

## **ANNEX 12**

# **IMPLEMENTING ORGANIZATION, COST ESTIMATE AND EVALUATION OF PILOT IA STRENGTHENING PROJECT**

**THE STUDY  
ON  
THE IRRIGATORS ASSOCIATION STRENGTHENING PROJECT  
IN  
NATIONAL IRRIGATION SYSTEMS**

**ANNEX 12**

**IMPLEMENTING ORGANIZATION, COST ESTIMATE  
AND  
EVALUATION OF PILOT IA STRENGTHENING PROJECT**

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## **ANNEX 12      IMPLEMENTING ORGANIZATION, COST ESTIMATE AND EVALUATION OF PILOT IA STRENGTHENING PROJECT**

### **1.      Organization for Project Implementation**

Implementation organization for IA strengthening projects covering six pilot NISs shall be formulated as follows:

- 1) As a financial and technical coordination body, a project management office shall be organized within the Institutional Development Department (IDD) consisting of the following staff ;
  - Management staff      Project Manager (1) and Assistant (1)
  - Technical staff      Institutional development (2)  
   Minor repair works (2)
  - Administration      Financial management (1)
- 2) As a regional coordination body, a regional pilot team shall be organized within the Regional Institutional Development Department (IDD) consisting of the following staff;
  - Regional coordinator
  - Technical staff      Institutional development (1)  
   Minor repair works (1)
- 3) At the NISO level, a pilot team shall be organized as follows;
  - Team leader      NISO Superintendent (1)
  - Coordinator      NISO IDO in-charge (1)
  - IA representative      President of IA federation  
   President of IAs
  - LGU representative      Municipalities, barangays
  - Other concerns government organizations (on-call basis)

At the NIA central office, the Steering Committee for IA strengthening projects shall be organized in order to report the progress and outcomes of project activities. The Steering Committee shall call the concerned regional managers and other on-going project managers in order to verify and solve issues, and to exchange the experiences and outcomes for replication of activities.

### **2.      Institutional Development Cost Estimate**

Institutional development cost comprises of five items, i.e. (i) IA strengthening and formulation cost, (ii) cost for deployment of field staff, (iii) cost for trainers, (iv) training equipment cost, and (v) cost for IA federation office and facilities.

Institutional development cost accounts for Php 68.5 million in total as follows (Ref. Table 2.1):

Item	Cost (Php '000)		
IA Strengthening/Formation	22,861		
Field Staff	30,599		
Trainers	530		
Training Equipment	1,836		
Sub-total	55,826	Php/ha	1,535
		\$/ha	30.7
FIA office and facilities	12,705	Php/ha	350
		\$/ha	7.0
Total	68,531	Php/ha	1,885
		\$/ha	37.7

### 3. Financial Pilot Project Evaluation

#### 3.1 Pilot Project Benefits

Benefits accrued from the IA strengthening project with the minor system rectification works within the jurisdiction of pilot IAs will be expected at increase in cropping intensity and crop productivity, and eventually at increase in ISF collection from IAs. The following project benefits may be expected based on the assumptions applied:

##### 3.1.1. Increase in Cropping Intensity under Irrigation

By applying rotational irrigation water distribution and water saving farming at the pilot NISs, increase in cropping intensity, at least 5% both in wet and dry seasons may be expected on all of the pilot NISs area. In addition, the irrigation facilities under the area of pilot IAs will be rehabilitated, therefore, the increase in cropping intensity of pilot IAs' area may be assumed at least 10%. The harvested area of the pilot NISs may be increased as follows (Ref. Table 3.1):

	Physical Area	Present/ Without Project		Future/ With Project		Increment	
		Wet S.	Dry S.	Wet S.	Dry S.	Wet S.	Dry S.
SanFabian	2,288	1,510	1,120	1,620	1,190	110	70
Angat	4,151	2,700	3,650	2,860	3,780	160	130
Bago	12,700	7,490	7,620	8,000	7,870	510	250
Labangan	3,195	1,850	1,920	2,040	2,110	190	190
Pulangui	11,415	9,700	9,930	10,270	10,390	570	460
Mal	2,613	2,380	1,860	2,530	1,910	150	50

### 3.1.2 Increase in Crop Productivity

By applying certified seed, fertilizers, agro-chemicals and proper farming practices under IAs' farmland trust management, together with technical assistance from NISO and other concerned line agencies, increased productivity of paddy may be expected by at least 0.3 ton/ha for the area of pilot IAs and 0.1 ton/ha for the other area of respective pilot NISs. The paddy production may be increased as follows (Ref. Table 3.2):

**Paddy Production under With and Without Project Conditions**

(Unit: ton)

Area	Present/ Without Project	Future/ With Project	Increment
SanFabian	10,040	10,890	850
Angat	25,110	26,760	1,650
Bago	52,080	55,730	3,650
Labangan	13,150	15,160	2,010
Pulangui	75,450	80,590	5,140
Mal	19,440	20,360	920

### 3.1.3 Increase in Irrigation Service Fee (ISF) Collection

The above increase in cropping intensity and crop productivity will be accrued by IA's organizational strengthening and rational O&M activities, which subsequently increase the collection efficiency of the ISF. The ISF is expected to achieve collection efficiency by 80% at the end of pilot period. The ISF collection of pilot NISO was estimated as follows (Ref. Table 3.3).

**ISF Collection under With and Without Project Conditions**

(Unit: Php '000)

Area	Present/ Without Project	Future/ With Project	Increment
SanFabian	1,119.0	2,322.0	1,202.2
Angat	2,219.2	7,050.8	4,831.6
Bago	5,548.0	13,619.6	8,071.6
Labangan	1,681.4	3,584.4	1,903.0
Pulangui	10,782.0	17,794.0	7,012.0
Mal	2,795.7	3,884.4	1,088.7

### 3.1.4 Decrease in O&M cost

The pilot NISs can reduce the O&M cost, specifically on manpower expenditure, due to the transfer of O&M at the jurisdiction of IAs, introduction of computerized

billing system for the ISF collection through bank accounts, etc.

### 3.2 Financial Pilot Project Evaluation

#### 3.2.1 O&M Cost for NISO

The ISF to be collected in the future shall be shared by IAs under Joint System Management (JSM) contract. Applying the present level of ISF rate per ha, half of the equivalent amount (50%) shall be remitted to NIS while the other half shall be retained for O&M and other rehabilitation cost by the IAs. In this Study, considering the available source of income from ISF and others, the above ISF sharing with IAs and NIA's shall reduced the management cost requirement by 10%. Thus, following the above assumptions the available O&M cost per ha will vary from Php 550/ha to Php 1,320/ha.

According to the Implementation Completion Report of Second Irrigation Operations Support Project (IOSP II), WB, the required O&M cost was estimated at Peso 1,500/ha. Based on the available fund of pilot NISs in the future, Agno, Pulangui and Mal RISs could accrue Peso 1,500/ha for O&M cost. Comparing the present scale of NISO expenditure, NISO O&M expenditures need to be decreased at San Fabian and Bago NIS, and could be increased at the rest of NISs. In order to decrease the O&M cost, priority of rehabilitation works will be given at the above NISs (Ref. Table 3.4).

**Financial Assessment of NISO Income and Expenditure for Pilot Project**

Item	San Fabian 2,288 ha	Angat 4,151 ha	Bago 12,700 ha	Labangan 3,195 ha	Pulangui 11,415 ha	Mal 2,613 ha
<u>Present/Without Project (Php)</u>						
1. Income	1,378,100	4,430,900	5,718,100	2,590,300	13,867,100	3,662,300
(Per ha)	(600)	(1,070)	(450)	(810)	(1,210)	(1,400)
2. Expenditure	2,392,000	4,570,800	7,599,000	2,248,600	11,118,600	2,028,400
(Per ha)	(1,050)	(1,100)	(600)	(700)	(970)	(780)
<u>Future/With Project (Php)</u>						
1. Income						
Before sharing	2,307,900	8,447,300	12,205,300	4,076,900	18,884,500	4,294,100
(Per ha)	(1,010)	(2,040)	(960)	(1,280)	(1,650)	(1,640)
After sharing	1,539,300	6,109,000	7,692,100	2,888,900	12,987,400	3,008,800
(Per ha)	(670)	(1,470)	(610)	(900)	(1,140)	(1,150)
2. Available O&M cost						
After NIA mana. cost (10%) & sharing (Per ha)	(600)	(1,320)	(550)	(810)	(1,030)	(1,040)
3. NISO O&M Cost available						
After NIA mana. cost (10%) & Sharing	1,372,800	5,479,300	6,985,000	2,588,000	11,757,500	2,717,500
Balance from the present scale	-1,019,200	908,500	-614,000	339,400	638,900	689,100

### 3.2.2 Crop Budget

Crop budgets covering financial cost and return under the with and without and with project conditions were prepared by applying input requirements, crop yields and prices of respective commodities. Irrigation service fee applied is 2.5 cavans/ha in wet season and 3.5 cavans/ha in dry season for Angat RIS, and 2.0 cavans/ha and 3.0 cavans/ha for the rest of pilot NISs. Increase in financial net income per ha varies from Php 1,700 to Php 3,110 for the pilot IAs' area and Php 520 to Php 1,400 for the non-pilot IAs' at the respective pilot NISs (Ref. Table 3.5) .

#### Net Return per Hectare, Paddy

Item	( Unit Php/ha)					
	San Fabian	Angat	Bago	Labangan	Pulangui	Mal
1. Present/Without Project						
Irrigated Area						
Wet Season	13,650	11,770	10,170	8,120	8,260	10,860
Dry Season	16,290	13,496	9,050	10,330	10,430	15,060
Rainfed Area (Wet S)	10,360	9,780	8,020	5,720	6,130	8,640
2. Future/With Project(Irrigated)						
Pilot Area						
Wet Season	16,380	13,460	13,280	9,820	11,010	12,760
Dry Season	18,510	15,407	12,170	12,030	13,010	16,950
Others Area						
Wet Season	14,420	12,380	11,570	8,640	9,380	11,460
Dry Season	16,890	14,220	10,470	10,860	11,560	15,650
3. Increment (Irrigated)						
Pilot Area						
Wet Season	2,730	1,690	3,110	1,700	2,750	1,900
Dry Season	2,220	1,911	3,120	1,700	2,580	1,890
Others Area						
Wet Season	770	610	1,400	520	1,120	600
Dry Season	600	724	1,420	530	1,130	590

### 3.2.3 Farm Budget

Farm budget analysis was made by assessing the anticipated change in farm income and production cost for the average operating farm size by tenurial status, i.e. owner operator, lessee, tenant and caretaker. The situation under the with and without project conditions was analyzed. Under the with project condition, non-farm incomes and living expenditures were assumed to be the same amount as those under the without project condition to be able to evaluate the direct impact on the farm income by the pilot project.

Increase in income from the farming is minimal at 2% to 18% due to a small operating farm size and estimation of slightly increase in crop yield. On the other hand, impact to net reserve is significant at 19% to 340% from the present level, particularly for landless farmers (Ref. Table 3.6).



### Farm Budget Analyses of Pilot Project

Area	Ave. Size (ha)	Present/Without Project (Php)		Future/With Project (Php)		Increase (%)	
		Income	N.Reserve	Income	N.Reserve	Income	N.Reserve
San Fabian	0.53						
Owner Operator		45,230	9,430	46,980	11,180	3.9	18.6
Lessee		39,690	4,890	41,440	6,640	4.4	35.8
Tenant		37,630	3,490	38,790	4,650	3.1	33.2
Caretaker		31,200	2,600	31,760	3,160	1.8	21.5
Angat	0.68						
Owner Operator		49,250	5,450	51,260	7,460	4.1	36.9
Lessee		43,730	3,930	45,740	5,940	4.6	51.1
Tenant		40,070	2,930	41,080	3,940	2.5	34.5
Caretaker		34,240	640	34,840	1,240	1.8	93.8
Bago	2.05						
Owner Operator		69,390	9,790	78,930	19,330	13.7	97.4
Lessee		52,630	5,130	62,170	14,670	18.1	186.0
Tenant		47,680	2,680	52,450	7,450	10.0	178.0
Caretaker		40,820	1,020	43,680	3,880	7.0	280.4
Labangan	1.96						
Owner Operator		62,550	7,550	65,780	10,780	5.2	42.8
Lessee		50,610	2,610	53,840	5,840	6.4	123.8
Tenant		48,770	2,270	50,380	3,880	3.3	70.9
Caretaker		45,260	1,160	46,230	2,130	2.1	83.6
Pulangui	1.97						
Owner Operator		69,400	11,400	77,920	19,920	12.3	74.7
Lessee		54,620	5,820	63,140	14,340	15.6	146.4
Tenant		48,740	1,950	52,250	5,460	7.2	180.0
Caretaker		43,387	757	45,937	3,307	5.9	336.9
Mal	1.12						
Owner Operator		58,850	6,550	62,330	10,030	5.9	53.1
Lessee		45,170	4,670	48,650	8,150	7.7	74.5
Tenant		37,560	2,320	39,310	4,070	4.7	75.4
Caretaker		35,320	1,830	36,370	2,880	3.0	57.4

## 4. Economic Pilot Project Evaluation

### 4.1. Assumptions

The following assumptions were applied in the economic evaluation of the pilot projects. All prices were expressed in constant prices of the year 2003:

- 1) The economic life of the project is assumed to be 30 years, beginning from the year 2003.
- 2) The period from the commencement of the IA strengthening pilot projects to achievement of full project benefit is assumed to be three (3) years.
- 3) A standard conversion factor (SCF) of 0.91 was applied for adjustment of the trade distortion in order to reflect the opportunity cost of the items being shadow priced.
- 4) Economic farmgate price of paddy was based on their import parity prices derived from the World Bank Global Economic Prospects, November 2002. The long-run projected price in 2010 at 2002 constant price was used in the analysis. Paddy was assumed to be import substitutes in view of their increasing importation. Fertilizers and agro-chemicals were valued at their farmgate prices by applying the SCF of 0.91 (Ref. Table 4.1 and 4.2)
- 5) The SCF of 0.91 was multiplied for converting financial prices of other non-traded commodities to get their economic prices.

- 6) The project area is regarded at a labor surplus economy. A shadow wage rate of 0.73 was applied to the financial cost of labor and animal power to get their economic prices.
- 7) Transfer payment such as tax, duty, subsidy, interest, etc., were excluded in estimating the economic costs and benefits.
- 8) Financial IA strengthening costs were converted into economic values using the SCF (0.91).
- 9) The official exchange rate of US\$ = Php50.0 = JPY123.0 was used.

