2.4 Replacement Cost

The useful life of facilities and machinery is assumed to be three years for threshing sheet and pedal thresher, five years for power thresher, power winnower and rice mill unit, and twenty years for drying floor, warehouse and milling house. Financial replacement costs in the respective pilot areas were estimated as shown in Table X 2-7.

2.5 Repayment of Loan

Condition of the loan for procurement and construction of machinery and facilities are set as follows :

- Machinery
  - Repayment period ; 5 years
  - Interest ; 18% /year
- Facilities (drying floor, warehouse, milling house)
  - Repayment period ; 10 years
  - Interest ; 6% /year

The repayment covers principal and interest as shown in Table X 2-8. The annual repayment in the pilot plans were estimated as follows:

(Unit: Rp '000)

Cost Item	Telagasari	Bagor	Mattiro Bulu	Trimurjo
1. Machinery	9,597	10,665	6,302	15,728
2. Construction of facilities				
- Drying floor	1,450	1,035	1,104	1,588
- Warehouse/milling house	8,141	5,935	6,163	8,673
Sub-total	9,591	6,970	7,267	10,261

2.6 Estimation of Operation Expenses

Operation expenses for machinery and facilities in the respective pilot areas covers the operation and maintenance costs, depreciation cost and repayment cost for the loan as shown in Tables X 2-9 and 2-10. The following unit operation expenses will be collected from the member farmers so as to compensate the several costs for the activities :

Item	Telagasari 1st-5th Year	Telagasari After 6th Year	Bagor 1st-5th Year	Bagor After 6th Year	Mattiro Bulu 1st-5th Year	Mattiro Bulu After 6th Year	Trimurjo 1st-5th Year	Trimurjo After 6th Year
I. Custom Threshing (Rp/kg of paddy)								
- Pedal Thresher	8	6	-	-	7	5	-	-
- Power Thresher	-	-	10	6	-	-	9	6
II. Processing and marketing (Rp/kg of rice)								
- Drying (Drying floor)	6	6	7	7	6	6	6	6
- Storage (Warehouse, milling house)	17	17	19	19	19	19	17	17
- Cleaning (Power winnower)	5	4	5	4	4	4	4	4
- Milling (Rice mill)	20	13	20	13	20	13	20	13
- Transportation	2	2	2	2	2	2	2	2
Sub-total	50	42	53	45	51	44	49	42

3. COST ESTIMATION FOR THE SERVICE CENTER

3.1 Preliminary Cost Estimate

The cost of the Service Center comprises the construction cost of building and facilities, equipment and machinery for demonstration, equipment and implement of laboratory for paddy/rice inspection, furniture and others. The following basic assumptions are considered for the preliminary cost estimate:

1) The cost for construction, equipment and machinery are basically estimated by applying the retail price and local cost in Indonesia in 1988.
2) The construction works will be executed under the local contract basis.
3) The cost of equipment and implement for laboratory are estimated at the retail prices in Japan. The exchange rate is Rp 1,730 and Yen 130 per US$.

The cost of the Service Center are estimated in Table X 3-1, and summarized as follows :

(Unit: Rp '000)

Cost Item	Amount
1. Building/ facilities	132,500
2. Equipment/ implement for laboratory	68,480
3. Farm machinery for demonstration	86,200
4. Equipment/ furniture for office (truck, jeep others)	137,700
Total	424,880

Table X 2-1 RETAIL PRICE LIST OF AGRICULTURAL MACHINERY

Machinery	Model	Specification	Price (Rupiah)		
			Without Engine	Engine	Total
1. Reaper/1		(Working Width)			
- Reaper	AR120	120 cm	-	-	6,387,000
2. Binder/1		(Working Width)			
- 2 wheel	RA30	30 cm	-	-	9,580,000
- 2 wheel	RA50	50 cm	-	-	12,135,000
3. Thresher		(Working Capa.)			
- Pedal		300 kg/hr	100,000	0	100,000
- Power	with Engine 5HP	500 kg/hr	550,000	594,000	1,144,000
- Power	with Engine 6.5HP	750 kg/hr	550,000	847,000	1,397,000
- Power/1	with Engine 3HP	1500 kg/hr	3,460,000	473,000	3,933,000
4. Winnower/2		(Working Capa.)			
- Mannual		400 kg/hr	50,000	0	50,000
- Power	with Engine 5HP	500 kg/hr	200,000	594,000	794,000
- Power	with Engine 6.5HP	750 kg/hr	300,000	847,000	1,147,000
5. Dryer		(Capacity)			
- Flat Type	Burner 3HP	800 kg	-	-	2,500,000 /4
- Flat Type/3	Burner 5HP	1600 kg	-	-	5,000,000 /4
- Flat Type/3	Burner 5HP	3200 kg	2,255,000	3,124,000	5,379,000
6. Rice Mill Unit/5		(Working Capa.)			
- one pass	Diesel Engine	300 kg/hr	3,190,000	4,300,000	7,490,000
- one pass	Diesel Engine	500 kg/hr	3,300,000	4,300,000	7,600,000
- one pass	Diesel Engine	750 kg/hr	3,685,000	4,300,000	7,985,000
7. Unit Cost of Agricultural Equipment/Machinery					
- Serrated sickle			-	-	2,500
- Mat for threshing		5m x5m	-	-	20,000
- Mat for drying		5m x5m	-	-	20,000

Note;/1: CIF Jakarta, imported from Japan (1$=1,730Rp.=130 yen).
/2: Results from interview survey in Karawang.
/3: Batch Dryer. Burner only (AB 3200)=Rp.2,530,000.
/4: Price of Box is estimated by use of actual price for 3.2 ton capa.
/5: One Pass Rice Mill Unit.
/6: Price in West Java.
Source : "MANUAL OF MODEL FFC DISK MILLS WITH ILLUSTRATIONS (ROC)", JAVA KARAWANG 1989

Table X 2-2 FINANCIAL PRICE LIST FOR CONSTRUCTION

Description		Area	Unit	Local Currency (Rp)
1. Unit Cost of Labor Charge				
Agricultural Labor		Java/1	Man-day	2,500
		Out of Java/2	Man-day	2,000
Operator/ Laborer	-Reaper		Man-day	3,000
	-Thresher	Java/1	Man-day	2,500
		Out of Java/2	Man-day	2,000
	-Winnower	Java/1	Man-day	2,500
		Out of Java/2	Man-day	2,000
	-Drying	Java/1	Man-day	2,500
		Outer Java/2	Man-day	2,000
	-Milling		Man-day	3,000
2. Unit Cost of Material				
Gasoline		Java/1	lit.	388
		Outer Java/2	lit.	385
Light Oil			lit.	200
3. Unit Construction Cost				
Concrete (1:4:8)/3			m3	56,496
Gravel Filling/3			m3	16,850
Land Levelling/3			ha	3,170,453
4. Unit Construction Cost of Warehouse				
Base/3			m3	22,400
Wall/3			m3	16,800
Roof/3			m3	11,200
Painting, etc. /3			m3	5,600

Note : /1:Karawang and Bagor.
/2:Mattiro Bulu and Telagasari.
/3:Including construction laborer, materials, equipment, etc.

Table X 2-3 FINANCIAL PROJECT COST FOR PILOT PLANS

Cost Items	Unit Cost (Rp'000)	Telagasari Q'ty (No)	Telagasari Amount (Rp'000)	Bagor Q'ty (No)	Bagor Amount (Rp'000)
1. Machinery					
- Threshing Mat (larger than 5m x 5m)	20	41	820	12	240
- Pedal Thresher (300 kg/hr)	100	41	4,100	-	-
- Power Thresher (750 kg/hr)	1,397	-	-	12	16,764
- Power Winnower (750 kg/hr)	1,147	2	2,294	1	1,147
- Rice Mill Unit (500 kg/hr)	7,600	3	22,800	2	15,200
sub-total			30,014		33,351
2. Construction/1		(m2)		(m2)	
- Drying Floor	5.08	2,100	10,668	1,500	7,620
- Warehouse	56	850	47,600	620	34,720
- Milling House	56	220	12,320	160	8,960
Sub-Total			70,588		51,300
3. Total (1+2)			100,602		84,651

Cost Items	Unit Cost (Rp'000)	Mattiro Bulu Q'ty (No)	Mattiro Bulu Amount (Rp'000)	Trimurjo Q'ty (No)	Trimurjo Amount (Rp'000)
1. Machinery					
- Threshing Mat (larger than 5m x 5m)	20	28	560	17	340
- Pedal Thresher (300 kg/hr)	100	28	2,800	-	-
- Power Thresher (750 kg/hr)	1,397	-	-	17	23,749
- Power Winnower (750 kg/hr)	1,147	1	1,147	2	2,294
- Rice Mill Unit (500 kg/hr)	7,600	2	15,200	3	22,800
sub-total			19,707		49,183
2. Construction/1		(m2)		(m2)	
- Drying Floor	5.08	1,600	8,128	2,300	11,684
- Warehouse	56	650	36,400	920	51,520
- Milling House	56	160	8,960	220	12,320
Sub-Total			53,488		75,524
3. Total (1+2)			73,195		124,707

Note ; /1: Indicating by m2.

Table X 2-4 FINANCIAL O & M COST FOR MACHINERY (1/2)

Item	Pedal/Power Thresher			Power Winnower(0.75t/hour)			Rice Mill(0.5t/hour)		
	Unit Price	Quantity	Cost per Hour	Unit Price	Quantity	Cost per Hour	Unit Price	Quantity	Cost per Hour
Telagasari (West Java)									
I. Operation and Maintenance Cost									
1. Fuel (Rp/lit)	388	-	0	388	1	388	200	3	600
2. Oil and others (30% of fuel)	116	-	0	116	1	116	180	1	180
3. Others		5% /_1	11		5% /_1	10		5% /_1	63
4. Repair cost		20% /_1	44		20% /_1	38		30% /_1	380
5. Parking, tax, etc.		10% /_1	22		10% /_1	19		10% /_1	127
Cost per hour			77			571			1,350
Annual operating hour			180			1,240			1,240
Annual cost			13,860			708,040			1,674,000
Depreciation per hour	/_2 Rp 120,000/540 hours=		222	Rp 1,147,000/6,000hours=		191	Rp 7,600,000/6,000hours=		1,267
II.Personnel Cost									
1. Wages for operators (Rp/hour)	417	3	1,251	417	2	834	500	2	1,000
Annual operating hour			180			1,240			1,240
Annual cost			225,180			1,034,160			1,240,000
Bagor (East Java)									
I. Operation and Maintenance Cost									
1. Fuel (Rp/lit)	388	1.5	582	388	1	388	200	3	600
2. Oil and others (30% of fuel)	175	1	175	116	1	116	180	1	180
3. Others		5% /_1	79		5% /_1	10		5% /_1	63
4. Repair cost		20% /_1	315		20% /_1	38		20% /_1	380
5. Parking, tax, etc.		10% /_1	157		10% /_1	19		10% /_1	127
Cost per hour			1,308			571			1,350
Annual operating hour			185			1,805			1,355
Annual cost			241,980			1,030,655			1,829,250
Depreciation per hour	/_2 Rp 1,417,000/900 hours=		1,574	Rp 1,147,000/6,000hours=		191	Rp 7,600,000/6,000hours=		1,267
II.Personnel Cost									
1. Wages for operators (Rp/hour)	417	2	834	417	2	834	500	2	1,000
Annual operating hour			185			1,805			1,355
Annual cost			154,290			1,505,370			1,355,000

Note : /_1 ; Percentage of depreciation cost per hour.
/_2 ; Including threshing mat of Rp 20,000(5mx5m)

Table X 2-4 FINANCIAL O & M COST FOR MACHINERY (2/2)

Item	Pedal/Power Thresher			Power Winnower(0.75t/hour)			Rice Mill(0.5t/hour)		
	Unit Price	Quantity	Cost per Hour	Unit Price	Quantity	Cost per Hour	Unit Price	Quantity	Cost per Hour
Mattiro Bulu (South Sulawesi)									
I. Operation and Maintenance Cost									
1. Fuel (Rp/lit)	385	0	0	385	1	385	200	3	600
2. Oil and others (30% of fuel)	175	0	0	116	1	116	180	1	180
3. Others		5% /_1	11		5% /_1	10		5% /_1	63
4. Repair cost		20% /_1	44		20% /_1	38		20% /_1	380
5. Parking, tax, etc.		10% /_1	22		10% /_1	19		10% /_1	127
Cost per hour			77			568			1,350
Annual operating hour			180			1,650			1,235
Annual cost			13,860			937,200			1,667,250
Depreciation per hour	/_2 Rp 120,000/540 hours=		222	Rp 1,147,000/6,000hours=		191	Rp 7,600,000/6,000hours=		1,267
II.Personnel Cost									
1. Wages for operators (Rp/hour)	333	3	999	333	2	666	500	2	1,000
Annual operating hour			180			1,650			1,235
Annual cost			179,820			1,098,900			1,235,000
Trimurjo (Lampung)									
I. Operation and Maintenance Cost									
1. Fuel (Rp/lit)	385	1.5	578	385	1	385	200	3	600
2. Oil and others (30% of fuel)	173	1	173	116	1	116	180	1	180
3. Others		5% /_1	79		5% /_1	10		5% /_1	63
4. Repair cost		20% /_1	315		20% /_1	38		20% /_1	380
5. Parking, tax, etc.		10% /_1	157		10% /_1	19		10% /_1	127
Cost per hour			1,302			568			1,350
Annual operating hour			180			1,350			1,350
Annual cost			234,270			766,800			1,822,500
Depreciation per hour	/_2 Rp 1,417,000/900 hours=		1,574	Rp 1,147,000/6,000hours=		191	Rp 7,600,000/6,000hours=		1,267
II.Personnel Cost									
1. Wages for operators (Rp/hour)	333	2	666	333	2	666	500	2	1,000
Annual operating hour			180			1,350			1,350
Annual cost			119,880			899,100			1,350,000

Note : /_1 ; Percentage of depreciation cost per hour.
/_2 ; Including threshing mat of Rp 20,000(5mx5m)

Table X 2-5 FINANCIAL O & M COST FOR FACILITIES

Items	Telagasari	Bagor	Mattiro Bulu	Trimurjo
I. Drying Floor				
I-1 Maintenance Cost				
-Total construction cost (Rp'000)	10,668	7,620	8,128	11,684
-Necessary % for annual maintenance	5%	5%	5%	5%
-Annual maintenance cost (Rp'000)	533	381	406	584
-Annual quantity of paddy (GKG) dried (t)	1,516	1,005	1,018	1,581
-Annual maintenance cost (Rp/kg)	0.35	0.38	0.40	0.37
I-2 Personnel Cost				
-Annual quantity of paddy (GKG) dried (t)	1,516	1,005	1,018	1,581
-Required days for operation of drying floor(t)	60	60	60	60
-Labor cost (Rp/man-day)	2,500	2,500	2,000	2,000
-Daily labor requirement (man-day/500m)	5	5	5	5
-Area of drying floor (m2)	2,100	1,500	1,600	2,300
-Daily labor requirement (man-day)	21	15	16	23
-Annual personnel cost (Rp'000)	3,150	2,250	1,920	2,760
-Annual personnel cost (Rp/kg)	2.08	2.24	1.89	1.75
I-3 Total O&M cost of drying floor per kg (Rp/kg)				
-Per kg in paddy(I-1+I-2)	2.43	2.62	2.28	2.12
-Per kg in rice (c.f.=0.65 of paddy)	3.74	4.53	4.02	3.75
II. Warehouse and Milling House				
II-1 Maintenance Cost				
-Total construction cost	59,920	43,680	45,360	63,840
-Necessary % for annual maintenance	3%	3%	3%	3%
-Annual maintenance cost (Rp'000)	1,798	1,310	1,361	1,915
-Annual quantity of paddy (GKG) stored (t)	1,516	1,005	1,018	1,581
-Annual maintenance cost (Rp/kg)	1.19	1.30	1.34	1.21
II-2 Personnel cost				
-Annual quantity of paddy (GKG) stored (t)	1,516	1,005	1,018	1,581
-Daily handling quantity for milling /_1	8.1	5.4	5.4	8.1
-Required days for operation of warehouse	187	186	189	195
-Labor cost (Rp/man-day)	2,500	2,500	2,000	2,000
-Daily labor requirement (man-day/day)	5	3	3	5
-Annual personnel cost (Rp'000)	2,338	1,395	1,134	1,950
-Annual personnel cost (Rp/kg)	1.54	1.39	1.11	1.23
II-3 Total O&M cost of warehouse per kg (Rp/kg)				
-Per kg in paddy(II-1+II-2)	2.73	2.69	2.45	2.44
-Per kg in rice (c.f.=0.65 of paddy)	4.20	4.14	3.77	3.76

Note;/1:Number of rice mills installed x 0.5ton/hr x 0.9 x 6hours

Table X 2-6 FINANCIAL O &M COST FOR PILOT PLAN

Cost Items	Telagasari			Bagor		
	Unit Cost	Q'ty (No)	Amount (Rp'000)	Unit Cost	Q'ty (No)	Amount (Rp'000)
I. Operation and Maintenance Cost /_1						
1. Machinery	(Rp'000)			(Rp'000)		
- Pedal Thresher (300 kg/hr)	14	41	574	-	-	-
- Pedal Thresher (750 kg/hr)	-	-	-	242	12	2,904
- Power Winnower (750 kg/hr)	708	2	1,416	1,031	1	1,031
- Rice Mill Unit (500 kg/hr)	1,674	3	5,022	1,829	2	3,658
2. Facilities /_2	(Rp/ton;rice)			(Rp/ton;rice)		
- Drying	541	986	533	584	652	381
- Warehouse and others	1,824	986	1,798	2,009	652	1,310
- Bagging	3,000	986	2,958	3,000	652	1,956
Sub total			12,301			11,240
II. Personnel Cost						
1. Machinery	(Rp'000)			(Rp'000)		
- Pedal Thresher (300 kg/hr)	225	41	9,225	-	-	-
- Power Thresher (750 kg/hr)	-	-	-	154	12	1,848
- Power Winnower (750 kg/hr)	1,034	2	2,068	1,505	1	1,505
- Rice Mill Unit (500 kg/hr)	1,240	3	3,720	1,355	2	2,710
2. Facilities /_2	(Rp/ton;rice)			(Rp/ton;rice)		
- Drying	3,195	986	3,150	3,451	652	2,250
- Warehouse and others	2,371	986	2,338	2,140	652	1,395
Sub total			20,501			9,708
III. Transpotation Cost /_2	(Rp/ton;rice) 2,000	986	1,972	(Rp/ton;rice) 2,000	652	1,304
Total (I+II+III)			34,774			22,252

Cost Items	Mattiro Bulu			Trimurjo		
	Unit Cost	Q'ty (No)	Amount (Rp'000)	Unit Cost	Q'ty (No)	Amount (Rp'000)
I. Operation and Maintenance Cost /_1						
1. Machinery	(Rp'000)			(Rp'000)		
- Pedal Thresher (300 kg/hr)	14	28	392	-	-	-
- Power Thresher (750 kg/hr)	-	-	-	234	17	3,978
- Power Winnower (750 kg/hr)	937	1	937	767	2	1,534
- Rice Mill Unit (500 kg/hr)	1,667	2	3,334	1,823	3	5,469
2. Facilities /_2	(Rp/ton;rice)			(Rp/ton;rice)		
- Drying	614	661	406	568	1,028	584
- Warehouse and others	2,059	661	1,361	1,863	1,028	1,915
- Bagging	3,000	661	1,983	3,000	1,028	3,084
Sub total			8,413			16,564
II. Personnel Cost						
1. Machinery	(Rp'000)			(Rp'000)		
- Pedal Thresher (300 kg/hr)	180	28	5,040	-	-	-
- Power Thresher (750 kg/hr)	-	-	-	120	17	2,040
- Power Winnower (750 kg/hr)	1,100	1	1,100	899	2	1,798
- Rice Mill Unit (500 kg/hr)	1,235	2	2,470	1,350	3	4,050
2. Facilities /_2	(Rp/ton;rice)			(Rp/ton;rice)		
- Drying	2,905	661	1,920	2,685	1,028	2,760
- Warehouse and others	1,716	661	1,134	1,897	1,028	1,950
Sub total			11,664			12,598
III. Transpotation Cost /_2	(Rp/ton;rice) 2,000	661	1,322	(Rp/ton;rice) 2,000	1028	2,056
Total (I+II+III)			21,399			31,218

Nota;/_1:Cost for fuel, oil, spairparts, repairment, excluding personnel cost.
/_2:Unit of quantity is indicated by ton of marketable rice.

