (kg)	Unit yield increase (kg)	
Paddy rice	297	945	1,589	2,894	(a) 3,473 (b) 4,300	579 1,406	1,118,956 1,412,553
Food crops			266				72,021
Corn					1,700		
Soybeans					1,700		
Estate crops			479				158,999
Cashew nuts					500		
Cocoa					500		
Coconuts					2,000		
Total							(a) 1,349,976 (b) 1,643,573

Note: In the above table,

(a) 3,473 kg is the top unit yield in Kendari district.

(b) 4,300 kg is the top unit yield for REPELITA-V.

• Plan data (Project plan)

Project costs (Total of equipment provided by Japanese side, construction costs, local costs in Indonesia) 7,210,750,000 Rp

• Internal rate of return

1) Using 3,473 kg

IR=11.95%

2) Using 4,300 kg

IR=14.14%

ii) Achievements

• Plan data (Production achievements)

Table 3 - 15 Achievements of Project

Crops	Crop area (ha)			Unit yield (kg/ha)			Annual net profit gain (1000Rp)
	Planned area requiring improvement (ha)	Second crop area (ha)	Development area (ha)	Planned unit yield (kg)	Planned unit yield (kg)	Unit yield increase (kg)	
Paddy rice	178	407	600	2,894	3,800	906	1,400,451
					4,000	1,106	
					4,200	1,306	
					4,500	1,606	
					5,500	2,606	
					6,000	3,106	
Food crops			13.5				14,337
Paddy rice					2,100		
Peanuts					900		
Corn					1,700		
Soybeans					900		
Estate crops			18.5				3,484
Cashew nuts					(250)		
Total							1,418,272

• Plan data (Project achievements)

Project costs (A) $\textcircled{1}+\textcircled{2}+\textcircled{3}$ 12,518,560,000 Rp

a) Project's project costs

(1) Japanese side 1) Equipment provision cost 12,265,144,000 Rp $\textcircled{1}$

2) Local costs borne by Japan 10,911,113,000 Rp

(2) Indonesian side 1) Local costs 1,354,031,000 Rp

b) Costs borne by Ministry of Public Works 217,566,000 Rp $\textcircled{2}$

c) Costs borne by farmers 356,850,000 Rp $\textcircled{3}$

Project costs (B) $\textcircled{4}+\textcircled{5}+\textcircled{6}$ 5,275,345,000 Rp

a) Project's project costs

(1) Japanese side 1) Equipment provision cost 4,700,929,000 Rp $\textcircled{4}$

2) Local costs borne by Japan (Except general local operation costs)

4,700,929,000 Rp

(2) Indonesian side 1) Local costs

b) Costs related borne by Ministry of Public Works 217,566,000 Rp $\textcircled{5}$

c) Costs borne by farmers 356,850,000 Rp $\textcircled{6}$

• Internal rate of return

- 1) Costs including project costs (A) IRR=7.58%
- 2) Costs including project costs (B) IRR=17.43%

2.2. Participation of rural women and WID considerations

JICA has positioned this project as a "WID Consideration Item." The WID consideration item selection standard (WID consideration manual) includes the following items: 1) The existence of the possibility of women's participation in the project's planning and implementation, 2) Women being targeted (among) the beneficiaries of the project, and 3) the existence of the possibility that women may suffer disadvantages arising from the implementation of the project. This project was selected as qualifying under item 2) above, "Women being targeted (among) the beneficiaries of the project." The reason for this decision is that the activities of this project include among other things actively activating women's organizations and implementing women's training as part of "strengthening farmers' organizations."

2.2.1. Life structure in project implementation district

As mentioned previously, eight villages were selected as the project site for the participatory approach project for the development of the eastern part of Indonesia as part of the Second Long-term (25-year) Indonesian Development Plan. The selection criteria included 1) the necessity of eradicating alang-alang grass (weeds), 2) demonstration effect leading to dissemination results, 3) existence of good leaders, 4) poverty, 5) plain (flat) area, 6) the existence of other public work projects, and 7) villages not created through government immigration policy. First, the population structure of the four villages that were surveyed is shown in Table 3-18.

Table 3 - 16 Population Structure of Surveyed Villages

Village	Population (persons)	Average Household Size (Persons)	Average Number of Children	Ethnic Group	Mostem (%)
Ranometo	1,856	5.35	3.65	Tolaki, Java	97
Palanga	1,683	4.91	1.83	Tolaki, Bugis	99
Kiaea	1,283	4.55	3.03	Bugis, Tolaki	100
Sabulakoa	4,048	4.96	-	Tolaki, Bugis, Bali	-

A characteristic of the populations of these villages is that except for Sabulakoa, men exceed women in number. However, the sex ratio is 50/50 in Palanga while in Ranometo and Kiaea, women outnumber men. Within households, the number of mothers exceeds the number of fathers in 17 households in Palanga, and in 20 households in Ranometo and Kiaea. Moreover, household members other than fathers and mothers number 390 persons and 20 persons,

respectively, in Palanga and Kiaea.

The Tolaki people are landed farmers who perform shifting cultivation, while the other people in the project cultivate mainly paddy field. The population structure of Ranometo, Palanga, and Kiaea consists of about 50% Tolaki and 50% of other peoples, while that of Sabulakoa is 75% Tolaki. If the main aim of this project is to improve wasteland overtaken by weeds and burnt fields and to develop paddy cultivation, to ensure the integrated promotion of agricultural development and farming village development, it is necessary to change the structure of villages, including their values such as their views on farming and life, in addition of course to their views on technology transfer methods, based on the fact that farming methods and village structure are intimately linked.

The power structure in villages consists, from an administrative viewpoint, of the village chief at the top, with decisions made on a village basis through the "mutual agreement" of the households of the village, represented primarily by males. Village chiefs are either chosen through elections or appointed by the governor. In the latter case, the village chief can advocate the views of villagers to the governor. As the bureaucracy is fully developed with the central government at the top, there is a strong possibility that "mutual agreement" through the participatory approach could mean decision-making by influential persons at the regional or village level. With regard to the participatory approach introduced by this project, the villagers' representatives are male heads of households, and it often turns out that women first learn about plans during the implementation stage.

2.2.2. Participatory approach and integrated rural development method

JICA experts and their counterparts explained the proposed plan to the villagers at every site, exchanged views and opinions, and after obtaining the approval of two thirds of the villagers, started implementation. With regard to the construction of roads, the provision of land by owners presented the possibility of discontent on the part of some, and the matter was left to villagers to settle among themselves. Villagers participated in land preparation surveys, and the creation of canals using streams was carried out with the direct participation of farmers under the guidance of technical specialists. With regard to constructions done by villagers, there are two traditional systems, the Suwadaya system, where only the persons benefiting from the project participate (water management and drain pipe installations), and the Gotong Royong system, where all villagers participate. For the construction of irrigation water canals, however, a system was employed whereby the project paid wages to villagers following the completion of the work, and 25% to 35% of these wages were pooled into a stock fund.

For the construction of wells, an average of five per village, farmers participated in the construction under the guidance of experts. The selection of well locations was done mainly by

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males among the villagers, and there was no established system for actively incorporating the opinions of women, who actually perform water-related tasks and water drawing. Moreover, while the selection of locations for the construction of rice mills, which also contribute to improving the lifestyles of villagers, was entrusted to villagers, the opinions of women, who are the ones to perform milling work, were not officially taken into account in this process. Thus various problems became apparent, such as in the definition of "villagers" in the context of attaching great importance to the participation and needs of villagers, as well as problems related to strengthening existing village organizations.

The method under which guidance was provided consisted in assigning two extension workers to each village, and charging them with conducting surveys on regarding the use and management of the equipment provided by the project, and liaison between the support providing side and villagers. For example, with regard to the use of hand tractors provided to each village, extension workers coordinated and established joint management systems including pooling utilization charges from farmers, purchasing new tractors, employing full-time operators, and supervising the operation and maintenance of tractors, areas in which the villagers were inexperienced. Moreover, with regard to rice mills, whose establishment freed villagers (in this case women) from the task of manually threshing rice, extension workers played an indispensable role in helping villagers understand the advantages of creating joint management association rules and allocating responsibilities in the same way as for farming equipment, covering such things as the employment of mill operators and money management, again areas where the villagers had no experience.

This project's major aim was to develop infrastructure on a suitable scale. In order to ensure suitable contents and durability, the participation of villagers was viewed as indispensable. As a result, based on the view that the promotion of social development and village development was a top priority, the strengthening of villager organizations in order to develop the awareness and capabilities of villagers became a main pillar of activities. The establishment of the above-mentioned types of joint management represented part of these activities. In addition to these, mini projects designed for youth groups and women's groups were also implemented.

Activities for women's groups include vegetable plots and shelling cashew nut, but women showed the most interest for poultry raising projects done by youths. This is explained by the fact that hatched eggs fetch twice the money obtained by selling non-hatched eggs, (Rp500 instead of Rp250), which opens the way to income generation. Such development shows that the needs of villagers cannot be determined in a fixed fashion, and suggests that a flexible approach that goes beyond sex and age is required.

2.2.3. Project cycle and women's participation

This project is characterized by the implementation of agricultural and rural areas based on the participation of villagers. The following section examines the implementation and achievements of the project from the viewpoint of the position of women within the larger group of "villagers."

(1) Planning stage

As previously mentioned, during the planning stage, when the opinions of farmers were listened to and reflected in planning, women were not incorporated among "villagers." Not only women were absent among the village representatives who attended exchange meetings between the Indonesian departments and agencies involved and JICA, but it was also found during interviews that women in many cases had not received any explanations from their husband about the project. The integrated development of the local society requires an integrated approach that includes social and cultural aspects in addition to economic ones. Even though the project is one that centers on agriculture, women fulfill important responsibilities in agriculture, and thus their opinions should be incorporated in the overall planning from the planning stage.

Shifting cultivation is the main type of agriculture in the project's district, and for this type of agriculture, women play a more important role than men, both in terms of quantity and amount. The shift from shifting agriculture to paddy cropping as a direct result of the project contributed to raise productivity and raise the living standards of villagers. However, if women had been allowed to participate from the planning stage as regular villagers, it is likely that the result would have been more active and creative input and actions with regard to the agricultural tasks handled by women. The original residents in the project's district are said not to have strong work ambitions. However, women, once they realize the potential for improving their lot, become much more eager to actively carry on work. It is now thought that more attention should have been paid to the division of labor according to sex based on the types of agriculture, considering the region's Islamic traditions.

(2) Implementation stage

Mini projects and training of women's groups have contributed to boosting the results of activities designed to increase the living standards of villagers. In particular, income generation projects have had a positive impact on household finances. Vegetable plots and handicrafts in particular have generated strong response among female villagers, and the establishment of a sales network is considered to be a determining factor in this regard. Thus, it is thought to be advisable to incorporate a training program about distribution systems for the entire project's district.

While the policy of aiming principally to strengthen existing organizations does contribute

to the development of villagers from inside, it is also linked to perpetuating the existing male-dominated social structure based on the sexual division of roles. The creation of an organization permitting the proper evaluation of women, who are already performing various important tasks, is desirable.

The development of an infrastructure has reduced the workload of women, who perform most farm labor, such as drawing water, plowing, and milling and increased farming revenues. Although the determination of locations for rural roads, canals, wells, milling centers, etc. (construction locations) was entrusted to villagers, women did not participate in the decision process, despite the fact that women are the main users of these facilities, as their responsibilities include drawing water and milling rice. Furthermore, guidance and training in areas new to farmers in the project district, including joint management of water management and farm equipment, money management, and so on, is also necessary for women, who form the core of rural society, and the acquisition of know-how by women should contribute to their empowerment.

(3) Results

The results of this project can be seen across a wide range of fields, including vegetable plots (improved nutrition, improved household finances, joint management know-how in the case of group vegetable plots), milling centers (reduced labor, shorter working hours), wells (secure water supplies, reduced labor, shorter working hours), mechanization of labor (reduced harvest labor, shorter working hours, and therefore increased production activities), cashew nut crushers (increased income due to addition of value to nuts), and so on. All these results have contributed to reducing the workload of women and increasing the income of farming households. However, farmer interviews gave the impression that rural women are simply awaiting other plans, perhaps on account of the above results having been achieved through plans that were given them. With regard to vegetable plots, most are cared for on an individual basis, and there is strong interest in acquiring cultivation techniques. Concerning this point, technology transfers and autonomous efforts can be said to be well matched.

2.2.4. Issues from viewpoint of WID

It has been frequently pointed that generally the relation between agricultural modes and the persons carrying out cultivation is a strong one. In the case of the shifting cultivation and crop rotation methods, which are preponderantly practiced in Africa, the roles fulfilled by males are limited, while women carry out most cultivation tasks. On the other hand, the fixed type of paddy cropping seen in Asia relies mostly on male labor. The operation of plowing equipment in particular is a traditionally male domain. In recent years, regardless of the region, the increase in the population has caused a shift from the first mode of agriculture to the latter mode. Even in

Asian regions that practice shifting cultivation, a shift toward paddy cropping can be seen as the result of population increases and as an anti-poverty measure. At this time, the largest problem is changes in gender relations. In the general trend observed until now, there has been an erosion of the power of women with regard to production activities.

This project is an agricultural development project centering on farming guidance suitable for the development and expansion of farm land, and thus per the above diagram, men have started playing the main role in farming. In the case of participatory-type development within a village structure such that it is men who actually have the power of decision, women, who represent an important part of the workforce, are definitely excluded from participating, as we have seen before. The autonomy of women in agriculture was exceptionally recognized in the case of vegetable plots. When such advances take place, women are likely to be restricted to the cultivation of vegetable plots, while a framework is set wherein it is the men who are at the center of production activities.