#### 4.2 Pilot Project Benefit

Institutional development benefit with system rectification works will be accrued from increase in paddy cropping areas and productivity in the wet and dry seasons. Economic benefit was estimated as an increment of Net Production Value (NPV) between the future with and without project conditions. The economic crop budgets of paddy were prepared under the without and with project conditions by applying requirement of farm inputs and total labors, unit crop yields, and their economic prices (Ref. Table 4.3). The institutional development benefit at the full development case was estimated by applying harvested area and NPVs of paddy under the without and with project conditions. The Project benefit varies by the pilot NISs from 2,070 Php /ha to 3,230 Php /ha as follows (Ref. Table 4.4):

**Net Production Value of Pilot Project**

Item	San Fabian	Angat	Bago	Labangan	Pulangui	Mal	Total
<b>Total NPV (Php'000)</b>							
Present/Without Project	29,799	78,875	156,986	36,138	193,988	54,244	550,030
Future/With Project	34,894	87,458	189,573	46,190	230,849	59,138	648,102
Increment	5,095	8,583	32,587	10,052	36,861	4,894	98,072
<b>Per ha</b>							
Php/ha	2,230	2,070	2,570	3,150	3,230	1,870	2,700
US\$/ha	44.6	41.4	51.4	63.0	64.6	37.4	54.0

Annual economic benefit will accrue according to the progress of institutional development. Built-up period of increment of NPVs was assumed for three (3) years.

#### 4.3 Pilot Project Cost

The economic project cost comprises (i) institutional development cost, (ii) system rectification cost, (iii) administration and others including consulting service and physical contingencies (Ref. Table 4.5). The price contingency same as increasing factors and interests was not included in the economic evaluation theoretically.

The economic project cost was estimated by applying the SCF (0.91) to the financial project cost. The total economic project cost was estimated at Php 166.3

million as follows:

**Pilot Economic Project Cost**

(Unit:Php'000)

Item	San Fabian 2,288 ha	Angat 4,151 ha	Bago 12,700 ha	Labangan 3,195 ha	Pulangui 11,415 ha	Mal 2,613 ha	Total 36,362 ha
1. Institutional Development Cost	3,924	7,119	21,782	5,480	19,578	4,480	62,363
2. System Rectification Cost	10,125	5,687	7,798	32,344	9,958	10,286	76,198
Sub-total	14,049	12,806	29,580	37,824	29,536	14,766	138,561
3. Administration and others	1,744	3,164	9,679	2,435	8,700	1,990	27,712
Total Cost	15,793	15,970	39,259	40,259	38,236	16,756	166,273

The economic operation and maintenance (O&M) cost was defined as the increment of expenditures between the without and with project conditions. The financial O&M cost under the without and with project conditions was converted to the economic value by applying the SCF (0.91). The increment of economic O&M cost was estimated as follows (Ref. Table 4.6):

**Economic O&M Cost**

(Unit:Php'000)

Annual	San Fabian	Angat	Bago	Labangan	Pulangui	Mal	Total
O&M Cost							
Without Project	2,177	4,160	6,915	2,047	10,118	1,845	27,262
With Project	1,249	4,986	6,356	2,355	10,700	2,474	28,120
Increment	-928	826	-559	308	582	629	858

4.4. Project Evaluation

The economic cost and benefit stream comprising the cost and benefit components were prepared for the project economic life of 30 years from the year 2003 to 2032. Economic internal rate of return (EIRR) for the whole pilot projects was calculated at 56.3 % varying from 23.9% to 88.3% per each pilot NIS. These indicate sufficient economic viability of the pilot projects (Ref. Table 4.7).

**Pilot Projects, EIRR**

	San Fabian	Angat	Bago	Labangan	Pulangui	Mal	Total
EIRR (%)	38.0	46.6	79.9	23.9	88.3	24.7	56.3

**Table 2.1 Cost Estimate for Institutional Development for Pilot IA Strengthening Projects (1/2)****1. Summary for ID Cost**

Item	Cost (Peso)		
A. IA Strengthening/Formation	22,861,000		
A.1 Before Rectification Works	14,903,000		
A.2 In and After Rectification Works	7,958,000		
B. Field Staff	30,599,000		
B.1 Remuneration and Compensation	25,908,000		
B.2 Trainings	2,986,000		
B.3 Travel and Communication Cost	1,705,000		
C. Trainers	530,000		
C.1 FIA Training	330,000		
C.2 FISO Training	200,000		
D. Training Equipment	1,836,000		
Sub-total	55,826,000	Peso/ha	1,535
		\$/ha	30.7
E. FIA office and facilities	12,705,000	Peso/ha	350
		\$/ha	7.0
Total	68,531,000	Peso/ha	1,885.3
		\$/ha	37.7

**2. Basic Data**

Pilot RISs	Service Area(ha)	No. of IAs	No. of Farmers	No. of FIOs*	No. of FIOS**
San Fabian	2,288	7	3,005	21	2
Angat/1	4,151	16	3,522	48	4
Bago	12,700	17	5,439	51	4
Labangan/2	3,195	9	1,608	27	2
Pulangui	11,415	17	28,427	51	4
Mal	2,613	15	2,779	45	3
Total	36,362	81	44,780	243	19

Note : 1/ Lateral D only 2/IA number based on IA re-organization plan

\* FIO - Farmer-Irrigator Organizer (3 persons/IA)

\*\* FIOS - FIO Supervisor (One FIOS per 15 FIOs)

\*\* IDC - Institutional Development Coordinator (including market price monitoring)

**2. Cost Breakdown****A. IA Strengthening and Formation**

Item	Quantity	Unit	Unit Cost	Estimated Cost	Remarks
A.1 Before Rectification Works					
1. Project Orientation Seminars	448 times		7,500	3,360,000	P75/pax, 100 pax/batch for 1 day
2. Parcellary Mapping per IA	81 IAs		43,000	3,483,000	P100/ha
3. Masterlisting of Farmers per IA	81 IAs		21,500	1,742,000	P50/ha
4. IA Meetings/Seminars					
4.1 Art. of Incorporation/By-Laws	81 IAs		12,000	972,000	20 pax/IA at P200/pax/day for 3 days
4.2 Design/Layout consultation	81 IAs		12,000	972,000	20 pax/IA at P200/pax/day for 3 days
4.3 Construction Policies	81 IAs		8,000	648,000	20 pax/IA at P200/pax/day for 2 days
5. IA Trainings					
5.1 PCM Workshop	81 IAs		16,000	1,296,000	20 pax/IA at P200/pax/day for 4 days
5.2 Leadership Development	81 IAs		30,000	2,430,000	20 pax/IA at P500/pax/day for 3 days
A.2 In and After Rectification Works					
1. NIA-IA Meetings					
1.1 ETO Closure/T.O & MFD constn	81 IAs		4,500	365,000	20 pax/IA at P75/pax/day for 3 day
1.2 Resource mobilization (lat./sub-lateral construction)	81 IAs		4,500	365,000	20 pax/IA at P75/pax/day for 1 day
2. IA/Federation Trainings					
2.1 System O&M/Water Management	81 IAs		30,000	2,430,000	20 pax/IA at P500/pax/day for 3 days
2.2 Financial Management	81 IAs		30,000	2,430,000	20 pax/IA at P500/pax/day for 3 days
2.3 Entrepreneur Development (IA Fed)	11 FIAs		30,000	330,000	20 pax/Federation at P500/pax/day for 3 days
2.4 IA Productivity Seminars	81 IAs		20,000	1,620,000	20 pax/IA at P500/pax/day for 2 days
2.5 Local Study Tours (Region XI)	11 FIAs		38,000	418,000	2 pax/FIA + 6 staff at P30,000/FIA

**Table 2.1 Cost Estimate for Institutional Development for Pilot IA Strengthening Projects (2/2)****2. Cost Breakdown****B. Field Staff**

Item	Quantity	Unit	Unit Cost	Estimated Cost	Remarks
<b>B.1 Remuneration/Compensation</b>					
1. FIOs (Transportation Allowance)	243 FIOs		2,000	8,748,000	P2,000/FIO/mo. for 18 months
2. FIOS	19 FIOS		12,000	7,410,000	P12,000/FIOS/mo. for 13 mo./yr for 2.5 years
3. IDC	6 IDC		50,000	9,750,000	P50,000/IDC/mo. for 13 mo./yr for 2.5 years (including transportation)
<b>B2. Trainings</b>					
1. FIO Pre-fielding orientation	243 FIOs		2,500	608,000	P500/pax/day for 5 days
2. FIOS Pre-fielding/Supv. training	19 FIOS		2,500	48,000	P500/pax/day for 5 days
3. FIO Seminars/JET	243 FIOs		9,000	2,187,000	P500/pax/day for 1 day/mo. for 18 mos.
4. FIOS Job Enrichment Trainings	19 FIOS		7,500	143,000	P500/pax/day for 3 days for 5 sessions
<b>B3. Travel and Communication Cost</b>					
1. Travel cost					
1.1 FIOS	19 FIOS		25,000	475,000	6 times
1.2 IDC	6 IDC		25,000	150,000	6 times
2. Communication cost	9 sites		4,000	1,080,000	P 4,000/mo. for 2.5 years (30 months) (inclu. 3 provincial federation, Negros Occidental, Bukidnon, Davao del Sur)

**C. Trainers**

Item	Quantity	Unit	Unit Cost	Estimated Cost	Remarks
C.1 FIA Training	11 FIAs		30,000	330,000	3 days/FIA x 11 FIAs
<b>C.2 FIOS Training</b>					
1. FIOS Pre-fielding/Supv. training	1 times		50,000	50,000	For 5 days
2. FIOS Job Enrichment Trainings	5 times		30,000	150,000	For 3 days

**D. Training Equipment**

Item	Quantity	Unit	Unit Cost	Estimated Cost	Remarks
D.1 Sound System	19	Units	6,000	114,000	
D.2 Projector/Screen	1	Units	135,000	135,000	
D.3 Video Camera/Video Player	1	Units	80,000	80,000	
D.4 Pocket PC	19	Units	50,000	950,000	
D.5 White board	19	Units	8,000	152,000	
D.6 Bulletin Board	81	Units	5,000	405,000	

**E. FIA Office and Facilities**

Item	Quantity	Unit	Unit Cost	Estimated Cost	Remarks
F.1 Warehouse	11	Units	500,000	5,500,000	Based on IISIP-II cost estimate
F.2 Office	11	Units	250,000	2,750,000	- do -
F.3 Weighing scale	11	Units	30,000	330,000	- do -
F.4 Office equipment/furniture	11	Units	65,000	715,000	- do -
F.5 Solar dryer	11	Units	100,000	1,100,000	- do -
F.6 Backfill	11	Units	70,000	770,000	250 cu.m (@280/cu.m)
F.7 Water & supply	11	Units	40,000	440,000	Based on IISIP-II cost estimate
F.8 Computer set w/modem	11	Units	100,000	1,100,000	

**Table 3.1 Area Harvested at Pilot NISs under With and Without Project Conditions**

NIS/ Area	Physical Area (ha)	Cropping Intensity (%)				Area Harvested (ha)					
		Present/1		Future		Present/Without Project/1		Future/With Project		Increment	
		Wet S.	Dry S.	Wet S.	Dry S.	Wet S.	Dry S.	Wet S.	Dry S.	Wet S.	Dry S.
SanFabian	2,288	66	49	71	52	1,510	1,120	1,620	1,190	110	70
Pilot Area	827	88	50	97	55	730	410	800	450	70	40
Other Area	1,461	54	48	57	50	780	710	820	740	40	30
Angat	4,151	65	88	69	91	2,700	3,650	2,860	3,780	160	130
Pilot Area	1,380	61	67	67	74	840	920	920	1,020	80	100
Other Area	2,771	67	98	70	100	1,860	2,730	1,940	2,760	80	30
Bago	12,700	59	60	63	62	7,490	7,620	8,000	7,870	510	250
Pilot Area	2,949	74	75	81	83	2,180	2,210	2,390	2,450	210	240
Other Area	9,751	54	55	57	55	5,310	5,410	5,610	5,420	300	10
Labangan	3,195	58	60	64	66	1,850	1,920	2,040	2,110	190	190
Pilot Area	3,195	58	60	64	66	1,850	1,920	2,040	2,110	190	190
Other Area	0	-	-	-	-	0	0	0	0	0	0
Pulangui	11,415	85	87	90	91	9,700	9,930	10,270	10,390	570	460
Pilot Area	3,090	76	76	84	84	2,350	2,350	2,600	2,600	250	250
Other Area	8,325	88	91	92	93	7,350	7,580	7,670	7,790	320	210
Mal	2,613	91	71	97	73	2,380	1,860	2,530	1,910	150	50
Pilot Area	530	90	70	99	77	480	370	520	410	40	40
Other Area	2,083	91	71	96	72	1,900	1,490	2,010	1,500	110	10

Note : /1 Average in 1999 - 2001

**Table 3.2 Paddy Production at Pilot NISs under With and Without Project Conditions**

Item	Unit	San Fabian	2,288ha	Angat	4,151ha	Bago	12,700ha	Labangan	3,195ha	Pulangui	11,415ha	Mal	2,613ha
		Pillot	Others	Pillot	Others	Pillot	Others	Pillot	Others	Pillot	Others	Pillot	Others
1. Area harvested	(ha)												
Present/Without Project(Irrigated)													
- Wet season		730	780	840	1,860	2,180	5,310	1,850	0	2,350	7,350	480	1,900
- Dry season		410	710	920	2,730	2,210	5,410	1,920	0	2,350	7,580	370	1,490
Present/Without Project(Rainfed)													
- Wet season		70	40	80	80	210	300	190	0	250	320	40	110
- Dry season (no cropping)		40	30	100	30	240	10	190	0	250	210	40	10
Future/With Project													
- Wet season		800	820	920	1,940	2,390	5,610	2,040	0	2,600	7,670	520	2,010
- Dry season		450	740	1,020	2,760	2,450	5,420	2,110	0	2,600	7,790	410	1,500
2. Paddy yield	(ton/ha)												
Present/Without Project(Irrigated)													
- Wet season		3.6	3.6	3.7	3.7	3.4	3.4	3.2	3.2	3.7	3.7	4.4	4.4
- Dry season		3.8	3.8	4.0	4.0	3.3	3.3	3.5	3.5	3.8	3.8	4.5	4.5
Present/Without Project(Rainfed)/1													
- Wet season		3.1	3.1	3.2	3.2	2.9	2.9	2.7	2.7	3.2	3.2	3.9	3.9
- Dry season		0	0	0	0	0	0	0	0	0	0	0	0
Future/With Project													
- Wet season		3.9	3.7	4.0	3.8	3.7	3.5	3.5	3.3	4.0	3.8	4.7	4.5
- Dry season		4.1	3.9	4.3	4.1	3.6	3.4	3.8	3.6	4.1	3.9	4.8	4.6
3. Paddy Production	(ton)												
Present/Without Project													
- Wet season		2,630	2,810	3,110	6,880	7,410	18,050	5,920	0	8,700	27,200	2,110	8,360
- Dry season		1,560	2,700	3,680	10,920	7,290	17,850	6,720	0	8,930	28,800	1,670	6,710
Present/Without Project(Rainfed)													
- Wet season		220	120	260	260	610	870	510	0	800	1,020	160	430
- Dry season		0	0	0	0	0	0	0	0	0	0	0	0
Future/With Project													
- Wet season		3,120	3,030	3,680	7,370	8,840	19,640	7,140	0	10,400	29,150	2,440	9,050
- Dry season		1,850	2,890	4,390	11,320	8,820	18,430	8,020	0	10,660	30,380	1,970	6,900
Increment													
- Wet season		270	100	310	230	820	720	710	0	900	930	170	260
- Dry season		290	190	710	400	1,530	580	1,300	0	1,730	1,580	300	190