Table X 2-7 FINANCIAL REPLACEMENT COST

Description	Useful Life (Year)	Financial Cost Telagasari (Rp'000)	Bagor (Rp'000)	Mattiro Bulu (Rp'000)	Trimurjo (Rp'000)
1. Replacement in 4th year					
Threshing Mat	3	820	240	560	340
Pedal Thresher	3	4,100	0	2,800	0
Total		4,920	240	3,360	340
2. Replacement in 6th year					
Power Thresher	5	0	16,764	0	23,749
Power Winnower	5	2,294	1,147	1,147	2,294
Rice Mill Unit	5	22,800	15,200	15,200	22,800
Total		25,094	33,111	16,347	48,843
3. Replacement in 21th year					
Drying Floor	20	10,668	7,620	8,128	11,684
Warehouse	20	47,600	34,720	36,400	51,520
Milling House	20	12,320	8,960	8,960	12,320
Total		70,588	51,300	53,488	75,524

Table X 2-8 ANNUAL REPAYMENT SCHEDULE FOR LOAN

Cost Items	Telagasari (Rp'000)	Bagor (Rp'000)	Mattiro Bulu (Rp'000)	Trimurjo (Rp'000)
I. Loan for Investment				
1. Machinery	30,014	33,351	19,707	49,183
2. Construction of facilities				
-Drying floor	10,668	7,620	8,128	11,684
-Warehouse/milling house	59,920	43,680	45,360	63,840
3. Total	100,602	84,651	73,195	124,707
II. Total Repayment				
1. Machinery/1	47,989	53,325	31,509	78,638
2. Construction of facilities				
-Drying floor	14,494	10,353	11,043	15,875
-Warehouse/milling house	81,412	59,347	61,630	86,738
3. Total	143,895	123,025	104,182	181,251
III. Annual Repayment Amount				
1. Machinery/1	9,597	10,665	6,302	15,728
2. Construction of facilities				
-Drying floor	1,450	1,035	1,104	1,588
-Warehouse/milling house	8,141	5,935	6,163	8,673
sub-total	9,591	6,970	7,267	10,261
IV. Annual Repayment				
1st	19,188	17,635	13,570	25,990
2nd	19,188	17,635	13,570	25,989
3rd	19,188	17,635	13,569	25,989
4th	19,188	17,635	13,569	25,989
5th	19,188	17,635	13,569	25,989
6th	9,591	6,970	7,267	10,261
7th	9,591	6,970	7,267	10,261
8th	9,591	6,970	7,267	10,261
9th	9,591	6,970	7,267	10,261
10th	9,591	6,970	7,267	10,261
Total	143,895	123,025	104,182	181,251

Note;/1:Repayment Period=5years, Interest=18%/year
/2:Repayment Period=10years, Interest=6%/year

Table X 2-9 UNIT OPERATION EXPENSES FOR MACHINERY (1/4)
(Telagasari Pilot Area)

Unit:Rp

Item	Pedal Thresher				Power Winnower (0.75ton)				Rice Mill Unit (0.5ton)			
	Unit Price	Q'ty	Total	per Hour/1 (540)	Unit Price	Q'ty	Total	per Hour/2 (6,000)	Unit Price	Q'ty	Total	per Hour/2 (6,000)
A. Machinery Cost			/3									
1) Depreciation			120,000	222			1,147,000	191			7,600,000	1,267
B. Operation and Maintenance Cost per Hour												
1) Operation Cost												
- Fuel (Rp/lit.)	388	0	-	0	388	1	-	388	200	3	-	600
- Oil and others (30% of Fuel)	116	0	-	0	116	1	-	116	180	1	-	180
- Wage for operator (Rp/hr)	417	3	-	1,251	417	2	-	834	500	2	-	1,000
- Others		5% of A.-1		11		5% of A.-1		10		5% of A.-1		63
2) Maintenance Cost												
- Repairing Cost		20% of A.-1		44		20% of A.-1		38		30% of A.-1		380
- Parking, Tax, etc.		10% of A.-1		22		10% of A.-1		19		10% of A.-1		127
Sub Total				1,329				1,405				2,350
C. Repayment for Loan												
1) Repayment		18%	191,867	355		18%	1,833,926	306		18%	12,151,558	2,025
D. Total Cost for Machinery	(A+B+C)			1,906	(A+B+C)			1,902	(A+B+C)			5,642
E. Estimated Cost per ha & kg /4												
1) Unit Cost per kg (Rp/kg)/5				(Paddy)				(Rice)				(Rice)
- With Repayment (Repayment Period of 5 Years)				7.1				4.3				19.3
- Without Repayment (After Repayment Period of 5 Years)				5.7				3.6				12.4
- Only Operation and Maintenance Cost				4.9				3.2				8
2) Unit Cost per ha (Rp/ha)/6												
- With Repayment (Repayment Period of 5 Years)				60,013				-				-
- Without Repayment (After Repayment Period of 5 Years)				48,828								
- Only Operation and Maintenance Cost				41,832								
3) Working Capacity (hr/ha)/7				25.5				-				-

Note:/1; Useful year=3, Less than 600 hour
/2; Useful year=5, Less than 10,000 hour
/3; Useful year=7, Less than 10,000 hour
/4; Working Condition

(1) Working Capacity (ton/hr)	0.3	(1)	0.75	(1)	0.5	
(2) Working Efficiency	90%	(2)	90%	(2)	90%	
(3) Unit Yield (ton/ha)	8.5					

/5; = Unit Cost per hour/(working capacity (ton/hr) x working efficiency (%))
/6; = (unit cost/kg) x unit yield (ton/ha)
/7; = Unit yield (ton/ha) / (working capacity ton/hr) x (working efficiency %)

Table X 2-9 UNIT OPERATION EXPENSES FOR MACHINERY (2/4)
(Bagor Pilot Area)

Unit:Rp

	Power Thresher (0.75 ton)				Power Winnower (0.75ton)				Rice Mill Unit (0.5ton)			
	Unit Price	Q'ty	Total	per Hour/1 (900)	Unit Price	Q'ty	Total	per Hour/2 (6,000)	Unit Price	Q'ty	Total	per Hour/2 (6,000)
A. Machinery Cost			/3									
1) Depreciation			1,417,000	1,574			1,147,000	191			7,600,000	1,267
B. Operation and Maintenance Cost per Hour												
1) Operation Cost												
- Fuel (Rp/lit.)	388	1.5	-	582	388	1	-	388	200	3	-	600
- Oil and others (30% of Fuel)	116	1	-	175	116	1	-	116	180	1	-	180
- Wage for operator (Rp/hr)	417	2	-	834	417	2	-	834	500	2	-	1,000
- Others		5% of A.-1		79		5% of A.-1		10		5% of A.-1		63
2) Maintenance Cost												
- Repairing Cost		20% of A.-1		315		20% of A.-1		38		30% of A.-1		380
- Parking, Tax, etc.		10% of A.-1		157		10% of A.-1		19		10% of A.-1		127
Sub Total				2,142				1,405				2,350
C. Repayment for Loan												
1) Repayment		18%	2,265,626	2,517		18%	1,833,926	306		18%	12,151,558	2,025
D. Total Cost for Machinery	(A+B+C)			6,233	(A+B+C)			1,902	(A+B+C)			5,642
E. Estimated Cost per ha & kg /4												
1) Unit Cost per kg (Rp/kg)/5				(Paddy)				(Rice)				(Rice)
- With Repayment (Repayment Period of 5 Years)				9.2				4.3				19.3
- Without Repayment (After Repayment Period of 5 Years)				5.5				3.6				12.4
- Only Operation and Maintenance Cost				3.2				3.2				8.0
2) Unit Cost per ha (Rp/ha)/6												
- With Repayment (Repayment Period of 5 Years)				78,495				-				-
- Without Repayment (After Repayment Period of 5 Years)				46,795								
- Only Operation and Maintenance Cost				26,969								
3) Working Capacity (hr/ha)/7				10.2				-				-

Note:/1; Total Operation Hour = (15days/season x 2 x 6hr/day = 180hr) x 5 (Useful Year) = 900 hr
/2; Total Operation Hour = (100days/season x 2 x 6hr/day = 180hr) x 5 (Useful Year) = 6,000 hr
/3; Including Mat for threshing of Rp 20,000 (5m x 5m)
/4; Working Condition

(1) Working Capacity (ton/hr)	0.75	(1)	0.75	(1)	0.5
(2) Working Efficiency	90%	(2)	90%	(2)	90%
(3) Unit Yield (ton/ha)	8.5				

/5; = Unit Cost per hour/(working capacity (ton/hr) x working efficiency (%))
/6; = (unit cost/kg) x unit yield (ton/ha)
/7; = Unit yield (ton/ha) / (working capacity ton/hr) x (working efficiency %)

Table X 2-9 UNIT OPERATION EXPENSES FOR MACHINERY (3/4)
(Mattiro Bulu Pilot Area)

Unit:Rp

	Pedal Thresher				Power Winnower (0.75ton)				Rice Mill Unit (0.5ton)			
	Unit Price	Q'ty	Total	per Hour/1 (540)	Unit Price	Q'ty	Total	per Hour/2 (6,000)	Unit Price	Q'ty	Total	per Hour/2 (6,000)
A. Machinery Cost			/3									
1) Depreciation			120,000	222			1,147,000	191			7,600,000	1,267
B. Operation and Maintenance Cost per Hour												
1) Operation Cost												
- Fuel (Rp/lit.)	385	0	-	0	385	1	-	385	200	3	-	600
- Oil and others (30% of Fuel)	116	0	-	0	116	1	-	116	180	1	-	180
- Wage for operator (Rp/hr)	333	3	-	999	333	2	-	666	500	2	-	1,000
- Others		5% of A. -1		11		5% of A. -1		10		5% of A. -1		63
2) Maintenance Cost												
- Repairing Cost		20% of A. -1		44		20% of A. -1		38		30% of A. -1		380
- Parking, Tax, etc.		10% of A. -1		22		10% of A. -1		19		10% of A. -1		127
Sub Total				1,077				1,233				2,350
C. Repayment for Loan												
1) Repayment		18%	191,867	355		18%	1,833,926	306		18%	12,151,558	2,025
D. Total Cost for Machinery	(A+B+C)			1,654	(A+B+C)			1,730	(A+B+C)			5,642
E. Estimated Cost per ha & kg /4												
1) Unit Cost per kg (Rp/kg)/5				(Paddy)				(Rice)				(Rice)
- With Repayment (Repayment Period of 5 Years)				6.1				3.9				19.3
- Without Repayment (After Repayment Period of 5 Years)				4.8				3.2				12.4
- Only Operation and Maintenance Cost				4.0				2.8				8.0
2) Unit Cost per ha (Rp/ha)/6												
- With Repayment (Repayment Period of 5 Years)				45,953				-				-
- Without Repayment (After Repayment Period of 5 Years)				36,083								
- Only Operation and Maintenance Cost				29,910								
3) Working Capacity (hr/ha)/7				22.5				-				-

Note:/1; Total Operation Hour = (15days/season x 2 x 6hr/day = 180hr) x 3 (Useful Year) = 540 hr
/2; Total Operation Hour = (100days/season x 2 x 6hr/day = 180hr) x 5 (Useful Year) = 6,000 hr
/3; Including Mat for threshing of Rp 20,000 (5m x 5m)
/4; Working Condition

(1) Working Capacity (ton/hr)	0.3	(1)	0.75	(1)	0.5
(2) Working Efficiency	90%	(2)	90%	(2)	90%
(3) Unit Yield (ton/ha)	7.5				

/5; = Unit Cost per hour/(working capacity (ton/hr) x working efficiency (%))
/6; = (unit cost/kg) x unit yield (ton/ha)
/7; = Unit yield (ton/ha) / (working capacity ton/hr) x (working efficiency %)

Table X 2-9 UNIT OPERATION EXPENSES FOR MACHINERY (4/4)
(Trimurjo Pilot Area)

Unit:Rp

	Power Thresher (0.75 ton)				Power Winnower (0.75ton)				Rice Mill Unit (0.5ton)			
	Unit Price	Q'ty	Total	per Hour/1 (900)	Unit Price	Q'ty	Total	per Hour/2 (6,000)	Unit Price	Q'ty	Total	per Hour/2 (6,000)
A. Machinery Cost			/3									
1) Depreciation			1,417,000	1,574			1,147,000	191			7,600,000	1,267
B. Operation and Maintenance Cost per Hour												
1) Operation Cost												
- Fuel (Rp/lit.)	385	1.5	-	578	385	1	-	385	200	3	-	600
- Oil and others (30% of Fuel)	116	1	-	173	116	1	-	116	180	1	-	180
- Wage for operator (Rp/hr)	333	2	-	666	333	2	-	666	500	2	-	1,000
- Others		5% of A.-1		79		5% of A.-1		10		5% of A.-1		63
2) Maintenance Cost												
- Repairing Cost		20% of A.-1		315		20% of A.-1		38		30% of A.-1		380
- Parking, Tax, etc.		10% of A.-1		157		10% of A.-1		19		10% of A.-1		127
Sub Total				1,968				1,233				2,350
C. Repayment for Loan (5 years)												
1) Repayment		18%	2,265,626	2,517		18%	1,833,926	306		18%	12,151,558	2,025
D. Total Cost for Machinery	(A+B+C)			6,060	(A+B+C)			1,730	(A+B+C)			5,642
E. Estimated Cost per ha & kg /4												
1) Unit Cost per kg (Rp/kg)/5				(Paddy)				(Rice)				(Rice)
- With Repayment (Repayment Period of 5 Years)				9.0				3.9				19.3
- Without Repayment (After Repayment Period of 5 Years)				5.2				3.2				12.4
- Only Operation and Maintenance Cost				2.9				2.8				8.0
2) Unit Cost per ha (Rp/ha)/6												
- With Repayment (Repayment Period of 5 Years)				61,943				-				-
- Without Repayment (After Repayment Period of 5 Years)				36,210								
- Only Operation and Maintenance Cost				20,115								
3) Working Capacity (hr/ha)/7				8.3				-				-

Note:/1; Total Operation Hour = (15days/season x 2 x 6hr/day = 180hr) x 5 (Useful Year) = 900 hr
/2; Total Operation Hour = (100days/season x 2 x 6hr/day = 180hr) x 5 (Useful Year) = 6,000 hr
/3; Including Mat for threshing of Rp 20,000 (5m x 5m)
/4; Working Condition

(1) Working Capacity (ton/hr)	0.75	(1)	0.75	(1)	0.5	
(2) Working Efficiency	90%	(2)	90%	(2)	90%	
(3) Unit Yield (ton/ha)	6.9					

/5; = Unit Cost per hour/(working capacity (ton/hr) x working efficiency (%))
/6; = (unit cost/kg) x unit yield (ton/ha)
/7; = Unit yield (ton/ha) / (working capacity ton/hr) x (working efficiency %)

Table X 2-10 UNIT OPERATION EXPENSES FOR FACILITIES

Item	Unit	Telagasari	Bagor	Mattiro Bulu	Trimurjo
I. Drying Floor					
I-1 Depreciation Cost					
-Construction Cost	Rp'000	10,668	7,620	8,128	11,684
-Useful life	Year	20	20	20	20
-Depreciation cost per year	Rp'000	533	381	406	584
-Annual handling quantity	t	1,516	1,005	1,018	1,581
-Depreciation cost per kg of paddy	Rp/kg	0.35	0.38	0.40	0.37
I-2 Maintenance Cost /_1					
-Maintenance cost per kg of paddy	Rp/kg	0.35	0.38	0.40	0.37
I-3 Personnel Cost /_1					
-Personnel cost per kg of paddy	Rp/kg	2.08	2.24	1.89	1.75
I-4 Repayment Cost					
-Annual repayment amount	Rp'000	1,450	1,035	1,104	1,588
-Annual handling quantity	t	1,516	1,005	1,018	1,581
-Repayment cost per kg of paddy	Rp/kg	0.96	1.03	1.08	1.00
I-5 Total O&M Cost					
-O&M cost per kg of paddy	Rp/kg	3.74	4.03	3.77	3.49
-O&M cost per kg of rice	Rp/kg	5.75	6.2	5.81	5.38
II. Warehouse and Milling House					
II-1 Depreciation Cost					
-Construction Cost	Rp'000	59,920	43,680	45,360	63,840
-Useful life	Year	20	20	20	20
-Depreciation cost per year	Rp'000	2,996	2,184	2,268	3,192
-Annual handling quantity	t	1,516	1,005	1,018	1,581
-Depreciation cost per kg of paddy	Rp/kg	1.98	2.17	2.23	2.02
II-2 Maintenance Cost /_1					
-Maintenance cost per kg of paddy	Rp/kg	1.19	1.30	1.34	1.21
II-3 Personnel Cost /_1					
-Personnel cost per kg of paddy	Rp/kg	1.54	1.39	1.11	1.23
II-4 Repayment Cost					
-Annual repayment amount	Rp'000	9,591	6,970	7,267	10,261
-Annual handling quantity	t	1,516	1,005	1,018	1,581
-Repayment cost per kg of paddy	Rp/kg	6.33	6.94	7.14	6.49
II-5 Total O&M Cost					
-O&M cost per kg of paddy	Rp/kg	11.03	11.80	11.82	10.95
-O&M cost per kg of paddy	Rp/kg	16.97	18.15	18.18	16.84