Although the rate of increase of the population of Indonesia is slowing down in Southeast Sulawesi, the largest issues remains as before how to escape from poverty. When the shift to paddy cropping, which is linked to increased production amounts, occurred, the creation of a system whereby women and men would participate equally in management and equipment operations and management is likely to be the key to enabling integrated regional development contributing to alleviate poverty and reduce disparities between genders. The majority of technology transfers in this project were of the type offering local men new experience, and it is unlikely that there will be any resistance to having women, who play an important role in farming and rural life, partake in the acquisition of new technology.

2.2.5. Outline of women's organizations of participating villages

(1) Types and activities of rural women's organizations

a) Desa Wisma (DW)

Desa Wisma are the terminal organizations of family welfare organizations (Pembinaan Kesejahteraan Keluarga: PKK) and as a rule, cover almost all households. Formed of women belonging to neighboring households, they function as units essentially charged with implementing PKK activities.

PKK conducts activities for the welfare of households throughout the country on an organized basis, under the Ministry of Home Affairs. It possesses management and administrative organs at the national, province, district, and village levels, and in cooperation with related ministries, it implements the following ten programs: 1) Pancasila implementation (referred to as

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P4), 2) Gotong Royong (mutual aid) promotion, 3) foods (vegetable plot promotion, nutritional education), 4) clothing, 5) home and household management, 6) education and professional training, 7) sanitation, 8) education of cooperative associations (activities to increase income through UP2K), 9) environment, and 10) life design. The PKK leaders at the middle level (Ketua PKK) is the wife of the Minister of Home Affairs, and the wives of province governors, district heads, and village chiefs are PKK leaders at each following lower level, constituting a type of top-down structure, not a build-up structure where representatives of lower organs form higher organs.

With regard to the implementation of the above-mentioned PKK program, tasks and responsibilities are organized among four working groups (Pokja) organized at each administrative level, as follows.

- Pokja 1 : Pancasila implementation (P4) and mutual aid promotion
- Pokja 2 : Education/professional training and training of cooperative association (activities to raise income)
- Pokja 3 : Foods/nutrition (vegetable plots), clothes, and house and household management
- Pokja 4 : Sanitation (mother-child insurance), environment, and life design

In villages, PKK is officially included as part of the village development committee (Lembaga Ketahanan Masyarakat Desa: LKMD) organizations. Part of the village grant (Inpres desa) funded through the Presidential Fund are earmarked for PKK, thus constituting a source of continuous funding. During FY96, out of a grant of Rp6,500,000 per location, the PKK allocation was Rp1,500,000 (approximately 23%). With regard to accounting, PKK organizations have the duty of reporting to their higher organization, but due to the changes in PKK leaders at each level accompanying the reelection of district and village chiefs, there are various instances of lost records and account books, and the situation is reported to be fairly confused.

b) Women farmers organizations (Kelompok Wanita Tani: KWT)

Women farmers organizations (KWT) are non-official groups organized and trained under the guidance of the Ministry of Agriculture. They are not the women's chapters of farmers organizations (Kelompok Tani (KT), and are operated as separate organizations. Whereas KTs are organized as units of local arable land (paddy fields in particular), KWTs are basically organized as units of local households (this project encourages the organization of village units). In the same way as KTs, there is no official registration system for KWTs, and from an administrative viewpoint, they are positioned as purely unofficial organizations. However, the village chief

(Kepala Desa) and extension workers (PLIs) monitor members and activities, and they function as receiving units through PLIs. As a rule, they are positioned as organizations operated mainly by farmers, but as described later, with regard to actual activities, they emphasize DWs in various ways.

As the principal implementing organizations of the Food Diversification and Nutrition Improvement Program (DPG) promoted from the 6th 5-Year National Development Plan (REPELITA V), KWTs are set to receive increasing support. This is confirmed by the fact that the DPG office of the Ministry of Agriculture has issued a handbook for extension workers about guidance methods for KWTs related to DPG.

<Food Diversification and Nutrition Improvement Program (DPG)>

DPG is a program launched in 1992 with the aims of diversifying foodstuff production by rural areas and improving nutrition. DPG is of significance due to the fact that KWTs are positioned as the main organizations for implementing DPG activities. According to existing conditions at the beneficiary area, two packages are available: Poultry farming/horticulture and pisciculture/horticulture. The concrete contents provided to each household in the case of the poultry farming/horticulture package are 5 to 6 chickens or ducks, feed, vaccines, and one breeding cage per lot. It is assumed that when members of a group participating in this program have secured sufficient income, they expand the program to other groups within the same village on a revolving basis. Groups are selected for participation in the program in cooperation with related organizations at the district level from among villages that are suffering from inferior nutrition and have been designated as low-income villages per the indices of the statistical office.

Out of the eight villages selected for the project, two (Onewila and Palanga) have already been selected for the DPG program, and one KWT per village has received support during FY1994 and FY1995.

- (2) Results of basic survey
 - a) Organization and characteristics

The organization joining rate of rural women indicates the percentage of registered members to the total number of households in the surveyed village. With regard to DWs, as a rule all households are encouraged to join, but in this survey, the joining rate was uneven among villages, varying between about 30% and 89%. When the joining rate was high, the DW composition is deemed to indicate the general characteristics of the village's women, but for villages where the joining rate is lower than 50%, it is possible that existing groups have not been

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reported, and therefore the characteristics of members forming the DWs cannot be taken as general characteristics. The joining rate for KWTs ranges between 5% and 54% for the various villages, and in many cases, members of KWTs overlap to their membership in a DW.

Almost all organizations have been established in the latter '80s, but the two villages of Ranometo and Onewila have many groups that have been organized relatively long ago. Among the groups for which the establishment date was obtained, the oldest was established in 1986, and the youngest was established in 1995.

As a rule, DWs are women's organizations comprising 10 neighboring households. In actuality, their membership is diverse, and among those surveyed, the smallest had 7 members while the largest had 25 members, with the average being 14.5 members. The membership of KWTs is 14 members for the smallest, 25 members for the largest, and the average number of members is 20.4. Thus, KWTs are slightly larger compared to DWs.

An overall look reveals that there are no major differences in age, education, and tribe composition among DWs and KWTs. The majority of members are in their twenties and thirties, the average age is about 30, and the educational level is elementary school for most members, with junior high school graduates representing less than 20%. With regard to the overall tribe composition, Tolakis are the most numerous, followed by the Bugis, Javas, and Balis, in this order.

A look at the differences in the composition of women's organizations in each village shows that in the groups of Ranometo, there is 11.5% of members 50 years or older, which is high compared to the other villages' groups, where the average member's age is between 29 and 42. Thus a characteristic revealed by the survey is that age is the parameter with the largest distribution. The women's organizations of Palanga are made up 100% by members in their 20s and 30s, and the average age is about 27, which is low compared to other villages. Since this is a shared characteristic among DWs and KWTs, the imposition of restrictions on joining is a possibility that must be considered. According to extension workers, it is not rare that such restrictions are set depending on the village, particularly for DWs, which tend to deviate from the rules, probably because they have been organized relatively recently and have not been educated sufficiently regarding the aims.

There are very little difference in the tribal composition of DWs and KWTs in the project's villages, except for Ranometo, where the tribal makeup of DWs is 54.2% Tolakis, 28.4% Javas, 7.4% Bugis, and 9.6% all others, whereas the tribal makeup of KWTs is 77.8% Javas, 5.6% Tolakis, and 16.7% all others. Since there is only one KWT in Ranometo, this heavy

concentration of Javas may be fortuitous, but the possibility that the level of receptivity and enterprise with regard to organization differ among tribes cannot be refuted, and such differences, if they exist, should be taken into account.

b) Characteristics of leaders

Based on the basic survey data, we examined the leader class in the women's organizations in the villages participating in the project, i.e. the organization members holding executive posts. With regard to the age composition, there was practically no difference with the age composition of members of women's organizations as a whole, and the leadership of these groups is not necessarily based on the seniority system. Similarly with regard to the tribal composition, there was little variation with the tribal makeup for members as a whole, with the percentage of Java women belonging to the leader class 13.2% for DWs, and 3.1% for KWTs, or 10.3% for the two types of organization combined, while the overall percentage of Java women in women's organizations is 8.8% for DWs, 2.8% for KWTs, and 6.6% for the two types of organizations combined. On the other hand, the percentage of Bugis women belonging to the leader class was 17.6%, slightly lower than the overall percentage of 20.9% of Bugis women making up women's organization members.

The education level of the leader class is slightly different from the average for all members. Mirroring exactly the average for all members, elementary school graduates form the most numerous segment, followed by junior high school and senior high school graduates, but the percentage of elementary school graduates is less than 50% for the leader class, compared to slightly less than 70% as the average for all members. On the other hand, the percentages of junior high school and senior high school graduates, 17.6% and 10.0% for all members, is much higher for the leader class, at 33.9% and 18.5%, respectively. This trend is more pronounced for KWTs than for DWs. Viewed on a individual organization basis, regardless of the fact that there are members with more schooling than others, there are also groups where the leader class is made up of elementary school graduates, and thus schooling itself cannot be generalized as a prerequisite for leadership. However, the fact that there is a correlation between schooling and the leadership of these rural women's organizations cannot be denied.

These leaders are selected based on mutual consent of the members rather than through elections, and in many cases their term of office is not particularly fixed. In addition to the informal character of these organizations, this can be attributed to the fact that the roles of the leader class are not clearly defined. In order to strengthen these organizations in the future, educating the leadership will be an unavoidable issue, and in a first stage, fully understanding the roles actually played by these leaders and the qualities expected of leaders by members will be required.

c) Characteristics of activities

Based on the basic survey data regarding the activities of existing women's groups, almost all groups organize meetings on a regular basis. The frequency of meetings ranges between 1 to 4 times per month. 25 KWT groups (78%) and 41 DW groups (53%) have two or more meetings per month. Mutual aid financing groups (Arisan) are the next most frequent event organized by women's groups. More than half of women's group list Arisan as a constantly ongoing activity. Over 80% of KWTs organize Arisan meetings, whereas this figure is less than 50% for DWs. Most Arisan are cash-based (with members contributing between Rp200 and Rp25,000/month). However, it is reported that some groups in Kiaea village have Arisan that are cloth-based. In principle, Arisan members cannot be exempted from contributing, and therefore the donation amount is believed to be set at a reasonable level to enable members to comfortably make monthly contributions. Contribution amounts vary among the villages. For example, members of an Arisan group in Ranometo contribute Rp7,350 per month, while members of an Arisan group in Lalobao contribute the least with monthly contributions set at Rp925, a seven-time difference and the lowest level among the villages participating in the project. This difference in contribution levels is a good example of how differences in the economic status of villages are reflected in the activities of women's organizations.

Moreover, 43% of all groups operate funds, and in this respect there are differences between DTs and KWTs. While fewer than 30% of DWs operate funds, this percentage is close to 80% for KWTs. The size of the funds varies greatly, from Rp3,000 to Rp360,000. The average size of funds operated by KWTs is approximately Rp36,000 and Rp40,000 for DWs, thus an average of approximately Rp38,000 for the two types of organizations combined. These funds are created with revenues from joint vegetable plots and joint poultry farming projects or with member contributions, and are used for credit granting, the purchase of equipment, and so on. Although credit granting activities represent approximately 10% of all activities and do not figure prominently among regular activities, when a fund exists, it is assumed that credit-granting activities are performed, even if on an irregular basis.

With regard to farmyard vegetable cultivation, approximately 30% of all groups answered that this represents a regular activity, and groups in Onewila and Sabulakoa also reported operating joint vegetable plots. The size of joint vegetable plots varies between 0.25 ha to 1.09 ha, and in many cases communal village land is lent free of charge with the agreement of the village chief, or the lands of members are used on a rotating basis. Members get together about once a week to work on joint vegetable plots, and sometimes periodic guidance by extension workers serves as occasions to do such joint work. As described later, the majority of members of women's groups raise poultry, but only a very small number of groups listed poultry farming as one of their activities. This suggests that, excluding DPG-related groups, activities to organize poultry farming

are still almost nonexistent.

d) Activity support systems for women's organizations

According to basic survey data, 78% of all groups responded that they received support from outside in one form or another. Technical guidance is provided through agricultural extension workers (PPLs) both for DWs and KWTs. Only DW groups answered they received support from PPK, but support provided through UP2K (PKK's income increasing program) is also directed at KWTs. In addition to technical guidance, support contents consist mainly in the supply of vegetable seeds. Although the supply of some processing equipment is also mentioned, sources of funding for such supplies are mainly grants from villages and sometimes from districts or provinces, the PKK budget, or the Ministry of Rural Development. According to the Ministry of Transmigration, women's groups in the newly settled lands of Sabulakoa (now Talunbinga Jaya village) are also receiving support. Women's groups in Lalobao and Lapulu also report receiving support from LP3M, a regional NGO. Supplementary surveys regarding these reports could not be done this time, and thus the concrete details of support still remain unclear.

Moreover, since the surveyed villages already receive support from the JICA project through training and mini projects, these sources of support did appear in the survey answers. Support provided through the project is provided both to KWTs and to DWs, and since there are no great differences in the contents of the support that is provided to these two types of organizations, no distinction is made between these women's organizations.

(3) Results of detailed survey

a) Organization and characteristics

A look at average trends regarding the family structure and household background of the groups for which the detailed survey was conducted reveals that 87.8% of members responded that they have a husband, that the number of household members is 3.4 persons (excluding the person answering the survey), and that 40% of members had one or more children under the age of five. Whereas on average 94% of DW members have a husband, this percentage drops to 81.8% for KWT members. Although there is no significant age difference among the respondents, widowed KWT members tend to be more numerous. Such difference may reflect the fact that whereas DWs are basically organizations in which the entire household participates, economic factors are a comparatively stronger factor for joining in the case of KWTs.

