APPENDIX M Farm Economy

M.1 Regional Development Plan (RDP)

1) Overview

Central Luzon continues to be a major agricultural area and the primary sector is thus playing the principal role in achieving growth and development for the region in the RDP, however, due to its proximity to the National Capital Region(NCR), the region is expected to be a catchment area for industrial and population movements.

Another backbone of the RDP is the decreasing margin for labor absorption of the agricultural sector even while the region has the largest plains in the country. Thus, the industrial sector is being pushed to a major lead in regional growth. These features largely shape the region's strategy for development

The basic strategy is to modify urban-rural distribution in the levels of development and income. The urban-rural growth in tandem is the center strategy involving several areas in the region. These centers are expected to generate economic activities in the intervening spaces throughout the region. Measures are taken to enhance the role of the private sector as an engine of growth. The fiscal and pricing policy reforms, zoning regulations, efficient communication and transportation and infrastructure complements are major items to be considered as measures, which, together, enhance the efficiency of the market economy.

The growth and income generating capabilities of agriculture is intensified through high-yielding crop varieties, multi-croppings, adequate production inputs, sufficient infrastructure support, cheap credit, and an efficient system of marketing and distribution of agricultural commodities. Commodity specialization is to be undertaken on a selective basis in areas with known potentials for contributing to short-and long-term agricultural growth.

Increased agricultural production and marketable surplus are emphasized particularly in Tarlac by exploiting to the fullest the benefits of technological advancements and by building the institutional capabilities in agricultural research and extension work, cooperative production, marketing and financing. Industrial uses for these products are also expected. Low-cost and cottage processing of agricultural products are encouraged in the rural areas among farm households to augment their income, especially during periods of oversupply when prices are low. Simultaneously, inefficiencies in the region's marketing and distribution system are to be corrected by revitalizing farmer-operated cooperatives and by establishing trading centers in strategic areas. Thus, the development target and strategies of the Project mentioned in Chapter 4.1 is harmonically consistent with RDP.

2) Regional Development Investment Plan (RDIP)

The RDIP(1989-1992) consists of programs and projects which are planned and formatted in line with RDP. NEDA, Region III is planning about 350 projects which are classified as nationally funded and implemented by line agencies, while 600 projects are categorized as nationally funded and implemented by local government units.

Aforesaid 350 projects which are planned to be implemented by line agencies during the period from 1989 to 1992 are mostly road construction and improvement projects by DPWH accounting for more than 50% of the total, followed by school construction projects, water works projects, irrigation and drainage projects in this order. The 600 projects which will be implemented by local government units line up almost same order as this, but the portion of irrigation and drainage projects is a little bit higher than that of the former.

M.2 Projections on Population, Labor Force and Household

1) Population

The population by barangay of the Study area up to CY 2030 was projected based on the actual population in 1988. The projected population growth rates (compound rates) are tabulated as follows:

Population Growth Rate (%)

Municipality	Area	1985-1990	1990-2000	2000-2010	2010-2020	2020-2030
Capas	Urban	2.88	2.70	2.17	1.70	1.53
	Rural	1.87	1.58	1.07	0.73	0.53
Bamban	Urban	2.90	2.75	2.17	1.70	1.52
	Rural	1.76	1.36	0.74	0.36	0.01
Concepcion	Urban	2.88	2.70	2.18	1.70	1.53
	Rural	1.97	1.64	1.09	0.72	0.48

These population growth rates were obtained from Tarlac Socio-Economic Profile which were prepared and published by the Provincial Planning and Development Office in 1986 covering 17 municipalities in Tarlac.

Adopting above-mentioned rates, the population projection was undertaken as shown in the succeeding page. The computation resulted that the present population of 178,106 persons will increase to 195,238 in 1995, 215,251 persons in 2000, 241,802 persons in 2010 and 261,952 persons in 2020, respectively. Since target year of this master plan is after 20 years' time from 1990, the 241,802 persons in 2010 is defined as the target population (refer to Table M-1-1).

2) Labor Force

Labor force projection is undertaken based on the ratio and percentage obtained from prevailing data and statistics on provincial and regional bases, because in the municipality level, there is no available data which can favorably contribute to the projection.

According to the employment classification specified by NCSO in April 1989, about 33% of the working age population (age group between 15 and 65 years old) are engaged in agriculture; while the same survey in April 1980 presents a percentage at 46%. The fact denotes that a huge number of new employment has been created in secondary and tertiary sectors of industry during the period from 1980 to 1989 and a considerable number of farm workers have been moved to non-farm workers. It is a well-known fact that a huge amount of capitals are now being invested in Tarlac which leads Central Luzon provinces in investment-employment ratio as is accounted for the least capital invested to employ one person. It was recorded in the first semester of 1989 that for every 35 thousand pesos worth of capital investment, one employment is generated in Tarlac (refer to Table M-1-2).

Unemployment and underemployment marked at 46% of total working age population; viz. six percent of unemployment and 40% of under-employment are estimated. In the Study area, accordingly, a total of 114 thousand are estimated as working age population and out of these, 52 thousand persons are regarded as unemployed and underemployed.