Note : /1 : Assumed at 0.5 ton/ha lower than irrigated paddy

**Table 3.3 ISF Collection Efficiency at Pilot NISs under With and Without Project Conditions**

Unit	San Fabian 2,288 ha	Angat 4,151 ha	Bago 12,700 ha	Labangan 3,195 ha	Pulangui 11,415 ha	Mal 2,613 ha
1. ISF Collection Efficiency (%)						
Present/Without Project /1						
- Wet season	30.8	30.9	43.8	15.3	51.6	89.0
- Dry season	45.0	42.7	24.8	26.4	29.5	73.0
Future/With Project						
- Wet season	80.0	80.0	80.0	80.0	80.0	90.0
- Dry season	80.0	80.0	80.0	80.0	80.0	80.0
2. Collectible area (ha)						
Present/Without Project						
- Wet season	1,510	2,710	7,560	1,870	9,470	2,390
- Dry season	1,100	3,670	7,590	1,910	9,640	1,860
Future/With Project						
- Wet season	1,620	2,860	8,000	2,040	10,270	2,530
- Dry season	1,190	3,780	7,870	2,110	10,390	1,910
3. ISF Collection (Peso)						
Present/Without Project /1						
- Wet season	1,119,800	2,219,200	5,548,000	1,681,400	10,782,000	2,795,700
- Dry season	575,600	643,900	2,589,070	703,800	5,765,000	1,458,900
- Dry season	544,200	1,575,300	2,958,930	977,600	5,017,000	1,336,800
Future/With Project/2						
- Wet season	2,322,000	7,050,800	13,619,600	3,584,400	17,794,000	3,884,400
- Dry season	1,036,800	2,288,000	5,120,000	1,305,600	6,572,800	1,821,600
- Dry season	1,285,200	4,762,800	8,499,600	2,278,800	11,221,200	2,062,800
Increment						
- Wet season	461,200	1,644,100	2,530,930	601,800	807,800	362,700
- Dry season	741,000	3,187,500	5,540,670	1,301,200	6,204,200	726,000

Note : /1; Average in 1999-2001 (Current and back accounts)

/2; Prices of paddy applied (Wet S.; Peso 8/kg, Dry S.; Peso 9/kg)

**Table 3.4 Financial Assessment of NISO Income and Expenditure**

Item	San Fabian 2,288 ha	Angat 4,151 ha	Bago 12,700 ha	Labangan 3,195 ha	Pulangui 11,415 ha	Mal 2,613 ha	
<b>PRESENT/Without Project</b> (1999-2001 Average)							
1. Income							
ISF Collection	1,119,800	2,219,200	5,548,000	1,681,400	10,708,200	2,795,700	
Equipment Rental	215,500	658,300	124,200	553,900	2,968,200	843,700	
Other	42,800	1,553,400	45,900	355,000	190,700	22,900	
Sub-total	1,378,100	4,430,900	5,718,100	2,590,300	13,867,100	3,662,300	
(Income/ha)	(600)	(1,070)	(450)	(810)	(1,210)	(1,400)	
2. Expenditure							
Personnel Services	934,900	3,960,400	6,918,600	1,881,300	9,456,400	1,885,500	
Maintenance and Operating	1,457,100	610,400	680,400	367,300	1,662,200	142,900	
Sub-total	2,392,000	4,570,800	7,599,000	2,248,600	11,118,600	2,028,400	
(Expenditure/ha)	(1,050)	(1,100)	(600)	(700)	(970)	(780)	
3. Balance (Income-Expenditure)							
(Balance/ha)	-1,013,900	-139,900	-1,880,900	341,700	2,748,500	1,633,900	
<b>FUTURE/With Project</b>							
1. Income							
ISF Collection	Before sharing	2,049,600	6,235,600	12,035,200	3,168,000	15,725,600	3,427,500
	After sharing (Amount at 50% ISF efficiency)	1,281,000	3,897,300	7,522,000	1,980,000	9,828,500	2,142,200
Equipment Rental		215,500	658,300	124,200	553,900	2,968,200	843,700
Other		42,800	1,553,400	45,900	355,000	190,700	22,900
Income total	Before sharing	2,307,900	8,447,300	12,205,300	4,076,900	18,884,500	4,294,100
	After sharing (Amount at 50% ISF efficiency)	1,539,300	6,109,000	7,692,100	2,888,900	12,987,400	3,008,800
Available O&M and NIA management cost per ha (Peso/ha)							
	Before sharing	1,010	2,040	960	1,280	1,650	1,640
	After sharing	670	1,470	610	900	1,140	1,150
Available O&M cost after NIA management cost (Peso/ha)							
Management cost at 10%	Before sharing	910	1,840	860	1,150	1,490	1,480
	After sharing	600	1,320	550	810	1,030	1,040
Management cost at 20%	Before sharing	810	1,630	770	1,020	1,320	1,310
	After sharing	540	1,180	490	720	910	920
2. Expenditure and Balance							
Expen. same as present		2,392,000	4,570,800	7,599,000	2,248,600	11,118,600	2,028,400
Balance	After sharing	-852,700	1,538,200	93,100	640,300	1,868,800	980,400
	(% to ISF collection before sharing)	(-41.6)	(24.7)	(0.8)	(20.2)	(11.9)	(28.6)
Expen. minus 30% of personnel services		2,111,500	3,382,700	5,523,400	1,684,200	8,281,700	1,462,800
Balance	After sharing	-572,200	2,726,300	2,168,700	1,204,700	4,705,700	1,546,000
	(% to ISF collection before sharing)	(-27.9)	(43.7)	(18.0)	(38.0)	(29.9)	(45.1)
Expen. based on O&M cost of Peso 1,500/ha		3,432,000	6,226,500	19,050,000	4,792,500	17,122,500	3,919,500
Balance	Before sharing	-1,124,100	2,220,800	-6,844,700	-715,600	1,762,000	374,600
	(% to ISF collection before sharing)	(-54.8)	(35.6)	(-56.9)	(-22.6)	(11.2)	(10.9)
3. NISO O&M Cost Assessment							
Management cost at 10%	After sharing	1,372,800	5,479,300	6,985,000	2,588,000	11,757,500	2,717,500
	Balance from the present scale	-1,019,200	908,500	-614,000	339,400	638,900	689,100
Management cost at 20%	After sharing	1,235,500	4,898,200	6,223,000	2,300,400	10,387,700	2,404,000
	Balance from the present scale	-1,156,500	327,400	-1,376,000	51,800	-730,900	375,600

**Table 3.5 Financial Crop Budget, Paddy (Per Hectare), San Fabian (1/6)****A. Paddy, Present and Without Project**

Item	Unit	Unit Price	Irrigated				Rainfed	
			Wet Season		Dry Season		Wet Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>								
Unit Yield	ton	8,040	3.6	28,940	3.8	30,550	3.1	24,920
<b>2. Production Cost</b>				15,290		14,260		14,560
2.1 Farm inputs				5,820		4,200		5,140
- Seed	kg	16.9	65.0	1,100	65.0	1,100	65.0	1,100
- Fertilizer								
Inorganic	sack	412.0	6.5	2,680	4.5	1,850	5.0	2,060
Farm manure (wet)	sack	432.0	2.0	860	0.5	220	2.0	860
- Agro-chemicals	lit	650.0	1.0	650	1.0	650	1.0	650
Others (10%)	peso			530		380		470
2.2 Labor (Hired)	md	138.0	25.0	3,450	32.0	4,420	25.0	3,450
2.3 Land preparation				2,630		1,580		2,980
Plowing	md	175.0	10.0	1,750	9.0	1,580	12.0	2,100
Paddling	md	175.0	5.0	880	-	-	5.0	880
2.4 Threshing/harvesting	sack	402.0	7.2	2,890	7.6	3,060	6.2	2,490
2.5 Tool/Equipment	no.	250.0	2.0	500	4.0	1,000	2.0	500
2.6 Loan interest	peso		-	-	-	-	-	-
2.7 ISF cost	sack	400.0	2.0	800	-	-	-	-
		450.0	-	-	3.0	1,350	-	-
<b>3. Net Return</b>	peso		-	13,650	-	16,290	-	10,360
(N.Return/P. Cost Ratio)	peso		-	0.89	-	1.14	-	0.71

Source: 1. Bureau of Agricultural Statistics, Cost and Returns Survey

2. National Irrigation System Office

**B. Irrigated Paddy, With Project**

Item	Unit	Unit Price	Irrigated (Pilot Area)				Irrigated (Other Area)			
			Wet Season		Dry Season		Wet Season		Dry Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>										
Unit Yield	ton	8,040	3.9	31,360	4.1	32,960	3.7	29,750	3.9	31,360
<b>2. Production Cost</b>				14,980		14,450		15,330		14,470
2.1 Farm inputs				5,820		4,200		5,820		4,200
- Seed	kg	16.9	65.0	1,100	65.0	1,100	65.0	1,100	65.0	1,100
- Fertilizer										
Inorganic	sack	412.0	6.5	2,680	4.5	1,850	6.5	2,680	4.5	1,850
Farm manure (wet)	sack	432.0	2.0	860	0.5	220	2.0	860	0.5	220
- Agro-chemicals	lit	650.0	1.0	650	1.0	650	1.0	650	1.0	650
Others (10% of cash)	peso			530		380		530		380
2.2 Labor (Hired)	md	138.0	26.0	3,590	33.0	4,550	26.0	3,590	33.0	4,550
2.3 Land preparation				1,930		1,400		2,450		1,580
Plowing	md	175.0	8.0	1,400	8.0	1,400	10.0	1,750	9.0	1,580
Paddling	md	175.0	3.0	530	-	-	4.0	700	-	-
2.4 Threshing/harvesting	sack	402.0	7.8	3,140	8.2	3,300	7.4	2,970	7.8	3,140
2.5 Tool/Equipment	no.	250.0	2.0	500	4.0	1,000	2.0	500	4.0	1,000
2.6 Loan interest	peso		-	-	-	-	-	-	-	-
2.7 ISF cost	sack	400.0	2.0	800	-	-	2.0	800	-	-
		450.0	-	-	3	1,350	-	-	3	1,350
<b>3. Net Return</b>	peso			16,380		18,510		14,420		16,890
(N.Return/P. Cost Ratio)	peso			1.09		1.28		0.94		1.17



**Table 3.5 Financial Crop Budget, Paddy (Per Hectare), Angat (2/6)**

**A. Irrigated Paddy, Present and Without Project**

Item	Unit	Unit Price	Irrigated				Rainfed	
			Wet Season		Dry Season		Wet Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1 Gross Income</b>								
Unit Yield	ton	7,960	3.7	29,450	4.0	31,840	3.2	25,470
<b>2 Production Cost</b>				17,680		18,344		15,690
2.1 Farm inputs				6,700		7,990		6,460
- Seed	kg	17.1	70.0	1,200	60.0	1,030	70.0	1,200
- Fertilizer								
Inorganic	sack	432.0	5.0	2,160	7.0	3,020	4.5	1,940
Farm manure (wet)	sack	120.0	5.0	600	6.0	720	5.0	600
- Agro-chemicals	lit	711.0	3.0	2,130	3.5	2,490	3.0	2,130
Others (10%)	peso			610		730		590
2.2 Labor (Hired)	md	118.0	35.0	4,130	40.0	4,720	32.0	3,780
2.3 Land preparation				1,900		950		1,900
Plowing	md	95.0	10.0	950	10.0	950	10.0	950
Paddling	md	95.0	10.0	950	-	-	10.0	950
2.4 Threshing/harvesting	sack	398.0	7.4	2,950	8.0	3,184	6.4	2,550
2.5 Tool/Equipment	no.	250.0	4.0	1,000	6.0	1,500	4.0	1,000
2.6 Loan interest	peso			-		-		-
2.7 ISF cost	sack	400.0	2.5	1,000	-	-	-	-
		450.0	-	-	3.5	1,580	-	-
<b>3 Net Return</b>	peso			-		13,496		9,780
(N.Return/P. Cost Ratio)	peso			-		0.74		0.62

Source: 1. Bureau of Agricultural Statistics, Cost and Returns Survey  
2. National Irrigation System Office

**B. Irrigated Paddy, With Project**

Item	Unit	Unit Price	Irrigated (Pilot Area)				Irrigated (Other Area)			
			Wet Season		Dry Season		Wet Season		Dry Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1 Gross Income</b>										
Unit Yield	ton	7,960	4.0	31,840	4.3	34,230	3.8	30,250	4.1	32,640
<b>2 Production Cost</b>				18,380		18,823		17,870		18,420
2.1 Farm inputs				6,930		7,990		6,700		7,990
- Seed	kg	17.1	70.0	1,200	60.0	1,030	70.0	1,200	60.0	1,030
- Fertilizer										
Inorganic	sack	432.0	5.2	2,250	7.0	3,020	5.0	2,160	7.0	3,020
Farm manure (wet)	sack	120.0	6.0	720	6.0	720	5.0	600	6.0	720
- Agro-chemicals	lit	711.0	3.0	2,130	3.5	2,490	3.0	2,130	3.5	2,490
Others (10%)	peso			630		730		610		730
2.2 Labor (Hired)	md	118.0	37.0	4,370	42.0	4,960	36.0	4,250	40.0	4,720
2.3 Land preparation				1,900		950		1,900		950
Plowing	md	95.0	10.0	950	10.0	950	10.0	950	10.0	950
Paddling	md	95.0	10.0	950	-	-	10.0	950	-	-
2.4 Threshing/harvesting	sack	398.0	8.0	3,180	8.6	3,423	7.6	3,020	8.2	3,260
2.5 Tool/Equipment	no.	250.0	4.0	1,000	6.0	1,500	4.0	1,000	6.0	1,500
2.6 Loan interest	peso			-		-		-		-
2.7 ISF cost	sack	400.0	2.5	1,000	-	-	2.5	1,000	-	-
	sack	450.0	-	-	3.5	1,580	-	-	3.5	1,580
<b>3 Net Return</b>	peso			-		15,407		12,380		14,220
(N.Return/P. Cost Ratio)	peso			-		0.82		0.69		0.77