Immigrants from other areas represented on average 48.9% of respondents, but there were large differences among villages; while immigrants represented 71.7% of all respondents in

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Ranometo, this percentage dropped to 50% for Onewila, 48.6% for Kiaea, and 19% Lalobao. Whereas the most frequent reasons for immigration were marriage and voluntary immigration (Transmigration Spontan) in Ranometo, and partial aid from the government in Kiaea (Transmigration Swakarsa), in Onewila and Lalobao, marriage and the husband's work were the reasons most often cited for immigration. With regard to the time of immigration, while relatively old immigrants who came during the 1960's and 70's stood out in Ranometo and Onewila, in Kiaea, recent immigrants who came from the mid-80's to the first half of the 90's constituted the majority. Although no concrete survey could be done this time, these immigration patterns are thought to have no small influence on the degree of cohesiveness of organizations.

With regard to the percentage of respondents whose husband is a farmer or a member of a farmer's association, a meaningful difference between KWTs and DWs is recognized. The percentage of respondents whose husband is a farmer was 66.7% for KWTs and 50.5% for DWs. The percentage of respondents' husbands participating in a farmers' organization (KT) was 78.8% for KWTs and 55% for DWs. Thus, in all cases, the percentage for responders belonging to KWTs organizations was considerably higher than the percentage for responders belonging to DW organizations. This motivation toward organization among KWT members has been created by extension workers, and since KWTs are first and foremost organizations conducting activities related to agriculture, the fact that persons with a strong interest in agriculture can be found in such organizations.

Furthermore, the fact that these percentages greatly differ among villages cannot be overlooked. Among respondents with a husband, the percentage of respondents with who husband is a farmer was 27% for Ranometo and 31% for Onewila, which are both in suburban areas, whereas the percentages of Kiaea and Lalobao, which are more remote from cities, were 89% and 75%, respectively. Similarly, with regard to the percentage of respondents whose husband participates in a farmers' group was 27% for Ranometo and 43% for Onewila, whereas it exceeded 90% for both Kiaea and Lalobao. In addition to clearly indicating the difference in positioning of agriculture in every village, these differences are thought to suggest the rising importance of the non-agricultural sector in suburban areas.

Similarly, this trend is also apparent in difference of perception concerning one's profession. The percentage of respondents who answered that their profession was farmer was 100% both for KWT and DW members in Kiaea, whereas it was 0% for DW members and a mere 15.4% in KWT in Onewila, and a low 9% overall. These percentages probably reflect in part the actual percentages of persons engaged in agriculture, but are also thought to indicate the differences in the perception of the women respondents, and thus represent a point that deserves attention with regard to grasping trends in the activities of women's groups.

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With regard to the ownership of land, livestock, and durable consumer goods, there are almost no differences based on organization type between KWTs and DWs, and on the contrary, differences among villages indicate characteristic trends. An inspection of land ownership shows that the average land area owned by households is greatest in Lalobao at 1.62 ha, which by far exceeds the 1.1 ha average for the three other villages. While the average paddy area owned by households is large for Lalobao and Kiaea, it is small in both Ranometo and Onewila. Moreover, the ownership of vegetable plots is characterized by differences in the agricultural systems of each village, and the development of irrigation facilities is expected to be a factor of change in this area in the future. With regard to Pekarangan, 90% of members of all groups of all villages are owners, and the largest averaged owned area, recorded for Kiaea group members, is 0.92%. This shows also a relationship with the percentage of vegetable plots operated as a regular group activity.

With regard to the livestock ownership, the most commonly raised livestock among all surveyed groups is poultry (80.2% poultry farming rate, average number owned: 8.1), followed by milk cows (36.7% breeding rate, average number owned: 0.8). Perhaps due to the influence of DPG, the poultry farming rate and number of poultry owned in Onewila exceeds the levels at the other villages, whereas the high stockbreeding rate for large animals such as draft cattle, milk cows, buffaloes, stands out among Kiaea's groups.

Against the background of actual usage conditions of livestock and poultry and the status of the distribution systems for these products, such differences are important variables to be considered in a study of women's group activities in the field of stockbreeding.

With regard to the status of ownership of durable consumer goods, clear differences have come in view among villages. The average ownership of radios in Ranometo and Onewila is 0.7 units, while it is 0.4 units in Kiaea and Lalobao. The same trend exists for cooking ranges, while in this case, the differences are thought to lie more in the lifestyles of the users than in their purchasing power. The rate of ownership of bicycles is between 40% and 50% in Ranometo and Onewila, whereas it exceeds 70% in Kiaea and Lalobao. This difference is probably also due to differences in the development of the transportation network and access to means of transportation, rather than differences in purchasing power.

A look at neighborhood housing conditions of members based on the detailed survey data of each group shows that, as a rule, members of a DW all live in the same neighborhood, and that organizations whose members stretch over two villages (Dusun) are extremely rare. The composition of these DWs was almost identical to that of neighborhood associations (RT), which are formed of only a small number of persons living next to each other. By contrast, there are variations in the composition of KWTs. The six KWT groups that were surveyed included two whose members

stretched across villages, and the constitution of the four other groups did not match that of the neighborhood associations. These differences indicate that the organization of KWTs is more function-oriented, and that KWTs have the potential of developing into initiative groups related to the activities of village women.

b) Motives for joining organizations and impeding factors

i) Motives for joining KWTs

Among the members of the six KWT groups that were part of the detailed survey, 121 indicated the reason they joined a KWT. The most frequently given reason was the desire to learn farming techniques, in particular production techniques for vegetables, etc. (43%). The next most frequently given reason was the general desire to acquire techniques and experience (33.1%). Furthermore, a little under 10% of members indicated as a reason for joining a KWT the desire to earn additional income, and a mere 3% indicated motivation created by extension workers as the direct reason for their joining. This data represents valuable information for the study of future directions with regard to incentives for organizing women and the role to be played by extension workers for organization and organization strengthening.

Other answers about additional motives included building cooperative relationships, and regarding joining organizations, understanding the existence of women who desire spiritual satisfaction rather than material gain. At the same time, some respondents also answered following government programs. This is thought to indicate a high level of acceptance of government-initiated programs at the farmer level.

ii) Reasons for not joining KWTs

A survey was conducted among 106 DW members about joining KWTs. 54 (50.9%) of the members had not joined a KWT. The principal reasons given for not joining a KWT was lack of time (83.3%), no interest (20.4%), and lack of understanding about KWT activities (11.1%). A more detailed look at answers about the lack of time reveals reasons such as household chores, work for other jobs, and child raising. From these results, one can see that existing KWT activities are not widely disseminated among villagers other than those who are currently members, and also that women do not join KWT out of concern that participation entails hard labor. Another reason may be the somewhat larger number of household members for DW members and the higher rate of DW members who have children under five years of age, compared to KWTs.

iii) Factors impeding participation in organization activities

In principle, membership in DWs is of all households, and this time a survey was done of

KWT members regarding problems regarding participation in organizations. Out of 121 respondents, only 3 (2.5%) answered that there was family opposition to their joining a KWT, clearly indicating that there is almost no social resistance to women joining such organizations. Moreover, only 15 respondents (12.3%) indicated problems regarding participation in group activities. Considering the facts that the majority of these KWTs have been established relatively recently and that the scale and range of their activities is not very extensive, one can reasonably conclude that at present the activities of these organizations do not cause difficulty to their members. However, the main factor indicated by respondents as impeding their participation in organization activities was lack of time due to household chores, child care, other jobs, and so on. Thus, in expanding activities of women's organizations, one can predict the necessity of devising ways to avoid heavy labor for women.

c) Prospects for development of activities and organization

The following views regarding prospects for the activities and organization of their own group were obtained from the members of the women's groups that participated in the detailed survey.

i) Important activities

Activities considered to be important both by DWs and KWTs included the cultivation of vegetables and Arisan. Onewila groups receiving DPG support mentioned poultry farming, while Kiaea groups answered cashew nut processing (shelling) as major activities. Since these activities increase the income of each individual member participating in them, these answers are considered to indicate the awareness of women with regard to the economic advantages that can be obtained through participation in these groups.

A comparison of KWTs and DWs shows that among members of KWTs, production activities such as the production of vegetables and joint vegetable plots are most often cited as major activities, while in DWs, directly financial activities such as Arisan and credit, are the activities regarded as most important. Yet most groups that conduct regular vegetable plot activities are mostly DWs, while the percentage of KWTs that organize Arisan is almost double that of DWs, thus indicating an opposite trend. A possible reason for this is that the production of vegetables in DWs being a prescribed program initiated by the PKK like mother's insurance (Posiyando), this activity is not perceived as being that important. On the other hand, with regard to KWTs, which, although not yet fulfilling all the conditions for performing production activities and not yet up to the point of performing regular activities, are thought to have a high degree of awareness of members' production activities on account of being organizations whose activities deal

principally with agriculture. As a result, these results can be taken as signs of such awareness.

ii) Organizational problems

Problems that are faced in common by KWTs and DWs include insufficient activity funds, weak cooperative ties among members, lack of technical expertise and experience, and so on.

The problem of insufficient activity funds is surmised to come from the fact that these women's organizations are not recognized as official organizations. In the same way as for KTs, there are no agricultural financing systems for KWTs. Although joining a village cooperative unit (KUD) gives KT members access to a financing system, such village channels for KWTs do not exist. Moreover, because DWs are organizations originally instituted for the implementation of PKK programs, they completely follow the program budgets of PKKs. Therefore, for their own original activities, these groups can only rely on stock funds, etc., based on contributions from their members. However, the structure of such funds is extremely weak.

The problems of lack of technical expertise and experience, and weak cooperative ties among members are probably related to the fact that the majority of these organizations have been established comparatively recently, and also indicate the need for technical guidance and organizational guidance of these groups.

Some differences in the organizational problems of KWTs and DWs can be observed. A greater percentage of KWTs compared to DWs feel that the lack of funds or contributions is a problem, while DWs perceive the lack of technical expertise and experience, and the lack of cooperative ties among members as being greater problems. This difference is interpreted as a sign that KWTs are more oriented toward activities that require more important amounts of resources.

iii) Measures required for activation of organizations

The forms of support most required by both DWs and KWTs for activating their organizations were reported to be technical guidance and training (38.4%). The next most frequently given category was financial support (27.8%), but other measures such as opportunities to visit advanced areas and tours of successful organizations were also indicated to be desirable, taking as reference the study tours implemented in projects in the past. This shows that the study tours were highly evaluated by the members of rural women's organizations.

While only 5.8% of KWT respondents answered that the formation of work groups was necessary as an activation method, as much as 19% of DW members gave that answer.

This is thought to be due to the fact that KWTs are composed only of members who favor clearly defined functions, whereas DWs, being lower organizations that cover a wide range of PKK activities, are composed of members who participate in many activities on an equal basis. In such a case, though this may seem a paradox, there easily arises the situation where some of the members are always leading some activities. In this latest survey's results, this sort of trend was present in some of the DW groups that were surveyed.

2.2.6. *Summary and recommendations*

(1) Current status and problems related to rural women's organizations

Until now, the existing women's organizations that participated in this project have been examined. The most important fact to consider in relation to problems affecting these organizations is that there are two types of rural women's organizations, DWs and KWTs, within the framework of public programs. The problems that are affecting these two types of organizations derive from insufficient awareness of policies and unclear positioning at the level of villages, which results in duplicated activities of these organizations. DWs are terminal organizations of the comprehensive life improvement and social welfare promotion program called PKK, and they cover an extremely wide range of activities. Moreover, DWs are linked to a national organization that goes all the way up to the central government level. As a result, guidelines for activities and directives regarding the course of these organizations tend to be passed down from the top. To the extent that it was possible to observe in the villages participating in the project, the activities that were conducted the most actively included development (beautification) of the living environment, healthness of mothers and children (Posiyando), which rather than activities conducted individually by single DWs, are larger-scale activities performed by PKKs at the village level. Activities that are conducted autonomously by single DWs are limited to Arisan and joint garden plots, and such activities generally overlap the activities of KWTs.

On the other hand, KWTs are positioned as organizations whose principal objective is agriculture. However, they do not organize activities or guidance for major agricultural fields such as paddy cropping and upland field cropping, and are instead observed promoting activities limited to the like of vegetable plots and small-scale poultry farming, in other words supplementary areas. In reality, women are also charged with many tasks in paddy and upland field cropping, and are also partially responsible for raising large livestock. The improvement of techniques in these fields handled by women is an important issue for the regional development of agriculture, but such elements are actually not incorporated within the scope of activities of KWTs. At the same time, KWTs are complete organizations onto themselves that depend almost exclusively on extension workers for external help. Such positioning of KWTs contrasts with that of KT, which have

access to higher organizations such as KUD and P3A, which are more official and have a stronger organizational base. In this sense, the organizational development possibilities of KWTs are inevitably limited.

Another problem affecting women's organizations is the insufficient positioning of women's organization activities based on the socioeconomic characteristics of each village and differences in agricultural conditions. In the case of DWs, programs that have been drafted at middle levels will be implemented in steps, and even though they are left at the discretion of working groups, their implementation actually follows entirely directions from higher organizations, and thus activities at the village level are almost identical among the villages. With regard to KWTs too, it is also believed necessary to develop techniques and activities that match the conditions of areas whose agricultural conditions differ, but original activities that reflect the characteristics of each village are not particularly visible. Only a few areas reported activities using crops specific to their area, such as cashew nut processing. In particular with regard to KWT activities, it is necessary to consider operations including aspects such as processing and distribution in addition to production. Having policies for activities that are adapted to the characteristics of the area is thought to be extremely important for the future.