Within the average family size of 6.7 persons, about 4 members belong to age groups between 15 to 65. The labor force in the area will increase to 138 thousand in 2000 and 155 thousand in 2010 wherein new entrants are accumulated at 11 thousand during the period from the year 1990 to 1995, 13 thousand from the year 1995-2000, and 16 thousand from the year 2000-2010, respectively. In order to absorb these new entrants completely in the labor force, additional investment of 380 million pesos, 450 million pesos and 600 million pesos are required during the period of 1990 to 1995, 1995 to 2000 and 2000 to 2010, respectively (refer to Table M-1-3).

3) Household

The projection on the number of households was performed in the same way as that of the population projection, viz., same growth rates were applied assuming that the family size is constant at 6.7 persons throughout the projection term. The projection entails that the present household number of 26,800 will increase to 29,400 in 1995, 32,400 in 2000 and 36,300 in 2010, respectively. In the analysis which shall be undertaken hereinafter, the loss of the land area that are brought about by the increase of farm household will not be considered. Accordingly, it shall be assumed that the increased households are to be supported by the secondary and tertiary sectors (refer to Table M-1-4).

Table M-1-1 Population Projection by Barangay

Municipality	Ref. No.	No.	Name of Barangay	Population 1988	Population 1989	Population 1995	Population 2000	Population 2010	Population 2020
1. Capas	13-0-1	1	Cut-Cut I	3,990	4,067	4,484	4,850	5,395	5,802
	13-1-2	2	Cut-Cut II	2,254	2,298	2,533	2,740	3,048	3,277
	99-0-1	3	Sto Rosario(Pob.)	2,043	2,102	2,471	2,826	3,506	4,150
	99-0-2	4	Sto Domingo I(Pob.)	1,270	1,307	1,536	1,757	2,179	2,580
	99-0-3	5	Sto Domingo II	2,892	2,948	3,250	3,515	3,910	4,205
	99-0-4	6	Arangoren	3,068	3,128	3,448	3,729	4,148	4,461
	99-0-5	7	Manlapig	1,392	1,419	1,564	1,692	1,882	2,024
	99-0-6	8	Estrada	1,239	1,263	1,393	1,506	1,675	1,802
	99-0-7	9	Lawy	4,861	4,955	5,463	5,909	6,572	7,068
	99-0-8	10	Sta Rita	1,116	1,138	1,254	1,357	1,509	1,623
	99-0-9	11	Manga	863	880	970	1,049	1,167	1,255
	99-0-10	12	Dolores	2,099	2,140	2,359	2,551	2,838	3,052
	99-0-11	13	Talaga	2,065	2,105	2,321	2,510	2,792	3,003
	99-0-12	14	Sta Lucia	•	•	•	•	•	•
	99-0-13	15	O'donnell	•	•	•	•	•	•
	99-0-14	16	Bueno	•	•	•	•	•	•
	99-0-15	17	Sta Juliana	•	•	•	•	•	•
	99-0-16	18	Maruglu	•	•	•	•	•	•
	99-0-17	19	Cub-Cub(Pob.)	1,911	1,966	2,312	2,643	3,279	3,882
			Sub-Total	31,063	31,716	35,360	38,635	43,980	48,184
2. Bamban	03-0-1	1	Malonzo	815	829	903	966	1,040	1,078
	04-0-1	2	Bangcu	211	215	234	250	269	279
	02-1-1	3	San Pedro	1,799	1,831	1,993	2,132	2,295	2,379
	01-1-1	4	Culubasa	207	211	229	245	264	274
	01-0-9	5	Pacalcal	1,080	1,099	1,196	1,280	1,378	1,428
	01-0-3	6	San Rafael	489	498	542	580	624	647
	01-0-10	7	DeLa Cruz	2,604	2,650	2,885	3,086	3,323	3,444
	01-0-7	8	La Paz	3,037	3,090	3,365	3,600	3,875	4,017
	01-0-6	9	Banaba	5,231	5,323	5,795	6,200	6,675	6,919
	99-0-18	10	Lourdes	4,428	4,506	4,906	5,248	5,650	5,857