**Table 3.5 Financial Crop Budget, Paddy (Per Hectare), Bago (3/6)**

**A. Paddy, Present and Without Project**

Item	Unit	Unit Price	Irrigated				Rainfed	
			Wet Season		Dry Season		Wet Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>								
Unit Yield	ton	7,640.0	3.4	25,980	3.30	25,210	2.9	22,160
<b>2. Production Cost</b>				15,810		16,160		14,140
2.1 Farm inputs				8,280		8,330		7,330
- Seed	kg	17.1	200.0	3,420	190.0	3,250	200.0	3,420
- Fertilizer								
Inorganic	sack	432.0	8.0	3,460	7.0	3,020	6.0	2,590
Farm manure (wet)	sack	-	-	-	-	-	-	-
- Agro-chemicals	lit	650.0	1.0	650	2.0	1,300	1.0	650
Others (10%)	peso			750		760		670
2.2 Labor (Hired)	md	100.0	30.0	3,000	30.0	3,000	28.0	2,800
2.3 Land preparation				500		900		500
Plowing	md	100.0	4.0	400	8.0	800	4.0	400
Paddling	md	100.0	1.0	100	1.0	100	1.0	100
2.4 Threshing/harvesting	sack	519.0	6.8	3,530	6.6	3,430	5.8	3,010
2.5 Tool/Equipment	no.	125.0	4.0	500	4.0	500	4.0	500
2.6 Loan interest	peso		-	-	-	-	-	-
2.7 ISF cost	sack	400.0	2.0	800	-	-	-	-
		450.0	-	-	3.0	1,350	-	-
<b>3. Net Return</b>	peso		-	10,170	-	9,050	-	8,020
(N.Return/P. Cost Ratio)	peso		-	0.64	-	0.56	-	0.57

Source: 1. Bureau of Agricultural Statistics, Cost and Returns Survey

2. National Irrigation System Office

**B. Irrigated Paddy, With Project**

Item	Unit	Unit Price	Irrigated (Pilot Area)				Irrigated (Other Area)			
			Wet Season		Dry Season		Wet Season		Dry Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>										
Unit Yield	ton	7,640.0	3.7	28,270	3.6	27,500	3.5	26,740	3.4	25,980
<b>2. Production Cost</b>				14,990		15,330		15,170		15,510
2.1 Farm inputs				7,150		7,190		7,540		7,580
- Seed	kg	17.1	140.0	2,390	130.0	2,220	160.0	2,740	150.0	2,570
- Fertilizer										
Inorganic	sack	432.0	8.0	3,460	7.0	3,020	8.0	3,460	7.0	3,020
Farm manure (wet)	sack	-	-	-	-	-	-	-	-	-
- Agro-chemicals	lit	650.0	1.0	650	2.0	1,300	1.0	650	2.0	1,300
Others (10% of cash)	peso			650		650		690		690
2.2 Labor (Hired)	md	100.0	30.0	3,000	30.0	3,000	30.0	3,000	30.0	3,000
2.3 Land preparation				500		900		500		900
Plowing	md	100.0	4.0	400	8.0	800	4.0	400	8.0	800
Paddling	md	100.0	1.0	100	1.0	100	1.0	100	1.0	100
2.4 Threshing/harvesting	sack	519.0	7.4	3,840	7.2	3,740	7.0	3,630	6.8	3,530
2.5 Tool/Equipment	no.	125.0	4.0	500	4.0	500	4.0	500	4.0	500
2.6 Loan interest	peso		-	-	-	-	-	-	-	-
2.7 ISF cost	sack	400.0	2.0	800	-	-	2.0	-	-	-
		450.0	-	-	3.0	1,350	-	-	3.0	-
<b>3. Net Return</b>	peso		-	13,280	-	12,170	-	11,570	-	10,470
(N.Return/P. Cost Ratio)	peso		-	0.89	-	0.79	-	0.76	-	0.68

**Table 3.5 Financial Crop Budget, Paddy (Per Hectare), Labangan (4/6)**

**A. Paddy, Present and Without Project**

Item	Unit	Unit Price	Irrigated				Rainfed	
			Wet Season		Dry Season		Wet Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>								
Unit Yield	ton	7,230.0	3.2	23,140	3.5	25,310	2.7	19,520
<b>2. Production Cost</b>				15,020		14,980		13,800
2.1 Farm inputs				6,060		6,670		5,820
- Seed	kg	17.1	98.0	1,680	80.0	1,370	98.0	1,680
- Fertilizer								
Inorganic	sack	432.0	4.0	1,730	6.0	2,590	3.5	1,510
Farm manure (wet)	sack	-	-	-	-	-	-	-
- Agro-chemicals	lit	1,050.0	2.0	2,100	2.0	2,100	2.0	2,100
Others (10%)	peso			550		610		530
2.2 Labor (Hired)	md	125.0	40.0	5,000	35.0	4,380	35.0	4,380
2.3 Land preparation				900		900		900
Plowing	md	150.0	4.0	600	4.0	600	4.0	600
Paddling	md	150.0	2.0	300	2.0	300	2.0	300
2.4 Threshing/harvesting	sack	361.0	6.4	2,310	7.0	2,530	5.4	1,950
2.5 Tool/Equipment	no.	125.0	6.0	750	4.0	500	6.0	750
2.6 Loan interest	peso			-		-		-
2.7 ISF cost	sack	400.0	2.0	800	-	-	-	-
		450.0	-	-	3.0	1,350	-	-
<b>3. Net Return</b>	peso			8,120		10,330		5,720
(N.Return/P. Cost Ratio)	peso			0.54		0.69		0.41

Source: 1. Bureau of Agricultural Statistics, Cost and Returns Survey

2. National Irrigation System Office

**B. Irrigated Paddy, With Project**

Item	Unit	Unit Price	Irrigated (Pilot Area)				Irrigated (Other Area)			
			Wet Season		Dry Season		Wet Season		Dry Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>										
Unit Yield	ton	7,230.0	3.5	25,310	3.8	27,470	3.3	23,860	3.6	26,030
<b>2. Production Cost</b>				15,490		15,440		15,220		15,170
2.1 Farm inputs				6,060		6,670		6,060		6,670
- Seed	kg	17.1	98.0	1,680	80.0	1,370	98.0	1,680	80.0	1,370
- Fertilizer										
Inorganic	sack	432.0	4.0	1,730	6.0	2,590	4.0	1,730	6.0	2,590
Farm manure (wet)	sack	-	-	-	-	-	-	-	-	-
- Agro-chemicals	lit	1,050.0	2.0	2,100	2.0	2,100	2.0	2,100	2.0	2,100
Others (10% of cash)	peso			550		610		550		610
2.2 Labor (Hired)	md	125.0	42.0	5,250	37.0	4,630	41.0	5,130	36.0	4,500
2.3 Land preparation				900		900		900		900
Plowing	md	150.0	4.0	600	4.0	600	4.0	600	4.0	600
Paddling	md	150.0	2.0	300	2.0	300	2.0	300	2.0	300
2.4 Threshing/harvesting	sack	361.0	7.0	2,530	7.6	2,740	6.6	2,380	7.2	2,600
2.5 Tool/Equipment	no.	125.0	6.0	750	4.0	500	6.0	750	4.0	500
2.6 Loan interest	peso			-		-		-		-
2.7 ISF cost	sack	400.0	2.0	800	-	-	2.0	800	-	-
		450.0	-	-	3.0	1,350	-	-	3.0	-
<b>3. Net Return</b>	peso			9,820		12,030		8,640		10,860
(N.Return/P. Cost Ratio)	peso			0.63		0.78		0.57		0.72

**Table 3.5 Financial Crop Budget, Paddy (Per Hectare), Pulangui (5/6)**

**A. Paddy, Present and Without Project**

Item	Unit	Unit Price	Irrigated				Rainfed	
			Wet Season		Dry Season		Wet Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>								
Unit Yield	ton	7,680.0	3.7	28,420	3.8	29,180	3.2	24,580
<b>2. Production Cost</b>				20,160		18,750		18,450
2.1 Farm inputs				9,720		7,930		8,780
- Seed	kg	17.1	160.0	2,740	150.0	2,570	160.0	2,740
- Fertilizer								
Inorganic	sack	432.0	7.0	3,020	6.0	2,590	5.0	2,160
Farm manure (wet)	sack	-	-	-	-	-	-	-
- Agro-chemicals	lit	1,025.0	3.0	3,080	2.0	2,050	3.0	3,080
Others (10%)	peso			880		720		800
2.2 Labor (Hired)	md	130.0	40.0	5,200	50.0	6,500	37.0	4,810
2.3 Land preparation				1,900		900		1,900
Plowing	md	150.0	10.0	1,500	4.0	600	10.0	1,500
Paddling	md	100.0	4.0	400	3.0	300	4.0	400
2.4 Threshing/harvesting	sack	384.0	7.4	2,840	7.6	2,920	6.4	2,460
2.5 Tool/Equipment	no.	125.0	4.0	500	4.0	500	4.0	500
2.6 Loan interest	peso			-		-		-
2.7 ISF cost	sack	400.0	2.0	800	-	-	-	-
		450.0	-	-	3.0	1,350	-	-
<b>3. Net Return</b>	peso			8,260		10,430		6,130
(N.Return/P. Cost Ratio)	peso			0.41		0.56		0.33

Source: 1. Bureau of Agricultural Statistics, Cost and Returns Survey  
2. National Irrigation System Office

**B. Irrigated Paddy, With Project**

Item	Unit	Unit Price	Irrigated (Pilot Area)				Irrigated (Other Area)			
			Wet Season		Dry Season		Wet Season		Dry Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>										
Unit Yield	ton	7,680.0	4.0	30,720	4.1	31,490	3.8	29,180	3.9	29,950
<b>2. Production Cost</b>				19,710		18,480		19,800		18,390
2.1 Farm inputs				8,780		7,170		9,150		7,360
- Seed	kg	17.1	110.0	1,880	110.0	1,880	130.0	2,220	120.0	2,050
- Fertilizer										
Inorganic	sack	432.0	7.0	3,020	6.0	2,590	7.0	3,020	6.0	2,590
Farm manure (wet)	sack	-	-	-	-	-	-	-	-	-
- Agro-chemicals	lit	1,025.0	3.0	3,080	2.0	2,050	3.0	3,080	2.0	2,050
Others (10% of cash)	peso			800		650		830		670
2.2 Labor (Hired)	md	130.0	42.0	5,460	52.0	6,760	41.0	5,330	51.0	6,630
2.3 Land preparation				1,900		900		1,900		900
Plowing	md	150.0	10.0	1,500	4.0	600	10.0	1,500	4.0	600
Paddling	md	100.0	4.0	400	3.0	300	4.0	400	3.0	300
2.4 Threshing/harvesting	sack	384.0	8.0	3,070	8.2	3,150	7.6	2,920	7.8	3,000
2.5 Tool/Equipment	no.	125.0	4.0	500	4.0	500	4.0	500	4.0	500
2.6 Loan interest	peso			-		-		-		-
2.7 ISF cost	sack	400.0	2.0	800	-	-	2.0	800	-	-
		450.0	-	-	3.0	1,350	-	-	3.0	1,350
<b>3. Net Return</b>	peso			11,010		13,010		9,380		11,560
(N.Return/P. Cost Ratio)	peso			0.56		0.70		0.47		0.63

**Table 3.5 Financial Crop Budget, Paddy (Per Hectare), Mal (6/6)**

**A. Paddy, Present and Without Project**

Item	Unit	Unit Price	Irrigated				Rainfed	
			Wet Season		Dry Season		Wet Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>								
Unit Yield	ton	7,750.0	4.4	34,100	4.5	34,880	3.9	30,230
<b>2. Production Cost</b>				23,240		19,820		21,590
2.1 Farm inputs				11,300		10,730		10,340
- Seed	kg	17.1	80.0	1,370	75.0	1,280	80.0	1,370
- Fertilizer								
Inorganic	sack	432.0	9.0	3,890	8.0	3,460	7.0	3,020
Farm manure (wet)	sack	-	-	-	-	-	-	-
- Agro-chemicals	lit	1,670.0	3.0	5,010	3.0	5,010	3.0	5,010
Others (10%)	peso			1,030		980		940
2.2 Labor (Hired)	md	100.0	40.0	4,000	30.0	3,000	37.0	3,700
2.3 Land preparation				3,630		2,000		3,630
Plowing	md	375.0	8.0	3,000	4.0	1,500	8.0	3,000
Paddling	md	125.0	5.0	630	4.0	500	5.0	630
2.4 Threshing/harvesting	sack	387.5	8.8	3,410	9.0	3,490	7.8	3,020
2.5 Tool/Equipment	no.	150.0	6.0	900	4.0	600	6.0	900
2.6 Loan interest	peso		-	-	-	-	-	-
2.7 ISF cost	sack	400.0	2.0	800	-	-	-	-
		450.0	-	-	3.0	1,350	-	-
<b>3. Net Return</b>	peso		-	10,860	-	15,060	-	8,640
(N.Return/P. Cost Ratio)	peso		-	0.47	-	0.76	-	0.40

Source: 1. Bureau of Agricultural Statistics, Cost and Returns Survey

2. National Irrigation System Office

**B. Irrigated Paddy, With Project**

Item	Unit	Unit Price	Irrigated (Pilot Area)				Irrigated (Other Area)			
			Wet Season		Dry Season		Wet Season		Dry Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>										
Unit Yield	ton	7,750.0	4.7	36,430	4.8	37,200	4.5	34,880	4.6	35,650
<b>2. Production Cost</b>				23,670		20,250		23,420		20,000
2.1 Farm inputs				11,300		10,730		11,300		10,730
- Seed	kg	17.1	80.0	1,370	75.0	1,280	80.0	1,370	75.0	1,280
- Fertilizer										
Inorganic	sack	432.0	9.0	3,890	8.0	3,460	9.0	3,890	8.0	3,460
Farm manure (wet)	sack	-	-	-	-	-	-	-	-	-
- Agro-chemicals	lit	1,670.0	3.0	5,010	3.0	5,010	3.0	5,010	3.0	5,010
Others (10% of cash)	peso			1,030		980		1,030		980
2.2 Labor (Hired)	md	100.0	42.0	4,200	32.0	3,200	41.0	4,100	31.0	3,100
2.3 Land preparation				3,630		2,000		3,630		2,000
Plowing	md	375.0	8.0	3,000	4.0	1,500	8.0	3,000	4.0	1,500
Paddling	md	125.0	5.0	630	4.0	500	5.0	630	4.0	500
2.4 Threshing/harvesting	sack	387.5	9.4	3,640	9.6	3,720	9.0	3,490	9.2	3,570
2.5 Tool/Equipment	no.	150.0	6.0	900	4.0	600	6.0	900	4.0	600
2.6 Loan interest	peso		-	-	-	-	-	-	-	-
2.7 ISF cost	sack	400.0	2.0	800	-	-	2.0	800	-	-
		450.0	-	-	3.0	1,350	-	-	3.0	1,350
<b>3. Net Return</b>	peso		-	12,760	-	16,950	-	11,460	-	15,650
(N.Return/P. Cost Ratio)	peso		-	0.54	-	0.84	-	0.49	-	0.78