(2) Recommendations for education and strengthening of rural women's organizations

As mentioned earlier, the scope of the conducted survey that very limited, and the obtained information in a sense superficial. Therefore, the recommendations presented here apply only to the organizations currently existing in the eight villages of the project, and are suggested measures for the strengthening of women's organizations in a general sense only. Further detailed surveys are emphasized to be needed in order to suggest detailed as well as concrete alternatives.

a) Education and strengthening of Desa Wisma (DW)

DW are the terminal organizations of the PKK movement, and in order to educate and strengthen them, it will be necessary to devise comprehensive activation measures taking PKK at the village level as the unit, rather than each DW organization. In the project implementation district, the organization of DWs has recently become an endeavor of its own, and it is believed that experience is still insufficient for PKK programs at the village level. Therefore, the first thing expected to be accomplished is the penetration of the PKK program itself. 10 program activity guidelines have been set for PKK at the province level, for which guidance is provided at the district level, and strengthening of these programs and full promotion of the contents of the program are thought to be the most realistic course for the time being. Of course, since PKK itself encompasses a broad range of contents and is positioned as a program, there is the risk that only activities whose results are readily perceivable will be promoted at the terminal level of village

women. However, considering that activities such as healthness of mothers and children that are directly linked to profits are taking hold, it should be possible to devise long-term measures for strengthening organizations using such so-called "bait" programs as an entrance. PKK itself has a support system organized in steps that is supported by activity wages, so that the establishment of clearly defined policy directions, organized activity monitoring, and periodic guidance and feedback systems will be future issues.

b) Education and strengthening of women farmers organizations (Kelompok Wanita Tani: KWT)

With regard to KWTs, it is necessary to clarify their positioning as organizations designed specifically for agriculture. At the village level, defining the relationship between the poultry farming programs of PKK with those of KWTs, which are currently being implemented in overlapping fashion, as well as clarifying the division of roles, are the measures to be taken for the time being to activate KWTs. At the same time, more high-level studies with regard to the question of how to set policy directions for incorporating KWTs into the mainstream of agricultural development are required.

Furthermore, for the long term, in addition to technical guidance for existing vegetable plots, small-scale poultry farming, processing of agricultural products, and life improvement, it will be important to conduct guidance for agriculture and production techniques across a wider range, as well as guidance on how to run organizations, for KWTs.

For this purpose, the first thing that will be needed is to provide sufficient opportunities for guidance by extension workers, who are the only existing channel for KWTs. In addition to programs related to agricultural and production techniques, the implementation of training programs for raising the level of knowledge and technical expertise of extension workers with regard to extension techniques and organization should also be considered.

Moreover, in parallel with strengthening guidance by extension workers, studies regarding how to improve the support system for the operation of organizations are also required. The development and securing of activity funds and equipment supply channels will certainly become necessary in the medium- and long-term. Also, devising system providing access to easy and low-cost financing such as farm loan associations, as well as access to information regarding agricultural organization support programs through other institutions and organizations, and enabling cooperation among the above, would enable strengthening and educating KWTs from an organizational perspective. One way to achieve these aims would be to establish a higher organization similar to KUD for KTs, or a coordinating organization for KWTs at a higher

administrative level.

2.3. Changes in rural society

2.3.1. Characteristics of rural society in project district

The Kendari district, which is the area covered by this project, is located at the tip of the Southeast Sulawesi Province peninsula. The characteristics of the agriculture practiced in this district differ according to the farming modes employed by the tribes making up the farmer population. Each tribe practices its own style of agriculture, passed down the generations. Besides the Tolaki, who are the original occupants of the project district, other tribes such as the Java and other ethnic groups who have immigrated under national transmigration plans, practice their own brand of agriculture. The characteristics of these tribes are listed in Table 3-19.

Among the eight villages that participated in the project, four are almost entirely made up of Tolakis. The other four villages consist of approximately 50% Tolakis, with immigrants making up the other half. In Ranometo and Lapulu, immigrants and original Tolakis live almost completely mixed. In Kiaea and neighboring Palanga, immigrants and Tolakis live in separate clusters.

Table 3 - 17 Tribal Characteristics of Projects Villages

Tribe	Tolaki	Bugis	Traja	Java	Bali
Original inhabitants	Southeast Sulawesi	South Sulawesi	South Sulawesi	Java Island	Bali Island
Environment	Wetlands/Mountains	Ocean (Paddy field, hills)	Mountains (poor soil)	Lowlands/hills	Hills
Agriculture	Upland cropping (upland fields, millet) Sago palm Cashew nuts Cacao	Upland cropping (Upland fields, millet) Paddy field Cloves Pepper	Upland cropping Paddy field (wetlands) Vegetables Coffee	Upland cropping (mixed crops) Paddy field (irrigated) Cane Soybean Diversified agriculture	Paddy field (irrigated) Palm Fruit trees
Immigration	Original residents	From about 1970	From about 1965	From 1959	From 1970s

The eight villages are divided by the Boroboro mountain range. On the northern side of the mountain range lie Ranometo, Sabulakoa, and Onewila. These three villages have poor soil and low productivity. The soil on the southern side of the mountain range is better, and paddy cropping is expanding in villages that have many immigrants skilled in paddy cropping. Ranometo, Palanga, Kiaea, and Lapulu have many immigrants, who immigrated because paddy cropping was possible. The other four villages consist mainly of Tolakis. They perform shifting cultivation of upland paddy field and fields, sago palm cultivation on wetlands, and cultivation of estate crops.

Table 3 - 18 Basic Data of Eight Villages Participating in Project

Village	Ranometo	Palanga	Kiaea	Lapulu	Lalobao	Lacya	Sabulakoa	Onewila	Total
Area (km ²)	15.70	55.01	44.56	73.08	82.44	22.66	41.18	13.44	318.07
1. Population (persons)	2,005	1,806	1,448	1,751	2,665	1,043	1,080	893	12,691
2. Males	996	897	703	876	1,375	516	502	461	6,326
3. Females	1,009	909	745	875	1,290	327	578	432	6,365
4. Households	432	345	315	394	559	238	400	178	2,858
5. Farms	312	339	312	394	543	238	400	131	2,669
6. Population density (persons/km ²)	127.7	32.8	32.5	24.0	32.3	460	26.2	66.4	36.5
7. Farmers' groups	11	10	11	8	5	6	10	7	68
8. Women's groups	2	9	5	1	1	3	4	4	29
9. Water users associations	1	1	1	1	1	-	1	1	7
10. Village cooperative units (KUD)	1			1					
11. Tribal composition									
Tolaki									
Bugis	48.6%	47.6%	48.8%	33.7%	100.0%	73.0%	98.4%	100.0%	
Traja	2.7%	43.4%	51.2%	52.3%	-	27.0%	1.6%	-	
Java	8.2%	-	-	-	-	-	-	-	
Bali	37.0%	7.5%	-	-	-	-	-	-	
Others	-	-	-	11.6%	-	-	-	-	
	3.5%	1.5%	-	0.6%	-	-	-	-	

(1) Ranometo

In addition to Tolakis (48.6%), Ranometo village is composed of Javans, Bugis, Traja, etc. Although the soil is poor and unit yield is low, the village has 178 ha of paddy fields (20% of the entire area). Estate crops (cashew nuts and cocoa) are produced on hills. Farmyard vegetable cultivation can be seen. Cows and poultry are mainly raised by immigrants, and most farms let them roam in gardens and roads. This situation is common to village with immigrants. Part-time farmers are on the rise near Kendari city, with half of the farmers having income sources outside agriculture.

(2) Palanga

Palanga has almost the same percentage of Tolakis and Bugis, and 7% of Javans. The Bugis include persons who immigrated recently, and they are skilled in paddy cropping. The village has 127.5 ha of paddy fields (15% of the entire area). Hills are used to grown mainly cashew nuts.

(3) Kiaea

Lying next to Palanga, Kiaea is composed of almost half Tolakis and half Bugis. Bugis include many recent immigrants. The village has 175 ha of paddy fields (20% of the entire area), with a large proportion of recently reclaimed paddy field. Upland fields are used to cultivate upland rice and corn during the rainy season. Cashew nuts are cultivated on hills. Tolakis until now did

not use cows for plowing, but recently an increasing number of farmers have learned cow plowing techniques for paddy field out of necessity.

(4) Lapulu

65% of Lapulu's inhabitants are Bugis and Bali immigrants. The village has 349.5 ha of paddy fields, which is about 40% of the entire area. Some Bali farmers have as much as 6 ha of paddy field, and the Lapulu is the largest paddy cultivating village in the area. Cashew nuts are produced in the hills.

(5) Lalobao

Lalobao is composed 100% of Tolakis. The village has only 7 ha of paddy fields reclaimed by the project. It produces upland rice, cassava, and corn on upland fields and burnt fields, sago palms on wetlands, and large amounts of cashew nuts on hills. As a Tolaki village, it raises cows, but only one tenth of the head count of villages with immigrants. Currently the use of cows for plowing is virtually nonexistent.

(6) Laeya

Laeya consists of 70% Tolakis and 30% Bugis. The village has no paddy fields. Its agricultural production consists exclusively of upland crops and estate crops. Its 17-ha upland crop cultivation demonstration farm on land reclaimed through the project is expanding.

(7) Sabulakoa

Sabulakoa is almost exclusively composed of Tolakis. Neighboring villages are peopled by Bali immigrants deploying fertile paddy fields, and as a result Sabulakoa has 20 ha of paddy field. It produces upland rice, cassava, and corn on upland fields and burnt fields, sago palms on wetlands, and cashew nuts on hills. Part-time farming is on the rise in the environs within commuting distance of Kendari city.

(8) Onewila

Onewila is composed 100% of Tolakis. The village has 14 ha of paddy fields. It produces upland rice, cassava, and corn on upland fields and burnt fields, sago palms on wetlands, and cashew nuts on hills. Part-time farming is on the rise, with farmers increasingly going to work in Kendari city.

2.3.2. Changes in rural society resulting from implementation of project

(1) Changes in distribution of agricultural products

a) Rice: Shift from sale of unhusked rice to sale of polished rice

Among the changes in the distribution of agricultural products caused by the project, the major one was the shift from the sale of unhusked rice to the sale of polished rice, which has been mainly occurring in suburban areas. According to the 1994 survey report, the sale of polished rice brings benefits in about 30% more than that of unhusked rice. The village of Ranometo, which lies in a suburban area, sold exclusively polished rice. However, the situation in Lapulu, which lies in a distant area south of the Boroboro mountain range, is different. Large-scale farms there that were selling the rice production of 4 ha of double rice cropping as polished rice at a higher price as reported in a survey two years earlier, decided to revert to selling unhusked rice to dealers due to the inconvenience of having to ship the rice.

According to the survey conducted this time around, the difference in the sales price of unhusked rice and polished rice has shrunk to 10% since 1994. This may be due to changes in the rice procurement patterns of channelers as a result of expanding sales of polished rice by farmers.

b) Cashew nuts: Shift from sales of unshelled cashew nuts to sales of shelled cashew nuts

Cashew nuts are an agricultural product that accounts for the largest cultivation area in the project district. They are grown under extremely extensive cultivation conditions, and harvested nuts were usually sold to dealers unshelled. During the project, advanced areas and farmers shipping shelled cashew nuts were surveyed and studied, and as a result shelling machines were introduced. As selling shelled nuts brought in more revenues, the production of shelled cashew nuts expanded. Whereas unshelled nuts sold for Rp1,500/kg, shelled cashew nuts sold for Rp10,000 and thus the shelling cost is Rp8,500. That not all farmers are inclined toward shelling cashew nuts seems however to indicate that the processing cost noted above is not attractive to them, or perhaps the existence of other problems.

However, a serious problems exists in the distribution of cashew nuts in Indonesia. That problem derives from the fact that Indonesia does not have a world market for its cashew nuts, and its processing plants are in a weak position.

Cashew nuts produced in Indonesia are shipped to India in an unshelled state, where they are processed and then resold as Indian cashew nuts to the world markets. Indonesia thus produces only the raw material. If Indonesia were to process and ship its cashew nuts as final products, the shipping prices of farmers would rise and Indonesia's markets for shelled cashew nuts would

expand. Indonesia's production of cashew nuts and related farmers would greatly benefit. It is possible to improve the distribution of cashew nuts through the establishment of a new system and guidance of related industries, in a manner similar to the shift from raw wood exports to sawed lumber exports that was formerly converted by the Indonesian government.

Whether cashew nut shelling technology becomes established in Indonesia depends on the adaptation ability of the market. For example, even if producers raise their technological level, failure of the market to respond likewise to these technological achievements would cause failure of the production technology to become established.

In order to raise the adaptation ability of the market, it is essential that education be actively implemented by the government for supplementary market organizations and systems such as trade associations, industrial associations, and so on. Unless such measures are taken, the power of adaptation of the market will make very little progress.

(2) Changes in agricultural product organizations and farmer behavior

a) Changes in farming customs including farm work

Indonesia has a mutual assistance system called Gotong Royong. In the case of agricultural production, this system is accompanied by Bawon, a system whereby crops are divided according to a predetermined ratio (profit sharing). As the level for each participant within the group is fixed, unit yield inequities tend to occur. This system causes irrationalities as it brings about a low level equalization of agricultural production.

Recent Bawon conditions in Java were reported as follows. "For example, a system based on the economic concept of the village paying a rather high remuneration to all who participate in rice reaping has emerged. Now farmers have started selling their crops to dealers some time before they have been harvested, or they contract to harvest workers for a fixed sum." ("Indonesia Twenty Years Later" by Aiko Kurasawa).

The majority of the district's farmers perform farming under the Gotong Royong system. All Bawon participants are farmers. They all share the concept of labor remuneration based on results achieved through complementation of their mutual labor insufficiencies, and their situation is somewhat different from the Bawon system as practiced by Javan farmers, wherein anybody can participate.