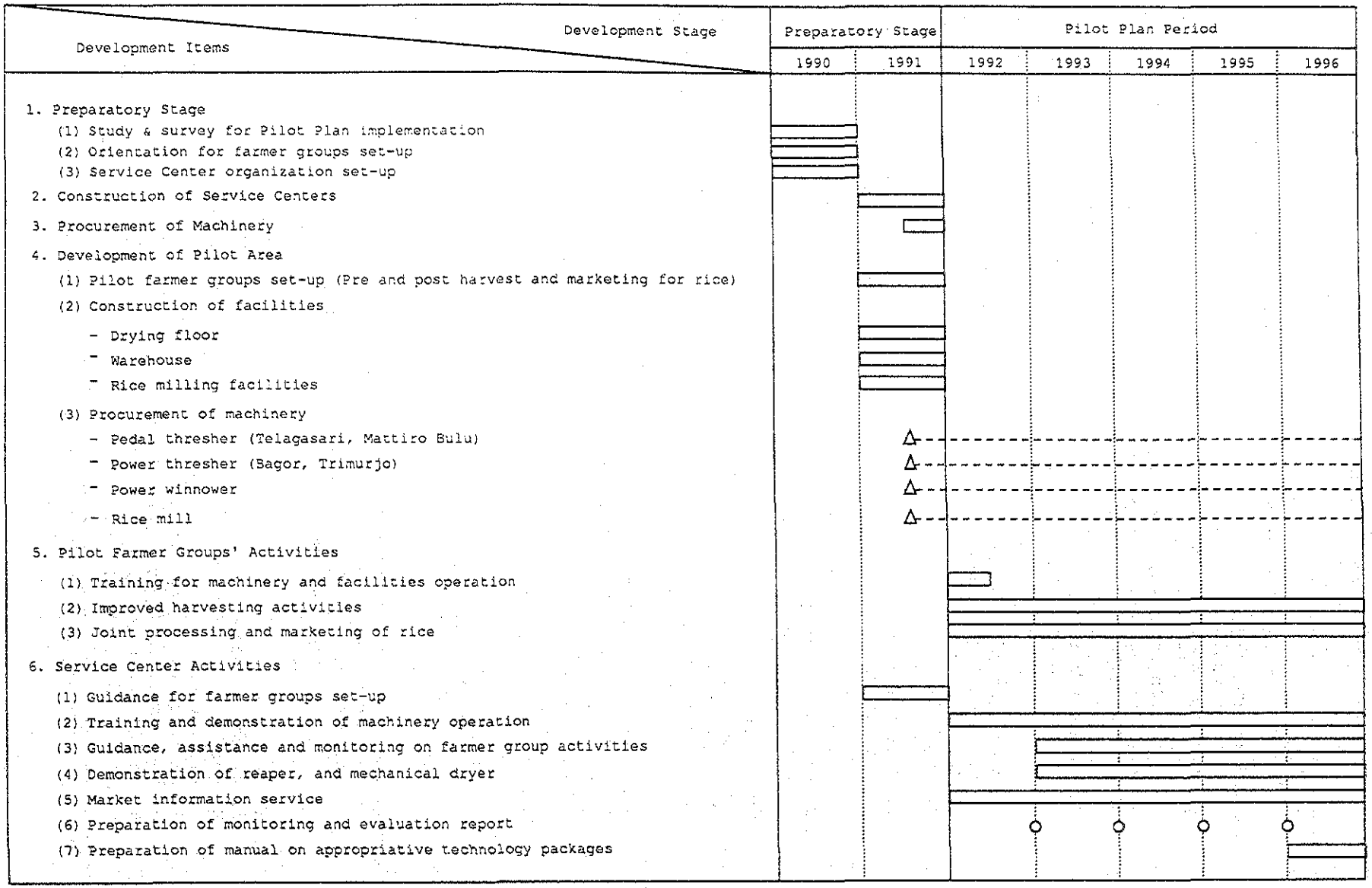
Note : /_1 ; See Table X 2-5

Table X 3-1 PRELIMINARY COST ESTIMATE FOR THE SERVICE CENTER

Items	Required Area and Number	Amount (Rp '000)
A. Building/ Facilities		
1) Display room	100 m2	25,000
2) Meeting/ lecture room	100 m2	25,000
3) Service center office	60 m2	15,000
4) Monitoring/ marketing information room	60 m2	15,000
5) Inspection/ laboratory for rice and paddy	100 m2	25,000
6) Farm machinery warehouse (rice mill, dryer, winnower, etc.)	150 m2	22,500
7) Garage for farm machinery (reaper, binder, truck, etc.)	50 m2	5,000
Sub-total		132,500
B. Equipment for Rice/ Paddy Inspection Service		
1) Grain moisture tester	3 sets	3,400
2) Test husker	1 set	8,600
3) Test mill unit	1 set	10,000
4) Test dryer	1 set	12,600
5) Test thickness grader	1 set	8,000
6) Test grader	1 set	8,000
7) Beam balance	1 set	700
8) Grain volume-weight tester	1 set	700
9) Digital rigidity tester	1 set	2,000
10) Digital witheness tester	1 set	5,700
11) Grain thermometer	1 set	80
12) Tachometer	1 set	700
13) Sample divider	1 set	300
14) Grain shape tester	1 set	700
15) Sampler, others	L.S.	7,000
Sub-total		68,480
C. Farm machinery and Equipment for Demonstratio		
-Ordinary machinery for common practices		
1) Rice mill unit	1 set	7,600
2) Power winnower	2 sets	2,400
3) Power thresher	2 sets	2,800
-Modernized machinery for advanced pracitices		
4) Reaper	5 sets	32,000
5) Binder/ harvester	2 sets	24,400
6) Mechanical dryer	2 sets	12,000
7) Other equipment	L.S.	5,000
Sub-total		86,200
D. Equipment for Marketing Information and Monitoring		
1) Photo copy/ printing machine	1 set	5,200
2) White board	2 sets	1,300
3) Furniture and equipment	L.S.	3,000
Sub-total		9,500
E. Office Equipment		
1) Truck (3 tons)	1	26,000
2) Jeep	1	30,000
3) Motor cycle	6	31,200
4) Micro computer/ typewriters	L.S.	13,000
5) Telecommunication equipment*	L.S.	15,000
6) Table, chair/ cabinets and others	L.S.	13,000
Sub-total		128,200
Total		424,880

Note : *; Side singie band (SSB) wireless radio, telephones and handy talkies

Fig. X 1-1 IMPLEMENTATION SCHEDULE OF PILOT PLAN



ANNEX XI

PROJECT EVALUATION

STUDY ON
IMPROVEMENT OF RICE POST HARVEST
AND MARKETING IN FARMER GROUPS

ANNEX-XI PROJECT EVALUATION

TABLE OF CONTENTS

LIST OF TABLES

1. GENERAL

This Annex XI is the study report on project evaluation for the pilot plans to be applied to the respective pilot areas of Telagasari (West Java), Bagor (East Java), Mattiro Bulu (South Sulawesi), and Trimurjo (Central Lampung)

The study includes the financial and economic price forecast, financial evaluation on farmers' economy as well as on farmer group activities, economic evaluation and socio-economic impact assessment.

The data and information were mainly collected from the following government authorities concerned:

1) Directorate of Food Crops, MOA
2) Central Bureau of Statistics(CBS)
3) Agricultural Office, Province and Kabupaten
4) Bureau of Statistics, Province and Kabupaten
5) DOLOG and Sub-DOLOG

2. PRICE FORECAST

2.1 Financial Price Forecast

2.1.1 Basic Assumptions

The financial prices to be applied for assessment of both with- and without-project conditions are estimated on the basis of the following assumptions :

1) All of the financial prices used for financial evaluation of the project works are refered to the current prices in 1988.

2) No increase of prices owing to infration, etc. is foreseen in this study

3) The prices of paddy under the without-project condition are assumed to be the same as the present low price which is applied to the low quality paddy.

4) The prices of rice under the with-project conditions are presumably set making reference to the present prices applied to the high quality rice.

5) Prices of farm inputs, laborers, tools, equipment, agricultural machines and facilities are directly refered to the current prices in 1988.

2.1.2 Prices of Rice Production

In case of the without-project condition, no drastic change will be appeared on the paddy and/or rice marketing. Selling of rice product will be scheduled by fresh/wet paddy immediately after harvesting in each season.

In case of the with-project condition, it is assumed that all the rice product will be sold in terms of the milled rice which is processed in rice mill to be owned by the respective farmer groups. Marketing of the said rice will be managed by the following schedule:

1) The wet season rice will be sold immediately after milling without storage due to no remarkable price increase before the next dry harvesting season and difficulties of quality control under rainy and high moisture condition.

2) In contrast, the dry season rice will be sold a few month after the harvesting where the rice price increases to the highest ranges. The quality control of paddy and rice is considered to be easy during this dry season.

The financial prices of rice product under the without- and with-project conditions are estimated as follows:

1) Financial prices estimated are the farm gate prices for paddy and the wholesale prices for rice.

2) Paddy prices both for wet and dry seasons are taken average prices during both harvesting seasons.

3) Rice price in wet season is taken an average price during wet harvesting season. On the other hand, rice price in dry season is taken an average price between dry harvesting season and off season of December because of increase in rice price.

4) Price differences on rice quality classes are estimated at Rp 20/kg between prices of class B and a class lower than B and Rp 30/kg between B and A classes. Outlets of rice are DOLOG for B class and the local wholesale markets for both A and B classes. DOLOG buying price of B class rice from KUDs or task force is applied Rp 405/kg which is set since January, 1989.

Financial prices of the paddy/rice are estimated as shown in Tables XI 2-1 and 2-2 and summarised as follows:

Item	Telagasari	Bagor	Mattiro Bulu	Trimurjo
I. Without-Project Condition (Present Farm Gate Price of Paddy)				
1) Wet Season Price (Rp/kg)	200	187	174	176
2) Dry Season Price (Rp/kg)	251	231	194	244
II. With-Project Condition (Wholesale Price of Rice)				
1) Wet Season				
- Class B Rice for DOLOG/Market Price (Rp/kg)	405/378	405/377	405/348	405/393
2) Dry Season				
- Class B Rice for DOLOG/Market Price (Rp/kg)	405/458	405/449	405/414	405/446
- Class A Rice for Market Price (Rp/kg)	488	479	444	476

2.1.3 Prices and Costs of Farm Inputs

Farming tools, equipment, machinery and facilities such as rice mill, warehouse, drying floor. will be introduced as the necessary counter arrangement for the improvement of rice post harvest and

marketing activities. Financial prices of these goods and machinery are directly referred to the retail prices in 1988 in Indonesia.

The custom charges or expenses for hired machinery powers, rice milling, etc. under the with-project condition are estimated on the basis of the operation and maintenance costs including the costs for depreciation and repayment. Financial prices and costs of farm inputs in the respective pilot areas are estimated in Table XI 2-3 and summarized as follows:

Item	Unit	Without Project Condition	With Project Condition	
Labor charge	Rp/day			
- Telagasari (West Java)		2,500	2,500	
- Bagor (East Java)		2,500	2,500	
- Outside of Java		2,000	2,000	
Hired animal power	Rp/day	12,000	12,000	
Custom Charges/Expenses				
- Hand tractor	Rp/day			
Telagasari		27,500	27,500	
Bagor		25,000	25,000	
Outside of Java		32,500	32,500	
			1st to 5th year	After 6th year
- Thresher/1	Rp/kg			
Telagasari	(Paddy)	-	8	6
Bagor		-	10	6
Mattiro Bulu		-	7	5
Trimurjo		-	9	6
- Processing/Marketing/1	Rp/kg			
Drying	(Rice)	-	6-7	6-7
Storage		-	17-19	17-19
Cleaning		-	4-5	4
Milling		20	20	13
Transportation		-	2	2
Total		20	49-53	42-45

/1: Unit expenses consist of O&M cost including both depreciation and repayment costs.

2.2 Economic Price Forecast

The economic prices used for the economic evaluation of pilot plans are studied on both farm inputs and outputs as follows:

1) Economic prices for rice production are estimated on each quality classes, i.e. class A, B and C (others) on the basis of the projected world market prices in the long term range for the period of 1987 to 1995 by the World Bank. In Indonesia, it is forecasted that the rice production would be continuously short for meeting the self-sufficiency, hence the price of paddy production is estimated at the import substitution value. The world market price of rice is converted to 1988 constant price by the rate of 1.407 based on the manufacturing unit value index. The price forecast are presented in detail in Table XI 2-4.

2) Seasonal financial price increase through shipment control of rice product is excluded from economic price forecast, because the similar economic activities are done by other private sectors and there are no remarkable increase in economic value. Economic prices of paddy and rice are forecasted taking quality increse into consideration.

3) Economic labor charges are estimated by appling shadow wage rates of 60% for Java and 70% for outer Java.

4) The economic prices for others are converted from the respective financial prices by appling the standard conversion factor of 0.9.

Economic prices of farm inputs and outputs are shown in Table XI 2-5 and summarized as follows:

Item	Unit	Economic Price (1995)
Outputs		
1) Paddy (Farm gate price)	(Rp/kg)	
a) For Class C rice		
- 60% milling rate (Without Condition)		159
b) For Class B rice		
- 65% milling rate (With Condition)		242
2) Rice (Wholesale price)	(Rp/kg)	
a) Class A rice		439
b) Class B rice		393
c) Class C rice		350
Inputs		
1) Labor charges	(Rp/day)	1,450
2) Hired animal power	(Rp/day)	10,800
3) Custom charges for hand tractor		
- Telagasari		27,500
- Bagor		25,000
- Outer Java		32,500

3. FINANCIAL EVALUATION

3.1 General

Financial evaluation of the pilot plans is made by analysis of both typical farm budget and cash flow statement related to the farmer groups' activities.

Analysis of farm budget is conducted aiming to assess how the pilot operation could provide sufficient incentives to the member of group farmers and bring enough increment of farm income.

Assessment of cash flow statement concerning the management of the pilot farmer groups' activities is examined to clarify how the groups could financially manage their activities i.e. joint investment for reinforcement of structural function, joint use of machinery and facilities and joint marketing activities, etc.

3.2 Farmers' Economy

In order to assess the feasibility of the pilot plan from farmers' economic view point, farmers' economy is examined by the analysis of the typical farm budget under the future conditions without and with project.

After the implementation of the pilot plan, harvesting and processing losses will be reduced considerably through improvement of the post harvest activities.

Harvesting cost will also be reduced to significant extent by the introduction of improved harvesting system. Timely reaping by organized laborers under cash payment system and effective threshing works by pedal and power threshers through farmer groups' custom service will produce the reduction of production cost. The farmer groups should repay the loan for the threshers until the fifth year from the commencement of the pilot plan, but there will be no debt after the sixth year. Accordingly, the reduction of threshing expenses is expected after the sixth year.

The analysis on harvesting cost is shown in Table XI 3-1 and summarized as follows:

(Unit: Rp '000/ha/year)

Item	Telagasari			Bagor			Mattiro Bulu			Trimurjo		
	w/o	w-1	w-6	w/o	w-1	w-6	w/o	w-1	w-6	w/o	w-1	w-6
1. Labor charge	428	130	130	412	115	115	145	38	38	155	40	40
2. Custom threshing charge	-	120	98	-	157	94	-	92	72	-	124	72
3. Others	-	12	12	-	12	12	-	12	12	-	12	12
4. Total	428	262	240	412	284	221	145	142	122	155	176	124

Note: w/o = without project condition
w-1 = with project condition (1st-5th year)
w-6 = with project condition (after 6th year)

Increase in farmers' gross income will be brought by joint marketing of milled rice in with-project condition. The following prices are set according to the marketing outlets and rice quality classes:

	Telagasari		Bagor		Mattiro Bulu		Trimurjo	
	Price (Rp/kg)	Share (%)	Price (Rp/kg)	Share (%)	Price (Rp/kg)	Share (%)	Price (Rp/kg)	Share (%)
Wet Season (Class B only)								
To DOLOG	405	10	405	10	405	10	405	10
To Market	378	90	377	90	348	90	393	90
Weighted Average	381	100	380	100	354	100	394	100
Dry Season								
To DOLOG (Class B)	405	10	405	10	405	10	405	10
To Market								
Class B	458	80	449	80	414	80	446	80
Class A	488	10	479	10	444	10	476	10
Weighted Average	456	100	448	100	416	100	445	100

The improvement of profitability will be brought about by decrease in losses, reduction of production cost and increase in gross income. The crop budget is made for paddy sales under the without-project condition and for rice sales under the with-project condition as shown in Table XI 3-2. The net return under the with-project condition will be increased by the rice sales even though additional processing and marketing costs are required. The net return will be moreover enlarged from the 6th year due to no debt on threshers and rice mills.