	05-0-2	11	San Roque	2,330	2,371	2,581	2,762	2,973	3,082
	99-0-19	12	San Nicolas(Pob.)	5,161	5,311	6,259	7,139	8,857	10,483
	01-0-2	13	Anupul	4,403	4,480	4,878	5,219	5,618	5,824
	99-0-20	14	Sto Nino	758	771	840	898	967	1,003
	99-0-21	15	San Vicente	•	•	•	•	•	•
			Sub-Total	32,553	33,185	36,605	39,606	43,808	46,713
3. Concepcion	99-0-22	1	San Nicolas(Pob.)	8,000	8,231	9,484	11,065	13,728	16,249
	99-0-23	2	Minane	3,691	3,764	4,083	4,516	5,033	5,407
	04-0-3	3	San Francisco	8,180	8,260	8,959	9,910	11,044	11,866
	99-0-24	4	Dungan	650	663	719	795	886	952
	99-0-25	5	Alfonso	3,930	4,007	4,347	4,808	5,359	5,757
	99-0-26	6	Santiago	2,722	2,776	3,011	3,330	3,711	3,987
	99-0-27	7	Dutung A Matas	1,383	1,410	1,530	1,692	1,886	2,026
	99-0-28	8	San Juan	3,600	3,671	3,982	4,404	4,909	5,274
	99-0-29	9	Sto Nino	2,800	2,855	3,097	3,426	3,818	4,102
	99-0-30	10	Sta Rosa	2,520	2,570	2,787	3,083	3,436	3,692
	99-0-31	11	San Agustin	3,600	3,671	3,982	4,404	4,909	5,274
	16-0-1	12	Tinang	2,790	2,835	3,075	3,401	3,791	4,072
	14-0-3	13	Tallmon.San Miguel	1,639	1,671	1,813	2,005	2,235	2,401
	14-1-4	14	Corazon De Jesus	1,276	1,301	1,411	1,561	1,740	1,869
	14-0-2	15	Pitabunan	1,130	1,152	1,250	1,382	1,541	1,655
	14-0-1	16	Sta Maria	900	918	995	1,101	1,227	1,318
	99-0-32	17	San Jose	1,941	1,979	2,147	2,375	2,647	2,843
	14-0-5	18	Sta Cristo	836	852	925	1,023	1,140	1,225
	14-0-6	19	Sta Cruz	3,491	3,560	3,861	4,271	4,760	5,114
	17-0-1	20	Sto Rosario	1,246	1,271	1,378	1,524	1,699	1,825
	18-0-1	21	Sta Monica	4,090	4,171	4,524	5,004	5,577	5,991
	19-0-1	22	Caluluan	3,199	3,262	3,538	3,914	4,362	4,686
	17-1-2	23	Parulong	1,120	1,142	1,239	1,370	1,527	1,641
	99-0-33	24	Pando	1,560	1,591	1,726	1,909	2,127	2,285
	99-0-34	25	Mabilog	1,746	1,780	1,931	2,136	2,381	2,558
	99-0-35	26	Parang	2,138	2,172	2,356	2,606	2,904	3,120
	14-0-8	27	Cafe	2,587	2,638	2,861	3,165	3,527	3,790
	14-0-9	28	Culatingan	2,651	2,703	2,932	3,243	3,615	3,883
	06-1-1	29	Sta Rita	6,000	6,118	6,637	7,340	8,181	8,789
	08-0-1	30	San Martin	1,060	1,081	1,172	1,297	1,445	1,553
	10-0-1	31	Lilibangan	647	660	716	792	882	948
	15-0-1	32	Magao	1,320	1,346	1,460	1,615	1,800	1,934
	15-0-2	33	Castillo	1,832	1,868	2,026	2,241	2,498	2,684
	99-0-36	34	San Nicolas Balas	5,000	5,099	5,531	6,117	6,817	7,325
	99-0-37	35	San Vicente	758	773	838	927	1,034	1,110
	99-0-38	36	San Antonio	2,525	2,575	2,793	3,089	3,443	3,699
	09-0-1	37	Baluto	4,260	4,344	4,712	5,212	5,808	6,241
	11-0-1	38	San Bartolome	1,040	1,060	1,150	1,272	1,418	1,524
	12-0-1	39	San Isidro	2,246	2,290	2,484	2,748	3,062	3,290
	99-0-2	40	Calius Gueco	849	866	939	1,039	1,158	1,244
	99-0-39	41	Panalicsan	2,000	2,039	2,212	2,447	2,727	2,930
	99-0-40	42	Talimondoc Marimura	1,470	1,499	1,626	1,798	2,004	2,153
	05-0-1	43	Telabanca	2,181	2,224	2,412	2,668	2,974	3,195
	14-0-7	44	Malupa	1,190	1,213	1,316	1,456	1,623	1,743
	99-0-41	45	Green Village	1,250	1,275	1,383	1,529	1,704	1,831
			Sub-Total	110,946	113,205	123,273	137,010	154,094	167,855
			Total	174,562	178,106	195,238	215,251	241,802	261,952
			Number of Household	26,285	26,806	29,382	32,352	36,292	39,265
			Average Family Size	6.6	6.6	6.6	6.7	6.7	6.7