Table 3 - 19 Bawon Changes

Village	Bawon Change	Change in unhusked rice amount (kg/ha)	Tractors (Units)	Crop
Ranometo	3:1 ~ 5:1 → 8:1 ~ 10:1	2,500 → 3,800	0 → 8	Paddy rice
Palanga	4:1 ~ 6:1 → 6:1 ~ 8:1	2,700 → 4,200	0 → 4	Paddy rice
Kiaea	4:1 ~ 6:1 → 5:1 ~ 8:1	2,700 → 4,500	0 → 8	Paddy rice
Lapulu	5:1 ~ 6:1 → 7:1 ~ 9:1	2,700 → 5,500	0 → 8	Paddy rice
Lalobao	3:1 ~ 4:1 → 3:1 ~ 4:1	2,100 → 2,200	0 → 2	Upland paddy rice

The progress of the project has caused a decline in the use of the Bawon system, a commendable result. One reason for this achievement is that, as crops grew considerably, the labor remuneration ratio would become excessive using the division rate used until then. Another reason is farmers plowing themselves using machines or cows and giving fewer labor hours to Goton Royong. Among the villages participating in the project, the fall Bawon participation rate has conspicuously fallen in the four villages that have expanded paddy fields.

b) Farmers' groups and water users associations

Farmers' groups were formed to promote the Bimas Plan, and water users associations were established in each village as part of this project. Paddy cropping is completely dependent on water and requires group coordination related to the management of water resources. Thus, it is necessary for farmers who have recently started paddy cropping to gain experience in water management.

(3) Changes in farmers' lives

a) Movements in agricultural income

Among the eight villages participating in the project, Ranometo and Onewila depend exclusively on agricultural income as there are no opportunities for side work for farmers.

Among the farmers participating in the project, those who have additional paddy field have seen their income increase considerably. As mentioned previously with regard to changes in agricultural production, paddy output jumped up due to the paddy field area increase plus a unit yield by far exceeding that of existing fields thanks to the use of improved cultivation management technology.

Some surveyed farmers reported that their production of paddy, which in 1993 accounted for 46% of a total agricultural production of Rp3,495,000 (now equivalent to Rp4,552,000), jumped up to Rp7,164,000 (1.57 times greater), or 70% of total agricultural output. Although

production costs rose approximately 30%, agricultural production income has increased 70%.

b) Changes in eating habits, particularly shift from sago to rice

The staple foods of the Tolakis are rice and sago. When asked why they reclaimed land for paddy fields, all Tolaki villages answered that it was so that they could achieve self-sufficiency. However, in the same way as Ranometo and Lapulu, where there is no upland paddy cropping, Tolakis are also switching from sago to rice, and more specifically, to paddy rice.

(4) WIDs

As an integrated project, this project also engaged in the construction of community wells (4 to 6). The students of technical high school in Kendari city created the well frames for well wall protection under their practice curriculum. Then these frames used to build the community wells. Indonesia being a male-dominated society, men decided everything including the location of the wells. Until then, women had not expressed too much dissatisfaction, but along the way, women started participating in the selection of the well locations. The construction of the wells was received extremely well, and even now, villagers come to borrow the well frames described above for use in constructing wells themselves.

The rice mills constructed in each village are used by all the villagers. They even bring in their upland paddy rice to be turned into polished rice. The rice mills have freed women and children from milling labor. Formerly, in Ranometo, which lies in a suburban area, the cultivation of vegetables was led by men. Now, women want to produce vegetables in their garden and sell them themselves, and are learning cultivation techniques for this purpose. This represents a development that was not foreseen initially.

(5) Changes in village overall

The project district is undergoing strong economic growth. The economic development of Indonesia as a nation is contributing to the development of the infrastructure, such as the construction of roads and the introduction of electricity, even in the project district, which is an outlying area, and stimulating the consumption culture of its residents. This has resulted in the project district's residents demanding bicycles, motorbikes, TVs, and other things. Changes of the social welfare in the project districts can be inspected as following facts.

i) Improvement of school attendance

An examination of the school attendance for elementary schools and junior high schools in the eight villages participating in the project shows that the number of enrollment in

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elementary schools increased 18% in Ranometo, 37% in Kiaea, and 18% in Lapulu. Since the population of Ranometo, which is in a suburban area, has been increasing at the same rate as elementary school enrolment, the increase of the latter cannot be attributed entirely to the project. However, the increase in elementary school enrolment in Kiaea and Lapulu is in large part due to the fact that incomes have risen through increased production of rice. In Indonesia, compulsory education is free, but Rp600 are needed monthly for textbook and other fees, in addition to Rp5,000 for school building maintenance and other costs. Since the population breakdown by age is not known, school enrolment figures are not available.

With regard to junior high schools, they exist in only three villages, and villages that do not have one send students to neighboring villages that have one. Therefore, the percentage of students who go on the junior high school cannot be established. The percentage of students going on to junior high school is estimated as follows based on district statistics. A comparison of enrolment in elementary schools and junior high schools per grade seems to indicate that approximately 60% of elementary schools go on to junior high schools (See Table 3-22).

Table 3 - 20 Movements in Number of Students in Kendari District

	No. of schools (1)	No. of teachers (2)	No. of students (3)	No. of students per grade (3)/6	No. of teachers per school (2)/(1)	No. of students per school (3)/(1)	No. of students per teacher (3)/(2)
Elementary school				(3)/6			
1990/91	615	4,627	86,322	14,387	7.52	140.36	18.66
1995/96	638	5,239	96,636	15,939	8.21	149.90	18.25
Junior high school				(3)/3			
1990/91	124	1,345	24,205	8,068	10.85	195.20	18.00
1995/96	114	1,678	29,675	9,691	14.72	257.61	17.50
High school				(3)/3			
1990/91	67	942	14,828	4,942	14.06	221.31	15.74
1995/96	53	1,288	17,919	5,973	24.30	338.09	13.91

Note: Prepared from Southeast Sulawesi Province statistics

ii) Purchases of durable goods (bicycles, motorcycles, cars) and electrification

With regard to purchases of durable goods and electrification, Palanga, Kiaea, and Lapulu are seeing increases in the purchase of bicycles and motorcycles, and electrification is also progressing.

2.4. Results of survey and evaluation missions

(1) Planning arrangement survey team (April, 1992)

Although there were delays in the first year of the project's implementation, these were only in the early stages and since then the execution scheme has been built up, with strong efforts

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from the expert team, cooperation with counterparts and delivery of mechanical equipment to the field. Moreover, the Ministry of Agriculture and other agencies have shown the Indonesian side's enthusiasm for the project. Bearing these positive factors in mind, there does not seem to be any need at this time for a major revision of the five-year plan for the TSI. In future, JICA technical guidance teams should give this matter further consideration if the situation in the field merits it.

In addition to this project's "hard aspects, it is significant that local representatives, and the officials concerned in local government joined in the farmer's participation to take the initiative in the project's planning process. The counterparts involved in all types of technological transfer also played an important role. Two counterparts were posted in each department, but as they were all very young the age difference between them and the long-term experts was perhaps too great, they lacked standing as instructors in the communities, and there were not enough people with suitable specialist skills. Also, of the two counterparts in each department, one was only serving part time, which may have been due to a lack of confidence for full-time work.

Related government staff, key farmers, farmer's groups and others must receive training in field such as cultivation, land reclamation and the reinforcement of farmers' organizations, but there is no clear willingness on the part of the Indonesian Government to spend money on such training. The Indonesian Government must establish proper budgetary measures for achieving the aims of the project.

(2) Interim evaluation (October 1993)

The R/D for this project came into effect from March 1991, and the first team of experts was dispatched in June of that year to discuss specific methods of cooperation with their counterpart (C/Ps) and conduct the detailed field survey. Based on those discussions, the bulldozers, backhoes, dump trucks and other heavy equipment important for the initial stages of the project cooperation were procured locally, but the delivery of this equipment was delayed, being delivered between March and August 1992. In this period the delays in dispatch of experts from Japan and the delivery of heavy equipment were compounded by delays in filling the counterpart posts. Furthermore, many of the counterparts appointed were not adequately experienced in the experts' fields. Overall, a delay of around one year resulted, relative to the initial plan.

However, as the land development, construction of agricultural and rural facilities and other facilities such as model fields were completed in Ranometo, which was where construction began earliest, the perception of the project's direction and effects on both the sides became clearer. As this was the first participatory development project, both the sides appear to have experienced

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some uncertainty over how to proceed in the initial stages of the project's implementation. Deliberations and coordination took longer than expected, but by now it is our impression that the completion of works in Ranometo has given a clearer sense of the way forward. From now on both sides will approach the implementation of this project with much greater confidence. For future cooperation, the technical ability of the counterparts can be expected to advance rapidly, as they are well-versed in the project's implementation.

The project sites scheduled for future development are situated in remote areas, so it will be extremely difficult to make up for lost time and complete these areas on schedule. It is likely that the period of cooperation will have to be reviewed at the time of the final evaluation survey.

The Indonesian side was united in emphasizing sustainability, the eradication of poverty and reduction of regional disparities as their prime concerns in the direction of agricultural policy. The content of this project fits neatly with the concerns of the Indonesian side, and it was our impression that they were deeply concerned with the outcome of the project. Therefore, in the implementation of this project, it is important that the Japanese side be flexible in accommodating Indonesian policy intentions out of consideration for the strength of these intentions.

Once the infrastructure has been improved, the "soft" service-related fields which improve farming practice and strengthen farmers' organizations play a major role in maintaining the project's forward momentum. In the project area, the villages are a diverse ethnic mix of indigenous Tolaki with Bugi settlers and other settlers from Java and Bali. Each of these peoples has its own culture and customs and their levels of farming expertise also differ. A thorough survey of these peoples and an approach which suits the characteristics of each is vital for the implementation of this project.

Working groups have been set up to build the farmer's enthusiasm for the project through participation in the construction of irrigation canals, and to enable smoother implementation of the project. Organizations are being built for the operation and maintenance of most of the equipment provided, and of the facilities constructed. They are also expected to contribute to the sustainability of the project. In Ranometo a portion of the wages earned from the participation of nine farmer's groups in the construction of irrigation canals was used to establish a fund totaling Rp3.2 million.

The voluntary creation of such independent funds by the farmers produces great benefits for the project. The Water Management Associations are being set up as planned and will begin service in the future. The farmer's future application and management of the funds which have been established should be studied together with the farmers as a way of raising their sense of

participation. Some progress has been seen in Ranometo by now, but organization of farmers in the other seven villages has not even begun.

The farmer's organizations in Ranometo should be built up with government support so that the influence of their example can spread to the other seven villages. This kind of organization of the farmers is a vitally important issue, one which has a decisive effect on the evaluation of the project. At this stage of the project, steady progress must be made in this regard, and at the same time, the effects of the project should be aggressively publicized whenever important people visit the area, and through the use of billboards etc.

(3) Final evaluation (November 1995)

The survey, conducted jointly with an Indonesian survey team, evaluated the points detailed below in line with the "Evaluation Guidelines" of JICA.

This project is characterized by its use of farmer's participation, with a portion of the Indonesian side's local costs for the necessary land improvement, construction machinery etc. being substituted by the provision of model infrastructure improvements and the provision of equipment and materials in order to move the project forward smoothly. In particular, it is important to understand what is meant by "agricultural and rural improvements through farmer's participation" and this point is given close consideration in this final evaluation. The elements of this project which are evaluated as being well managed are analyzed below.

- a) This was "aid with a human face" in which discussions and coordination with the local farmers began from the start of the project plan and the project proceeded with their agreement.
- b) One form of participation was the way farmers provided their labor for the excavation of irrigation canals. The counterparts were central to this process, which gave the farmers a sense of ownership of the facilities.
- c) Agricultural and rural facilities which genuinely met the needs of the villages, such as rice polishing stations, shared wells, cattle fattening centers, drying facilities and seed stores, were constructed with the wholehearted participation of the farmers. This raises the farmer's sense of involvement in the building of the villages concerned, and persuaded them that these facilities should be maintained and managed by farmer's organizations.
- d) The creation of stock funds and the collection of fees for the use of rice polishing stations by Water User's Associations is highly desirable as a means of preparing funds for the maintenance management and replacement of facilities in the future. These measures are

steps towards the independent development of the Water Users' Associations.

- e) Effective development methods have been established for the use of heavy equipment in the development of alang-alang grassland and the preparation of paddy fields in wetland areas. Operation skills are being transferred to inexperienced operators selected from among the farmers.
- f) The development concept of this project has been taken as the model for other projects developing in Southeast Sulawesi Province. These include projects financed by the World Bank and joint projects for integrated agricultural development funded by the Ministry of Agriculture from its own budget.

The final target of this project is to develop independent organization toward establishment and sustenance based on the successful results of this JICA technical cooperation.

A wide variety of agencies have pursued diverse activities towards the attainment of this project's goals, achieving considerable success. However, if this work is to continue and spread further after the end of the project, those concerned have to be aware that great efforts will be required. These efforts will be the task of the Indonesian government. Therefore the government must establish the organizational structures necessary for the continuation of this project. This will require coordination between the agencies involved, and a firmly established role for the counterparts, who have gained transferred skills. Even if the establishment of such an organization is impossible, the various agencies will still be capable of a wide range of activities. However, strong cooperation between agencies will still be required. The regional government is the ideal organization to lead the strengthening of cooperative inter-agency links. This is in line with government guidelines calling for greater regional devolution of powers. The solutions for the kind of independent development described above must be prepared during the R/D period.

The Sixth National Development Plan included four central projects in the agricultural sector. Elements of these projects are modeled on this project and other parts are very similar in content. Therefore even after the Japanese cooperation with this project ends, it can continue to be developed using elements of the plans for these central projects. Even the parts of these plans which are not suitable for application to this project could be developed using the local government budget, foreign loans or bank loans.