(Unit: Rp '000/ha)

	Telagasari		Bagor		Mattiro Bulu		Trimurjo	
	W.S.	D.S.	W.S.	D.S.	W.S.	D.S.	W.S.	D.S.
Without-Project Condition (Paddy)								
1. Gross income	1,400	1,682	1,253	1,478	1,027	1,145	1,021	1,293
2. Production cost	568	606	578	576	267	287	239	268
3. Net return (1-2)	832	1,076	675	902	759	858	782	1,025
With-Project Condition (1st-5th year) (Rice)								
1. Gross income	1,829	2,098	1,710	1,971	1,416	1,664	1,576	1,647
2. Production cost	749	729	754	745	478	481	458	449
3. Net return (1-2)	1,080	1,369	956	1,227	938	1,184	1,118	1,198
With-Project Condition (After 6th year) (Rice)								
1. Gross income	1,829	2,098	1,710	1,971	1,416	1,664	1,576	1,647
2. Production cost	699	681	686	677	440	443	404	397
3. Net return (1-2)	1,130	1,416	1,024	1,294	976	1,222	1,172	1,250

Note: W.S.; Wet season D.S.; Dry season

Farm budget is prepared for the average size farmers in both without- and with-project conditions on the basis of the above crop budget analysis as shown in Table XI 3-3 and summarized in the following table. The budget conditions are different among the pilot areas because of the difference in farm size and rice productivity. The increase in net reserve under the with-project condition is fairly large being Rp 400-1,400 thousand in case of owner, while that is limited to Rp 30-150 thousand in case of tenant. This is mainly due to the land rent as high as 50% to the total paddy product.

(Unit: Rp '000)

	Telagasari		Bagor		Mattiro Bulu		Trimurjo	
	Owner	Tenant	Owner	Tenant	Owner	Tenant	Owner	Tenant
Farm size (ha)	0.98	0.69	1.30	0.30	2.56	1.21	0.76	0.62
Without-Project Condition								
1. Farm income	1,722	383	1,822	268	3,481	1,148	1,264	502
2. Non-farm income	419	412	451	489	18	30	24	162
3. Total income	2,141	795	2,273	756	3,499	1,178	1,288	664
4. Living expense	2,065	749	1,480	667	2,145	925	1,184	662
5. Net reserve (3-4)	76	46	793	89	1,354	253	104	2
With-Project Condition (1st - 5th year)								
1. Farm income	2,259	465	2,609	301	4,776	1,191	1,662	538
2. Non-farm income	419	412	451	489	18	30	24	162
3. Total income	2,678	877	3,060	789	4,794	1,220	1,685	700
4. Living expense	2,065	749	1,480	667	2,145	925	1,184	662
5. Net reserve (3-4)	613	128	1,580	122	2,649	295	501	38
With-Project Condition (after 6th year)								
1. Farm income	2,326	532	2,644	335	4,859	1,273	1,728	603
2. Non-farm income	419	412	451	489	18	30	24	162
3. Total income	2,746	944	3,095	824	4,877	1,303	1,751	765
4. Living expense	2,065	749	1,480	667	2,145	925	1,184	662
5. Net reserve (3-4)	681	195	1,615	157	2,732	378	567	103

3.3 Farmer Groups' Economy

Farmer groups' economy is assessed for ten years from the commencement of the pilot plan taking the groups' incomes and expenditures into consideration. The machinery and the facilities will be jointly procured or constructed respectively by the utilization of loan. Operation and maintenance cost including depreciation and repayment costs will be compensated by the collection of the expenses for threshing, processing and marketing activities.

The cash inflow of the groups' activities consists of custom threshing charges, processing and marketing charges, rice sales income and loan. The charges for joint use of machinery and facilities are calculated so as to compensate the expenses for operation, maintenance, depreciation and repayment for loan detailed in Annex X. The unit charges collecting from group members are decided as follows:

Item	Telagasari	Bagor	Mattiro Bulu	Trimurjo
I. Custom Threshing Charges (Rp/kg of paddy)				
1. 1st to 5th year	8	10	7	9
2. After 6th year	6	6	5	6
II. Processing/Marketing Charges (Rp/kg of rice)				
1. 1st to 5th year	50	53	51	49
2. After 6th year	42	45	44	42

Annual incomes from the charges as shown in Table XI 3-4 are estimated on the basis of the threshing, processing and marketing quantities of rice product and the above unit charges and summarized as follows:

(Unit: Rp '000)

Item	Telagasari	Bagor	Mattiro Bulu	Trimurjo
I. 1st to 5th year				
1. Custom Threshing Charges	15,984	14,920	9,506	18,504
2. Processing/Marketing Charges	51,850	38,031	30,548	47,948
Total	67,834	52,951	40,054	66,452
II. 6th to 10th year				
1. Custom Threshing Charges	11,988	8,952	6,790	12,336
2. Processing/Marketing Charges	43,146	31,703	30,121	45,828
Total	55,134	40,655	36,911	58,164

Milled rice will be jointly sold to the local wholesale markets or DOLOG after milling at the farmer group' mills. The income of sold rice as shown in Table XI 3-5 will be shared with the members on the basis of the members' deliveries of paddy. Loan incomes will be spent for the procurement of machinery and construction of facilities.

The cash outflow for the managenent of groups' activities comprises 1) investment cost for procurement of machinery and construction of facilities i.e. drying concrete floors, warehouses and milling houses, 2) operating cost for machinery, facilities, paddy procurement from farmers and transportation cost to DOLOG or the wholesale markets, 3) replacement cost for machinery, 4) repayment for the loan.

Cash flow statements in the respective pilot areas are prepared on the basis of the above conditions and of implementation schedule of the pilot plan as shown in Table XI 3-6. It is concluded that the pilot farmer groups can manage their activities economically even during the repayment periods for machinery untill the fifth year. The groups' accounts will be improved after the repayment of the loan for machiney when the farmer groups could have possibilities for the other investments i.e. expansion of capacities for storage, introduction of mechanical dryers, a truck for transportation, etc.

4. ECONOMIC EVALUATION

4.1 Economic Benefit

Economic benefit will accrue from the decrease in losses of paddy and rice and increase in rice quality which are considerd as the quantitative and qualitavive benefits respectively. Incremental benefits between without- and with-project conditions are estimated in terms of economic value of milled rice.

Quantitative benefits consist of the decrease in reaping and threshing losses at field level and in rice milling losses which will be produced by the improvement of harvesting and milling activities with introduction of machinery and equipment. Quantitative benefits accrued from the decrease in field losses are estimated taking the following assumptions:

1) Decrease in field losses of paddy is converted to quantity of milled rice by applying the present milling recovery rate of about 60% (from GKP to white rice).

2) Milled rice converted is considered as the class C rice on the basis of the low milling efficiency of present rice mills in and around the pilot areas.

3) Milled rice is evaluated by the class C price of Rp 328/kg in terms of economic value.

Increase in milling recovery rates is estimated at 5% between the present rate of around 60% and the improved rate of around 65% in with project condition. The saving of milling losses is evaluated by applying the class C price.

Qualitative benefit is evaluated by the differences of economic value among the different rice qualities. The milled rice in without-project condition is considered as the class C rice which is common product around the pilot areas. The rice quality in with project condition will be improved to the class B or A by the improvement of drying, cleaning and milling activities with introduction of winnowers,

drying and storage facilities and rice mills. Qualitative benefit is calculated in terms of economic price differences between the class C and B for the class B rice, and the class C and A for the class A rice in with project condition.

The quantitative and qualitative annual benefits are estimated as shown in Table XI 4-1 and summarized as follows:

Item	Unit	Telagasari	Bagor	Mattiro Bulu	Trimurjo
I. Quantitative Benefit					
1. Decrease in Field Losses					
- Decrease in losses	t of paddy	99	47	98	72
- Increase in rice	t of rice	59	28	59	43
- Price of Class C rice	Rp'000/t	328	328	328	328
- Benefit	Rp'000	19,352	9,184	19,352	14,104
2. Decrease in Milling Losses					
- Decrease in milling losses	t	84	61	56	91
- Benefit	Rp'000	27,552	20,008	18,368	29,848
3. Quantitative Benefit	Rp'000	46,904	29,192	37,720	43,952
II. Qualitative Benefit					
1. Class B Rice Production					
- Production in with	t	1,034	754	690	1,127
- Price difference (Class B and C)	Rp'000/t	22	22	22	22
- Benefit	Rp'000	22,748	16,588	15,180	24,794
2. Class A Rice Production					
- Production in with	t	40	27	24	42
- Price difference (Class A and C)	Rp'000/t	65	65	65	65
- Benefit	Rp'000	2,600	1,755	1,560	2,730
3. Qualitative Benefit	Rp'000	25,348	18,343	16,740	27,524

The benefits will be expected to increase linearly year by year and reach the full benefits in and after five years after the implementation of the pilot plan.

4.2 Economic Cost

4.2.1 Economic Project Cost

Economic project costs for the pilot plan are estimated for the construction cost for drying floor, warehouse and milling house, and procurement cost for machinery.

Economic project costs is converted from the financial costs by applying the standard convertion factor (SCF) of 0.9. The economic project costs are calculated as shown in Table XI 4-2 and summarized as follows:

(Unit: Rp '000)

	Telagasari	Bagor	Mattiro Bulu	Trimurjo
1. Machinery and Equipment	28,864	31,432	19,181	46,241
2. Construction				
- Drying Floor	9,597	6,855	7,312	10,511
- Building	53,928	39,312	40,824	57,456
Sub-total	63,525	46,167	48,136	67,967
3. Total (1 + 2)	92,389	77,599	67,317	114,208

4.2.2 Operation and Maintenance Cost

Operation and maintenance cost (O&M costs) for the pilot plan comprise expenses for operators and laborers, fuel and oil, spareparts and materials for repair. O&M costs for processing and marketing activities using drying floors, winnowers, rice mills and warehouse are considered the additional cost in with-project condition. Economic unit O&M costs are estimated by applying the economic labor cost of Rp 1,450/man-day and the SCF of 0.9 for the other cost portion as shown in Table XI 4-3 for machinery and Table XI 4-4 for facilities. Economic annual O&M costs in the respective pilot areas are shown in Table XI 4-5 and summarized as follows:

(Unit: Rp '000/year)

Cost Item	Telagasari	Bagor	Mattiro Bulu	Trimurjo
I. Operation and Maitnenance Cost	10,561	7,506	7,224	11,332
II. Personnel Cost	6,801	4,750	4,617	7,355
III. Transportation Cost	1,775	1,174	1,190	1,850
Total (I+II+III)	19,137	13,430	13,033	20,534

4.2.3 Change of Cost for Harvesting

Labor requirements for the post harvest activities i.e. reaping, threshing, winnowing, bagging, drying and transportation at field level are changed by the introduction of pedal or power threshers and additional labor inputs for drying. O&M cost for the threshers accrues in with-project condition instead of threshing labor costs in without-project condition. Total economic harvesting cost will increase between without- and with-project conditions as shown in Table XI 4-6. The incremental harvesting costs are summarized as follows:

(Unit: Rp '000)

Item	Telagasari	Bagor	Mattiro Bulu	Trimurjo
Incremental cost				
Wet season	518	1,018	588	1,364
Dry season	835	1,253	524	1,758
Total	1,353	2,271	1,062	3,122

4.2.4 Replacement Cost

The following machinery and equipments are considered to be replaced by 5 years and 2 or 3 years respectively. Building and drying floor will be replaced by 20 years. Economic replacement costs for machinery and equipment are estimated by applying the SCF of 0.9 to those of financial prices as follows:

(Unit: Rp '000)

Item	Useful Life (year)	Telagasari	Bagor	Mattiro Bulu	Trimurjo
1. Replacement in 3rd year					
- Serrated Sickle	2	412	340	365	542
- Drying Sheet	2	1,440	1,080	1,080	1,440
Total		1,852	1,420	1,445	1,982
2. Replacement in 4th year					
- Threshing Sheet	3	738	216	504	306
- Pedal Thresher	3	3,690	0	2,520	0
Total		4,428	216	3,024	306
3. Replacement in 6th year					
- Power Thresher	5	0	15,084	0	21,369
- Power Winnower	5	2,064	1,032	1,032	2,064
- Rice Mill Unit	5	20,520	13,680	13,680	20,520
Total		22,584	29,796	14,712	43,953
4. Replacement in 21th year					
- Building	20	53,928	39,312	40,824	57,456
- Drying Floor	20	9,597	6,855	7,312	10,511
Total		63,525	46,167	48,136	67,967

4.3 Economic Evaluation

The economic useful life of the pilot plan is considered to be 20 years on the basis of the useful life for building and drying floors of 20 years. The economic internal rate of return(EIRR) is caluculated from the economic cost and benefit flows for each pilot area as shown in Table XI 4-7. The EIRRs are as follows:

	Telagasari	Bagor	Mattiro Bulu	Trimurjo
EIRR (%)	25	18	24	19

Project sensitivity is analyzed with respect to change in the project benefits and costs. The results of sensitivity test are summarized in Table XI 4-8. The above table indicates that the pilot plan is still expected to become economically feasible even if there are considerably increase in the project costs and or decrease in benefits.

5. SOCIO-ECONOMIC IMPACTS

In addition of the direct benefits assessed in the economic and financial evaluations, various secondary and intangible benefits and/or favourable socio-economic impacts may be expected from the implementation of the pilot plans as follows:

(1) Activation of Village Economy

The present economy in the pilot areas depends on the paddy production sector. The agro-processing industries including rice milling are limited to the home consumption for farmers and most of marketable surplus are brought out by paddy or raw materials. The operation of rice mills by farmer groups will create the employment oppotunities of laborers and operators for drying, cleaning and milling. Initial rice milling activities by farmer groups would promote the other processing industries for palawija crops. The village economy will be stabililized and enlarged by the close coordination between production and processing sectors.

(2) Spreading Effects to Other Area

Each of the pilot area is located at the major rice producing area in the respective four provinces. The development effects by the pilot plan will be easily spread to the other farmer groups around the pilot areas through the existing Rural Extension Centers and the proposed Post Harvest Service Centers.

Technologies introduced by the pilot plan will be monitored and evaluated by the Service Centers.. These accumulated and consolidated technologies will be effectively used for the improvement activities in the other farmer groups.

(3) Enhancement of Farmer Groups Organization

Joint post harvest and marketing activities by farmer groups will accrue close coordination with pre harvesting activities and KUDs'

activities. Effective post harvest activities heavily rely on the pre harvesting activities i.e. planting of same variety for timely harvesting, coordinated plant protection activities for increase in production, timely drainage for increase in harvetsting work efficiency, etc. Farmer group activities for the improvement of post harvest will be expanded to pre harvesting activities on the basis of SUPRA INSUS technologies. Pilot farmer groups will easily join the KUDs' activities through the timely arrangement for the procurement of farm inputs, surely repayment of SUPRA INSUS credit and close coordination of marketing activities.

When the farmer groups by the unit of tertiary irrigation block are reorganized and their post harvest and marketing activities are fairly under way, the respective farmer groups will be integrated as a rice growers' association. This association will have chances to introduce more effective technologies on the basis of scale merits, i.e. mechanical dryers, larger scale rice mills with higher efficiency, and to get more strong bargaining powers. The set-up of the growers' association will bring more benefits to the member farmers.

(4) Enhancement of Village Society

The proposed pilot plan will play the leading activities in the village society. Not only member farmers but also agricultural laborers and the government officials in the villages will participate in the pilot activities. Most of the village members will be required to attend the meetings for the promotion of the plan and have the joint activities each other. The village society can be enhanced through these activities.

(5) Promotion of Palawija Crop Production

The present major constraints for the production of palawija crops are lower productivities due to improper farming practicies as well as limited water supply or production under rainfed conditions, and lower prices due to limited market outlets. The farmer groups set-up by the pilot plan could improve the constraints on the marketing outlets through

the joint processing and marketing activities as well as rice production. The technical problems will be solved by the enhancement of extension activities from the Rural Extension Centers. The farmers' income could be increased by the promotion of palawija crops.

Table XI 2-1 FINANCIAL WHOLESALE PRICE OF RICE

Item	Without Condition			With Condition				
	Selling Month	Quality Class	Present Price (Rp/kg)	Selling Month	Selling to	Quality Class	Price Increase Ratio /_1	Estimated Price for Farmer Groups (Rp/kg) /_2
Telagasari (Karawang)								
Wet Season	Apr-May	C	358	Apr-Jul	DOLOG	B	-	405 /_3
				Apr-Jul	Market	B	-	378 (358+20)
Dry Season	Jul-Aug	C	389	Jul-Aug	DOLOG	B	-	405
				Aug-Dec	Market	B	1.12	458 ((389+20)*1.12)
				Aug-Dec	Market	A	-	488 (458+30)
Bagor (Nganjuk)								
Wet Season	Apr	C	357	Apr-Jul	DOLOG	B	-	405
				Apr-Jul	Market	B	-	377 (357+20)
Dry Season	Jul-Aug	C	400	Jul-Aug	DOLOG	B	-	405
				Aug-Dec	Market	B	1.07	449 ((400+20)*1.07)
				Aug-Dec	Market	A	-	479 (449+30)
Mattiro Bulu (Pinrang)								
Wet Season	May	C	328	May-Jul	DOLOG	B	-	405
				May-Jul	Market	B	-	348 (328+20)
Dry Season	Jul-Aug	C	363	Jul-Aug	DOLOG	B	-	405
				Aug-Dec	Market	B	1.08	414 ((363+20)*1.08)
				Aug-Dec	Market	A	-	444 (414+30)
Trimurjo (Central Lampung)								
Wet Season	Apr	C	373	Apr-Aug	DOLOG	B	-	405
				Apr-Aug	Market	B	-	393 (373+20)
Dry Season	Aug-Sep	C	401	Aug-Sep	DOLOG	B	-	405
				Sep-Dec	Market	B	1.06	446 ((401+20)*1.06)
				Sep-Dec	Market	A	-	476 (446+30)

Note : /_1 : Based on the monthly wholesale price analysis through 1983 to 1988.
Price increase ratio is estimated at a half of increase between dry harvesting season and off season in december.

/_2 : B= (C+20) x R or A = B +30
R ; Price increase ratio
C ; Wholesale price of C class rice in the harvesting season (without condition)
B ; Price of B class rice
A ; Price of A class rice
20 ; Minimum price differences between B and C classes of Rp20/kg.
30 ; Minimum price differences between A and B classes of Rp30/kg.

/_3 : DOLOG buying price of B class rice from KUDs or task force.