Source: Municipal Offices in Capas, Bamban, Concepcion

Note: • --- Outside the Study Area

Table M-1-2 Employment Status 15 years old and over in April 1989
- Tarlac Province -

Unit : Thousand Persons

Employment Status	Both Sex	Male: (%)	Female : (%)
Total 15 years old and over	498 : 100%	258 : 100%	239 : 100%
In the Labor Force	296 : 59%	212 : 82%	84 : 35%
Employed Fully and Partially	267 : 54%	194 : 75%	73 : 30%
- In agriculture	163 : 33%	132 : 51%	31 : 12%
- In non-agriculture	105 : 21%	62 : 24%	42 : 17%
Total Unemployed	29 : 6%	18 : 7%	11 : 5%
Not in the Labor Force (Underemployed)	202 : 40%	46 : 18%	155 : 64%

Note : Total population of Tarlac in 1980 was 688,457. The population in 1989 is projected at 782,997 adopting annual population growth rate of 1.44%. Therefore, the percentage of the economically active person is computed at 64% (498 divided by 783).

Source : NCSO, Tarlac

Table M-1-3 Required Investment to Absorb New Job Opportunities (Project Area)

	Calendar Year				
	1989	1995	2000	2010	2020
1) Population	178,106	195,238	215,251	241,802	261,952
2) Economically Active Persons */	113,987	124,952	137,760	154,753	167,649
3) Unemployment & Underemployment **/	52,434	57,477	63,369	71,186	77,118
4) Economically Active Persons per Household ***/	4	4	4	4	4
5) New Job Opportunities	0	10,965	12,808	16,993	12,896
6) Investment Required to Absorb New job opportunities (M Pesos) ****/	0	385	455	595	455

*/ Assumed 64% of total population (refer to table shown in above).
**/ Assumed 46% of economically active persons (refer to table shown in above).
***/ Based on the household projection; 26,806 HHs in 1989, 29,362 HHs in 1995, 32,352 HHs in 2000, 36,292 HHs in 2010 and 39,265 HHs in 2020.
****/ Estimated applied investment in Tarlac per employee is 35 thousand pesos.

Table M-1-4 Household Projection by Barangay

Municiparity	Ref. No.	No.	Name of Barangay	Household 1988	Household 1989	Household 1995	Household 2000	Household 2010	Household 2020
1. Capas	13-0-1	1	Cut-Cut I	682	695	767	829	922	992
	13-1-2	2	Cut-Cut II	332	338	373	404	449	483
	99-0-1	3	Sto Rosario(Pob.)	438	446	524	600	744	880
	99-0-2	4	Sto Domingo I(Pob.)	211	215	253	289	359	424
	99-0-3	5	Sto Domingo II	454	463	510	552	614	660
	99-0-4	6	Arengoren	548	558	607	656	730	785
	99-0-5	7	Manlapig	232	237	261	282	314	337
	99-0-6	8	Estrada	188	192	211	229	254	273
	99-0-7	9	Lawy	817	833	918	993	1,105	1,188
	99-0-8	10	Sta Rita	174	177	196	212	235	253
	99-0-9	11	Manga	141	144	158	171	191	205
	99-0-10	12	Dolores	364	371	409	442	492	529
	99-0-11	13	Talaga	357	364	401	434	483	519
	99-0-12	14	Sta Lucia	-	-	-	-	-	-
	99-0-13	15	O'donnell	-	-	-	-	-	-
	99-0-14	16	Bueno	-	-	-	-	-	-
	99-0-15	17	*Sta Juliana*	-	-	-	-	-	-
	99-0-16	18	Maruglu	-	-	-	-	-	-
	99-0-17	19	Cub-Cub(Pob.)	330	336	395	452	560	663
			Sub-Total	5,260	5,361	5,984	6,544	7,451	8,193
2. Bamban	03-0-1	1	Malonzo	200	204	222	237	255	265
	04-0-1	2	Bangcu	31	32	34	37	40	41
	02-1-1	3	San Pedro	302	307	335	358	385	399
	01-1-1	4	Culubasa	31	32	34	37	40	41
	01-0-9	5	Pacalcal	158	161	175	187	202	209
	01-0-3	6	San Rafael	62	63	69	73	79	82
	01-0-10	7	DeLa Cruz	369	375	409	437	471	488
	01-0-7	8	La Paz	471	479	522	558	601	623
	01-0-6	9	Banaba	754	767	835	894	962	997
	99-0-18	10	Lourdes	674	686	747	799	860	891
	05-0-2	11	San Roque	362	368	401	429	462	479
	99-0-19	12	San Nicolas(Pob.)	746	758	905	1,032	1,280	1,515
	01-0-2	13	Anupul	655	667	726	776	836	866
	99-0-20	14	Sto Nino	170	173	188	201	217	225
	99-0-21	15	San Vicente						
			Sub-Total	4,985	5,081	5,601	6,056	6,689	7,122
3. Concepcion	99-0-22	1	San Nicolas(Pob.)	800	823	940	1,107	1,373	1,625
	99-0-23	2	Minane	410	418	454	502	559	601
	04-0-3	3	San Francisco	466	475	515	570	635	683
	99-0-24	4	Dungan	73	74	81	89	100	107
	99-0-25	5	Alfonso	655	668	724	801	893	960
	99-0-26	6	Santiago	562	573	622	688	766	823
	99-0-27	7	Dutung A Matas	250	255	277	306	341	366
	99-0-28	8	San Juan	550	561	608	673	750	806
	99-0-29	9	Sto Nino	260	265	288	318	355	381
	99-0-30	10	Sta Rosa	420	428	465	514	573	615
	99-0-31	11	San Agustin	587	599	649	718	800	860
	16-0-1	12	Tinang	530	540	586	648	723	776
	14-0-3	13	Talimon.San Miguel	284	289	292	323	360	387
	14-1-4	14	Corazon De Jesus	231	236	256	283	315	338
	14-0-2	15	Pitabunan	231	236	256	283	315	338
	14-0-1	16	Sta Maria	70	71	77	86	95	103
	99-0-32	17	San Jose	1,186	1,209	1,312	1,451	1,617	1,737
	14-0-5	18	Sta Cristo	137	140	152	168	187	201
	14-0-6	19	Sta Cruz	57	58	63	70	78	83
	17-0-1	20	Sto Rosario	157	160	174	192	214	230
	18-0-1	21	Sta Monica	625	637	691	765	852	916
	19-0-1	22	Caluluan	457	466	505	559	623	669
	17-1-2	23	Parulong	157	160	174	192	214	230
	99-0-33	24	Pando	60	61	66	73	82	88
	99-0-34	25	Mabilog	350	357	387	428	477	513
	99-0-35	26	Parang	350	357	387	428	477	513
	14-0-8	27	Cafe	340	347	376	416	464	498
	14-0-9	28	Culatingan	315	321	348	385	430	461
	06-1-1	29	Sta Rita	690	704	763	844	941	1,011
	08-0-1	30	San Martin	163	166	180	199	222	239
	10-0-1	31	Lilibangan	115	117	127	141	157	168
	15-0-1	32	Magao	220	224	243	269	300	322
	15-0-2	33	Castillo	337	344	373	412	459	494
	99-0-36	34	San Nicolas Balas	346	353	383	423	472	507
	99-0-37	35	San Vicente	60	61	66	73	82	88
	99-0-38	36	San Antonio	520	530	575	636	709	762
	09-0-1	37	*Baluto*	710	724	785	869	968	1,040
	11-0-1	38	San Bartolome	207	211	229	253	282	303
	12-0-1	39	San Isidro	600	612	664	734	818	879
	09-0-2	40	Calius Gueco	130	133	144	159	177	190
	99-0-39	41	Panalicsan	200	204	221	245	273	293
	99-0-40	42	Talimondoc Marimura	210	214	232	257	286	308
	05-0-1	43	Telabanca	510	520	564	624	695	747
	14-0-7	44	Malupa	202	206	223	247	275	296
	99-0-41	45	Green Village	270	275	299	330	368	396
			Sub-Total	16,040	16,363	17,797	19,752	22,153	23,950
			Total	26,285	26,806	29,382	32,352	36,292	39,265
			Number of Population	174,562	178,106	195,238	215,251	241,802	261,952
			Average Family Size	6.6	6.6	6.6	6.7	6.7	6.7