The stock fund system, established as part of the activities of the farmers' organizations set up within the project, merits close attention as a way of recovering costs using independent financial resources. This system of shared investment by farmers can be expected to fund the purchase of materials, infrastructure improvements, the maintenance management of machinery

and other applications.

Technical cooperation has transferred skills to the counterparts and in some parts of the project's work the counterparts are taking the lead. During the R/D period it is an essential condition for the attainment of the project's objectives that most of the counterparts who have acquired transferred skills remain rooted in the project.

One aim of this project was that it should not end with the transfer of skills to the counterparts, but rather that the skills would be of direct benefit to the farmers. That was the purpose of the training of counterparts. Some of the counterparts have no more than a shallow knowledge of their assigned specialist fields. Considering the wide range of subjects they must give guidance in, further guidance will be required for some time to come.

The establishment of the kinds of organizational measures described above is a precondition for the training of successors to the counterparts. The role of the local government is important in this regard.

3. *Effects of the project*

Southeast Sulawesi Province "Integrated Agricultural and Rural Development Project" was implemented in 8 villages in 5 districts in Kendari, based on farmer participation, for the development of farm land, the establishment of modern agricultural facilities, and life and environment facilities, and the introduction of agricultural technology. The farmers and villages that participated in this project observed development results based on the implementation of the project, but since this project is an integrated development project, it is bound to have various impacts including some that cannot be measured. The results that appeared through the implementation of this project were established through "with and without project" comparisons.

3.1. *Economic effects estimated during planning*

3.1.1. *Labor hours per paddy cropping task per unit area*

Five average farms cultivating 1 to 2 ha of paddy field were selected for a survey on labor hours spent on paddy cropping. As shown in Table 3-21 and Table 3-22, labor hours spent on paddy cropping ranged between 400 and 700 hours/ha, and plowing was the task that accounted for the most hours. Farmers plowed the paddy field themselves, then planted them, and harvesting was done through joint work by Kelompok Tanis.

The planned labor hours for plowing and threshing following harvesting were shorted by 34 and 100 hours, respectively, through the use of two-wheel tractors and power threshers. Family labor involved on average 2.5 persons, 7 hours per day, and the maximum labor hours per family was set at 17.5 hours. Outer labor hours mean total number of persons by work, which are dependent upon the past Kelompok Tanis. Thus through the mechanization of plowing and harvesting, significant improvements were obtained both in terms of quality and labor hours.

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Table 3 - 21 Labor Hours by Task per Paddy Ha (hours)

Item	Farm No.	Nursery bed No.	Plowing	Paddy planting	Weeding	Fertilizing	Agricultural chemical spraying	Harvesting	Total
Current status	Survey farm 1	14	168	70	12			140	404
	Survey farm 2	20	180	120	30	2	8	200	560
	Dry season average	17	174	95	21	2	4	170	483
	Survey farm 3	14	360	96	6			160	636
	Survey farm 4	20	378	110	8	2	2	190	710
	Survey farm 5	15	336	90	12	2	5	130	590
	Monsoon average	16	358	99	9	2	2	160	646
Plan	Soybean		280	120	140	2	4	150	696
	Paddy rice	6	34	90	16	4	10	100	260
	Soybean		30	100	70	5	10	100	315

Table 3 - 22 Labor Hours Spend on Plowing of Paddy field

Farm No.	Plowing days	No. of workers	Number of daily labor hours	Total labor hours	Overall labor hours	Plowing labor percentage
Survey farm 1	14	2	6	168	404	41.6
Survey farm 2	15	2	6	180	560	32.1
Survey farm 3	30	3	4	360	636	26.6
Survey farm 4	27	2	7	378	710	53.2
Survey farm 5	16	3	7	336	590	56.9

(Oral survey of farmers)

3.1.2. Evaluation criteria

A list of evaluation factors is shown in Table 3 - 23, Table 3 - 24, and Table 3 - 25.

1,500 ha of new farm land was developed during the project. Through intensive cropping, a cropping rate of 300% is projected, and the unit yields for paddy defined by the Sulawesi Province 5-year was employed. A 20% increase is projected for other crops.

Table 3 - 23 Increase in Cropping Area (Newly Developed Farm Land)

Land type	Current status	Newly developed farm land	Planned
Paddy fields	341	1,040	1,381
Upland field	940	120	1,060
Estate	320	340	660
Total	1,601	1,500	3,101

(ha)

Table 3 - 24 Yield Increase through Improved Cropping Rate through Intensive Farming

Land type	Current status	Planned
Paddy fields	217	300
Upland field	276	300
Estate	100	100

(%)

Table 3 - 25 Unit Yield, Selling Price, and Income Ratio Resulting from Improvement of Irrigation Facilities and Farming Techniques

Crop	Current status	Plan	Price (Rp/kg)	Income ratio (kg/ha)		
				Cropping increase	Yield increase	
Paddy	Monsoon harvest	2,894	3,473	200	71.2	91.8
	Dry season harvest	2,512	3,473	200	71.2	91.8
Upland paddy		1,624	1,950	200		88.1
Soybean		943	1,132	700	73.4	92.4
Corn		1,506	1,807	200	74.2	92.6
Peanuts		889	1,067	75	57.3	87.8
Cassavas		10,383	12,460	350		84.6
Coconuts		847	1,016	275		87.4
Cashew nuts		412	500	1,000	62.4	89.3
Cocoa		722	866	1,260	56.4	87.6

3.1.3. Evaluation of income amounts (Evaluation of crop production increases)

Income figures calculated based on the evaluation criteria listed above are shown in Table 3 - 26. Income figures are as follows: Rp2,252,509,000 of increased income compared to the current income figure of Rp1,703,467,000, thus a planned income figure of Rp3,955,976,000. This total income figure is shared among 1,536 farms, thus a current average of Rp1,109,000 per farm, and a planned average income figure of Rp2,576,000, or approximately a 2.3-time increase. Using these figures, one obtains a daily average (365 days/year) income of Rp3,038 and a planned income of Rp7,057. Currently the daily labor wage in Kendari city is Rp2,000.

Table 3 - 26 Income Calculated Based on Price Factors (Unit: Rp1,000)

Land type	Current status	Planned	Increase	Part of cropped increase	Part of yield increase
Paddy fields	436,271	2,083,881	1,647,610	1,583,109	64,501
Upland field	1,120,031	1,591,135	471,104	195,075	276,029
Estate	147,165	280,960	133,795	102,359	31,436
Total	1,703,467	3,955,976	2,252,509	1,880,543	371,996
Income per farm	1,109	2,576	1,467	1,224	242
Total number of farms					1,536

3.2. Economic development of Indonesia during project implementation

3.2.1. Economic development of Indonesia

The Indonesian economy has been developing satisfactorily in recent years. The GDP growth rate was 6.5% in 1991, 6.5% in 1992, 7.3% in 1993, 7.0% in 1994, and 8.1% in 1995. GDP per person for the first time exceeded the US\$1,000 level, rising to US\$1,023. The GDP

growth rates by industry in 1995 were led by 11.1% in manufacturing, domestic demand (24% of total GDP), and 7.7% for trade and services (16.8% of total GDP). Agriculture (16.1% of total GDP), which posted good growth for cereals, posted a 4% growth.

The expanding national economy is supporting private consumption. Private consumption in 1995 was boosted as sales of cars grew 19% (380,000 units) over the previous year, and sales of motorcycles grew 34% (1,040,000 units), both figures the highest ever. Other big merchandise items also sold well, including color TVs (100% growth, 1,300,000 units), air conditioners (42%, 170,000 units), and refrigerators (67%, 700,000 units).

3.2.2. Economic development in project district

The population of Kendari, capital next to the project district, reached 150,000 people and Kendari was established as a city. This city's largest industry is the marine products industry, and stockbreeding is the largest industry in the hinterland. The provincial capital of Kendari and its environs have a more developed road infrastructure and a motorization that is 10 times more advanced than the project district. The city is well kept and vibrant with activity.

3.3. Project plans and results

The project plans and results in each of the village participating in the project are listed in the attached tables (see attachment AT - 130). The main projects were the reclamation of land for paddy field, with 170 ha planned and 54.9 ha achieved, the reclamation of land for upland fields, etc., with 60 ha planned, 32 ha achieved, and the construction of roads, with 26.3 km planned, 42.3 km achieved.

3.4. Project implementation method

The initial project plans and actual achievements differ considerably. This reflects the fact that the project was implemented using the participatory approach. Prior to the implementation of the project, plans were explained to farmers, they gave various feedback, and based on talks and coordination among the provincial government, agricultural offices, villagers, etc., the project plans were finalized. Thus the project plans, in whose drafting the farmers participated, became "farmer's plans." During this time, counterparts participated in various surveys.

The project plan decision process is described below taking Kiaea as an example.

The initial plan, as shown in the farm land area movements and project results of the attached tables (see attachment AT - 130), was to reclaim 20 ha of paddy field and build 2 km of roads. However, the farmers pointed out that this being a new immigration area, it was still lacking

an adequate road network, and said that they would like the project funds to be channeled instead to road construction. They also indicated that if water resources and canals could be provided through the project, they would then be able to develop paddy field on their own. As a result, paddy field development was excluded from the project, and instead road construction was expanded from 2 km to 9.58 km. Paddy field, which covered 30 ha at the time of the project planning, increased to 175 ha as farmers developed 145 ha on their own after water resources and canals were provided through the project.

3.5. *Changes in agricultural production and agricultural income in project district*

(1) Changes in agricultural production

The largest change in agricultural production resulting from this project was the dramatic expansion of paddy cropping. The changes including the following.

- 1) The paddy area was expanded 3.2 times compared to when the project started. 54.9 ha were directly reclaimed through the project, and 474.6 ha were reclaimed by the farmers themselves using the water system developed by the project, while 74.5 ha were developed using two other water systems.
- 2) The irrigation water supply being stable, worries about droughts have been eliminated, and as a result, farmers now feel safe about using costly fertilizers. As a total effect of securing water resources and improving cultivation management, the unit yield for paddy field has considerably increased. In Lapulu, which has good soil, the yield, which used to be in the vicinity of 3,000 kg/ha, has increased to between 5,000 kg/ha and 6,000 kg/ha.
- 3) Demonstrations of direct sowing of paddy were also held, and direct sowing is now employed by some farmers. Production costs (fertilizers and agricultural chemicals) have increased, but production has increased even more (per farmer surveys).
- 4) The diversification of crops has also been achieved through guidance by experts, with farmers starting to cultivate vegetables and peanuts. Although they are on a limited scale, these new crops are becoming established.
- 5) The mechanization of agricultural work started with the supply of tractors by the project, and the private ownership of tractors has started. Also, the use of small farming equipment for plowing is increasing, as is plowing using cows, and as a result, labor hours are becoming shorter.

(2) Movements in agricultural income

Among the eight villages that participated in the project, all villages except Ranometo and Onewila do not have side job opportunities for farmers, and as a result depend exclusively on agriculture as the source of their income. Farmers participating in the project who secured new paddy field saw their income increase considerably. In addition to the larger area they cultivated as a result, this was due to the achievement of a unit yield vastly superior to that of existing paddy field thanks to the use of improved farming techniques.

The farmers in one survey indicated that paddy rice represented 46% of their total agricultural production of Rp3,495,000 (now worth Rp4,552,000), whereas their production of paddy rice has now expanded to Rp7,164,000 (a 1.57 increase), and the paddy share has now reached 70%.

Although agricultural production costs have risen approximately 30%, production income has risen 70%.

3.6. Economic effects

(1) Economic effects forecast during planning

a) Conditions for measurement of effects

The following conditions were set for the economic assessment during the planing stage.

- i) Economic evaluation indicates the internal rate of return (IRR).
- ii) Two types of planed yield units were used in agricultural production plans.
- iii) The area for which results were measured was the area directly under the supervision of the project.
- iv) Project costs consisted of total project costs including local costs on the Indonesian side.

b) Measured results

The economic results forecast during the planning stage were as follows.

- | | |
|---|------------|
| i) Higher unit yield for Kendari district | IRR=11.95% |
| ii) Targeted unit yield for REPELITA-V | IRR=14.14% |

(2) Actual economic effects

a) Conditions for measurement of effects

The economic evaluation was made based on the following conditions at the time of the project.

- i) Economic effects indicate the internal rate of return.
- ii) Agricultural production corresponds to the unit yield currently achieved.
- iii) The area for which economic results are measured is the area directly under the supervision of the project and the area developed with funds from the Ministry of Public Works related to this project.
- iv) Project costs consist of the total project costs, related costs of the Ministry of Public Works, and costs borne by the farmers themselves.
- v) Total project costs consisted of 1) total operation costs, and 2) Costs subtracting allowance of counterparts.
- vi) The value of project costs of the past fiscal year are adjusted to current prices.

b) Measured results

The achieved economic effects were as follows.

- | | |
|---|------------|
| i) Using total costs | IRR=7.58% |
| ii) Subtracting allowance for counterparts on Indonesian side | IRR=17.43% |

(3) Future development of economic effects

The economic effects based only on achieved unit yield as measured immediately after the implementation of the project amounted to very large figures. The reason that the farmers worked hard together at land reclamation for paddy fields is understandable.

The unit yield for paddy set as a target during the planning stage has already been exceeded. In a matter of a few years, farmers will have mature paddy fields and mature upland fields, more experience in cultivation management and water management for paddy, and as a result their agricultural production will rise as will their income.