Table XI 2-2 SUMMARY OF FINANCIAL PRICE OF PADDY AND RICE

Item	Telagasari	Bagor	Mattiro Bulu	Trimurjo
I. Without Condition (Present Farm Gate Price of Paddy)				
1) Wet Season				
Price (Rp/kg)	200	187	174	176
Month	Mar-Apr	Mar-Apr	Mar-Apr	Apr-May
Selling to	Private	Private	Private	Private
2) Dry Season				
Price (Rp/kg)	251	231	194	244
Month	Jul-Aug	Jul-Aug	Jul-Aug	Aug-Sep
Selling to	Private	Private	Private	Private
II. With Project Condition (Wholesale Price of Rice)				
1) Wet Season				
Price (Rp/kg)	405 / 378	405 / 377	405 / 348	405 / 393
Month	Apr-Jul	Apr-Jul	May-Jul	Apr-Aug
Selling to	DOLOG / Market	DOLOG / Market	DOLOG / Market	DOLOG / Market
2) Dry Season				
- Class B Rice				
Price (Rp/kg)	405 / 458	405 / 449	405 / 414	405 / 446
Month	Jul-Aug/Aug-Dec	Jul-Aug/Aug-Dec	Jul-Aug/Aug-Dec	Aug-Sep/Sep-Dec
Selling to	DOLOG / Market	DOLOG / Market	DOLOG / Market	DOLOG / Market
- Class A Rice				
Price (Rp/kg)	488	479	444	476
Month	Aug-Dec	Aug-Dec	Aug-Dec	Sep-Dec
Selling to	Market	Market	Market	Market

Table XI 2-3 FINANCIAL PRICES OF FARM INPUTS AND CUSTOM CHARGES

Item	Unit	Without Project Condition	With Project Condition	
Labor charge	Rp/day			
Java (Telagasari/Bagor)		2,500	2,500	
Outside of Java (Mattiro Bulu/Trimurjo)		2,000	2,000	
Hired animal power	Rp/day	12,000	12,000	
Custom Charges/Cost				
-Hand tractor	Rp/day			
Telagasari		27,500	27,500	
Bagor		25,000	25,000	
Outside of Java		32,500	32,500	
-Thresher	Rp/kg (Paddy)		1st to 5th Year	After 6th Year
Telagasari (Manual)		-	8	6
Bagor (Power)		-	10	6
Mattiro Bulu (Manual)		-	7	5
Trimurjo (Power)		-	9	6
-Processing/Marketing	Rp/kg (Rice)			
Drying (Concrete Floor)		-	4 - 5	3
Ceaning (Winnower)		-	4 - 5	4
Milling		20	20	13
Storage		-	13 - 14	13 - 14
Transportation		-	2	2
Total		20	43 - 46	35 - 36

Table XI 2-4 ECONOMIC PRICE STRUCTURE FOR RICE / PADDY, 1995
(Import substitution value, 1988 Constant Price)

Item	Operation	Unit	1995 Price: 10 % Broken Rice (Class A)	35 % Broken Rice (Class B)	More than 35% Broken Rice (Class C)
Thai 5% brokens, FOB Bangkok /_1		$/ton	243		
Quality adjustment	80%/70%/65%	$/ton	194	170	158
Freight and insurance	+	$/ton	31	31	31
CIF price, related ports/_2	=	$/ton	225	201	189
	*1.73	Rp/kg	389	348	327
Port handling, storage and losses	+(5%)	Rp/kg	19	17	16
Transport, port to wholesaler	+	Rp/kg	6	6	6
Wholesale price, related area	=	Rp/kg	414	371	349
Transport, mill to wholesaler	-	Rp/kg	10	10	10
Trader margins	-	Rp/kg	11	11	11
Ex-mill price	=	Rp/kg	393 *	350 *	328 *
			-	(65%)	(60%)
Conversion to paddy	65%/60%	Rp/kg	-	227	196
Milling cost	-	Rp/kg	-	10	10
Transport, farm to mill	-	Rp/kg	-	3	3
Economic farm gate price of dry clean paddy	=	Rp/kg(GKG)	-	214	183
Economic farm gate price of wet paddy	=	Rp/kg(GKP)	-	173	147 /_3

Note : /_1 Based on Revision of Commodity Price Forecasts and Quarterly Review of Commodity Markets, September 1988, World Bank.
/_2 Prices converted at an exchange rate of US$ 1.0 = Rp 1,730
/_3 Based on the following assumptions
-Weight convertion rate of 85% from wet paddy(GKP) to dry clean paddy(GKG)
-Drying cost of Rp 10/kg of dry paddy(GKG)
-Price(GKP)=(Price(GKG)-10)*0.85

Table XI 2-5 SUMMARY OF FINANCIAL AND ECONOMIC PRICES

Item	Unit	Financial Price (1988)	Economic Price/_1 (1995)
Outputs			
1) Paddy (Farm gate price)	Rp/kg (Wet Paddy)		
a) For Class C Rice - 60% milling rate (Without Condition)		174-282 /_2	147
b) For Class B Rice - 65% milling rate (With Condition)		-	173
2) Rice (Wholesale price)	Rp/kg		
a) Class A (10% broken)		444-488 /_2	439
b) Class B (35% broken)		348-458	393
c) Class C (More than 35% broken)		328-401	350
Inputs			
1) Labor charges/_3	Rp/day		
-Telagasari (West Java)		2,500	1,500
-Bagor (East Java)		2,500	1,500
-Outside of Java		2,000	1,400
			Average; 1,450
2) Hired animal power/_4	Rp/day	12,000	10,800
3) Custom Charges/_5			
-Hand tractor	Rp/day		
Telagasari		27,500	24,700
Bagor		25,000	22,500
Outside of Java		32,500	29,200

	Rp/kg (Paddy)	1st to 5th Year	After 6th Year	
-Thresher				
Telagasari (Manual)		8	6	-
Bagor (Power)		10	6	-
Mattiro Bulu (Manual)		7	5	-
Trimurjo (Power)		9	6	-
-Processing/Marketing	Rp/kg (Rice)			
Drying (Concrete Floor)		6 - 7	6 - 7	-
Ceaning (Winnower)		4 - 5	4	-
Milling		20	13	-
Storage		17 - 19	17 - 19	-
Transportation		2	2	-
	Total	49 - 53	42 - 45	-

/_1 1988 constant prices based on World Bank September 1988, Commodity Price Forecasts. The other economic prices are converted by SCF of 0.9. IBRD Staff Appraisal Report, Irrigation Sub-sector, 1987, Oct.
/_2 Financial price ranges in the related areas.
/_3 Economic shadow wage rates of 60% for Java and 70% for outside of Java are applied. IBRD Staff Appraisal Report, Irrigation Sub-sector, 1987, Oct.
/_4 Hired animal power comprises 2 heads of bull with 1 operator.
/_5 Custom charges consist of O&M cost including depriciation and repayment costs.

Table XI 3-1 FINANCIAL HARVESTING COST IN WITH AND WITHOUT PROJECT CONDITIONS

	Without						With					
	W.S.			D.S.			W.S.			D.S.		
	Labor (md/ha)		Cost (Rp'000	Labor (md/ha)		Cost (Rp'000	Labor (md/ha)		Cost (Rp'000	Labor (md/ha)		Cost (Rp'000
	Family	Hired	/ha)	Family	Hired	/ha)	Family	Hired	/ha)	Family	Hired	/ha)
TELAGASARI	(7.0 t/ha, 200Rp/kg)			(6.7 t/ha, 251Rp/kg)			(2,500Rp/md)			(2,500Rp/md)		
1.Labor Charge												
Reaping	1	14	73.7	1	11	82.6	1	15	37.5	1	12	30.0
Threshing	0	12	63.2	0	10	75.1	0	8	-	0	8	-
Winnowing	0	5	26.3	0	5	37.5	0	2	5.0	0	2	5.0
Bagging	0	2	10.5	0	2	15.0	0	2	5.0	0	2	5.0
Drying	0	0	0.0	0	0	0.0	0	4	10.0	0	4	10.0
Transportation	0	4	21.1	0	3	22.5	0	5	12.5	0	4	10.0
sub-total /1	1	37	194.7	1	31	232.7	1	36	70.0	1	32	60.0
2.Custom threshing charge /2												
Pedal thresher												
- 1st-5th year			-			-			60.0			60.0
- after 6th year			-			-			48.8			48.8
3. Depreciation Cost of Tools												
Serrated sickles			-			-			1.2			1.2
Drying mat			-			-			5.0			5.0
4. Total												
- 1st-5th year			194.7			232.7			136.2			126.2
- after 6th year			194.7			232.7			125.0			115.0
BAGOR	(8.2 t/ha, 187Rp/kg)			(7.5 t/ha, 231Rp/kg)			(2,500Rp/md)			(2,500Rp/md)		
1.Labor Charge												
Reaping	2	11	57.9	2	9	67.6	2	12	30.0	2	10	25.0
Threshing	0	12	63.2	0	10	75.1	0	4	-	0	4	-
Winnowing	0	5	26.3	0	4	30.0	0	2	5.0	0	2	5.0
Bagging	0	2	10.5	0	2	15.0	0	2	5.0	0	2	5.0
Drying	0	0	0.0	0	0	0.0	0	4	10.0	0	4	10.0
Transportation	0	3	15.8	0	3	22.5	0	4	10.0	0	4	10.0
sub-total	2	33	206.5	2	28	204.5	2	28	60.0	2	26	55.0
2.Custom threshing charge												
Power thresher												
- 1st-5th year			-			-			78.5			78.5
- after 6th year			-			-			46.8			46.8
3. Depreciation Cost of Tools												
Serrated sickles			-			-			1.2			1.2
Drying mat			-			-			5.0			5.0
4. Total												
- 1st-5th year			206.5			204.5			144.7			139.7
- after 6th year			206.5			204.5			113.0			108.0
MATTIRO BULU	(5.9t/ha, 174Rp/kg)			(5.9t/ha, 194Rp/kg)			(2,000Rp/md)			(2,000Rp/md)		
1.Labor Charge												
Reaping	8	6	31.6	6	6	45.0	11	4	10.0	7	6	15.0
Threshing	7	5	26.3	5	5	37.5	0	8	-	0	7	-
Winnowing	3	2	10.5	3	2	15.0	2	0	0.0	2	0	0.0
Bagging	1	1	5.3	1	1	7.5	2	0	0.0	2	0	0.0
Drying	0	0	0.0	0	0	0.0	3	1	2.5	3	1	2.5
Transportation	1	1	5.3	0	1	7.5	2	2	5.0	2	1	2.5
sub-total	20	15	62.9	15	15	81.8	20	15	17.5	16	15	20.0
2.Custom threshing charge												
Pedal thresher												
- 1st-5th year			-			-			46.0			46.0
- after 6th year			-			-			36.1			36.1
3. Depreciation Cost of Tools												
Serrated sickles			-			-			1.2			1.2
Drying mat			-			-			5.0			5.0
4. Total												
- 1st-5th year			62.9			81.8			69.7			72.2
- after 6th year			62.9			81.8			59.8			62.3
TRIMURJO	(5.8t/ha, 176Rp/kg)			(5.3t/ha, 244Rp/kg)			(2,000Rp/md)			(2,000Rp/md)		
1.Labor Charge												
Reaping	8	6	31.6	6	5	37.5	11	4	10.0	7	5	12.5
Threshing	6	5	26.3	5	4	30.0	0	4	-	0	4	-
Winnowing	3	2	10.5	2	3	22.5	2	0	0.0	2	0	0.0
Bagging	1	1	5.3	1	1	7.5	1	1	2.5	2	0	0.0
Drying	0	0	0.0	0	0	0.0	3	1	2.5	2	2	5.0
Transportation	2	1	5.3	1	2	15.0	3	1	2.5	2	2	5.0
sub-total	20	15	62.5	15	15	92.4	20	11	17.5	15	13	22.5
2.Custom threshing charge												
Power thresher												
- 1st-5th year			-			-			61.9			61.9
- after 6th year			-			-			36.2			36.2
3. Depreciation Cost of Tools												
Serrated sickles			-			-			1.2			1.2
Drying mat			-			-			5.0			5.0
4. Total												
- 1st-5th year			62.5			92.4			85.6			90.6
- after 6th year			62.5			92.4			59.9			64.9

Note: /1 = for without project, unit price of paddy x yield x sharing rate(1/7) x (hired labor/total labor)
for with project, unit wage x hired labor
/2 = Custom threshing charge includes operator charge, therefore above labor charge does not include threshing in with project condition.

Table XI 3-2 CROP BUDGET IN WITH AND WITHOUT PROJECT CONDITIONS

(Unit:'000Rs/ha)

	TELAGASARI						BAGOR					
	Without		With				Without		With			
			1st-5th Year		After 6th Year				1st-5th Year		After 6th Year	
	W.S.	D.S.	W.S.	D.S.	W.S.	D.S.	W.S.	D.S.	W.S.	D.S.	W.S.	D.S.
A. Gross Income	1,400	1,682	1,829	2,098	1,829	2,098	1,253	1,478	1,710	1,971	1,710	1,971
1) Yield(t/ha)												
-Paddy	7.0	6.7	7.4	7.1	7.4	7.1	6.7	6.4	6.9	6.7	6.9	6.7
-Rice	-	-	4.8	4.6	4.8	4.6	-	-	4.5	4.4	4.5	4.4
2) Unit price (Rp/kg)												
-Paddy	200	251	-	-	-	-	187	231	-	-	-	-
-Rice	-	-	381	456	381	456	-	-	380	448	380	448
B. Production Cost												
1) Farm input	143	143	143	143	143	143	159	159	159	159	159	159
2) Cost for pre harvest												
-Labor	150	150	150	150	150	150	140	140	140	140	140	140
-Animal	0	0	0	0	0	0	0	0	0	0	0	0
-Machinery	55	55	55	55	55	55	50	50	50	50	50	50
3) Harvesting cost /1	195	233	136	126	125	115	207	205	145	140	113	108
4) Processing/Marketing charge	-	-	240	230	202	193	-	-	239	233	203	198
5) Irrigation fee	2	3	2	3	2	3	2	2	2	2	2	2
6) Land tax	23	23	23	23	23	23	20	20	20	20	20	20
7) Land rent	700	841	914	1,049	914	1,049	626	739	855	986	855	986
8) Total												
-Owner	568	606	749	729	699	681	578	576	754	745	686	677
-Tenant	1,174	1,353	1,569	1,684	1,520	1,636	1,105	1,216	1,510	1,631	1,442	1,563
C. Net Return (A-B)												
-Owner	832	1,076	1,080	1,369	1,130	1,416	675	902	956	1,227	1,024	1,294
-Tenant	227	329	260	414	309	462	148	262	200	341	268	408

(Unit:'000Rs/ha)

	MATTIRO BULU						TRIMURJO					
	Without		With				Without		With			
			1st-5th Year		After 6th Year				1st-5th Year		After 6th Year	
	W.S.	D.S.	W.S.	D.S.	W.S.	D.S.	W.S.	D.S.	W.S.	D.S.	W.S.	D.S.
A. Gross Income	1,027	1,145	1,416	1,664	1,416	1,664	1,021	1,293	1,576	1,647	1,576	1,647
1) Yield(t/ha)												
-Paddy	5.9	5.9	6.2	6.2	6.2	6.2	5.8	5.3	6.2	5.7	6.2	5.7
-Rice	-	-	4.0	4.0	4.0	4.0	-	-	4.0	3.7	4.0	3.7
2) Unit price (Rp/kg)												
-Paddy	174	194	-	-	-	-	176	244	-	-	-	-
-Rice	-	-	354	416	354	416	-	-	394	445	394	445
B. Production Cost												
1) Farm Input	113	113	113	113	113	113	131	131	131	131	131	131
2) Cost for pre harvest												
-Labor	6	6	6	6	6	6	4	4	4	4	4	4
-Animal	36	36	36	36	36	36	24	24	24	24	24	24
-Machinery	33	33	33	33	33	33	0	0	0	0	0	0
3) Harvesting cost /1	63	82	70	72	60	62	63	92	86	91	60	65
4) Processing/Marketing charge	-	-	204	204	176	176	-	-	196	181	168	155
5) Irrigation fee	2	2	2	2	2	2	2	2	2	2	2	2
6) Land tax	15	15	15	15	15	15	15	15	15	15	15	15
7) Land rent	513	572	708	832	708	832	510	647	788	823	788	823
8) Total												
-Owner	267	287	478	481	440	443	239	268	458	449	404	397
-Tenant	709	787	1,115	1,241	1,077	1,203	669	835	1,165	1,191	1,111	1,140
C. Net Return (A-B)												
-Owner	759	858	938	1,184	976	1,222	782	1,025	1,118	1,198	1,172	1,250
-Tenant	318	357	301	423	339	461	352	459	411	455	465	507

Note: This budget is for paddy in without project condition, and for rice in with project condition.
/1= See Table XI 3-1

Table XI 3-3 FARM BUDGET IN WITH AND WITHOUT PROJECT CONDITIONS (1/2)

Item	TELAGASARI						BAGOR					
	Without		With				Without		With			
			1st-5th Year		After 6th Year				1st-5th Year		After 6th Year	
	Owner	Tenant	Owner	Tenant	Owner	Tenant	Owner	Tenant	Owner	Tenant	Owner	Tenant
Family Size	4.1	4.1	4.1	4.1	4.1	4.1	4.3	4.3	4.3	4.3	4.3	4.3
Farm Size(ha)												
Operated	0.69	0.69	0.69	0.69	0.69	0.69	0.30	0.30	0.30	0.30	0.30	0.30
Leased to other farmer(s)	0.29	-	0.29	-	0.29	-	1.00	-	1.00	-	1.00	-
Cropping Intensity (%)												
Paddy (WS)	100	100	100	100	100	100	90	90	90	90	90	90
Paddy (DS)	100	100	100	100	100	100	80	80	80	80	80	80
Palawija	0	0	0	0	0	0	70 /2	70 /2	70 /2	70 /2	70 /2	70 /2
Sugarcane	-	-	-	-	-	-	10	10	10	10	10	10
I. Farm Income												
a. Paddy												
-Gross income	2,127	2,127	2,710	2,710	2,710	2,710	693	693	935	935	935	935
-Production cost	810	1,744	1,020	2,245	952	2,178	294	590	382	799	348	764
-Net income	1,317	383	1,690	465	1,757	532	399	103	552	136	587	170
b. Palawija												
-Net income	-	-	-	-	-	-	145	145	145	145	145	145
c. Sugarcane												
-Net income	-	-	-	-	-	-	71	20	71	20	71	20
II. Land rent from tenant	405	-	569	-	569	-	1,207	-	1,841	-	1,841	-
III Income from On-farm Employment	-	-	-	-	-	-	-	-	-	-	-	-
IV. Non-farm income	419	412	419	412	419	412	451	489	451	489	451	489
V. Total Income (I + II + III + IV)	2,141	795	2,678	877	2,746	944	2,273	756	3,060	789	3,095	824
VI. Living Expense	2,065	749	2,065	749	2,065	749	1,480	667	1,480	667	1,480	667
a. Food	846	476	846	476	846	476	659	440	659	440	659	440
-Rice	206	206	206	206	206	206	159	159	159	159	159	159
-Other food	640	270	640	270	640	270	500	281	500	281	500	281
b. Other items	1,219	273	1,219	273	1,219	273	821	227	821	227	821	227
VII Net Reserve(V-VI)	76	46	613	128	681	195	793	89	1,580	122	1,615	157