Source: Municipal Offices in Capas, Bamban, Concepcion

Note: - --- Outside the Study Area

M.3 Present Situation of 19 CISs

1) Establishment of IA

Among 19 CISs, four CISs, namely, San Pedro, Bamban, Susuba-Cutcut, and San Isidro have no IA. Tinang CIS has been established at the oldest year in 1923, while three CISs namely, San Martin, Magao, and Caluluan have been constructed at the newest year in 1987. Most of CISs are constructed by NIA except two CISs by Hacienderos. In case of San Isidro CIS, the IA has been established in 1986, from that time on, no activity has been made. As of now, NIA's participatory approach is applied in 12 CISs in total (refer to Table M-3-1).

2) Membership of IA

The total number of membership in 19 CISs is about 2,900. The largest number is marked in Lucong CIS at 750, while the smallest number is recorded both in Marita and Caluluan CISs at 41. Since the establishment of the IA, the most CISs increase membership, the biggest magnitude can be observed in San Pedro CIS at 3.18 times, followed by Sto Rosario CIS, Bamban CIS and so on. The total number of potential membership in 19 CISs is at 3,500 or 120% of the present number (refer to Table M-3-2).

3) Board of Directors (BODs)

The BODs are elected by vote in every CIS. Assignment period of BODs is usually one or two year(s). Out of 19 CISs, four CISs are giving some salaries for the BODs, while in the remnant of 14 CISs, the BODs are working in a voluntarily manner. There are three university graduators among 19 IA presidents (or Barangay Captains). Moat of them have an experience as the leader or manager of other organizations before. As compared with other IA members, the head of organization has larger land holding area ranging from two to eight hectares (refer to Tables M-3-3 to M-3-4).

The number of BOD ranges from five to 11. Out of 19 CISs, 13 CISs hold the BODs who are appointed simultaneously as the officer both IA and Barangay Council. The area which one BOD has to cover ranges from 4 to 222 hectares. The minimum ratio is presented in Susuba-Cutcut CIS, while the maximum ratio is shown in Lucong CIS (refer to Table M-3-5).

4) Amortization Collector

The eight CISs are repaying some amount to NIA. To collect the dues, some collectors are employed by IA. In some CISs, the collectors are considered to be overburdened. For example, one collector in Sta Monica CIS has to collect the amortization from 500 farms covering 740 hectares. As of now, three CISs define

the remuneration for the collectors, however, only one CIS, namely Sto Rosario employs the penalty for non-payer. Amortization collection rate in 1989 was the highest in Lucong CIS at 100%, while it was the lowest in Sta Monica CIS at zero (refer to Table M-3-6).

5) IA Association Due

The IA association due is mainly used as the operation and maintenance cost of irrigation facilities in the CIS. There are two kinds of collection method; ie. the one is to collect in advance and the other is to collect dues on case to case basis (it means, the collection is made when required). Out of 19 CISs, seven CISs belong to the former and the remainder of 12 appertain to the latter. According to the result of the Study, it is the usual case that the advance collection brings about high gross production income per hectare in the area. The collection rate of IA association due also differs by CIS. The highest collection rate is recorded in San Pedro CIS at 100%, while the lowest is marked in Bamban CIS at 10% (refer to Table M-3-7).