4. *Opinions and recommendations of experts and counterparts concerning their experience on the project*

4.1. *Opinions of experts*

(1) Agricultural and rural development planning field

a) Project formation

- The agricultural and rural development plan spans many specialized fields, and it is important to implement planning that fully answers the needs of farmers by ensuring their participation, based on close cooperation among various fields. It is necessary to always keep in mind that the planning process for this development plan and the quality of the basic planning will have the greatest influence on the future development and expansion of the villages.
- Drafting the plan requires comprehensive knowledge and experience in the area of agricultural and rural development, and the study and consideration of environmental protection is of greater importance than ever. Therefore, coordination with experts from other fields, government organizations, universities, and NGOs are ever important.
- Drafting development plans that answer needs based on current conditions and future forecasts is required, but reviewing plans adapted to changes in conditions occurring during the project implementation process is also important. Achieving this requires more flexible planning, including a full dialogue and exchange of ideas with beneficiaries, and seeking the advice of third parties.

b) Participation of villagers and consensus building

- To the extent that the basic plan is a development plan closely related to the daily lives of the project district's residents, the views of residents must be reflected in the planning, or else it will be difficult to receive the support of the project district's residents in the implementation of the project, and in some cases, project plans may even collapse and have to be abandoned. Concrete ways of surveying residents that were employed included questionnaires and village meetings, studies by village organization representatives, and discussion groups.
- The selection of locations for the construction of agricultural facilities requires the prior approval of local authorities. Generally, rural society is closed, with people of influence dominating weak farmers, and in various instances there were complications. When the views of the two sides ran parallel and no compromise was

possible, it was often necessary to change the negotiation location, call a truce during which the parties observed each other's reaction, or else give precedence to the local will, in order to ensure the smooth progress of the project.

c) Others

- Following the assessment of the results of the project's activities by a third party, the contents of the final assessment of the project performed between September and October 1995 by a joint Japanese-Indonesian Evaluation Mission should probably be reassessed, and experts review the project's achievements.

(2) Agricultural and rural infrastructure development field

a) Future issues

- At the beginning of the fiscal year, an implementation budget application for the fiscal year is submitted to JICA headquarters, and the budget is allocated between the end of November to the beginning of December, then the project book is prepared, and the construction ordering schedule must also be set, but by this time, it is already the monsoon, and civil works such as land development are difficult unless done during the dry season. Therefore, the allocated budget cannot be used up during the year, and it is necessary to submit budget carry-over applications every year. On the other hand, Indonesia has steep inflation, which results in large price differences between when budget proposals are made and when constructions are ordered, and as a result, it is not possible to implement projects as originally planned. Shrinkage of the actual purchasing power of the allocated budget is handled by reviewing construction contents and ancillary structures, with the aim of cutting as much as possible construction costs. Unless the budget allocation process is improved, persons in charge of project implementation will continue to experience great difficulties as described above.
- Six types of farming plans have been implemented in the eight project areas, through which land development was performed. Due to ethnic and cultural differences among original residents and settlers from Java and Bali, there are important differences in needs regarding paddy field. At the four villages composed principally by original residents, and particularly at the three villages performing land reclamation for paddy, spontaneous reclamation by farmers is expected in the future.
- Per the project implementation plan, land development and the construction of farming facilities have been completed. Relegation of these facilities, etc., as promptly as possible, as well as creating maintenance organizations and providing management guidance are considered to be necessary.

b) Recommendations

- In the case of Onewila, which has many swamps, drainage was improved, attachments for hand tractors were modified for use in swamps, and techniques for reclaiming land for paddy field were developed and implemented. However, farmers are still considered to require further technical guidance by experts regarding the use of hand tractors for reclaiming paddy land. Fortunately, there is a yearly follow-up, and if technical guidance regarding the use of hand tractors for paddy land development is performed again, farmers may be able to develop paddy land on their own.
- The counterparts provided were MOA staff who were far from being specialists in the required fields, but through daily efforts, they became able in the areas of agricultural infrastructure and facilities planning, and design, estimates. In the future, this will be used as a model for similar projects, in which the same technology will be used, thus contributing to the development of the region.

(3) Construction supervision field

- Roads, community wells, and meeting facilities were created, contributing to raising the level of public facilities of villages. The development of paddy field was demonstrated through the use of model paddy field at each village, and positive results can be seen at Palanga, Lapulu, and Sabulakoa. The development of upland fields was actively done in Laeya under the guidance of farming experts, and the village is gradually breaking away from its former practice of shifting cultivation.
- Simple intake weirs for irrigation purposes were formerly created by farmers themselves, but would collapse every time there was a flood. A new design was used in this project thanks to which the total area of paddy field is being expanding. Moreover, reservoirs are being put to various uses in addition to irrigation, including fish farming and ablution locations in villages.
- Several of the counterparts who participated in the project were replaced during the course of the project, but they now play central roles based on the technology they learned on the project on the posts they have gone back to.
- Except for those sent by the province's Public Works Office, counterparts were all agricultural scientists without knowledge of civil engineering, and only a small amount of technological transfer could be done for them. However, with regard to the progress of the project, sufficient technological transfer is believed to have been achieved.
- Local briefing sessions were held during which the views and desires of farmers

were directly obtained for incorporation in implementation planning, something that had not been done before. Moreover, based on the implementation plans, directly managed work and works done by farmers' groups were executed during which counterparts directly operated heavy machinery and gave directed farmers' groups for works and work management, something that we are confident will be used again in implementing development projects within the province in the future.

- The concept of quality control for contract work was entirely nonexistent in the beginning. Concrete and mortar were mixed by hand on the ground, and even when machine mixing was used, we were surprised to see the mixed material laid temporarily on the bare ground. Even counterparts with considerable experience would say that the construction process was irrelevant as long as the appearance (shape) of the finished product looked nice. These problems were gradually remedied, but their roots remain deep.

(4) Equipment operation and maintenance field

- The maintenance of heavy machinery requires equipment maintenance experts, and the repair of problems in equipment on the field is a maintenance challenge. Since many types of equipment have been provided through this project, it is not possible for locals to learn all repair technologies required, including those for heavy machinery. Counterparts, who have many years of schooling, are prompt to speak out but do not like getting their hands dirty. Because the sales offices for heavy machinery are located in the provincial capital, Kendari, it is proper that heavy machinery be repaired from now on at the workshops of these sales offices.
- Young people selected in each village were trained in how to perform maintenance of equipment, but once they acquired equipment maintenance skills, several went to work in the city, rather than staying in their village.
- Organization is an essential factor for maintenance. The provided equipment is to be shared among all villagers, and the implementation of this shared use by villagers is a problem. Farmers' organizations for the use of equipment have been formed in each village, but how the equipment will be managed remains an issue that needs to be addressed.
- Young persons selected in each village were also trained in the operation of heavy machinery, but the transfer of operation skills is not an easy task. The grading of land reclaimed for paddy field in particular requires extensive training, and is a difficult task even for operators with many years of experience. The heavy machinery operators trained during the project achieved a technical level high enough to allow them to work at various work sites.

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- The introduced farming equipment was relatively simple equipment not requiring particularly advanced operation skills, and it is enough to master the contents covered in the training administered during the project.
- (5) Farming guidance field
- a) Future issues: Technical items whose implementation should continue even after completion of the project
- Newly developed paddy field and reclaimed upland field land has high acidity, excessive iron, or consists of lean sandy soil, and is not ideally suited for cultivation. Several measures exist to remedy this, including soil improvement, cultivation technique improvement, and the selection of optimum crops, and further study in this field is required.
 - The Tolakis, who are traditionally a mountain people, are inexperienced in paddy cropping, and are particularly prone to rejecting trans-planting work, which is particularly exacting. Therefore, studies on direct sowing of dry paddy field, as well as demonstrations of this technique and enlightenment and diffusion work is required.
 - Ranometo has a lot of part-time farmers who also hold a job in the city, and thus a strong inclination toward mechanized farming. Further studies on the possibility of direct sowing on wet fields combined with the substitution method are required.
 - The Tolakis have an extremely strong interest in upland paddy cropping. Upland paddy cropping is particularly indispensable for switching from shifting cultivation to fixed cultivation. Based on the soil conditions of the area, further studies about more stable upland paddy cropping techniques and crop selection are indispensable.
 - Immigrants have a strong inclination toward cultivating paddy, and the introduction of secondary cropping and upland field cropping are important themes. On the other hand, further crop diversification based on the selection of suitable crops is indispensable for the fixed cultivation by the Tolakis. The design and establishment of a suitable cropping system that is stable and viable under the existing soil and water conditions is required.
- b) Recommendation: Importance of enlightenment and diffusion for production activities in farming stage and environmental development
- The current technical and awareness levels of extension workers are still low, and more long-term technical guidance is advisable. This should include the continuation of the training of mid-level technicians that was started by this project, further

development of teaching materials, and stronger guidance and counseling activities regarding extension methods and techniques at extension worker conferences.

- In the eight villages that participated in the project, Tolaki farms are particularly poor, and the provision of fertilizers and agricultural chemicals is essential for enabling them to switch from shifting cultivation to fixed cultivation and secure a stable income. We are convinced that the stock fund system is the only way to make this possible, and recommend that this system be further reinforced.
- Compared to Java island, the project district has a low population density and the labor supply in rural areas is thus lower. Therefore, there are many fallow farm lands. In such underpopulated area, the mechanization of agriculture is considered to be indispensable for raising productivity. Studies about the suitability of mechanization including economic analysis are therefore required.

(6) Farmers' organization promotion and reinforcement field

a) Emergence of new types of farmers' organizations and reinforcement of such organizations through project activities

- Along with infrastructure development for farming villages, the construction of various facilities, and the supply of equipment through the project, as well as various activities to reinforce farmers' organizations, new types of farmers' organizations have appeared. Among them, farmers' groups in particular have started operating stock funds (agricultural production activity funds), which constitutes a significant development.
- Furthermore, we recommend that, as farming equipment usage associations, activities of farmers' groups for small farming equipment consisting mainly of plows in each village, be integrated with village cooperative units (KUD) in an unified and expanding manner.
- Funds for the management of rice mills probably should also be appropriated as administrative expenses as the usage rate tables established by farming equipment usage associations. Moreover, in order to perpetuate these activities, the maintenance of the equipment should be improved so as to extend the life of the equipment, and it would be desirable to amend the allocation of operation costs so as to maximize the ratio of depreciation expense.
- As future issues based on experiences up to now, we make the following recommendations.
 - 1) That each farm make improving its living standard through the use of suitable technologies (using materials available in the village) its first priority.

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- 2) That it is important that groups that include original residents (women) be selected and made to do their own planning insofar as possible.
- 3) That in cooperation with the farming field, counterparts with regard to the implementation of the project, extension workers, and farmers' groups, be led to work as a team.
- 4) That small-scale projects related to activities in the area's major industries, such as paddy cropping, upland field cropping, and cash crops, be devised.
- 5) That the results of projects be obtained as fast as possible. Also, that an integrated approach enabling support of sales, etc., be taken. We encourage the operation of a stock fund funded with approximately 10% of sales.
- 6) It is effective for groups to carry out the training in terms of the execution for small-scale projects.

b) Technology transfers to counterparts (C/P)

- Communication

This technical expert saw a total of five C/Ps assigned to him over the duration of his post, due to personnel shuffles. They all held technical degrees, and had sufficient specialized knowledge about agriculture and practical experience. As C/Ps, they also were sufficiently proficient, in English, both conversation and writing. One of them also had a master of science and experience studying abroad, in Europe and the U.S.

- With regard to technology transfers, the most important factor is communication. This problem is solely one of linguistic ability, but also involves complex interrelations between social and cultural factors. As a result, although this is difficult, it is important that both parties understand as well as possible mutual differences. Moreover, another practical aspect is that there are various differences related to the standard of living of the technical expert and the C/P, and it is important that both parties understand that they may have a subtle influence on communications. If the expert studied more Indonesian, he would then be able to interact with a greater number of people, and widen his understanding beyond his C/P.

- Technology transfer methods

- 1) As a technology transfer method generally used until now in the field of farmers' organizations reinforcement, a method for teaching and explaining through speech and writing was employed. It is an excellent method in that it allows teaching to a large number of persons at the same time, but it has the drawback of not having great

impact. It is essential that C/Ps and extension workers, and in some cases liaison farmers, provide guidance in a concrete, easy-to-understand manner. The guidance method, insofar as possible, should be such that results can be seen within a relatively short time.

- 2) Persons providing guidance to developing countries have a strong tendency to base their guidance exclusively on language. They may have their reasons for doing so, but if the expansion of activities slows down, this may cause a drop in faith among farmer leaders. To overcome this problem, it is important to repeat practical guidance over and over again so as to instill confidence in farmer leaders.

For this purpose, it is important to create as many opportunities as possible for C/Ps to learn techniques hands-on, and from this viewpoint, having C/Ps study in Japan takes deep significance.

4.2. Impressions, suggestions and views of counterparts

The impressions and views of counterparts, who worked with technical specialists in this project, from planning to implementation and assessment, were collected in a question and answer format (the questions consisted of the five items listed below). The data presented below consists of the answers given by the counterparts of each field. Throughout the cooperation period (1991 to 1996), there were 52 counterparts in all, including full-time and part-time counterparts. Many of them have been transferred to different posts already, and thus answers were collected only from 9 persons.

These materials were recorded through cooperation with local projects.

Questions given to counterparts

- It is believed that related residents participated in this project from the planning stage, and that works that reflected their views were executed. From the viewpoint of counterparts, did things occur this way? Please indicate problems, if there were any.
- Please indicate advantages and disadvantages of this project with regard to the life, income and other aspects pertaining to the residents in the project district.
- Do you think that the education and reinforcement of institutions and farmers' groups, stock fund system, the transfer of farming technology and other contributions of this project will become solidly established in the project district? If there are items that you think would be difficult to solidly establish, please indicate the reason(s) and possible measures.

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- As a counterpart participating in this project, what do you rate as a "plus" and what do you rate as a "minus" with regard to the tasks you were engaged in?
- If the contents of this project were to be extended to other regions, what do you think would be the necessary conditions?