Note: /1 A.L = Agricultural Laborer
/2 10% as dry season crop and 60% as third crop

Table XI 3-3 FARM BUDGET IN WITH AND WITHOUT PROJECT CONDITIONS (2/2)

Item	MATTIRO BULU						TRIMURJO					
	Without		With				Without		With			
			1st-5th Year		After 6th Year				1st-5th Year		After 6th Year	
	Owner	Tenant	Owner	Tenant	Owner	Tenant	Owner	Tenant	Owner	Tenant	Owner	Tenant
Family Size	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Farm Size (ha)												
Operated	1.21	1.21	1.21	1.21	1.21	1.21	0.62	0.62	0.62	0.62	0.62	0.62
Leased to other farmer	1.35	-	1.35	-	1.35	-	0.14	-	0.14	-	0.14	-
Cropping Intensity (%)												
Paddy (WS)	100	100	100	100	100	100	100	100	100	100	100	100
Paddy (DS)	80	80	80	80	80	80	100	100	100	100	100	100
Palawija	50	50	50	50	50	50	0	0	0	0	0	0
Sugarcane	-	-	-	-	-	-	-	-	-	-	-	-
I. Farm Income												
a. Paddy												
-Gross income	2,351	2,351	3,324	3,324	3,324	3,324	1,435	1,435	1,998	1,998	1,998	1,998
-Production cost	601	1,620	1,044	2,550	961	2,468	314	932	562	1,461	497	1,396
-Net income	1,750	731	2,280	774	2,363	856	1,120	502	1,436	538	1,502	603
b. Palawija												
-Net income	417	417	417	417	417	417	-	-	-	-	-	-
c. Sugarcane												
-Net income	-	-	-	-	-	-	-	-	-	-	-	-
II Land rent from tenant	1,314	-	2,079	-	2,079	-	144	-	226	-	226	-
III Income from On-farm Employment	-	-	-	-	-	-	-	-	-	-	-	-
IV Non-farm income	18	30	18	30	18	30	24	162	24	162	24	162
V. Total Income (I + II + III + IV)	3,499	1,178	4,794	1,220	4,877	1,303	1,288	664	1,685	700	1,751	765
VI Living Expense	2,145	925	2,145	925	2,145	925	1,184	662	1,184	662	1,184	662
a. Food	890	585	890	585	890	585	687	423	687	423	687	423
-Rice	200	200	200	200	200	200	198	198	198	198	198	198
-Other food	690	385	690	385	690	385	489	225	489	225	489	225
b. Other items	1,255	340	1,255	340	1,255	340	497	239	497	239	497	239
VII Net Reserve (V-VI)	1,354	253	2,649	295	2,732	378	104	2	501	38	567	103

Table XI 3-4 ANNUAL INCOMES FROM CUSTOM THRESHING, PROCESSING AND MARKETING CHARGES

Cost Items	Telagasari			Bagor			Mattiro Bulu			Trimurjo		
	Unit Price (Rp/kg)	Q'ty (ton)	Amount (Rp'000)	Unit Price (Rp)	Q'ty (ton)	Amount (Rp'000)	Unit Price (Rp)	Q'ty (ton)	Amount (Rp'000)	Unit Price (Rp)	Q'ty (ton)	Amount (Rp'000)
I. 1st to 5th year												
1. Custom Threshing Charge	Paddy			Paddy			Paddy			Paddy		
- Pedal Thresher (300 kg/hr)	8	1,998	15,984	-	-	-	7	1,358	9,506	-	-	-
- Power Thresher (750 kg/hr)	-	-	-	10	1,492	14,920	-	-	-	9	2,056	18,504
Sub total			15,984			14,920			9,506			18,504
2. Processing/Marketing Charge	Rice			Rice			Rice			Rice		
- Drying	6	986	5,916	7	652	4,564	6	661	3,966	6	1,028	6,168
- Storage/_1	17	986	16,762	19	652	12,388	19	661	12,559	17	1,028	17,476
- Cleaning	5	1,088 /2	5,440	5	791 /2	3,955	4	722 /2	2,888	4	1,184 /2	4,736
- Milling	20	1,088 /2	21,760	20	791 /2	15,820	20	722 /2	14,440	20	1,184 /2	23,680
- Transportation	2	986	1,972	2	652	1,304	2	661	1,322	2	1,028	2,056
Sub total	50	986	51,850	53	652	38,031	51	661	35,175	49	1,028	54,116
Total			67,834			52,951			44,681			72,620
II. 6th to 10th year												
1. Custom Threshing Charge	Paddy			Paddy			Paddy			Paddy		
- Pedal Thresher (300 kg/hr)	6	1,998	11,988	-	-	-	5	1,358	6,790	-	-	-
- Power Thresher (750 kg/hr)	-	-	-	6	1,492	8,952	-	-	-	6	2,056	12,336
Sub total			11,988			8,952			6,790			12,336
2. Processing/Marketing Charge	Rice			Rice			Rice			Rice		
- Drying	6	986	5,916	7	652	4,564	6	661	3,966	6	1,028	6,168
- Storage/_1	17	986	16,762	19	652	12,388	19	661	12,559	17	1,028	17,476
- Cleaning	4	1,088 /2	4,352	4	791 /2	3,164	4	722 /2	2,888	4	1,184 /2	4,736
- Milling	13	1,088 /2	14,144	13	791 /2	10,283	13	722 /2	9,386	13	1,184 /2	15,392
- Transportation	2	986	1,972	2	652	1,304	2	661	1,322	2	1,028	2,056
Sub total	42	986	43,146	45	652	31,703	44	661	30,121	42	1,028	45,828
Total			55,134			40,655			36,911			58,164

Note : /_1; Including O&M cost and repayment cost for milling house.
/_2; Milling quantity including home consumption.

Table XI 3-5 RICE SALES INCOME BY FARMER GROUPS IN WITH PROJECT CONDITION

Item	Telagasari			Bagor		
	Unit Price (Rp)	Q'ty (ton)	Total (Rp'000)	Unit Price (Rp)	Q'ty (ton)	Total (Rp'000)
I. Wet Season						
1) Class B Rice						
To DOLOG	405	50	20,250	405	36	14,580
To Market	378	455	171,990	377	322	121,394
sub total		505	192,240		358	135,974
II. Dry Season						
1) Class B Rice						
To DOLOG	405	44	17,820	405	27	10,935
To Market	458	397	181,826	449	240	107,760
sub total		441	199,646		267	118,695
2) Class A Rice						
To Market	488	40	19,520	479	27	12,933
III.Annual (I +II)		986	411,406		652	267,602

Item	Mattiro Bulu			Trimurjo		
	Unit Price (Rp)	Q'ty (ton)	Total (Rp'000)	Unit Price (Rp)	Q'ty (ton)	Total (Rp'000)
I. Wet Season						
1) Class B Rice						
To DOLOG	405	37	14,985	405	54	21,870
To Market	348	336	116,928	393	486	190,998
sub total		373	131,913		540	212,868
II. Dry Season						
1) Class B Rice						
To DOLOG	405	26	10,530	405	45	18,225
To Market	414	238	98,532	446	401	178,846
sub total		264	109,062		446	197,071
2) Class A Rice						
To Market	444	24	10,656	476	42	19,992
III.Annual (I +II)		661	251,631		1,028	429,931

Table XI 3-6 CASH FLOW STATEMENT FOR FARMER GROUP ACTIVITIES, TELAGASARI PILOT PLAN AREA (1/4)

(Unit : Rp'000)

Item / Year	1	2	3	4	5	6	7	8	9	10
I. Inflow										
(1) Custom Threshing Charges										
1. Pedal Thresher/Equipment	15,984	15,984	15,984	15,984	15,984	11,988	11,988	11,988	11,988	11,988
2. Power Thresher/Equipment	0	0	0	0	0	0	0	0	0	0
(2) Processing/Marketing Charges	51,850	51,850	51,850	51,850	51,850	43,146	43,146	43,146	43,146	43,146
(3) Rice Sales Income	411,406	411,406	411,406	411,406	411,406	411,406	411,406	411,406	411,406	411,406
(4) Loan /_1										
1. Machinery	30,014	0	0	0	0	0	0	0	0	0
2. Facilities	100,602	0	0	0	0	0	0	0	0	0
Sub-total	130,616	0	0	0	0	0	0	0	0	0
Total Inflow	609,856	479,240	479,240	479,240	479,240	466,540	466,540	466,540	466,540	466,540
II. Outflow										
(1) Investment Cost /_1										
1. Machinery	30,014	0	0	0	0	0	0	0	0	0
2. Facilities	100,602	0	0	0	0	0	0	0	0	0
Sub-total	130,616	0	0	0	0	0	0	0	0	0
(2) Operating Cost										
1. Machinery /_2										
Pedal or power thresher	574	574	574	574	574	574	574	574	574	574
Power winnower	1,416	1,416	1,416	1,416	1,416	1,416	1,416	1,416	1,416	1,416
Rice mill	5,022	5,022	5,022	5,022	5,022	5,022	5,022	5,022	5,022	5,022
2. Facilities /_2										
Driyng	533	533	533	533	533	533	533	533	533	533
Warehouse and others	1,798	1,798	1,798	1,798	1,798	1,798	1,798	1,798	1,798	1,798
3. Personnel Cost	20,501	20,501	20,501	20,501	20,501	20,501	20,501	20,501	20,501	20,501
4. Transportation Cost	1,972	1,972	1,972	1,972	1,972	1,972	1,972	1,972	1,972	1,972
5. Rice Procurement	411,406	411,406	411,406	411,406	411,406	411,406	411,406	411,406	411,406	411,406
6. Others /_3	2,958	2,958	2,958	2,958	2,958	2,958	2,958	2,958	2,958	2,958
Sub-total	446,180	446,180	446,180	446,180	446,180	446,180	446,180	446,180	446,180	446,180
(3) Replacement Cost	0	0	0	4,920	0	25,094	4,920	0	0	4,920
(4) Repayment	19,188	19,188	19,188	19,188	19,188	9,591	9,591	9,591	9,591	9,591
Total Outflow	595,984	465,368	465,368	470,288	465,368	480,865	460,691	455,771	455,771	460,691
III.Cash Surplus										
1. Annual Balance (I-II)	13,872	13,872	13,872	8,952	13,872	-14,325	5,849	10,769	10,769	5,849
2. Cumulative	13,872	27,744	41,616	50,568	64,440	50,115	55,964	66,733	77,502	83,351

Note : /_1 ; Income and expenditure for the procurement of machinery and construction of facilities in the previous year.
/_2 ; Cost for fuel, oil, spareparts and repair excluding personnel costs.
/_3 ; Cost for bagging of marketable rice.

Table XI 3-6 CASH FLOW STATEMENT FOR FARMER GROUP ACTIVITIES, BAGOR PILOT PLAN AREA (2/4)

(Unit : Rp'000)

Item / Year	1	2	3	4	5	6	7	8	9	10
I. Inflow										
(1) Custom Threshing Charges										
1. Pedal Thresher/Equipment	0	0	0	0	0	0	0	0	0	0
2. Power Thresher/Equipment	14,920	14,920	14,920	14,920	14,920	8,952	8,952	8,952	8,952	8,952
(2) Processing/Marketing Charges	38,031	38,031	38,031	38,031	38,031	31,703	31,703	31,703	31,703	31,703
(3) Rice Sales Income	267,602	267,602	267,602	267,602	267,602	267,602	267,602	267,602	267,602	267,602
(4) Loan /_1										
1. Machinery	33,351	0	0	0	0	0	0	0	0	0
2. Facilities	51,300	0	0	0	0	0	0	0	0	0
Sub-total	84,651	0	0	0	0	0	0	0	0	0
Total Inflow	405,204	320,553	320,553	320,553	320,553	308,257	308,257	308,257	308,257	308,257
II. Outflow										
(1) Investment Cost /_1										
1. Machinery	33,351	0	0	0	0	0	0	0	0	0
2. Facilities	51,300	0	0	0	0	0	0	0	0	0
Sub-total	84,651	0	0	0	0	0	0	0	0	0
(2) Operating Cost										
1. Machinery /_2										
Pedal or power thresher	2,904	2,904	2,904	2,904	2,904	2,904	2,904	2,904	2,904	2,904
Power winnower	1,031	1,031	1,031	1,031	1,031	1,031	1,031	1,031	1,031	1,031
Rice mill	3,658	3,658	3,658	3,658	3,658	3,658	3,658	3,658	3,658	3,658
2. Facilities /_2										
Driyng	381	381	381	381	381	381	381	381	381	381
Warehouse and others	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310
3. Personnel Cost	9,708	9,708	9,708	9,708	9,708	9,708	9,708	9,708	9,708	9,708
4. Transportation Cost	1,304	1,304	1,304	1,304	1,304	1,304	1,304	1,304	1,304	1,304
5. Rice Procurement	267,602	267,602	267,602	267,602	267,602	267,602	267,602	267,602	267,602	267,602
6. Others /_3	1,956	1,956	1,956	1,956	1,956	1,956	1,956	1,956	1,956	1,956
Sub-total	289,854	289,854	289,854	289,854	289,854	289,854	289,854	289,854	289,854	289,854
(3) Replacement Cost	0	0	0	240	0	33,111	240	0	0	240
(4) Repayment	17,635	17,635	17,635	17,635	17,635	6,970	6,970	6,970	6,970	6,970
Total Outflow	392,140	307,489	307,489	307,729	307,489	329,935	297,064	296,824	296,824	297,064
III.Cash Surplus										
1. Annual Balance (I-II)	13,064	13,064	13,064	12,824	13,064	-21,678	11,193	11,433	11,433	11,193
2. Cumulative	13,064	26,128	39,192	52,016	65,080	43,402	54,595	66,028	77,461	88,654

Note : /_1 ; Income and expenditure for the procurement of machinery and construction of facilities in the previous year.
/_2 ; Cost for fuel, oil, spareparts and repair excluding personnel costs.
/_3 ; Cost for bagging of marketable rice.

Table XI 3-6 CASH FLOW STATEMENT FOR FARMER GROUP ACTIVITIES, MATTIRO BULU PILOT PLAN AREA (3/4)

(Unit : Rp'000)

Item / Year	1	2	3	4	5	6	7	8	9	10
I. Inflow										
(1) Custom Threshing Charges										
1. Pedal Thresher/Equipment	9,506	9,506	9,506	9,506	9,506	6,790	6,790	6,790	6,790	6,790
2. Power Thresher/Equipment	0	0	0	0	0	0	0	0	0	0
(2) Processing/Marketing Charges	35,175	35,175	35,175	35,175	35,175	30,121	30,121	30,121	30,121	30,121
(3) Rice Sales Income	251,631	251,631	251,631	251,631	251,631	251,631	251,631	251,631	251,631	251,631
(4) Loan /_1										
1. Machinery	19,707	0	0	0	0	0	0	0	0	0
2. Facilities	53,488	0	0	0	0	0	0	0	0	0
Sub-total	73,195	0	0	0	0	0	0	0	0	0
Total Inflow	369,507	296,312	296,312	296,312	296,312	288,542	288,542	288,542	288,542	288,542
II. Outflow										
(1) Investment Cost /_1										
1. Machinery	19,707	0	0	0	0	0	0	0	0	0
2. Facilities	53,488	0	0	0	0	0	0	0	0	0
Sub-total	73,195	0	0	0	0	0	0	0	0	0
(2) Operating Cost										
1. Machinery /_2										
Pedal or power thresher	392	392	392	392	392	392	392	392	392	392
Power winnower	937	937	937	937	937	937	937	937	937	937
Rice mill	3,334	3,334	3,334	3,334	3,334	3,334	3,334	3,334	3,334	3,334
2. Facilities /_2										
Driyng	406	406	406	406	406	406	406	406	406	406
Warehouse and others	1,361	1,361	1,361	1,361	1,361	1,361	1,361	1,361	1,361	1,361
3. Personnel Cost	11,664	11,664	11,664	11,664	11,664	11,664	11,664	11,664	11,664	11,664
4. Transportation Cost	1,322	1,322	1,322	1,322	1,322	1,322	1,322	1,322	1,322	1,322
5. Rice Procurement	251,631	251,631	251,631	251,631	251,631	251,631	251,631	251,631	251,631	251,631
6. Others /_3	1,983	1,983	1,983	1,983	1,983	1,983	1,983	1,983	1,983	1,983
Sub-total	273,030	273,030	273,030	273,030	273,030	273,030	273,030	273,030	273,030	273,030
(3) Replacement Cost	0	0	0	3,360	0	16,347	3,360	0	0	3,360
(4) Repayment	13,570	13,570	13,569	13,569	13,569	7,267	7,267	7,267	7,267	7,267
Total Outflow	286,626	286,626	286,625	289,985	286,625	296,670	283,683	280,323	280,323	283,683
III.Cash Surplus										
1. Annual Balance (I-II)	82,881	9,686	9,687	6,327	9,687	-8,128	4,859	8,219	8,219	4,859
2. Cumulative	82,881	92,567	102,254	108,581	118,268	110,140	114,999	123,218	131,437	136,296

Note : /_1 ; Income and expenditure for the procurement of machinery and construction of facilities in the previous year.
/_2 ; Cost for fuel, oil, spareparts and repair excluding personnel costs.
/_3 ; Cost for bagging of marketable rice.