**Table 3.6 Farm Budget Analyses, Pilot NISs, Present /Without Project Condition (1/2)**

Item	Owner/Cultivator			Lessee			Tenant			Caretaker		
	Wet	Dry	Total	Wet	Dry	Total	Wet	Dry	Total	Wet	Dry	Total
<b>San Fabian</b>	Ave. Operation Size (ha)		0.53									
1. Area Planted/Harvested 1/	0.42	0.27	0.69	0.42	0.27	0.69	0.42	0.27	0.69	0.42	0.27	0.69
2. Gross Income	29,700	25,800	55,500	29,700	25,800	55,500	27,210	23,310	50,520	26,250	22,350	48,600
Farme income 2/	12,150	8,250	20,400	12,150	8,250	20,400	12,150	8,250	20,400	12,150	8,250	20,400
Other source of Income	17,550	17,550	35,100	17,550	17,550	35,100	15,060	15,060	30,120	14,100	14,100	28,200
3. Production Expenditure	6,420	3,850	10,270	9,190	6,620	15,810	7,860	5,030	12,890	10,440	6,960	17,400
- Production cost (share)	6,420	3,850	10,270	6,420	3,850	10,270	3,850	2,310	6,160	1,930	1,180	3,110
- Production share	-	-	-	2,770	2,770	5,540	4,010	2,720	6,730	8,510	5,780	14,290
4. Living Expenditure	17,900	17,900	35,800	17,400	17,400	34,800	17,070	17,070	34,140	14,300	14,300	28,600
5. Net Reserve	5,380	4,050	9,430	3,110	1,780	4,890	2,280	1,210	3,490	1,510	1,090	2,600
<b>Angat</b>	Ave. Operation Size (ha)		0.68									
1. Area Planted/Harvested 1/	0.48	0.63	1.11	0.48	0.63	1.11	0.48	0.63	1.11	0.48	0.63	1.11
2. Gross Income	34,140	40,060	69,300	31,640	37,560	69,200	30,640	36,560	67,200	29,140	35,060	64,200
Farme income 2/	14,140	20,060	34,200	14,140	20,060	34,200	14,140	20,060	34,200	14,140	20,060	34,200
Other source of Income	20,000	20,000	35,100	17,500	17,500	35,000	16,500	16,500	33,000	15,000	15,000	30,000
3. Production Expenditure	8,490	12,300	20,790	11,200	15,010	26,210	11,320	16,180	27,500	12,450	17,730	30,180
- Production cost (share)	8,490	12,300	20,790	8,490	12,300	20,790	4,250	6,150	10,400	2,550	3,690	6,240
- Production share	-	-	-	2,710	2,710	5,420	7,070	10,030	17,100	9,900	14,040	23,940
4. Living Expenditure	21,900	21,900	43,800	19,900	19,900	39,800	18,570	18,570	37,140	16,800	16,800	33,600
5. Net Reserve	3,750	5,860	4,710	540	2,650	3,190	750	1,810	2,560	(110)	530	420
<b>Bago</b>	Ave. Operation Size (ha)		2.05									
1. Area Planted/Harvested 1/	1.52	1.54	3.06	1.52	1.54	3.06	1.52	1.54	3.06	1.52	1.54	3.06
2. Gross Income	59,490	58,820	118,310	56,990	56,320	113,310	55,990	55,320	111,310	55,490	54,820	110,310
Farme income 2/	39,490	38,820	78,310	39,490	38,820	78,310	39,490	38,820	78,310	39,490	38,820	78,310
Other source of Income	20,000	20,000	40,000	17,500	17,500	35,000	16,500	16,500	33,000	16,000	16,000	32,000
3. Production Expenditure	24,030	24,890	48,920	29,910	30,770	60,680	31,770	31,860	63,630	34,850	34,640	69,490
- Production cost (share)	24,030	24,890	48,920	24,030	24,890	48,920	12,020	12,450	24,470	7,210	7,470	14,680
- Production share	-	-	-	5,880	5,880	11,760	19,750	19,410	39,160	27,640	27,170	54,810
4. Living Expenditure	29,800	29,800	59,600	23,750	23,750	47,500	22,500	22,500	45,000	19,900	19,900	39,800
5. Net Reserve	5,660	4,130	9,790	3,330	1,800	5,130	1,720	960	2,680	740	280	1,020
<b>Labangan</b>	Ave. Operation Size (ha)		1.96									
1. Area Planted/Harvested 1/	0.94	0.96	1.90	0.94	0.96	1.90	0.94	0.96	1.90	0.94	0.96	1.90
2. Gross Income	44,250	46,800	91,050	41,750	44,300	86,050	41,750	44,300	86,050	41,750	44,300	86,050
Farme income 2/	21,750	24,300	46,050	21,750	24,300	46,050	21,750	24,300	46,050	21,750	24,300	46,050
Other source of Income	22,500	22,500	45,000	20,000	20,000	40,000	20,000	20,000	40,000	20,000	20,000	40,000
3. Production Expenditure	14,120	14,380	28,500	17,590	17,850	35,440	17,940	19,340	37,280	19,470	21,320	40,790
- Production cost (share)	14,120	14,380	28,500	14,120	14,380	28,500	7,060	7,190	14,250	4,240	4,310	8,550
- Production share	-	-	-	3,470	3,470	6,940	10,880	12,150	23,030	15,230	17,010	32,240
4. Living Expenditure	27,500	27,500	55,000	24,000	24,000	48,000	23,250	23,250	46,500	22,050	22,050	44,100
5. Net Reserve	2,630	4,920	7,550	160	2,450	2,610	560	1,710	2,270	230	930	1,160
<b>Pulangui</b>	Ave. Operation Size (ha)		1.97									
1. Area Planted/Harvested 1/	1.60	1.60	3.20	1.60	1.60	3.20	1.60	1.60	3.20	1.60	1.60	3.20
2. Gross Income	65,220	66,440	131,660	63,970	65,190	129,160	66,970	68,190	135,160	62,679	63,899	126,577
Farme income 2/	45,470	46,690	92,160	45,470	46,690	92,160	45,470	46,690	92,160	45,470	46,690	92,160
Other source of Income	19,750	19,750	39,500	18,500	18,500	37,000	21,500	21,500	43,000	17,209	17,209	34,417
3. Production Expenditure	32,260	30,000	62,260	38,400	36,140	74,540	43,410	43,010	86,420	41,510	41,680	83,190
- Production cost (share)	32,260	30,000	62,260	32,260	30,000	62,260	16,130	15,000	31,130	9,680	9,000	18,680
- Production share	-	-	-	6,140	6,140	12,280	27,280	28,010	55,290	31,830	32,680	64,510
4. Living Expenditure	29,000	29,000	58,000	24,400	24,400	48,800	23,395	23,395	46,790	21,315	21,315	42,630
5. Net Reserve	3,960	7,440	11,400	1,170	4,650	5,820	165	1,785	1,950	(147)	904	757
<b>Mal</b>	Ave. Operation Size (ha)		1.12									
1. Area Planted/Harvested 1/	0.92	0.92	1.84	0.92	0.92	1.84	0.92	0.92	1.84	0.92	0.92	1.84
2. Gross Income	48,870	49,590	98,460	46,370	47,090	93,460	44,195	44,915	89,110	45,450	46,170	91,620
Farme income 2/	31,370	32,090	63,460	31,370	32,090	63,460	31,370	32,090	63,460	31,370	32,090	63,460
Other source of Income	17,500	17,500	35,000	15,000	15,000	30,000	12,825	12,825	25,650	14,080	14,080	28,160
3. Production Expenditure	21,380	18,230	39,610	25,720	22,570	48,290	26,380	25,170	51,550	28,370	27,930	56,300
- Production cost (share)	21,380	18,230	39,610	21,380	18,230	39,610	10,690	9,120	19,810	6,410	5,470	11,880
- Production share	-	-	-	4,340	4,340	8,680	15,690	16,050	31,740	21,960	22,460	44,420
4. Living Expenditure	26,150	26,150	52,300	20,250	20,250	40,500	17,620	17,620	35,240	16,745	16,745	33,490
5. Net Reserve	1,340	5,210	6,550	400	4,270	4,670	195	2,125	2,320	335	1,495	1,830

Note: 1/ Computed wet and dry area were based on cropping intensity  
2/ Farme income and production cost were based on the crop budget  
3/ Tenant and owner share the cost of production (50:50)  
4/ Caretaker share 30% of the cost; owner 70%

Source: Production/Cost Sharing Survey, JICA-NIA

**Table 3.6 Farm Budget Analyses, Pilot NISs, Future/With Project Condition (2/2)**

Item	Owner/Cultivator			Lessee			Tenant			Caretaker		
	Wet	Dry	Total	Wet	Dry	Total	Wet	Dry	Total	Wet	Dry	Total
<b>San Fabian</b>	Ave. Operation Size (ha)		0.53									
1. Area Planted/Harvested 1/	0.42	0.27	0.69	0.42	0.27	0.69	0.42	0.27	0.69	0.42	0.27	0.69
2. Gross Income	30,720	26,450	57,170	30,720	26,450	57,170	28,230	23,960	52,190	27,270	23,000	50,270
Farme income 2/	13,170	8,900	22,070	13,170	8,900	22,070	13,170	8,900	22,070	13,170	8,900	22,070
Other source of Income	17,550	17,550	35,100	17,550	17,550	35,100	15,060	15,060	30,120	14,100	14,100	28,200
3. Production Expenditure	6,290	3,900	10,190	9,060	6,670	15,730	8,120	5,280	13,400	11,110	7,400	18,510
- Production cost (share)	6,290	3,900	10,190	6,290	3,900	10,190	3,770	2,340	6,110	1,890	1,170	3,060
- Production share	-	-	-	2,770	2,770	5,540	4,350	2,940	7,290	9,220	6,230	15,450
4. Living Expenditure	17,900	17,900	35,800	17,400	17,400	34,800	17,070	17,070	34,140	14,300	14,300	28,600
5. Net Reserve	6,530	4,650	11,180	4,260	2,380	6,640	3,040	1,610	4,650	1,860	1,300	3,160
<b>Angat</b>	Ave. Operation Size (ha)		0.68									
1. Area Planted/Harvested 1/	0.48	0.63	1.11	0.48	0.63	1.11	0.48	0.63	1.11	0.48	0.63	1.11
2. Gross Income	35,280	41,560	71,940	32,780	39,060	71,840	31,780	38,060	69,840	30,280	36,560	66,840
Farme income 2/	15,280	21,560	36,840	15,280	21,560	36,840	15,280	21,560	36,840	15,280	21,560	36,840
Other source of Income	20,000	20,000	35,100	17,500	17,500	35,000	16,500	16,500	33,000	15,000	15,000	30,000
3. Production Expenditure	8,820	12,530	21,350	11,530	15,240	26,770	12,050	17,050	29,100	13,350	18,850	32,200
- Production cost (share)	8,820	12,530	21,350	8,820	12,530	21,350	4,410	6,270	10,680	2,650	3,760	6,410
- Production share	-	-	-	2,710	2,710	5,420	7,640	10,780	18,420	10,700	15,090	25,790
4. Living Expenditure	21,900	21,900	43,800	19,900	19,900	39,800	18,570	18,570	37,140	16,800	16,800	33,600
5. Net Reserve	4,560	7,130	6,790	1,350	3,920	5,270	1,160	2,440	3,600	130	910	1,040
<b>Bago</b>	Ave. Operation Size (ha)		2.05									
1. Area Planted/Harvested 1/	1.52	1.54	3.06	1.52	1.54	3.06	1.52	1.54	3.06	1.52	1.54	3.06
2. Gross Income	62,970	62,350	125,320	60,470	59,850	120,320	59,470	58,850	118,320	58,970	58,350	117,320
Farme income 2/	42,970	42,350	85,320	42,970	42,350	85,320	42,970	42,350	85,320	42,970	42,350	85,320
Other source of Income	20,000	20,000	40,000	17,500	17,500	35,000	16,500	16,500	33,000	16,000	16,000	32,000
3. Production Expenditure	22,780	23,610	46,390	28,660	29,490	58,150	32,880	32,990	65,870	36,910	36,730	73,640
- Production cost (share)	22,780	23,610	46,390	22,780	23,610	46,390	11,390	11,810	23,200	6,830	7,080	13,910
- Production share	-	-	-	5,880	5,880	11,760	21,490	21,180	42,670	30,080	29,650	59,730
4. Living Expenditure	29,800	29,800	59,600	23,750	23,750	47,500	22,500	22,500	45,000	19,900	19,900	39,800
5. Net Reserve	10,390	8,940	19,330	8,060	6,610	14,670	4,090	3,360	7,450	2,160	1,720	3,880
<b>Labangan</b>	Ave. Operation Size (ha)		1.96									
1. Area Planted/Harvested 1/	0.94	0.96	1.90	0.94	0.96	1.90	0.94	0.96	1.90	0.94	0.96	1.90
2. Gross Income	46,290	48,870	95,160	43,790	46,370	90,160	43,790	46,370	90,160	43,790	46,370	90,160
Farme income 2/	23,790	26,370	50,160	23,790	26,370	50,160	23,790	26,370	50,160	23,790	26,370	50,160
Other source of Income	22,500	22,500	45,000	20,000	20,000	40,000	20,000	20,000	40,000	20,000	20,000	40,000
3. Production Expenditure	14,560	14,820	29,380	18,030	18,290	36,320	19,180	20,600	39,780	21,020	22,910	43,930
- Production cost (share)	14,560	14,820	29,380	14,560	14,820	29,380	7,280	7,410	14,690	4,370	4,450	8,820
- Production share	-	-	-	3,470	3,470	6,940	11,900	13,190	25,090	16,650	18,460	35,110
4. Living Expenditure	27,500	27,500	55,000	24,000	24,000	48,000	23,250	23,250	46,500	22,050	22,050	44,100
5. Net Reserve	4,230	6,550	10,780	1,760	4,080	5,840	1,360	2,520	3,880	720	1,410	2,130
<b>Pulangui</b>	Ave. Operation Size (ha)		1.97									
1. Area Planted/Harvested 1/	1.60	1.60	3.20	1.60	1.60	3.20	1.60	1.60	3.20	1.60	1.60	3.20
2. Gross Income	68,900	70,130	139,030	67,650	68,880	136,530	70,650	71,880	142,530	66,359	67,589	133,947
Farme income 2/	49,150	50,380	99,530	49,150	50,380	99,530	49,150	50,380	99,530	49,150	50,380	99,530
Other source of Income	19,750	19,750	39,500	18,500	18,500	37,000	21,500	21,500	43,000	17,209	17,209	34,417
3. Production Expenditure	31,540	29,570	61,110	37,680	35,710	73,390	45,260	45,020	90,280	43,870	44,140	88,010
- Production cost (share)	31,540	29,570	61,110	31,540	29,570	61,110	15,770	14,790	30,560	9,460	8,870	18,330
- Production share	-	-	-	6,140	6,140	12,280	29,490	30,230	59,720	34,410	35,270	69,680
4. Living Expenditure	29,000	29,000	58,000	24,400	24,400	48,800	23,395	23,395	46,790	21,315	21,315	42,630
5. Net Reserve	8,360	11,560	19,920	5,570	8,770	14,340	1,995	3,465	5,460	1,174	2,134	3,307
<b>Mal</b>	Ave. Operation Size (ha)		1.12									
1. Area Planted/Harvested 1/	0.92	0.92	1.84	0.92	0.92	1.84	0.92	0.92	1.84	0.92	0.92	1.84
2. Gross Income	51,020	51,720	102,740	48,520	49,220	97,740	46,345	47,045	93,390	47,600	48,300	95,900
Farme income 2/	33,520	34,220	67,740	33,520	34,220	67,740	33,520	34,220	67,740	33,520	34,220	67,740
Other source of Income	17,500	17,500	35,000	15,000	15,000	30,000	12,825	12,825	25,650	14,080	14,080	28,160
3. Production Expenditure	21,780	18,630	40,410	26,120	22,970	49,090	27,650	26,430	54,080	29,990	29,540	59,530
- Production cost (share)	21,780	18,630	40,410	21,780	18,630	40,410	10,890	9,320	20,210	6,530	5,590	12,120
- Production share	-	-	-	4,340	4,340	8,680	16,760	17,110	33,870	23,460	23,950	47,410
4. Living Expenditure	26,150	26,150	52,300	20,250	20,250	40,500	17,620	17,620	35,240	16,745	16,745	33,490
5. Net Reserve	3,090	6,940	10,030	2,150	6,000	8,150	1,075	2,995	4,070	865	2,015	2,880