6) Mass Work

The 15 CISs are employing the water tender(s). They are asked to check water management of the CIS. Most of water tenders are given some remuneration, but in three CISs, namely Lilibangan, San Bartolome, and Magao, they are working in a voluntarily manner. The brush dam and main canals are checked by the water tenders every day and mass work for cleaning and weeding of lateral and sub-lateral canals are made once to three times a year by all farmers' participation. The participation rate of the mass work is rather high in every CIS. The penalty for non-participants is not so tight. It is estimated that the amount of penalty is equivalent to about 40 pesos in average (refer to Table M-3-8).

7) Visit of ICO and Farm Technicians

As mentioned above, 12 CISs are now placed under the participatory approach. The visit of ICO in each CIS is not uniformly undertaken. Generally, ICOs do not oftenly visit the inaccessible CISs such as San Bartolome and Magao, vice-versa, adjacent CISs like Bamban and San Pedro have the higher frequency to be visited. Farm Technicians of DA scarcely visit the CIS with the frequency of once a week at most. The eight CISs reported of no visitation of Farm Technician (refer to Table M-3-9).

Table M-3-1 Information on 19 CISs (1)

	Year of Establishment of CIS	Name of Agency Which Const'd the CIS	Establishment of IA *1/	Year of IA Establishment	Registering Agencies of IA	CIS where the Participatory Approach was Applied
1 Bamban	1977	NIA	O	1977	SEC,FSDC	●
2 San Pedro	1965	NIA	X	–	–	
3 Malonzo	1970	NIA-DPWH	O	1990	SEC	●
4 Bangcu	1973	NIA-DPWH	X	–	–	
5 Susuba-CutCut	1964	NIA	X	–	–	
6 Telabanca	1986	NIA-DPWH	O	1987	SEC	●
7 Sta Rita	1986	NIA	O	1986	SEC	●
8 Marita	1986	NIA	O	1987	SEC	●
9 San Martin	1987	NIA	O	1989	SEC	●
10 Baluto	1979	NIA	O	1986	FSDC	Temporary
11 Lilibangan	1979	NIA	O	1979	FSDC	
12 San Bartolome	1986	NIA	O	1986	SEC	●
13 San Isidro	1945	Hacienderos	X	1986	–	Partially
14 Lucong	1953	NIA	O	1984	SEC	●
15 Magao	1987	NIA	O	1987	SEC	●
16 Tinang	1923	Hacienderos	O	1977	SEC	
17 Sto Rosario	1985	NIA	O	1976	SEC	●
18 Sta Monica	1955	NIA	O	1980	FSDC	●
19 Caluluan	1987	NIA	O	1988	SEC	●

Note:
*1/ Mark "O" means with IA establishment, while mark "X" means without IA establishment

Table M-3-2 Information on 19 CISs (2)

	No of Members in the Year IA was established	No of Members in Jan 1990	Increasing or Decreasing	No of Potential Membership
1 Bamban	305	352	Increasing	532
2 San Pedro	33	105	Increasing	105
3 Malonzo	118	118	Constant	109
4 Bangcu	80	80	Constant	150
5 Susuba-CutCut	66	66	Constant	66
6 Telabanca	121	121	Constant	132
7 Sta Rita	43	43	Constant	43
8 Marita	41	41	Constant	40
9 San Martin	73	73	Constant	95
10 Baluto	188	188	Constant	188
11 Lilibangan	116	116	Constant	116
12 San Bartolome	64	64	Constant	100
13 San Isidro	80	80	Constant	235
14 Lucong	720	750	Increasing	750
15 Magao	134	152	Increasing	152
16 Tinang	189	189	Constant	189
17 Sto Rosario	26	71	Increasing	102
18 Sta Monica	195	220	Increasing	220
19 Caluluan	34	41	Increasing	200

Table M-3-3 Information on 19 CISs (3) - Election of BODs -

	Method of Election of BOD	Frequency of Election	Date of Last Election	Candidate System or Recmmndtn System	Salary & Remune ration of BOD
1 Bamban	Vote	Every Year	Jan 1988	C	1/
2 San Pedro 2/	Vote	-	-	*/	P 50/farmer/crppng
3 Malonzo	Vote	Every Year	Oct 1989	C	IA operating
4 Bangcu	Vote	-	-	*/	30 cav/crppng
5 Susuba-CutCut	Vote	-	-	*/	None
6 Telabanca	Vote	Every 2 Years	Nov 1989	C	None
7 Sta Rita	Vote	Every Year	Nov 1986	C	None
8 Marita	Vote	Every Year	March 1988	C	None
9 San Martin	Vote	Every Year	Feb 1988	**/	None
10 Baluto	Vote	Every 2 Years	Feb 1988	C	None
11 Lilibangan	Vote	Every Year	Apr 1989	***/	3/
12 San Bartolome	Vote	Every 2 Years	Nov 1988	C	None
13 San Isidro	Vote	-	-	*/	None
14 Lucong	Vote	Every Year	May 1989	C	P60/meeting
15 Magao	Vote	Every Year	May 1989	C	None
16 Tinang	Vote	Every Year	March 1988	C	None
17 Sto Rosario	Vote	Every Year	Sept 1989	C	None
18 Sta Monica	Vote	Every Year	May 1986	C	None
19 Caluluan	Vote	Every Year	Jun 1989	C	None

Note:
C Canditate system

*/ Same as the election system of Barangay Officials. It is subject to Law.