(1) Farmers' organization promotion and reinforcement field Mr. Amdi Aria Pangerang

- a) As part of this project, irrigation check gates, intake weirs, rice mills, hand tractors and so on were either built or provided. Since these things were all needed and desired items by small farmers in the project district, they are being put to efficient use under favorable conditions within the project district.
- b) The result of this project has been to positively change the living conditions of residents by increasing their income and improving their living environment. Insofar as I am concerned, I have not heard any complaints from residents in the project district nor do I know of any negative results. Farmers support farmers' groups, stock funds, farming guidance, and other technology transfers, and are incorporating them in their agricultural management. However, support of all of the above will have to be performed by farmers themselves, local governments, and MOA regional offices as related organizations. At present, all these activities are being successfully implemented under the tight leadership of IICA experts and counterparts.
- c) I worked as a counterpart in the farmers' group reinforcement field. The issues of this field are providing guidance to farmers for the promotion of farming techniques and cooperation among farmers. The level of understanding and activities required in this field are completely similar to those of the farming guidance field, and in order to clarify the characteristics of the field, I think it would perhaps be better to change the farming guidance field into the farming experiment and demonstration field.
- d) The following conditions are required for repeating this project in other areas.
 - Receive the support of residents and the local government.
 - Perform research and surveys beforehand for the positioning of the project.
 - Be well acquainted with the customs of the society of the proposed project area, tribal activities, etc.
 - Issue certificates and letters of appreciation to counterparts, farmers, extension workers, and others who have closely cooperated with and engaged in project activities.

(2) Equipment operation and maintenance field Mr. Mukhnio Ideal S. Tp

- a) This project can be used as a model of integrated development including all fields by the Indonesian Government. The project resulted in the expansion of the farming area and the rise in income in the implementation areas. Based on this experience, it can be concluded that the implementation of such projects in all villages cannot be done without the participation of the rural societies concerned. The fact that each paddy reclaimed through the project belongs to one owner presents several problems from my viewpoint as a counterpart. For instance, paddy field were reclaimed by a village chief and the project authorities did not check with villagers. Among the issues faced by the equipment operation and maintenance field, there is that of operators and machinists moving over to different jobs. This may be a good thing for the area as more funds have to be allocated to train additional operators and machinists, but it is not a good thing for the project side.
- b) The positive effects of this project on the villages including the following.
- Increased farmers' income through technology transfers and construction of irrigation canals, check weirs, and rural roads.
 - Increased living amenities and health of villagers through construction of wells and increased incomes.
 - By increasing knowledge of farmers, enabled them to operate and maintain equipment themselves.
 - Through the above, contributed to reducing unemployment by creating new jobs at village level.
 - Through this project, only a limited quantity of farming equipment was provided to each village, and thus only a limited number of farmers could use the equipment, which gave rise to jealousies in the village.
 - Compensation for land that was used for building canals, roads, etc., was not offered by the project, and as a result the farmers who owned this land saw their farm land decrease.
- c) Various facilities were built, farmers' organizations and the stock fund system were introduced, and guidance on farming techniques was conducted at the eight villages that participated in this project. It was difficult to establish farmers' organizations in a short time. Farmers' organizations are a new type of organization as far as the project's villages are concerned, and since guidance over a long period is required to ensure smooth operation of the organizations, I think that the project should provide supervision and guidance until the organizations can function on their own.

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- d) From the viewpoint of a counterpart, this project had many advantages, from the initial phase of implementation all the way to its completion. Counterparts were able to directly manage this project, and thus were well informed of local happenings. Even if problems occurred in villages, they were able to learn about these problems promptly because they could get on the premises rapidly. On the other hand, one of the disadvantages of this project was the short-term experts assigned to participate in the project. The short-term experts had a high level of expertise, but their short stay made it difficult to successfully perform technology transfers to counterparts. This is particularly true for the equipment operation and maintenance field. The solution would be to have the short-term experts know in detail the conditions in villages, and have clearly defined programs to be implemented during the project.
- e) The following conditions are thought to be required in order to extend projects of this type to other provinces.
- The long-term and short-term experts participating in a project should have mutual understanding with counterparts about their respective intentions, and be well informed about the local society.
 - When the project uses land belonging to farmers or for building rice mills, extension workers' offices, meeting places, and so on, documents conforming to the laws fixed by the Indonesian Government should be prepared. This would help reduce problems emerging after the completion of the project.
 - The important factors to consider in selecting project sites should concern increasing agricultural output, available labour input and etc. Also, adequate equipment usage conditions are also important; this should include making sure that equipment parts can be procured at a nearby city and ensuring that following their training, farmers will be able to easily procure parts.
- (3) Farming guidance field Mr. Sutigno
- a) As a counterpart, I recognize the value of building facilities for agricultural and rural development. However, many things must be ensured regarding the basic tasks of cooperating organizations and following completion of the project, such as budget support for raising the quality of training.
- b) Positive points
- The farmers were able to increase their abilities in order to raise their income through the construction of various facilities.
 - The farmers were able to rapidly achieve independence.

c) Negative point

- Because everything was supplied by the project, although farmers performed part of the project, they appear not to fully understand all the required steps.
- As the result of being able to increase their income, some of them have started purchasing unnecessary items that are not related to agricultural activities.

d) Future issues

- The conditions of farming equipment will deteriorate in the absence of good repair shops. To remedy this, good repair shops should be established in each district.
- To create a forward-looking inclination among farmers, managers must provide sufficient remuneration, and in order to make this possible, related organizations should provide operation costs budgets.

• Positive points

- i) There was a sufficient budget for survey planning and implementation, and as a result, surveys were successful.
- ii) Some of the experts has extremely high ability.
- iii) The project implementation was smooth.

• Negative points

- i) Some of the experts did not have high ability. They graduated from technical schools, but could not speak English.
- ii) Some experts did not know much about changes in the lifestyles of farmers, and thus experienced many culture shocks.

e) Conditions that must be considered

• For experts

- i) Have a good understanding of the life and culture of residents.
- ii) Have English ability

• For counterparts

- i) Have experience in technical aid projects.
- ii) Have English ability.

(4) Farmers' organization training and reinforcement Mr. Mappinagku

- a) Since this project began, the residents and farmers of the villages concerned participated in

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the project's implementation, demonstrating that the participatory method is a successful approach.

- b) In this project, before starting a new activity, we would usually hold discussions in the village about what was being attempted, and I think that this practice should be continued.
- c) According to JICA's assessment of this project, it was a success, and from the viewpoint of counterparts, there is strong evidence to this effect.
- d) Among the problems experienced during the implementation of the project, some of the experts could not achieve mutual understanding through English, and as a result, some villages had counterparts who did not understand technology transfer methods.
- e) Advantages were as follows.
 - Farmers benefited from technology transfer at each group they belonged to.
 - Farmers' incomes increased, and changes in villages in this respect occurred at a fast rate.
 - Rice cropping in low-lying wetlands and other types of cultivation were improved.
- f) The disadvantages included the fact that JICA conducted activities mainly in 1 or 2 locations in each village, but all other areas did not receive any benefits, which sometimes resulted in villagers saying this was unfair and getting jealous.
- g) This project created structures and facilities, and trained and reinforced village organizations, such as farmers' groups, water management and farmers' associations, and agricultural cooperatives. However, water resources are limited and farmers do not understand sequential irrigation and crop rotation, and as a result I think that the reinforcement of water management organizations is difficult. To solve this problem, water management organizations need to be improved and guidance for farmers must be pursued, and this issue represents one of the duties of extension workers and one of the public duties of the Ministry of Agriculture.
- h) The advantages of the project are that meetings with and supervision of farmers were done on a frequent basis, and also transportation to village was no problem. Therefore, the improvement of the planning contents was extremely well implemented by among JICA and farmers.
- i) In order to transfer this project to other areas, the background of the residents, social conditions, the expert fields that are required, and so on, should be systematically investigated and understood. Also, the customs of residents, and the potential of tribes

and areas should be investigated.

- (5) Farming guidance division Mr. Syamsul Rijal
- a) The activities of this project have been extremely useful to the residents of the project district. The income of residents is growing each year.
 - b) I think that this (participatory approach) aid, born through cooperation between Japan and Indonesia, also has potential in other areas and other countries.
 - c) The results yielded by this project to farmers included cultivation know-how and techniques, various farming facilities and training, which will enable farmers to continue farming using better techniques.
 - d) Increasing stock funds figures is a point that will be difficult to implement in the future. I think that this is the only problem.
 - e) The advantages of this project are that experts worked with counterparts to provide direct guidance to farmers, but the disadvantage of this project is that many hours were required of farmers to receive this guidance.
 - f) Expanding this type of project to other areas will require that participants including PPLs clearly define remuneration in order to motivate farmers to participate in activities.
- (6) Agricultural infrastructure development and facilities management field Mr. Prasery Budi R.
- a) This project has built agricultural and rural development facilities based on the needs of rural societies. One problem is that Water users associations (P3A) in charge of managing irrigation facilities, are not yet fully operational. Therefore, concentrated guidance for P3A is required.
 - b) Advantages of the project were 1) increased agricultural production and increased agricultural income, and 2) increased agricultural management knowledge and techniques
 - c) The disadvantages of the project were that, concerning the local PPLs, they were supplied with motorcycles by the project, but since no maintenance funds were provided, they saw their income actually drop, regardless of the fact that their workload increased. Therefore, it is necessary to increase the remuneration of PPLs.
 - d) In my opinion, it will not be too difficult to make them solidly established. However, solid guidance will be required, especially for farming equipment maintenance

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organizations, stock funds, and P3A.

e) The strong point of this project was that farmers enthusiastically participated in its planning and implementation.

f) I think that the following will need to be considered in extending this project approach to other regions.

- Background of rural society and socioeconomics
- Willingness of rural society to participate

(7) Counterpart of short-term technical expert (agronomics) Mr. Mustari Jalal

a) In this project, excluding the fact that seed storage facilities are not yet used, almost all other facilities were constructed based on the will of the residents.

b) Generally good results were obtained for residents, and the personal income of farmers increased.

c) This project has been completed by JICA and residents in terms of basic requirements, and thus I do not foresee any problems in future.

d) With regard to my own duties, I believe that the detailed data that we collected is almost entirely usable, and thus highly valid.

e) The government and residents must be instructed to design and implement the project together, and if they do, everything should go smoothly. Speaking for the residents, the project should be implemented in such a way as to draw the interest of the residents and gain their trust.

(8) Farmers' organization education and reinforcement field Mr. Bien Bangapadang

a) As a counterpart, this project has promoted agricultural and rural development per the wishes of the rural society of the beneficiary areas. However, following the project's completion, with regard to the maintenance of existing facilities, I think that problems will arise, especially for facilities that were completed prior to the completion of the project. Although solid guidance was provided regarding maintenance following the completion of agricultural development facilities, these facilities were developed at different times, and therefore I think that the guidance period should be conducted at different times for each village.

b) The advantages are that, as announced by the survey team that performed the

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socioeconomic survey in the project district, agricultural production is increasing and the income of farmers is rising. A disadvantage for residents of the project district that became clear following completion of the project, in particular following the allocation of farming equipment, is that for farmers, paddy cropping is entirely dependent on power plows, but since there is only a limited number of power plows, paddy cropping is not sufficiently performed in all villages.

c) The establishment of items started by this project may be difficult in the future. Even after the project is completed, intensive guidance must continue, in particular for farming equipment maintenance organizations and stock fund organizations.

d) The advantages of the implementation method are that village residents were invited to participate during the project planning stage. The main disadvantage is that too much emphasis was placed on building facilities.

e) I think that the following items should be considered in applying the things implemented through this project in other regions.

- Social background of rural people of beneficiary area
- Interface between experts and counterparts (communication ability, etc.)
- Participation of farmers in planning, implementation, and evaluation stages

(9) Equipment operation and maintenance field Mr. Juhuri

a) In this project, residents participated from the planning stage, and works that reflected the will of residents were implemented.

b) The advantages received by farmers through this project are as follows.

- Training about farming, farmers' organizations, farming equipment, the use of irrigation and farm land was implemented for farmers, and as a result, planning with regard to the type of crops to cultivate and the implementation of these plans have become easier.
- The construction of rural roads has made it easier to transport agricultural materials and products.
- The introduction of the stock fund system has made the procurement of farming materials easier.
- As a result of the above, agriculture, production amounts, income levels, and living standards have gradually risen. There were also the following disadvantages. As a result of the project's success, farmers have begun cultivating different varieties of

crops, but since the provincial markets are still underdeveloped, not all products can be sold. Therefore, a difficult situation now exists with regard to the sale of agricultural products.

c) With regard to farmers, there are the following important themes.

- Many people are required to record usage times, operation costs, operation revenues, and so on, with regard to farming equipment maintenance. In order to solve these problems, I think that a managing organization (for example an association) with rules and regulations is needed for implementing maintenance.
- The same could be said with regard to stock funds. However, with regard to stock fund planning methods, it is necessary to provide guidance about framing plans related to needed materials that are suited to local conditions. Also, one should not forget how to replenish former funds.

d) Important things that I gained as a counterpart in the equipment operation and maintenance division are as follows.

- I was able to learn about many things related to farming equipment.
- gained knowledge about agricultural structure through group study in Japan.
- Unfortunately, with regard to the experts attached to this project, the experts in farming equipment lacked knowledge about farming equipment under tropical conditions, and it was difficult to communicate to them in English. Moreover, they lacked understanding about the social nature of people living in the tropics.

e) I think that the same type of project can be applied in other provinces, districts, and villages. However, what is important is, as I mentioned before, to ensure that experts in particular have a suitable character and ability in their field, and also an adequate communication ability. This is because the main objective of this project is the performance of technology transfer to promote the nation's development.