Table XI 3-6 CASH FLOW STATEMENT FOR FARMER GROUP ACTIVITIES, TRIMURJO PILOT PLAN AREA (4/4)

(Unit : Rp'000)

Item / Year	1	2	3	4	5	6	7	8	9	10
I. Inflow										
(1) Custom Threshing Charges										
1. Pedal Thresher/Equipment	0	0	0	0	0	0	0	0	0	0
2. Power Thresher/Equipment	18,504	18,504	18,504	18,504	18,504	12,336	12,336	12,336	12,336	12,336
(2) Processing/Marketing Charges	54,116	54,116	54,116	54,116	54,116	45,828	45,828	45,828	45,828	45,828
(3) Rice Sales Income	429,931	429,931	429,931	429,931	429,931	429,931	429,931	429,931	429,931	429,931
(4) Loan /_1										
1. Machinery	49,183	0	0	0	0	0	0	0	0	0
2. Facilities	75,524	0	0	0	0	0	0	0	0	0
Sub-total	124,707	0	0	0	0	0	0	0	0	0
Total Inflow	627,258	502,551	502,551	502,551	502,551	488,095	488,095	488,095	488,095	488,095
II. Outflow										
(1) Investment Cost /_1										
1. Machinery	49,183	0	0	0	0	0	0	0	0	0
2. Facilities	75,524	0	0	0	0	0	0	0	0	0
Sub-total	124,707	0	0	0	0	0	0	0	0	0
(2) Operating Cost										
1. Machinery /_2										
Pedal or power thresher	3,978	3,978	3,978	3,978	3,978	3,978	3,978	3,978	3,978	3,978
Power winnower	1,534	1,534	1,534	1,534	1,534	1,534	1,534	1,534	1,534	1,534
Rice mill	5,469	5,469	5,469	5,469	5,469	5,469	5,469	5,469	5,469	5,469
2. Facilities /_2										
Driyng	584	584	584	584	584	584	584	584	584	584
Warehouse and others	1,915	1,915	1,915	1,915	1,915	1,915	1,915	1,915	1,915	1,915
3. Personnel Cost	12,598	12,598	12,598	12,598	12,598	12,598	12,598	12,598	12,598	12,598
4. Transportation Cost	2,056	2,056	2,056	2,056	2,056	2,056	2,056	2,056	2,056	2,056
5. Rice Procurement	429,931	429,931	429,931	429,931	429,931	429,931	429,931	429,931	429,931	429,931
6. Others	3,084	3,084	3,084	3,084	3,084	3,084	3,084	3,084	3,084	3,084
Sub-total	461,149	461,149	461,149	461,149	461,149	461,149	461,149	461,149	461,149	461,149
(3) Replacement Cost	0	0	0	340	0	48,843	340	0	0	340
(4) Repayment	25,990	25,989	25,989	25,989	25,989	10,261	10,261	10,261	10,261	10,261
Total Outflow	487,139	487,138	487,138	487,478	487,138	520,253	471,750	471,410	471,410	471,750
III.Cash Surplus										
1. Annual Balance (I-II)	140,119	15,413	15,413	15,073	15,413	-32,158	16,345	16,685	16,685	16,345
2. Cumulative	140,119	155,532	170,945	186,018	201,431	169,273	185,618	202,303	218,988	235,333

Note : /_1 ; Income and expenditure for the procurement of machinery and construction of facilities in the previous year.
/_2 ; Cost for fuel, oil, spareparts and repair excluding personnel costs.
/_3 ; Cost for bagging of marketable rice.

Table XI 4-1 ESTIMATION OF ECONOMIC BENEFIT FOR PILOT PLAN

Item	Operation	Unit	Telagasari	Bagor	Mattiro Bulu	Trimurjo
I. Quantitative Benefit						
(A) Decrease in Field Losses						
1) Production of paddy for use		t				
a. Without condition			1,582	1,177	1,020	1,759
b. With condition			1,681	1,224	1,118	1,831
c. Decrease in losses			99	47	98	72
2) Milling rate in without condition		%	60	60	60	60
3) Increase in rice		t	59	28	59	43
4) Price of C class rice		Rp'000/t	328	328	328	328
5) Benefit	3*4	Rp'000/t	19,352	9,184	19,352	14,104
(B) Decrease in Milling Losses						
6) Increase in milling rate(60% to 65%)		%	5	5	5	5
7) Paddy milled in the New Rice Mill		t	1,673	1,218	1,111	1,820
8) Decrease in milling losses	6*7	t	84	61	56	91
9) Price of rice in without condition		Rp'000/t	328	328	328	328
10) Benefit	8*9	Rp'000	27,552	20,008	18,368	29,848
(C) Quantitative Benefit	A+B	Rp'000	46,904	29,192	37,720	43,952
II. Qualitative Benefit						
(A) Class B Rice Production						
1) Production in with		t	1,034	754	690	1,127
2) Price of rice						
a. Class C rice		Rp'000/t	328	328	328	328
b. Class B rice		Rp'000/t	350	350	350	350
c. Price difference		Rp'000/t	22	22	22	22
3) Benefit	1*2c	Rp'000	22,748	16,588	15,180	24,794
(B) Class A Rice Production						
4) Production in with		t	40	27	24	42
5) Price of rice						
a. Class C rice		Rp'000/t	328	328	328	328
b. Class A rice		Rp'000/t	393	393	393	393
c. Price difference		Rp'000/t	65	65	65	65
6) Benefit	4*5c	Rp'000	2,600	1,755	1,560	2,730
(C) Qualitative Benefit	A+B	Rp'000	25,348	18,343	16,740	27,524

Table XI 4-2 ECONOMIC PROJECT COST FOR TECHNOLOGY PACKAGES

Cost Items	Unit Cost (Rp'000)	Telagasari Q'ty (No)	Telagasari Amount (Rp'000)	Bagor Q'ty (No)	Bagor Amount (Rp'000)
1. Machinery and Equipment					
- Serrated Sickle	2.25	183	412	151	340
- Drying Mat (larger than 5m x 5m)	18	80	1,440	60	1,080
- Threshing Mat (larger than 5m x 5m)	18	41	738	12	216
- Pedal Thresher (300 kg/hr)	90	41	3,690	-	-
- Power Thresher (750 kg/hr)	1,257	-	-	12	15,084
- Power Winnower (750 kg/hr)	1,032	2	2,064	1	1,032
- Rice Mill Unit (500 kg/hr)	6,840	3	20,520	2	13,680
sub-total			28,864		31,432
2. Construction/1		(m2)		(m2)	
- Drying Floor	4.57	2,100	9,597	1,500	6,855
- Warehouse	50.4	850	42,840	620	31,248
- Milling House	50.4	220	11,088	160	8,064
Sub-Total			63,525		46,167
3. Total (1+2)			92,389		77,599

Cost Items	Unit Cost (Rp'000)	Mattiro Bulu Q'ty (No)	Mattiro Bulu Amount (Rp'000)	Trimurjo Q'ty (No)	Trimurjo Amount (Rp'000)
1. Machinery and Equipment					
- Serrated Sickle	2.25	162	365	241	542
- Drying Mat (larger than 5m x 5m)	18	60	1,080	80	1,440
- Threshing Mat (larger than 5m x 5m)	18	28	504	17	306
- Pedal Thresher (300 kg/hr)	90	28	2,520	-	-
- Power Thresher (750 kg/hr)	1,257	-	-	17	21,369
- Power Winnower (750 kg/hr)	1,032	1	1,032	2	2,064
- Rice Mill Unit (500 kg/hr)	6,840	2	13,680	3	20,520
sub-total			19,181		46,241
2. Construction/1		(m2)		(m2)	
- Drying Floor	4.57	1,600	7,312	2,300	10,511
- Warehouse	50.4	650	32,760	920	46,368
- Milling House	50.4	160	8,064	220	11,088
Sub-Total			48,136		67,967
3. Total (1+2)			67,317		114,208

Note; /1: Indicating by m2.

Table XI 4-3 ECONOMIC O & M COST FOR MACHINERY (1/2)

Item	Pedal/Power Thresher			Power Winnower(0.75t/hour)			Rice Mill(0.5t/hour)		
	Unit Price	Quantity	Cost per Hour	Unit Price	Quantity	Cost per Hour	Unit Price	Quantity	Cost per Hour
Telagasari (West Java)									
I. Operation and Maintenance Cost									
1. Fuel (Rp/lit)	349	-	0	349	1	349	180	3	540
2. Oil and others (30% of fuel)	105	-	0	105	1	105	162	1	162
3. Others		5% /_1	10		5% /_1	9		5% /_1	57
4. Repair cost		20% /_1	40		20% /_1	35		30% /_1	342
5. Parking, tax, etc.		10% /_1	20		10% /_1	18		10% /_1	114
Cost per hour			70			516			1,215
Annual operating hour			180			1,240			1,240
Annual cost			12,600			639,840			1,506,600
Depreciation per hour	/_2 Rp 108,000/540 hours=		200	Rp 1,050,300/6,000hours=		175	Rp 6,840,000/6,000hours=		1,140
II.Personnel Cost									
1. Wages for operators (Rp/hour)	242	3	726	242	2	484	325	2	650
Annual operating hour			180			1,240			1,240
Annual cost			130,680			600,160			806,000
Bagor (East Java)									
I. Operation and Maintenance Cost									
1. Fuel (Rp/lit)	349	1.5	524	349	1	349	180	3	540
2. Oil and others (30% of fuel)	157	1	157	105	1	105	162	1	162
3. Others		5% /_1	71		5% /_1	9		5% /_1	57
4. Repair cost		20% /_1	283		20% /_1	35		20% /_1	342
5. Parking, tax, etc.		10% /_1	142		10% /_1	18		10% /_1	114
Cost per hour			1,177			516			1,215
Annual operating hour			185			1,805			1,355
Annual cost			217,653			931,380			1,646,325
Depreciation per hour	/_2 Rp 1,275,300/900 hours=		1,417	Rp 1,050,300/6,000hours=		175	Rp 6,840,000/6,000hours=		1,140
II.Personnel Cost									
1. Wages for operators (Rp/hour)	242	2	484	242	2	484	325	2	650
Annual operating hour			185			1,805			1,355
Annual cost			89,540			873,620			880,750

Note : /_1 ; Percentage of depreciation cost per hour.
/_2 ; Including threshing mat of Rp 18,000(5mx5m)

Table XI 4-3 ECONOMIC O & M COST FOR MACHINERY (2/2)

Item	Pedal/Power Thresher			Power Winnower(0.75t/hour)			Rice Mill(0.5t/hour)		
	Unit Price	Quantity	Cost per Hour	Unit Price	Quantity	Cost per Hour	Unit Price	Quantity	Cost per Hour
Mattiro Bulu (South Sulawesi)									
I. Operation and Maintenance Cost									
1. Fuel (Rp/lit)	347	0	0	347	1	347	180	3	540
2. Oil and others (30% of fuel)	104	0	0	104	1	104	162	1	162
3. Others		5% /_1	10		5% /_1	9		5% /_1	57
4. Repair cost		20% /_1	40		20% /_1	35		20% /_1	342
5. Parking, tax, etc.		10% /_1	20		10% /_1	18		10% /_1	114
Cost per hour			70			513			1,215
Annual operating hour			180			1,650			1,235
Annual cost			12,600			846,450			1,500,525
Depreciation per hour	/_2 Rp 108,000/540 hours=		200	Rp 1,050,300/6,000hours=		175	Rp 6,840,000/6,000hours=		1,140
II.Personnel Cost									
1. Wages for operators (Rp/hour)	242	3	726	242	2	484	325	2	650
Annual operating hour			180			1,650			1,235
Annual cost			130,680			798,600			802,750
Trimurjo (Lampung)									
I. Operation and Maintenance Cost									
1. Fuel (Rp/lit)	347	1.5	521	347	1	347	180	3	540
2. Oil and others (30% of fuel)	156	1	156	104	1	104	162	1	162
3. Others		5% /_1	71		5% /_1	9		5% /_1	57
4. Repair cost		20% /_1	283		20% /_1	35		20% /_1	342
5. Parking, tax, etc.		10% /_1	142		10% /_1	18		10% /_1	114
Cost per hour			1,173			513			1,215
Annual operating hour			180			1,350			1,350
Annual cost			211,050			692,550			1,640,250
Depreciation per hour	/_2 Rp 1,275,300/900 hours=		1,417	Rp 1,050,300/6,000hours=		175	Rp 6,840,000/6,000hours=		1,140
II.Personnel Cost									
1. Wages for operators (Rp/hour)	242	2	484	242	2	484	325	2	650
Annual operating hour			180			1,350			1,350
Annual cost			87,120			653,400			877,500

Note : /_1 ; Percentage of depreciation cost per hour.
/_2 ; Including threshing mat of Rp 18,000(5mx5m)

Table XI 4-4 ECONOMIC O & M COST FOR FACILITIES

Items	Telagasari	Bagor	Mattiro Bulu	Trimurjo
I. Drying Floor				
I-1 Maintenance Cost				
-Total construction cost (Rp'000)	9,597	6,855	7,312	10,511
-Necessary % for annual maintenance	5%	5%	5%	5%
-Annual maintenance cost (Rp'000)	480	343	366	526
-Annual quantity of paddy (GKG) dried (t)	1,516	1,005	1,018	1,581
-Annual maintenance cost (Rp/kg)	0.32	0.34	0.36	0.33
I-2 Personnel Cost				
-Annual quantity of paddy (GKG) dried (t)	1,516	1,005	1,018	1,581
-Required days for operation of drying floor(t)	60	60	60	60
-Labor cost (Rp/man-day)	1,450	1,450	1,450	1,450
-Daily labor requirement (man-day/500m)	5	5	5	5
-Area of drying floor (m2)	2,100	1,500	1,600	2,300
-Daily labor requirement (man-day)	21	15	16	23
-Annual personnel cost (Rp'000)	1,827	1,305	1,392	2,001
-Annual personnel cost (Rp/kg)	1.21	1.30	1.37	1.27
I-3 Total O&M cost of drying floor per kg (Rp/kg)				
-Per kg in paddy(I-1+I-2)	1.52	1.64	1.73	1.60
-Per kg in rice (c.f.=0.65 of paddy)	2.34	3.02	3.16	2.96
II. Warehouse and Milling House				
II-1 Maintenance Cost				
-Total construction cost	53,928	39,312	40,824	57,456
-Necessary % for annual maintenance	3%	3%	3%	3%
-Annual maintenance cost (Rp'000)	1,618	1,179	1,225	1,724
-Annual quantity of paddy (GKG) stored (t)	1,516	1,005	1,018	1,581
-Annual maintenance cost (Rp/kg)	1.07	1.17	1.20	1.09
II-2 Personnel cost				
-Annual quantity of paddy (GKG) stored (t)	1,516	1,005	1,018	1,581
-Daily handling quantity for milling /_1	8.1	5.4	5.4	8.1
-Required days for operation of warehouse	187	186	189	195
-Labor cost (Rp/man-day)	1,450	1,450	1,450	1,450
-Daily labor requirement (man-day/day)	5	3	3	5
-Annual personnel cost (Rp'000)	1,356	809	822	1,414
-Annual personnel cost (Rp/kg)	0.89	0.80	0.81	0.89
II-3 Total O&M cost of warehouse per kg (Rp/kg)				
-Per kg in paddy(II-1+II-2)	1.96	1.98	2.01	1.98
-Per kg in rice (c.f.=0.65 of paddy)	3.02	3.04	3.09	3.05

Note;/1:Number of rice mills installed x 0.5ton/hr x 0.9 x 6hours

Table XI 4-5 ECONOMIC O & M COST FOR PILOT PLAN

Cost Items	Telagasari Unit Cost	Q'ty (No)	Amount (Rp'000)	Bagor Unit Cost	Q'ty (No)	Amount (Rp'000)
I. Operation and Maintenance Cost /_1						
1. Machinery	(Rp'000)			(Rp'000)		
- Power Winnower (750 kg/hr)	640	2	1,280	932	1	932
- Rice Mill Unit (500 kg/hr)	1,507	3	4,521	1,646	2	3,292
2. Facilities /_2	(Rp/ton;rice)			(Rp/ton;rice)		
- Drying	487	986	480	526	652	343
- Warehouse and others	1,641	986	1,618	1,808	652	1,179
- Bagging	2,700	986	2,662	2,700	652	1,760
Sub total			10,561			7,506
II. Personnel Cost						
1. Machinery	(Rp'000)			(Rp'000)		
- Power Winnower (750 kg/hr)	600	2	1,200	874	1	874
- Rice Mill Unit (500 kg/hr)	806	3	2,418	881	2	1,762
2. Facilities /_2	(Rp/ton;rice)			(Rp/ton;rice)		
- Drying	1,853	986	1,827	2,002	652	1,305
- Warehouse and others	1,375	986	1,356	1,241	652	809
Sub total			6,801			4,750
III. Transpotation Cost /_2	(Rp/ton;rice) 1,800	986	1,775	(Ro/ton;rice) 1,800	652	1,174
Total (I+II+III)			19,137			13,430

Cost Items	Mattiro Bulu Unit Cost	Q'ty (No)	Amount (Rp'000)	Trimurjo Unit Cost	Q'ty (No)	Amount (Rp'000)
I. Operation and Maintenance Cost /_1						
1. Machinery	(Rp'000)			(Rp'000)		
- Power Winnower (750 kg/hr)	846	1	846	693	2	1,386
- Rice Mill Unit (500 kg/hr)	1,501	2	3,002	1,640	3	4,920
2. Facilities /_2	(Rp/ton;rice)			(Rp/ton;rice)		
- Drying	554	661	366	512	1,028	526
- Warehouse and others	1,853	661	1,225	1,677	1,028	1,724
- Bagging	2,700	661	1,785	2,700	1,028	2,776
Sub total			7,224			11,332
II. Personnel Cost						
1. Machinery	(Rp'000)			(Rp'000)		
- Power Winnower (750 kg/hr)	799	1	799	653	2	1,306
- Rice Mill Unit (500 kg/hr)	803	2	1,606	878	3	2,634
2. Facilities /_2	(Rp/ton;rice)			(Rp/ton;rice)		
- Drying	2,106	661	1,392	1,946	1,028	2,001
- Warehouse and others	1,244	661	822	1,375	1,028	1,414
Sub total			4,619			7,355
III. Transpotation Cost /_2	(Rp/ton;rice) 1,800	661	1,190	(Rp/ton;rice) 1,800	1,028	1,850
Total (I+II+III)			13,033			20,537

Nota;/_1:Cost for fuel, oil, spairparts, repairment, excluding personnel cost.
/_2:Unit of quantity is indicated by ton of marketable rice.