**/ No candidate stands before the election day. Member select one capable person on the election day among the member and top eleven (11) are selected as Board of Director.

***/ Rotation system.

1/ 10% of total collection of IA association due(for collectors), free of charges(for BODs).
2/ One messenger who will transfer the desidion of BOD meeting to the members can get at P50 x 33 farms/croppng.
3/ Exemption from IA association due at one cavan per hectare per cropping.

Table M-3-4 Information on 19 CISs (4) - IA President -

	Highest Educational Attainment of IA Pres. or Bgy Capt.	His Experience as a Leader	His main Income & Land Holding Area	Frequency of BOD Meeting
1 Bamban	2nd Year HS	Auditor (1987)	Farmer (2.5 ha)	Monthly
2 San Pedro	Grade IV	PTA Presdnt & etc	Farmer (3 ha)	Monthly (followed)
3 Malonzo	Grade VI	-	Farmer (3 ha)	Monthly
4 Bangcu	Elementary	Bgy Capt	Farmer (2 ha)	As the need arises.
5 Susuba-CutCut	High Sch	Bgy Capt	Farmer (2 ha)	None
6 Telabanca	2nd Year Col	none	Farmer (2 ha)	Monthly (not followed)
7 Sta Rita	Grade V	none	Farmer (5 ha)	Monthly (not followed)
8 Marita	Grade IV	BOD of IA	Farmer (3 ha)	Monthly (not followed)
9 San Martin	Grade VI	none	Farmer (4 ha)	Monthly (not followed)
10 Baluto	Grade V	Brgy. Justice	Farmer (4 ha)	Monthly (not followed)
11 Lilibangan	Grade VI	Bgy Capt	Farmer (3 ha)	As the need arises.
12 San Bartolome	2nd Year HS	SN President	Farmer (6 ha)	Monthly (not followed)
13 San Isidro	3rd Year Col	Bgy Capt	Farmer (2.5 ha)	As the need arises.
14 Lucong	BS	Mgr, Water Dist	Farmer (8 ha)	Monthly
15 Magao	BSAE	Bgy Capt	Farmer (4 ha)	Weekly
16 Tinang	BSA	Mngr. Hda Luisita	Mngr. Hda Luisita	As the need arises.
17 Sto Rosario	High Sch	none	Farmer (3.5 ha)	Monthly
18 Sta Monica	Grade IV	Leader Hukbalahap	Farmer (5 ha)	Monthly (not followed)
19 Caluluan	Grade VI	none	Farmer (4 ha)	Monthly (not followed)

Table M-3-5 Information on 19 CISs (5)

	CIS Covered Area (ha)	CIS Covered Barangays	Number of BOD	Area-No Ratio	Bgy-No Ratio	No of BOD also Member Bgy Cncl	Availability of By-Law in the CIS
1 Bamban	751	9	7	107	0.7	0	0
2 San Pedro	120	2	5	17	2.3	5	-
3 Malonzo	240	1	9	27	9.0	0	0
4 Bangcu	700	4	7	100	1.8	7	-
5 Susuba-CutCut	40	3	9	4	3.0	9	-
6 Telabanca	389	1	11	35	11.0	1	0
7 Sta Rita	115	1	7	16	7.0	1	0
8 Marita	100	2	7	14	3.5	1	0
9 San Martin	240	1	11	22	11.0	4	0
10 Baluto	600	3	7	86	2.3	2	0
11 Lilibangan	240	1	9	27	9.0	3	-
12 San Bartolome	350	1	9	39	9.0	0	0
13 San Isidro	450	1	9	50	9.0	0	-
14 Lucong	2,000	9	9	222	1.0	5	0
15 Magao	620	1	7	89	7.0	0	0
16 Tinang	200	1	5	40	5.0	5	-
17 Sto Rosario	150	3	9	17	3.0	2	0
18 Sta Monica	740	1	7	106	7.0	0	0
19 Caluluan	80	2	11	7	5.5	2	0

Table M-3-6 Information on 19 CISs (6) - Amortization Collection -

	Amortizing IA **/	Due Date	No of Collector	Covered Area per collector (ha)	Covered Farm HH per Collector	Previlege of Collector	Penalty of Non-Payer	Annual Amortizing Amount & Remaining Years	Amortization (%)
1 Bamban	X								
2 San Pedro	X								
3 Malonzo	X								
4 Bangcu	X								
5 Susuba-CutCut	X								
6 Telabanca	O	12/90	11	35	11	None	None	102,112.50 (3yrs)	0
7 Sta Rita	O	11/90	8	15	12	10% G Amt	None	30,069.38 (3yrs)	-
8 Marita	O	11/90	1	99	42	None	None	13,052.64 (10yrs)	90
9 San Martin	O	12/90	2	120	36	None	None	63,000.00 (7yrs)	9
10 Baluto	X								
11 Lilibangan	X						None		
12 San Bartolome	O	12/90	****/	****/	****/	****/	****/	78,750.00 (4yrs)	-
13 San Isidro	X								
14 Lucong	O	11/90	4***/	150	60	10% G Amt	None	*/	100
15 Magao	X								
16 Tinang	X								
17 Sto Rosario	O	5/90	2	90	50	None	No Water	87,706.00 (25yrs)	68
18 Sta Monica	O	7/90	1	740	500	10% G Amt	None	12,000.00 (10yrs)	0
19 Caluluan	X								

*/ P11,301.70 up to Dry 1989 P170,625.00 from wet 1990 for 25 years
**/ Mark "O" refers to amortizing IA, mark "x" refers to non-amortizing IA
***/ Besides the fee collectors, the 9 BODs help collecting dues.
****/ Amortization to NIA starts from 1990, the collector was not yet assigned as of Mar. 1990.