Note: 1/ Computed wet and dry area were based on cropping intensity  
 2/ Farme income and production cost were based on the crop budget  
 3/ Tenant and owner share the cost of production (50:50)  
 4/ Caretaker share 30% of the cost; owner 70%

Source: Production/Cost Sharing Survey, JICA-NIA

**Table 4.1 Summary of Financial and Economic Prices**

Item	Unit	Financial Price (2002 Price)/a	Conversion	Economic Price (2002 Constant)
1. Crops	Peso/ton			
Paddy		7,230-8,040	a	7,530
2. Farm Inputs				
1) Seed	Peso/kg			
Paddy		16.9-17.1	b	15.4 - 15.6
2) Fertilizer	Peso/sack			
Inorganic		412-432	b	375 - 393
Organic fertilizer		432	b	393.1
Manure		120	b	109.2
3) Agro-Chemicals	Peso/lit.	650-1,670	b	592 - 1,520
3. Labor and Animal Power	Peso/day			
1) Skilled Labor		150	b	110
2) Unskilled Labor		100-138	c	73 - 101
4. Mechanical Power				
1) Threshing	Peso/sack	50 kg of paddy	a	377
5. Irrigation Service Fee				
1) Wet Season	Peso/sack	400	a	377
2) Dry Season	Peso/sack	500	a	377

## Remarks :

/a ; Economic price estimate based on the WB Global Economic Prospect

/b ; Financial prices are converted to economic value multiplying by SCF of 0.91/c ; Multiplied by shadow wage rate of 0.73

(Based on the shadow wage rate factor (0.8) multiplied by SCF (0.91))

**Table 4.2 Economic Price Estimate for Paddy**

(Unit : ton)

Item	Operation	Unit	Paddy
1. Projected 2010 World Price (in 1990 price) /a		US\$	233.9
			(Rice)
2. Projected 2005 World Price (in 2000 price) /a		US\$	225.6
3. Quality Adjustment	x	%	85
4. Projected Price Adjusted for Quality Difference	=	US\$	191.8
5. International Shipping and Handling	+	US\$	43.0
6. CIF Price at Manila Port	=	US\$	234.8
Equivalent in Pesos / ton /b		Peso	11,740
7. Port Charge, Handling and Warehousing	+	Peso	200
8. Wholesale Price in Metro Manila	=	Peso	11,940
9. Transportation Cost (Pilot Areas-Manila) /c	-	Peso	250
10. Price at Markets in the pilot areas	=	Peso	11,690
11. Processing Cost	-	Peso	490
12. Mill Price	=	Peso	11,200
13. Processing Ratio	x	%	65
14. By-Products through Processing /c	+	Peso	370
15. Transport/Handling from Farmgate /c	-	Peso	120
16. Farmgate Price	=	Peso	7,530

Note : /a ; Based on the World Bank, Global Economic Prospect, November 2002

The projected prices in 1990 constant US\$ were adjusted by the factor of 0.9645 (MUV) to allow for price escalation between 1990 and 2002.

Paddy : Thai, milled, 5% broken, FOB Bangkok

/b ; Exchange rate : US\$ = Peso 50.0/c ; Adjusted with SCF of 0.91



**Table 4.3 Economic Crop Budget, Paddy (Per Hectare), San Fabian NIS (1/6)****A. Paddy, Present and Without Project**

Item	Unit	Unit Price	Irrigated				Rainfed	
			Wet Season		Dry Season		Wet Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>								
Unit Yield	ton	7,530	3.6	27,110	3.8	28,610	3.1	23,340
<b>2. Production Cost</b>				17,190		16,060		16,410
2.1 Farm inputs				5,300		3,830		4,680
- Seed	kg	15.4	65.0	1,000	65.0	1,000	65.0	1,000
- Fertilizer								
Inorganic	sack	374.9	6.5	2,440	4.5	1,690	5.0	1,870
Farm manure (wet)	sack	393.1	2.0	790	0.5	200	2.0	790
- Agro-chemicals	lit	591.5	1.0	590	1.0	590	1.0	590
Others (10%)	peso			480		350		430
2.2 Labor (Hired)	md	100.7	65.0	6,550	70.0	7,050	65.0	6,550
2.3 Land preparation				1,920		1,150		2,170
Plowing	md	127.8	10.0	1,280	9.0	1,150	12.0	1,530
Paddling	md	127.8	5.0	640	-	-	5.0	640
2.4 Threshing/harvesting	sack	411.0	7.2	2,960	7.6	3,120	6.2	2,550
2.5 Tool/Equipment	no.	227.5	2.0	460	4.0	910	2.0	460
2.6 Loan interest	peso		-	-	-	-	-	-
2.7 O&M activities	sack	411.0	2.0	822	-	-	-	-
		411.0	-	-	3.0	1,230	-	-
<b>3. Net Return</b>	peso		-	9,920	-	12,550	-	6,930
(N.Return/P. Cost Ratio)	peso		-	0.58	-	0.78	-	0.42

Source: 1. Bureau of Agricultural Statistics, Cost and Returns Survey

2. National Irrigation System Office

**B. Irrigated Paddy, With Project**

Item	Unit	Unit Price	Irrigated (Pilot Area)				Irrigated (Other Area)			
			Wet Season		Dry Season		Wet Season		Dry Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>										
Unit Yield	ton	7,530	3.9	29,370	4.1	30,870	3.7	27,860	3.9	29,370
<b>2. Production Cost</b>				17,120		16,380		17,140		16,150
2.1 Farm inputs				5,300		3,830		5,300		3,830
- Seed	kg	15.4	65.0	1,000	65.0	1,000	65.0	1,000	65.0	1,000
- Fertilizer										
Inorganic	sack	374.9	6.5	2,440	4.5	1,690	6.5	2,440	4.5	1,690
Farm manure (wet)	sack	393.1	2.0	790	0.5	200	2.0	790	0.5	200
- Agro-chemicals	lit	591.5	1.0	590	1.0	590	1.0	590	1.0	590
Others (10% of cash)	peso			480		350		480		350
2.2 Labor (Hired)	md	100.7	67.0	6,750	72.0	7,250	65.0	6,550	70.0	7,050
2.3 Land preparation				1,400		1,020		1,790		1,150
Plowing	md	127.8	8.0	1,020	8.0	1,020	10.0	1,280	9.0	1,150
Paddling	md	127.8	3.0	380	-	-	4.0	510	-	-
2.4 Threshing/harvesting	sack	411.0	7.8	3,210	8.2	3,370	7.4	3,040	7.8	3,210
2.5 Tool/Equipment	no.	227.5	2.0	460	4.0	910	2.0	460	4.0	910
2.6 Loan interest	peso		-	-	-	-	-	-	-	-
2.7 O&M activities	sack	411.0	2.0	820	-	-	2.0	820	-	-
		411.0	-	-	3	1,230	-	-	3	1,230
<b>3. Net Return</b>	peso			12,250		14,490		10,720		13,220
(N.Return/P. Cost Ratio)	peso			0.72		0.88		0.63		0.82

**Table 4.3 Economic Crop Budget, Paddy (Per Hectare), Angat NIS (2/6)**

**A. Irrigated Paddy, Present and Without Project**

Item	Unit	Unit Price	Irrigated				Rainfed	
			Wet Season		Dry Season		Wet Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1 Gross Income</b>								
Unit Yield	ton	7,530	3.7	27,860	4.0	30,120	3.2	24,100
<b>2 Production Cost</b>				16,780		17,100		15,120
2.1 Farm inputs				6,110		7,270		5,890
- Seed	kg	15.6	70.0	1,090	60.0	940	70.0	1,090
- Fertilizer								
Inorganic	sack	393.1	5.0	1,970	7.0	2,750	4.5	1,770
Farm manure (wet)	sack	109.2	5.0	550	6.0	660	5.0	550
- Agro-chemicals	lit	647.0	3.0	1,940	3.5	2,260	3.0	1,940
Others (10%)	peso			560		660		540
2.2 Labor (Hired)	md	86.1	50.0	4,310	52.0	4,480	50.0	4,310
2.3 Land preparation				1,380		690		1,380
Plowing	md	69.4	10.0	690	10.0	690	10.0	690
Paddling	md	69.4	10.0	690	-	-	10.0	690
2.4 Threshing/harvesting	sack	411.0	7.4	3,040	8.0	3,290	6.4	2,630
2.5 Tool/Equipment	no.	227.5	4.0	910	6.0	1,370	4.0	910
2.6 Loan interest	peso		-	-	-	-	-	-
2.7 O&M activities	sack	411.0	2.5	1,030	-	-	-	-
	sack	411.0	-	-	3.5	1,440	-	-
<b>3 Net Return</b>	peso		-	11,080		13,020	-	8,980
(N.Return/P. Cost Ratio)	peso		-	0.66		0.76	-	0.59

Source: 1. Bureau of Agricultural Statistics, Cost and Returns Survey  
2. National Irrigation System Office

**B. Irrigated Paddy, With Project**

Item	Unit	Unit Price	Irrigated (Pilot Area)				Irrigated (Other Area)			
			Wet Season		Dry Season		Wet Season		Dry Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1 Gross Income</b>										
Unit Yield	ton	7,530	4.0	30,120	4.3	32,380	3.8	28,610	4.1	30,870
<b>2 Production Cost</b>				17,390		17,510		16,860		17,180
2.1 Farm inputs				6,300		7,270		6,110		7,270
- Seed	kg	15.6	70.0	1,090	60.0	940	70.0	1,090	60.0	940
- Fertilizer										
Inorganic	sack	393.1	5.2	2,040	7.0	2,750	5.0	1,970	7.0	2,750
Farm manure (wet)	sack	109.2	6.0	660	6.0	660	5.0	550	6.0	660
- Agro-chemicals	lit	647.0	3.0	1,940	3.5	2,260	3.0	1,940	3.5	2,260
Others (10%)	peso			570		660		560		660
2.2 Labor (Hired)	md	86.1	52.0	4,480	54.0	4,650	50.0	4,310	52.0	4,480
2.3 Land preparation				1,380		690		1,380		690
Plowing	md	69.4	10.0	690	10.0	690	10.0	690	10.0	690
Paddling	md	69.4	10.0	690	-	-	10.0	690	-	-
2.4 Threshing/harvesting	sack	411.0	8.0	3,290	8.6	3,530	7.6	3,120	8.2	3,370
2.5 Tool/Equipment	no.	227.5	4.0	910	6.0	1,370	4.0	910	6.0	1,370
2.6 Loan interest	peso		-	-	-	-	-	-	-	-
2.7 O&M activities	sack	411.0	2.5	1,030	-	-	2.5	1,030	-	-
	sack	411.0	-	-	3.5	1,440	-	-	3.5	1,440
<b>3 Net Return</b>	peso		-	12,730		14,870	-	11,750		13,690
(N.Return/P. Cost Ratio)	peso		-	0.73		0.85	-	0.70		0.80

**Table 4.3 Economic Crop Budget, Paddy (Per Hectare), Bago NIS (3/6)**

**A. Paddy, Present and Without Project**

Item	Unit	Unit Price	Irrigated				Rainfed	
			Wet Season		Dry Season		Wet Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>								
Unit Yield	ton	7,530.0	3.4	25,600	3.30	24,850	2.9	21,840
<b>2. Production Cost</b>				14,800		15,420		13,530
2.1 Farm inputs				7,540		7,580		6,680
- Seed	kg	15.6	200.0	3,120	190.0	2,960	200.0	3,120
- Fertilizer								
Inorganic	sack	393.1	8.0	3,140	7.0	2,750	6.0	2,360
Farm manure (wet)	sack	-	-	-	-	-	-	-
- Agro-chemicals	lit	591.5	1.0	590	2.0	1,180	1.0	590
Others (10%)	peso			690		690		610
2.2 Labor (Hired)	md	73.0	50.0	3,650	55.0	4,020	50.0	3,650
2.3 Land preparation				360		650		360
Plowing	md	73.0	4.0	290	8.0	580	4.0	290
Paddling	md	73.0	1.0	70	1.0	70	1.0	70
2.4 Threshing/harvesting	sack	411.0	6.8	2,790	6.6	2,710	5.8	2,380
2.5 Tool/Equipment	no.	113.8	4.0	460	4.0	460	4.0	460
2.6 Loan interest	peso		-	-	-	-	-	-
2.7 O&M activities	sack	411.0	2.0	822	-	-	-	-
		411.0	-	-	3.0	1,230	-	-
<b>3. Net Return</b>	peso		-	10,800	-	9,430	-	8,310
(N.Return/P. Cost Ratio)	peso		-	0.73	-	0.61	-	0.61