Table XI 4-6 POST HARVEST COST AT FILED IN WITH AND WITHOUT CONDITION

Item	Wet Season						Dry Season						Incremental Production Cost
	Without		With		Incremental Cost		Without		With		Incremental Cost		
	Total Labor (md/ha)	Cost (Rp/ha)	Total Labor (md/ha)	Cost (Rp/ha)	Per ha (Rp/ha)	Total (Rp'000)	Total Labor (md/ha)	Cost (Rp/ha)	Total Labor (md/ha)	Cost (Rp/ha)	Per ha (Rp/ha)	Total (Rp'000)	(Rp'000)
TELAGASARI													
1.Harvested Area (ha)	(119)		(119)				(119)		(119)				
2.Labor Cost/1													
- Reaping	15	21,750	16	23,200	1,450	173	12	17,400	13	18,850	1,450	173	346
- Threshing	12	17,400	8	11,600	-5,800	-690	10	14,500	8	11,600	-2,900	-345	-1,035
- Winnowing	5	7,250	2	2,900	-4,350	-518	5	7,250	2	2,900	-4,350	-518	-1,036
- Bagging	2	2,900	2	2,900	0	0	2	2,900	2	2,900	0	0	0
- Drying	0	0	4	5,800	5,800	690	0	0	4	5,800	5,800	690	1,380
- Transportation	4	5,800	5	7,250	1,450	173	3	4,350	4	5,800	1,450	173	346
sub-total	38	55,100	37	53,650	-1,450	-172	32	46,400	33	47,850	1,450	173	1
3.Maintenence Cost for Machinery & Equipment													
- Pedal thresher/2	-	0	-	2,171	2,171	258	-	0	-	2,171	2,171	258	516
- Serrated sickles/3	-	0	-	900	900	107	-	0	-	731	731	87	194
- Drying mat/4	-	0	-	2,732	2,732	325	-	0	-	2,668	2,668	317	642
sub-total	-	0	-	5,803	5,803	690	-	0	-	5,570	5,570	662	1,352
4. Total (2+3)		55,100		59,453	4,353	518		46,400		53,420	7,020	835	1,353
BAGOR													
1.Harvested Area (ha)	(98)		(98)				(87)		(87)				
2.Labor Charge													
- Reaping	13	18,850	14	20,300	1,450	142	11	15,950	12	17,400	1,450	126	268
- Threshing	12	17,400	4	5,800	-11,600	-1,137	10	14,500	4	5,800	-8,700	-757	-1,894
- Winnowing	5	7,250	2	2,900	-4,350	-426	4	5,800	2	2,900	-2,900	-252	-678
- Bagging	2	2,900	2	2,900	0	0	2	2,900	2	2,900	0	0	0
- Drying	0	0	4	5,800	5,800	568	0	0	4	5,800	5,800	505	1,073
- Transportation	3	4,350	4	5,800	1,450	142	3	4,350	4	5,800	1,450	126	268
sub-total	35	50,750	30	43,500	-7,250	-711	30	43,500	28	40,600	-2,900	-252	-963
3.Maintenence Cost for Machinery & Equipment													
- Power thresher	-	0	-	14,118	14,118	1,384	-	0	-	14,118	14,118	1,228	2,612
- Serrated sickles	-	0	-	788	788	77	-	0	-	675	675	59	136
- Drying mat	-	0	-	2,732	2,732	268	-	0	-	2,507	2,507	218	486
sub-total	-	0	-	17,638	17,638	1,729	-	0	-	17,300	17,300	1,505	3,234
4. Total (2+3)		50,750		61,138	10,388	1,018		43,500		57,900	14,400	1,253	2,271
MATTIRO BULU													
1.Harvested Area (ha)	(105)		(105)				(84)		(84)				
2.Labor Charge													
- Reaping	14	20,300	15	21,750	1,450	152	12	17,400	13	18,850	1,450	122	274
- Threshing	12	17,400	8	11,600	-5,800	-609	10	14,500	7	10,150	-4,350	-365	-974
- Winnowing	5	7,250	2	2,900	-4,350	-457	5	7,250	2	2,900	-4,350	-365	-822
- Bagging	2	2,900	2	2,900	0	0	2	2,900	2	2,900	0	0	0
- Drying	0	0	4	5,800	5,800	609	0	0	4	5,800	5,800	487	1,096
- Transportation	2	2,900	4	5,800	2,900	305	1	1,450	3	4,350	2,900	244	549
sub-total	35	50,750	35	50,750	0	0	30	43,500	31	44,950	1,450	123	123
3.Maintenence Cost for Machinery & Equipment													
- Pedal thresher	-	0	-	1,867	1,867	196	-	0	-	1,867	1,867	157	353
- Serrated sickles	-	0	-	844	844	89	-	0	-	731	731	61	150
- Drying mat	-	0	-	2,411	2,411	253	-	0	-	2,186	2,186	183	436
sub-total	-	0	-	5,122	5,122	538	-	0	-	4,784	4,784	401	939
4. Total (2+3)		50,750		55,872	5,122	538		43,500		49,734	6,234	524	1,062
TRIMURJO													
1.Harvested Area (ha)	(157)		(157)				(157)		(157)				
2.Labor Charge													
- Reaping	14	20,300	15	21,750	1,450	228	11	15,950	12	17,400	1,450	228	456
- Threshing	11	15,950	4	5,800	-10,150	-1,594	9	13,050	4	5,800	-7,250	-1,138	-2,732
- Winnowing	5	7,250	2	2,900	-4,350	-683	5	7,250	2	2,900	-4,350	-683	-1,366
- Bagging	2	2,900	2	2,900	0	0	2	2,900	2	2,900	0	0	0
- Drying	0	0	4	5,800	5,800	911	0	0	4	5,800	5,800	911	1,822
- Transportation	3	4,350	4	5,800	1,450	227	3	4,350	4	5,800	1,450	228	455
sub-total	35	50,750	31	44,950	-5,800	-911	30	43,500	28	40,600	-2,900	-454	-1,365
3.Maintenence Cost for Machinery & Equipment													
- Power thresher	-	0	-	11,426	11,426	1,794	-	0	-	11,426	11,426	1,794	3,588
- Serrated sickles	-	0	-	844	844	133	-	0	-	675	675	106	239
- Drying mat	-	0	-	2,218	2,218	348	-	0	-	1,993	1,993	312	660
sub-total	-	0	-	14,488	14,488	2,275	-	0	-	14,094	14,094	2,212	4,487
4. Total (2+3)		50,750		59,438	8,688	1,364		43,500		54,694	11,194	1,758	3,122

Note;/1:Economic unit labor cost is Rp1,450/man-day.
/2:(Annual O&M cost excluding personnel expenses) x (total number of thresher)/(annual harvested area). *See Table XI 4-3
/3:(Economic price of serrated sickle of Rp 2,250)/(4 season) x 10% x (labor requirements for reaping)
/4:(Economic unit price of drying mat of Rp 18,000)/4 season x 5% x (unit yield)/(0.7 ton/mat).

Table XI 4-7 ECONOMIC COST AND BENEFIT FLOW FOR PILOT PLAN (1/2)

TELAGASARI PILOT PLAN (WEST JAVA)

IRR : 25% (Unit : Rp '000)

Year in Order	Cost Flow: Project Cost Drying Floor	Building /_1	Total	Machine Cost	O & M Cost /_2	Replacement Cost	Change of Cost for Harvesting /_3	Total	Benefit Flow: Quantitative Benefit	Qualitative Benefit	Total	Benefit minus Cost
1	9,597	53,928	63,525	28,864	0	0	0	92,389	0	0	0	-92,389
2	0	0	0	0	19,137	0	1,353	20,490	9,381	5,070	14,451	-6,039
3	0	0	0	0	19,137	1,852	1,353	22,342	18,762	10,139	28,901	6,559
4	0	0	0	0	19,137	0	1,353	20,490	28,142	15,209	43,351	22,861
5	0	0	0	0	19,137	6,280	1,353	26,770	37,523	20,278	57,801	31,031
6	0	0	0	0	19,137	0	1,353	20,490	46,904	25,348	72,252	51,762
7	0	0	0	0	19,137	24,436	1,353	44,926	46,904	25,348	72,252	27,326
8	0	0	0	0	19,137	4,428	1,353	24,918	46,904	25,348	72,252	47,334
9	0	0	0	0	19,137	1,852	1,353	22,342	46,904	25,348	72,252	49,910
10	0	0	0	0	19,137	0	1,353	20,490	46,904	25,348	72,252	51,762
11	0	0	0	0	19,137	6,280	1,353	26,770	46,904	25,348	72,252	45,482
12	0	0	0	0	19,137	22,584	1,353	43,074	46,904	25,348	72,252	29,178
13	0	0	0	0	19,137	1,852	1,353	22,342	46,904	25,348	72,252	49,910
14	0	0	0	0	19,137	4,428	1,353	24,918	46,904	25,348	72,252	47,334
15	0	0	0	0	19,137	1,852	1,353	22,342	46,904	25,348	72,252	49,910
16	0	0	0	0	19,137	0	1,353	20,490	46,904	25,348	72,252	51,762
17	0	0	0	0	19,137	28,864	1,353	49,354	46,904	25,348	72,252	22,898
18	0	0	0	0	19,137	0	1,353	20,490	46,904	25,348	72,252	51,762
19	0	0	0	0	19,137	1,852	1,353	22,342	46,904	25,348	72,252	49,910
20	0	0	0	0	19,137	4,428	1,353	24,918	46,904	25,348	72,252	47,334

Note :/_1 ; Construction cost for warehouse, milling house, garage and community house.
/_2 ; O & M cost for processing and marketing by winnower, rice mill, and building.
/_3 ; Incremental production cost for post harvest activities at field level.

BAGOR PILOT PLAN (EAST JAVA)

IRR : 18% (Unit : Rp '000)

Year in Order	Cost Flow: Project Cost Drying Floor	Building /_1	Total	Machine Cost	O & M Cost /_2	Replacement Cost	Change of Cost for Harvesting /_3	Total	Benefit Flow: Quantitative Benefit	Qualitative Benefit	Total	Benefit minus Cost
1	6,855	39,312	46,167	31,432	0	0	0	77,599	0	0	0	-77,599
2	0	0	0	0	13,430	0	2,271	15,701	5,838	3,669	9,507	-6,194
3	0	0	0	0	13,430	1,420	2,271	17,121	11,677	7,337	19,014	1,893
4	0	0	0	0	13,430	0	2,271	15,701	17,515	11,006	28,521	12,820
5	0	0	0	0	13,430	1,636	2,271	17,337	23,354	14,674	38,028	20,691
6	0	0	0	0	13,430	0	2,271	15,701	29,192	18,343	47,535	31,834
7	0	0	0	0	13,430	31,216	2,271	46,917	29,192	18,343	47,535	618
8	0	0	0	0	13,430	216	2,271	15,917	29,192	18,343	47,535	31,618
9	0	0	0	0	13,430	1,420	2,271	17,121	29,192	18,343	47,535	30,414
10	0	0	0	0	13,430	0	2,271	15,701	29,192	18,343	47,535	31,834
11	0	0	0	0	13,430	1,636	2,271	17,337	29,192	18,343	47,535	30,198
12	0	0	0	0	13,430	29,796	2,271	45,497	29,192	18,343	47,535	2,038
13	0	0	0	0	13,430	1,420	2,271	17,121	29,192	18,343	47,535	30,414
14	0	0	0	0	13,430	216	2,271	15,917	29,192	18,343	47,535	31,618
15	0	0	0	0	13,430	1,420	2,271	17,121	29,192	18,343	47,535	30,414
16	0	0	0	0	13,430	0	2,271	15,701	29,192	18,343	47,535	31,834
17	0	0	0	0	13,430	31,432	2,271	47,133	29,192	18,343	47,535	402
18	0	0	0	0	13,430	0	2,271	15,701	29,192	18,343	47,535	31,834
19	0	0	0	0	13,430	1,420	2,271	17,121	29,192	18,343	47,535	30,414
20	0	0	0	0	13,430	216	2,271	15,917	29,192	18,343	47,535	31,618

Note :/_1 ; Construction cost for warehouse, milling house, garage and community house.
/_2 ; O & M cost for processing and marketing by winnower, rice mill, and building.
/_3 ; Incremental production cost for post harvest activities at field level.

Table XI 4-7 ECONOMIC COST AND BENEFIT FLOW FOR PILOT PLAN (2/2)

MATTIRO BULU PILOT PLAN (SOUTH SULAWESI)

IRR : 24% (Unit : Rp '000)

Year in Order	Cost Flow: Project Cost: Drying Floor	Project Cost: Building /_1	Project Cost: Total	Machine Cost	O & M Cost /_2	Replacement Cost	Change of Cost for Harvesting /_3	Total	Benefit Flow: Quantitative Benefit	Qualitative Benefit	Total	Benefit minus Cost
1	7,312	40,824	48,136	19,181	0	0	0	67,317	0	0	0	-67,317
2	0	0	0	0	13,033	0	1,062	14,095	3,621	1,607	5,228	-8,867
3	0	0	0	0	13,033	1,445	1,062	15,540	7,242	3,214	10,456	-5,084
4	0	0	0	0	13,033	0	1,062	14,095	18,106	8,035	26,141	12,046
5	0	0	0	0	13,033	4,469	1,062	18,564	30,176	13,392	43,568	25,004
6	0	0	0	0	13,033	0	1,062	14,095	37,720	16,740	54,460	40,365
7	0	0	0	0	13,033	16,157	1,062	30,252	37,720	16,740	54,460	24,208
8	0	0	0	0	13,033	3,024	1,062	17,119	37,720	16,740	54,460	37,341
9	0	0	0	0	13,033	1,445	1,062	15,540	37,720	16,740	54,460	38,920
10	0	0	0	0	13,033	0	1,062	14,095	37,720	16,740	54,460	40,365
11	0	0	0	0	13,033	4,469	1,062	18,564	37,720	16,740	54,460	35,896
12	0	0	0	0	13,033	14,712	1,062	28,807	37,720	16,740	54,460	25,653
13	0	0	0	0	13,033	1,445	1,062	15,540	37,720	16,740	54,460	38,920
14	0	0	0	0	13,033	3,024	1,062	17,119	37,720	16,740	54,460	37,341
15	0	0	0	0	13,033	1,445	1,062	15,540	37,720	16,740	54,460	38,920
16	0	0	0	0	13,033	0	1,062	14,095	37,720	16,740	54,460	40,365
17	0	0	0	0	13,033	19,181	1,062	33,276	37,720	16,740	54,460	21,184
18	0	0	0	0	13,033	0	1,062	14,095	37,720	16,740	54,460	40,365
19	0	0	0	0	13,033	1,445	1,062	15,540	37,720	16,740	54,460	38,920
20	0	0	0	0	13,033	3,024	1,062	17,119	37,720	16,740	54,460	37,341

Note :/_1 ; Construction cost for warehouse, milling house, garage and community house.
/_2 ; O & M cost for processing and marketing by winnower, rice mill, and building.
/_3 ; Incremental production cost for post harvest activities at field level.

TRIMURJO PILOT PLAN (LAMPUNG)

IRR : 19% (Unit : Rp '000)

Year in Order	Cost Flow: Project Cost: Drying Floor	Project Cost: Building /_1	Project Cost: Total	Machine Cost	O & M Cost /_2	Replacement Cost	Change of Cost for Harvesting /_3	Total	Benefit Flow: Quantitative Benefit	Qualitative Benefit	Total	Benefit minus Cost
1	10,511	57,456	67,967	46,241	0	0	0	114,208	0	0	0	-114,208
2	0	0	0	0	20,537	0	3,122	23,659	8,790	5,505	14,295	-9,364
3	0	0	0	0	20,537	1,982	3,122	25,641	17,581	11,010	28,591	2,950
4	0	0	0	0	20,537	0	3,122	23,659	26,371	16,514	42,885	19,226
5	0	0	0	0	20,537	2,288	3,122	25,947	35,162	22,019	57,181	31,234
6	0	0	0	0	20,537	0	3,122	23,659	43,952	27,524	71,476	47,817
7	0	0	0	0	20,537	45,935	3,122	69,594	43,952	27,524	71,476	1,882
8	0	0	0	0	20,537	306	3,122	23,965	43,952	27,524	71,476	47,511
9	0	0	0	0	20,537	1,982	3,122	25,641	43,952	27,524	71,476	45,835
10	0	0	0	0	20,537	0	3,122	23,659	43,952	27,524	71,476	47,817
11	0	0	0	0	20,537	2,288	3,122	25,947	43,952	27,524	71,476	45,529
12	0	0	0	0	20,537	43,953	3,122	67,612	43,952	27,524	71,476	3,864
13	0	0	0	0	20,537	1,982	3,122	25,641	43,952	27,524	71,476	45,835
14	0	0	0	0	20,537	306	3,122	23,965	43,952	27,524	71,476	47,511
15	0	0	0	0	20,537	1,982	3,122	25,641	43,952	27,524	71,476	45,835
16	0	0	0	0	20,537	0	3,122	23,659	43,952	27,524	71,476	47,817
17	0	0	0	0	20,537	46,241	3,122	69,900	43,952	27,524	71,476	1,576
18	0	0	0	0	20,537	0	3,122	23,659	43,952	27,524	71,476	47,817
19	0	0	0	0	20,537	1,982	3,122	25,641	43,952	27,524	71,476	45,835
20	0	0	0	0	20,537	306	3,122	23,965	43,952	27,524	71,476	47,511

Note :/_1 ; Construction cost for warehouse, milling house, garage and community house.
/_2 ; O & M cost for processing and marketing by winnower, rice mill, and building.
/_3 ; Incremental production cost for post harvest activities at field level.

Table XI 4-8 SENSITIVITY TEST OF PILOT PLAN

(IRR %)

Assumption (%)					
Cost Up	Benefit Down	Telagasari	Bagor	Mattiro Bulu	Trimurjo
0	-10	22	15	21	16
0	-20	18	11	17	14
+10	0	24	17	22	17
+10	-10	20	14	19	15
+10	-20	16	10	16	13
+20	0	22	16	21	16
+20	-10	19	12	18	14
+20	-20	15	9	15	12
0	0	25	18	24	19

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