Source: 1. Bureau of Agricultural Statistics, Cost and Returns Survey

2. National Irrigation System Office

**B. Irrigated Paddy, With Project**

Item	Unit	Unit Price	Irrigated (Pilot Area)				Irrigated (Other Area)			
			Wet Season		Dry Season		Wet Season		Dry Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>										
Unit Yield	ton	7,530.0	3.7	27,860	3.6	27,110	3.5	26,360	3.4	25,600
<b>2. Production Cost</b>				14,160		14,790		14,200		14,820
2.1 Farm inputs				6,500		6,560		6,850		6,900
- Seed	kg	15.6	140.0	2,180	130.0	2,030	160.0	2,500	150.0	2,340
- Fertilizer										
Inorganic	sack	393.1	8.0	3,140	7.0	2,750	8.0	3,140	7.0	2,750
Farm manure (wet)	sack	-	-	-	-	-	-	-	-	-
- Agro-chemicals	lit	591.5	1.0	590	2.0	1,180	1.0	590	2.0	1,180
Others (10% of cash)	peso			590		600		620		630
2.2 Labor (Hired)	md	73.0	52.0	3,800	57.0	4,160	50.0	3,650	55.0	4,020
2.3 Land preparation				360		650		360		650
Plowing	md	73.0	4.0	290	8.0	580	4.0	290	8.0	580
Paddling	md	73.0	1.0	70	1.0	70	1.0	70	1.0	70
2.4 Threshing/harvesting	sack	411.0	7.4	3,040	7.2	2,960	7.0	2,880	6.8	2,790
2.5 Tool/Equipment	no.	113.8	4.0	460	4.0	460	4.0	460	4.0	460
2.6 Loan interest	peso		-	-	-	-	-	-	-	-
2.7 O&M activities	sack	411.0	2.0	822	-	-	2.0	-	-	-
		411.0	-	-	3.0	1,230	-	-	3.0	-
<b>3. Net Return</b>	peso		-	13,700	-	12,320	-	12,160	-	10,780
(N.Return/P. Cost Ratio)	peso		-	0.97	-	0.83	-	0.86	-	0.73

**Table 4.3 Economic Crop Budget, Paddy (Per Hectare), Labangan NIS (4/6)**

**A. Paddy, Present and Without Project**

Item	Unit	Unit Price	Irrigated				Rainfed	
			Wet Season		Dry Season		Wet Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>								
Unit Yield	ton	7,530.0	3.2	24,100	3.5	26,360	2.7	20,330
<b>2. Production Cost</b>				15,410		16,460		14,790
2.1 Farm inputs				5,510		6,070		5,300
- Seed	kg	15.6	98.0	1,530	80.0	1,250	98.0	1,530
- Fertilizer								
Inorganic	sack	393.1	4.0	1,570	6.0	2,360	3.5	1,380
Farm manure (wet)	sack	-	-	-	-	-	-	-
- Agro-chemicals	lit	955.5	2.0	1,910	2.0	1,910	2.0	1,910
Others (10%)	peso			500		550		480
2.2 Labor (Hired)	md	91.3	65.0	5,930	70.0	6,390	65.0	5,930
2.3 Land preparation				660		660		660
Plowing	md	109.5	4.0	440	4.0	440	4.0	440
Paddling	md	109.5	2.0	220	2.0	220	2.0	220
2.4 Threshing/harvesting	sack	411.0	6.4	2,630	7.0	2,880	5.4	2,220
2.5 Tool/Equipment	no.	113.8	6.0	680	4.0	460	6.0	680
2.6 Loan interest	peso			-		-		-
2.7 O&M activities	sack	411.0	2.0	820	-	-	-	-
		411.0	-	-	3.0	1,230	-	-
<b>3. Net Return</b>	peso			8,690		9,900		5,540
(N.Return/P. Cost Ratio)	peso			0.56		0.60		0.37

Source: 1. Bureau of Agricultural Statistics, Cost and Returns Survey

2. National Irrigation System Office

**B. Irrigated Paddy, With Project**

Item	Unit	Unit Price	Irrigated (Pilot Area)				Irrigated (Other Area)			
			Wet Season		Dry Season		Wet Season		Dry Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>										
Unit Yield	ton	7,530.0	3.5	26,360	3.8	28,610	3.3	24,850	3.6	27,110
<b>2. Production Cost</b>				15,850		16,880		15,590		16,630
2.1 Farm inputs				5,510		6,070		5,510		6,070
- Seed	kg	15.6	98.0	1,530	80.0	1,250	98.0	1,530	80.0	1,250
- Fertilizer										
Inorganic	sack	393.1	4.0	1,570	6.0	2,360	4.0	1,570	6.0	2,360
Farm manure (wet)	sack	-	-	-	-	-	-	-	-	-
- Agro-chemicals	lit	955.5	2.0	1,910	2.0	1,910	2.0	1,910	2.0	1,910
Others (10% of cash)	peso			500		550		500		550
2.2 Labor (Hired)	md	91.3	67.0	6,120	72.0	6,570	66.0	6,030	71.0	6,480
2.3 Land preparation				660		660		660		660
Plowing	md	109.5	4.0	440	4.0	440	4.0	440	4.0	440
Paddling	md	109.5	2.0	220	2.0	220	2.0	220	2.0	220
2.4 Threshing/harvesting	sack	411.0	7.0	2,880	7.6	3,120	6.6	2,710	7.2	2,960
2.5 Tool/Equipment	no.	113.8	6.0	680	4.0	460	6.0	680	4.0	460
2.6 Loan interest	peso			-		-		-		-
2.7 O&M activities	sack	411.0	2.0	820	-	-	2.0	820	-	-
		411.0	-	-	3.0	1,230	-	-	3.0	-
<b>3. Net Return</b>	peso			10,510		11,730		9,260		10,480
(N.Return/P. Cost Ratio)	peso			0.66		0.69		0.59		0.63

**Table 4.3 Economic Crop Budget, Paddy (Per Hectare), Pulangui NIS (5/6)**

**A. Paddy, Present and Without Project**

Item	Unit	Unit Price	Irrigated				Rainfed	
			Wet Season		Dry Season		Wet Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>								
Unit Yield	ton	7,530.0	3.7	27,860	3.8	28,610	3.2	24,100
<b>2. Production Cost</b>				19,440		17,640		18,170
2.1 Farm inputs				8,860		7,230		8,000
- Seed	kg	15.6	160.0	2,500	150.0	2,340	160.0	2,500
- Fertilizer								
Inorganic	sack	393.1	7.0	2,750	6.0	2,360	5.0	1,970
Farm manure (wet)	sack	-	-	-	-	-	-	-
- Agro-chemicals	lit	932.8	3.0	2,800	2.0	1,870	3.0	2,800
Others (10%)	peso			810		660		730
2.2 Labor (Hired)	md	94.9	60.0	5,690	65.0	6,170	60.0	5,690
2.3 Land preparation				1,390		660		1,390
Plowing	md	109.5	10.0	1,100	4.0	440	10.0	1,100
Paddling	md	73.0	4.0	290	3.0	220	4.0	290
2.4 Threshing/harvesting	sack	411.0	7.4	3,040	7.6	3,120	6.4	2,630
2.5 Tool/Equipment	no.	113.8	4.0	460	4.0	460	4.0	460
2.6 Loan interest	peso			-		-		-
2.7 O&M activities	sack	411.0	2.0	820	-	-	-	-
		411.0	-	-	3.0	1,230	-	-
<b>3. Net Return</b>	peso			8,420		10,970		5,930
(N.Return/P. Cost Ratio)	peso			0.43		0.62		0.33

Source: 1. Bureau of Agricultural Statistics, Cost and Returns Survey

2. National Irrigation System Office

**B. Irrigated Paddy, With Project**

Item	Unit	Unit Price	Irrigated (Pilot Area)				Irrigated (Other Area)			
			Wet Season		Dry Season		Wet Season		Dry Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>										
Unit Yield	ton	7,530.0	4.0	30,120	4.1	30,870	3.8	28,610	3.9	29,370
<b>2. Production Cost</b>				19,020		17,400		19,100		17,300
2.1 Farm inputs				8,000		6,550		8,340		6,710
- Seed	kg	15.6	110.0	1,720	110.0	1,720	130.0	2,030	120.0	1,870
- Fertilizer										
Inorganic	sack	393.1	7.0	2,750	6.0	2,360	7.0	2,750	6.0	2,360
Farm manure (wet)	sack	-	-	-	-	-	-	-	-	-
- Agro-chemicals	lit	932.8	3.0	2,800	2.0	1,870	3.0	2,800	2.0	1,870
Others (10% of cash)	peso			730		600		760		610
2.2 Labor (Hired)	md	94.9	62.0	5,880	67.0	6,360	61.0	5,790	66.0	6,260
2.3 Land preparation				1,390		660		1,390		660
Plowing	md	109.5	10.0	1,100	4.0	440	10.0	1,100	4.0	440
Paddling	md	73.0	4.0	290	3.0	220	4.0	290	3.0	220
2.4 Threshing/harvesting	sack	411.0	8.0	3,290	8.2	3,370	7.6	3,120	7.8	3,210
2.5 Tool/Equipment	no.	113.8	4.0	460	4.0	460	4.0	460	4.0	460
2.6 Loan interest	peso			-		-		-		-
2.7 O&M activities	sack	411.0	2.0	820	-	-	2.0	820	-	-
		411.0	-	-	3.0	1,230	-	-	3.0	1,230
<b>3. Net Return</b>	peso			11,100		13,470		9,510		12,070
(N.Return/P. Cost Ratio)	peso			0.58		0.77		0.50		0.70

**Table 4.3 Economic Crop Budget, Paddy (Per Hectare), Mal NIS (6/6)**

**A. Paddy, Present and Without Project**

Item	Unit	Unit Price	Irrigated				Rainfed	
			Wet Season		Dry Season		Wet Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>								
Unit Yield	ton	7,530.0	4.4	33,130	4.5	33,890	3.9	29,370
<b>2. Production Cost</b>				21,760		20,010		20,260
2.1 Farm inputs				10,290		9,760		9,420
- Seed	kg	15.6	80.0	1,250	75.0	1,170	80.0	1,250
- Fertilizer								
Inorganic	sack	393.1	9.0	3,540	8.0	3,140	7.0	2,750
Farm manure (wet)	sack	-	-	-	-	-	-	-
- Agro-chemicals	lit	1,519.7	3.0	4,560	3.0	4,560	3.0	4,560
Others (10%)	peso			940		890		860
2.2 Labor (Hired)	md	73.0	60.0	4,380	62.0	4,530	57.0	4,160
2.3 Land preparation				2,650		1,470		2,650
Plowing	md	273.8	8.0	2,190	4.0	1,100	8.0	2,190
Paddling	md	91.3	5.0	460	4.0	370	5.0	460
2.4 Threshing/harvesting	sack	411.0	8.8	3,620	9.0	3,700	7.8	3,210
2.5 Tool/Equipment	no.	136.5	6.0	820	4.0	550	6.0	820
2.6 Loan interest	peso		-	-	-	-	-	-
2.7 O&M activities	sack	411.0	2.0	820	-	-	-	-
		411.0	-	-	3.0	1,230	-	-
<b>3. Net Return</b>	peso		-	11,370	-	13,880	-	9,110
(N.Return/P. Cost Ratio)	peso		-	0.52	-	0.69	-	0.45

Source: 1. Bureau of Agricultural Statistics, Cost and Returns Survey

2. National Irrigation System Office

**B. Irrigated Paddy, With Project**

Item	Unit	Unit Price	Irrigated (Pilot Area)				Irrigated (Other Area)			
			Wet Season		Dry Season		Wet Season		Dry Season	
			Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)	Qty	Amount (peso/ha)
<b>1. Gross Income</b>										
Unit Yield	ton	7,530.0	4.7	35,390	4.8	36,140	4.5	33,890	4.6	34,640
<b>2. Production Cost</b>				22,150		20,400		21,910		20,160
2.1 Farm inputs				10,290		9,760		10,290		9,760
- Seed	kg	15.6	80.0	1,250	75.0	1,170	80.0	1,250	75.0	1,170
- Fertilizer										
Inorganic	sack	393.1	9.0	3,540	8.0	3,140	9.0	3,540	8.0	3,140
Farm manure (wet)	sack	-	-	-	-	-	-	-	-	-
- Agro-chemicals	lit	1,519.7	3.0	4,560	3.0	4,560	3.0	4,560	3.0	4,560
Others (10% of cash)	peso			940		890		940		890
2.2 Labor (Hired)	md	73.0	62.0	4,530	64.0	4,670	61.0	4,450	63.0	4,600
2.3 Land preparation				2,650		1,470		2,650		1,470
Plowing	md	273.8	8.0	2,190	4.0	1,100	8.0	2,190	4.0	1,100
Paddling	md	91.3	5.0	460	4.0	370	5.0	460	4.0	370
2.4 Threshing/harvesting	sack	411.0	9.4	3,860	9.6	3,950	9.0	3,700	9.2	3,780
2.5 Tool/Equipment	no.	136.5	6.0	820	4.0	550	6.0	820	4.0	550
2.6 Loan interest	peso		-	-	-	-	-	-	-	-
2.7 O&M activities	sack	411.0	2.0	820	-	-	2.0	820	-	-
		411.0	-	-	3.0	1,230	-	-	3.0	1,230
<b>3. Net Return</b>	peso		-	13,240	-	15,740	-	11,980	-	14,480
(N.Return/P. Cost Ratio)	peso		-	0.60	-	0.77	-	0.55	-	0.72

**Table 4.4 Economic Project Benefit Estimate**

Item	Unit	2,288ha		4,151ha		12,700ha		3,195ha		11,415ha		2,613ha	
		San Fabian Pilot	Others	Angat Pilot	Others	Bago Pilot	Others	Labangan Pilot	Others	Pulangui Pilot	Others	Mal Pilot	Others
1. Area harvested	(ha)												
Present/Without Project(Irrigated)													
- Wet season		730	780	840	1,860	2,180	5,310	1,850	0	2,350	7,350	480	1,900
- Dry season		410	710	920	2,730	2,210	5,410	1,920	0	2,350	7,580	370	1,490
Present/Without Project(Rainfed)													
- Wet season		70	40	80	80	210	300	190	0	250	320	40	110
- Dry season		40	30	100	30	240	10	190	0	250	210	40	10
Future/With Project													
- Wet season		800	820	920	1,940	2,390	5,610	2,040	0	2,600	7,670	520	2,010
- Dry season		450	740	1,020	2,760	2,450	5,420	2,110	0	2,600	7,790	410	1,500
2. Net Production Value per ha (Php/ha)													
Present/Without Project(Irrigated)													
- Wet season		9,920	9,920	11,080	11,080	10,800	10,800	8,690	8,690	8,420	8,420	11,370	11,370
- Dry season		12,550	12,550	13,020	13,020	9,430	9,430	9,900	9,900	10,970	10,970	13,880	13,880
Present/Without Project(Rainfed)													
- Wet season		6,930	6,930	8,980	8,980	8,310	8,310	5,540	5,540	5,930	5,930	9,110	9,110
Future/With Project													
- Wet season		12,250	10,720	12,730	11,750	13,700	12,160	10,510	9,260	11,100	9,510	13,240	11,980
- Dry season		14,490	13,220	14,870	13,690	12,320	10,780	11,730	10,480	13,470	12,070	15,740	14,480
3. Net production Value (Php'000)													
Present/Without Project(Irrigated)													
- Wet season		7,242	7,738	9,307	20,609	23,544	57,348	16,077	0	19,787	61,887	5,458	21,603
- Dry season		5,146	8,911	11,978	35,545	20,840	51,016	19,008	0	25,780	83,153	5,136	20,681
Present/Without Project(Rainfed)													
- Wet season		485	277	718	718	1,745	2,493	1,053	0	1,483	1,898	364	1,002
Present total		12,873	16,926	22,003	56,872	46,129	110,857	36,138	0	47,050	146,938	10,958	43,286
Future/With Project													
- Wet season		9,800	8,790	11,712	22,795	32,743	68,218	21,440	0	28,860	72,942	6,885	24,080
- Dry season		6,521	9,783	15,167	37,784	30,184	58,428	24,750	0	35,022	94,025	6,453	21,720
Future total		16,321	18,573	26,879	60,579	62,927	126,646	46,190	0	63,882	166,967	13,338	45,800
4. Increment		3,448	1,647	4,876	3,707	16,798	15,789	10,052	0	16,832	20,029	2,380	2,514
			5,095		8,583		32,587		10,052		36,861		4,894
Per ha	(Php)		2,230		2,070		2,570		3,150		3,230		1,870
	(US\$)		44.6		41.4		51.4		63.0		64.6		37.4

**Table 4.5 Economic Project Cost Estimate**

Item	Service Area (ha)	Financial Cost (Php'000)	Conversion Factor	Economic Cost (Php'000)
1. Insitutional Development Cost	<u>36,362</u>	<u>68,531</u>	0.91	<u>62,363</u>
1.1 San Fabian	2,288	4,312		3,924
1.2 Angat	4,151	7,823		7,119
1.3 Bago	12,700	23,936		21,782
1.4 Labangan	3,195	6,022		5,480
1.5 Pulangui	11,415	21,514		19,578
1.6 Mal	2,613	4,924		4,480
2. System Rectification Cost		<u>83,734</u>	0.91	<u>76,198</u>
2.1 San Fabian		11,126		10,125
2.2 Angat		6,249		5,687
2.3 Bago		8,569		7,798
2.4 Labangan		35,543		32,344
2.5 Pulangui		10,943		9,958
2.6 Mal		11,304		10,286
Sub-total		152,265		138,561
3. Administration and others		30,453	0.91	27,712
4. Total Cost		<u>182,718</u>		<u>166,273</u>
4.1 San Fabian		17,354		15,793
4.2 Angat		17,548		15,970
4.3 Bago		43,141		39,259
4.4 Labangan		44,241		40,259
4.5 Pulangui		42,017		38,236
4.6 Mal		18,417		16,756

**Table 4.6 Economic O&M Cost Estimate**

Item	Financial Cost (Php'000)	Conversion Factor	Economic Cost (Php'000)
1. Without Project	<u>29,958</u>	0.91	<u>27,262</u>
1.1 San Fabian	2,392		2,177
1.2 Angat	4,571		4,160
1.3 Bago	7,599		6,915
1.4 Labangan	2,249		2,047
1.5 Pulangui	11,119		10,118
1.6 Mal	2,028		1,845
2. With Project	<u>30,901</u>	0.91	<u>28,120</u>
2.1 San Fabian	1,373		1,249
2.2 Angat	5,479		4,986
2.3 Bago	6,985		6,356
2.4 Labangan	2,588		2,355
2.5 Pulangui	11,758		10,700
2.6 Mal	2,718		2,474
3. Increment	<u>943</u>	0.91	<u>858</u>
3.1 San Fabian	-1,019		-927
3.2 Angat	909		827
3.3 Bago	-614		-559
3.4 Labangan	339		308
3.5 Pulangui	639		581
3.6 Mal	689		627



**Table 4.7 Economic Cost and Benefit Stream (1/2)**

(1) Whole Project EIRR : 56.3%

(Unit : Peso '000)

Year in Order	Year	Economic Cost			Economic Benefit	Net Cash Flow
		Project Cost	O&M Cost	Total Cost		
1	2003	66,509	0	66,509	0	-66,509
2	2004	66,509	515	67,024	19,614	-47,410
3	2005	33,255	858	34,113	98,072	63,959
4	2006		858	858	98,072	97,214
5	2007		858	858	98,072	97,214
6	2008		858	858	98,072	97,214
7	2009		858	858	98,072	97,214
8	2010		858	858	98,072	97,214
9	2011		858	858	98,072	97,214
10	2012		858	858	98,072	97,214
11	2013		858	858	98,072	97,214
12	2014		858	858	98,072	97,214
13	2015		858	858	98,072	97,214
14	2016		858	858	98,072	97,214
15	2017		858	858	98,072	97,214
16	2018		858	858	98,072	97,214
17	2019		858	858	98,072	97,214
18	2020		858	858	98,072	97,214
19	2021		858	858	98,072	97,214
20	2022		858	858	98,072	97,214
21	2023		858	858	98,072	97,214
22	2024		858	858	98,072	97,214
23	2025		858	858	98,072	97,214
24	2026		858	858	98,072	97,214
25	2027		858	858	98,072	97,214
26	2028		858	858	98,072	97,214
27	2029		858	858	98,072	97,214
28	2030		858	858	98,072	97,214
29	2031		858	858	98,072	97,214
30	2032		858	858	98,072	97,214

(2) San Fabian EIRR : 38.0%

(Unit : Peso '000)

Year in Order	Year	Economic Cost			Economic Benefit	Net Cash Flow
		Project Cost	O&M Cost	Total Cost		
1	2003	6,317	0	6,317	0	-6,317
2	2004	6,317	-464	5,853	1,019	-4,834
3	2005	3,159	-928	2,231	5,095	2,864
4	2006		-928	-928	5,095	6,023
5	2007		-928	-928	5,095	6,023
6	2008		-928	-928	5,095	6,023
7	2009		-928	-928	5,095	6,023
8	2010		-928	-928	5,095	6,023
9	2011		-928	-928	5,095	6,023
10	2012		-928	-928	5,095	6,023
11	2013		-928	-928	5,095	6,023
12	2014		-928	-928	5,095	6,023
13	2015		-928	-928	5,095	6,023
14	2016		-928	-928	5,095	6,023
15	2017		-928	-928	5,095	6,023
16	2018		-928	-928	5,095	6,023
17	2019		-928	-928	5,095	6,023
18	2020		-928	-928	5,095	6,023
19	2021		-928	-928	5,095	6,023
20	2022		-928	-928	5,095	6,023
21	2023		-928	-928	5,095	6,023
22	2024		-928	-928	5,095	6,023
23	2025		-928	-928	5,095	6,023
24	2026		-928	-928	5,095	6,023
25	2027		-928	-928	5,095	6,023
26	2028		-928	-928	5,095	6,023
27	2029		-928	-928	5,095	6,023
28	2030		-928	-928	5,095	6,023
29	2031		-928	-928	5,095	6,023
30	2032		-928	-928	5,095	6,023

(3) Angat EIRR : 46.6%

(Unit : Peso '000)

Year in Order	Year	Economic Cost			Economic Benefit	Net Cash Flow
		Project Cost	O&M Cost	Total Cost		
1	2003	6,388	0	6,388	0	-6,388
2	2004	6,388	429	6,817	1,717	-5,100
3	2005	3,194	826	4,020	8,583	4,563
4	2006		826	826	8,583	7,757
5	2007		826	826	8,583	7,757
6	2008		826	826	8,583	7,757
7	2009		826	826	8,583	7,757
8	2010		826	826	8,583	7,757
9	2011		826	826	8,583	7,757
10	2012		826	826	8,583	7,757
11	2013		826	826	8,583	7,757
12	2014		826	826	8,583	7,757
13	2015		826	826	8,583	7,757
14	2016		826	826	8,583	7,757
15	2017		826	826	8,583	7,757
16	2018		826	826	8,583	7,757
17	2019		826	826	8,583	7,757
18	2020		826	826	8,583	7,757
19	2021		826	826	8,583	7,757
20	2022		826	826	8,583	7,757
21	2023		826	826	8,583	7,757
22	2024		826	826	8,583	7,757
23	2025		826	826	8,583	7,757
24	2026		826	826	8,583	7,757
25	2027		826	826	8,583	7,757
26	2028		826	826	8,583	7,757
27	2029		826	826	8,583	7,757
28	2030		826	826	8,583	7,757
29	2031		826	826	8,583	7,757
30	2032		826	826	8,583	7,757

**Table 4.7 Economic Cost and Benefit Stream (2/2)**

(4) Bago

EIRR : 79.9%

(Unit : Peso '000)

Year in Order	Year	Economic Cost			Economic Benefit	Net Cash Flow
		Project Cost	O&M Cost	Total Cost		
1	2003	15,704	0	15,704	0	-15,704
2	2004	15,704	-335	15,369	6,517	-8,852
3	2005	7,851	-559	7,292	32,587	25,295
4	2006		-559	-559	32,587	33,146
5	2007		-559	-559	32,587	33,146
6	2008		-559	-559	32,587	33,146
7	2009		-559	-559	32,587	33,146
8	2010		-559	-559	32,587	33,146
9	2011		-559	-559	32,587	33,146
10	2012		-559	-559	32,587	33,146
11	2013		-559	-559	32,587	33,146
12	2014		-559	-559	32,587	33,146
13	2015		-559	-559	32,587	33,146
14	2016		-559	-559	32,587	33,146
15	2017		-559	-559	32,587	33,146
16	2018		-559	-559	32,587	33,146
17	2019		-559	-559	32,587	33,146
18	2020		-559	-559	32,587	33,146
19	2021		-559	-559	32,587	33,146
20	2022		-559	-559	32,587	33,146
21	2023		-559	-559	32,587	33,146
22	2024		-559	-559	32,587	33,146
23	2025		-559	-559	32,587	33,146
24	2026		-559	-559	32,587	33,146
25	2027		-559	-559	32,587	33,146
26	2028		-559	-559	32,587	33,146
27	2029		-559	-559	32,587	33,146
28	2030		-559	-559	32,587	33,146
29	2031		-559	-559	32,587	33,146
30	2032		-559	-559	32,587	33,146

(5) Labangan

EIRR : 23.9%

(Unit : Peso '000)

Year in Order	Year	Economic Cost			Economic Benefit	Net Cash Flow
		Project Cost	O&M Cost	Total Cost		
1	2003	16,104	0	16,104	0	-16,104
2	2004	16,104	185	16,289	2,010	-14,279
3	2005	8,051	308	8,359	10,052	1,693
4	2006		308	308	10,052	9,744
5	2007		308	308	10,052	9,744
6	2008		308	308	10,052	9,744
7	2009		308	308	10,052	9,744
8	2010		308	308	10,052	9,744
9	2011		308	308	10,052	9,744
10	2012		308	308	10,052	9,744
11	2013		308	308	10,052	9,744
12	2014		308	308	10,052	9,744
13	2015		308	308	10,052	9,744
14	2016		308	308	10,052	9,744
15	2017		308	308	10,052	9,744
16	2018		308	308	10,052	9,744
17	2019		308	308	10,052	9,744
18	2020		308	308	10,052	9,744
19	2021		308	308	10,052	9,744
20	2022		308	308	10,052	9,744
21	2023		308	308	10,052	9,744
22	2024		308	308	10,052	9,744
23	2025		308	308	10,052	9,744
24	2026		308	308	10,052	9,744
25	2027		308	308	10,052	9,744
26	2028		308	308	10,052	9,744
27	2029		308	308	10,052	9,744
28	2030		308	308	10,052	9,744
29	2031		308	308	10,052	9,744
30	2032		308	308	10,052	9,744

(6) Pulangui

EIRR : 88.3%

(Unit : Peso '000)

Year in Order	Year	Economic Cost			Economic Benefit	Net Cash Flow
		Project Cost	O&M Cost	Total Cost		
1	2003	15,294	0	15,294	0	-15,294
2	2004	15,294	291	15,585	7,372	-8,213
3	2005	7,648	582	8,230	36,861	28,631
4	2006		582	582	36,861	36,279
5	2007		582	582	36,861	36,279
6	2008		582	582	36,861	36,279
7	2009		582	582	36,861	36,279
8	2010		582	582	36,861	36,279
9	2011		582	582	36,861	36,279
10	2012		582	582	36,861	36,279
11	2013		582	582	36,861	36,279
12	2014		582	582	36,861	36,279
13	2015		582	582	36,861	36,279
14	2016		582	582	36,861	36,279
15	2017		582	582	36,861	36,279
16	2018		582	582	36,861	36,279
17	2019		582	582	36,861	36,279
18	2020		582	582	36,861	36,279
19	2021		582	582	36,861	36,279
20	2022		582	582	36,861	36,279
21	2023		582	582	36,861	36,279
22	2024		582	582	36,861	36,279
23	2025		582	582	36,861	36,279
24	2026		582	582	36,861	36,279
25	2027		582	582	36,861	36,279
26	2028		582	582	36,861	36,279
27	2029		582	582	36,861	36,279
28	2030		582	582	36,861	36,279
29	2031		582	582	36,861	36,279
30	2032		582	582	36,861	36,279

(7) Mal

EIRR : 24.7%

(Unit : Peso '000)

Year in Order	Year	Economic Cost			Economic Benefit	Net Cash Flow
		Project Cost	O&M Cost	Total Cost		
1	2003	6,702	0	6,702	0	-6,702
2	2004	6,702	429	7,131	979	-6,152
3	2005	3,352	629	3,981	4,894	913
4	2006		629	629	4,894	4,265
5	2007		629	629	4,894	4,265
6	2008		629	629	4,894	4,265
7	2009		629	629	4,894	4,265
8	2010		629	629	4,894	4,265
9	2011		629	629	4,894	4,265
10	2012		629	629	4,894	4,265
11	2013		629	629	4,894	4,265
12	2014		629	629	4,894	4,265
13	2015		629	629	4,894	4,265
14	2016		629	629	4,894	4,265
15	2017		629	629	4,894	4,265
16	2018		629	629	4,894	4,265
17	2019		629	629	4,894	4,265
18	2020		629	629	4,894	4,265
19	2021		629	629	4,894	4,265
20	2022		629	629	4,894	4,265
21	2023		629	629	4,894	4,265
22	2024		629	629	4,894	4,265
23	2025		629	629	4,894	4,265
24	2026		629	629	4,894	4,265
25	2027		629	629	4,894	4,265
26	2028		629	629	4,894	4,265
27	2029		629	629	4,894	4,265
28	2030		629	629	4,894	4,265
29	2031		629	629	4,894	4,265
30	2032		629	629	4,894	4,265