Note: Please refer to Appendix K for exact figures.

Table M-3-7 Information on 19 CISs (7) - IA Association Dues -

	IA Irrigation Fee	Collection Rate (%)	Purpose of Fund	Penalty	No of Collector	Priviledge of Collector
1 Bamban	1 cavan/ha	10	O/M of CIS	Charge be 2x	15	10% cllctn
2 San Pedro 1/	1cav/frm/hrvst	100	To water tender	No Penalty	1	33frmxP50
3 Malonzo	one cav/ha	From 1990	*/	*/	*/	
4 Bangcu	x					
5 Susuba-CutCut	x					
6 Telabanca	x					
7 Sta Rita	x					
8 Marita	x					
9 San Martin	x					
10 Baluto	x					
11 Lilibangan	one cav/ha	90	O/M of CIS	No Penalty	4	Exemptn.
12 San Bartolome	x					
13 San Isidro	x					
14 Lucong	one cav/ha	60	O/M of CIS	No Penalty	4	10% cllctn
15 Magao	x					
16 Tinang	x					
17 Sto Rosario	P10	95	Fare of BODs	No Irrig Water	2	None
18 Sta Monica	P100/yr	15	O/M of CIS	No Penalty	1	10% cllctn
19 Caluluan	x					

Generally, since the IA is registered as a non-stock, non-profit organization whose main purpose is to utilize irrigation water in optimum, there are no trading activities with another economic entities. Accordingly, the fund of IA could be considered at zero, except some IAs who are collecting IA fund by the name of "IA association due" or "O/M charge" and even though they are collecting from the members, only a small amount could be retained as an internal fund.

*/ Under discussion by the members

1/ From 33 original farms the due collection is made. The remainder of 72 farms contribute to original farms for successful colllection.

Table M-3-8 Information on 19 CISs (8) - Water Management -

	No of Water Tender	Salary of Water Tender	Frequency he Visits the Brush Dam	Frequency He Check the Canal	Frequency of Mass Work	Penalty for Non-Participant	Average Participate Rate
1 Bamban	1	75 cav/yr	1 X/week	Every day	3 x/year	Snacks	60%
2 San Pedro	1 */	33 cvns/harvst	Every day	Every day	3 x/crrpng	P20	90%
3 Malonzo	2 ***/	1/2 cav/ha	Every day	1 x week	2 x/year	None	50%
4 Bangcu	1	30 cav/cropping	Every day	Every day	2 x/year	Snacks	60%
5 Susuba-CutCut	0	-	-	-	-	-	-
6 Telabanca	4	1/3 cav/ha	Every day	Every day	2 x/year	Snacks	85%
7 Sta Rita	1	1 cav/famer	Every day	Every day	2 x/year	None	75%
8 Marita	1	1/3 cav/ha	Every day	Every day	2 x/year	P40 - 50	80%
9 San Martin	2	P500/mo	Every day	Every day	2 x/year	P20/week	83%
10 Baluto ****/	0	-	Every day	Every day	1 x/year	No water	90%
11 Lilibangan	4	-	Every day	Every day	2 x/year	P100	90%
12 San Bartolome	2	-	Every day	Every day	2 x/year	Snacks	60%
13 San Isidro	0	-	Individual	Individual	Individual	-	-
14 Lucong	7	P900/mo	Every day	Every day	2 x/year	Snacks	60%
15 Magao	3	-	Every day	Every day	2 x/year	No water	70%
16 Tinang	6	125 kg/fa/crop	Every day	Every day	2 x/year	Snacks	100%
17 Sto Rosario	4	25 kg/ha	Every day	Every day	2 x/year	No water	85%
18 Sta Monica	2 **/	17 kg/ha/crop	Every day	Every day	2 x/year	Last delvry	35%
19 Caluluan	0	-	-	Individually	1 x/year	-	50%

*/ Permanent water tender -- If he died and his family can't continue his task BODs select the other one.

**/ Employed from May to Feb (10 month), water delivery schedule is followed only in dry season.

***/ Out of 5, 2 BODs are in charge of water management.

****/ Water delivery schedule is followed only in dry season.

Table M-3-9 Information on 19 CISs (9)
- Activity of ICO & Farm Technician -

	Frequency of ICO's Visit	Frequency of Farm Tech Visit	Availability of ICO */
1 Bamban	Every day	-	0
2 San Pedro	-	1-2 x Cropping	-
3 Malonzo	Every day	1 x/mo	0
4 Bangcu	-	-	-
5 Susuba-CutCut	-	2 x/mo	-
6 Telabanca	Every day	1 x/mo	0
7 Sta Rita	1 x/week	2 x/mo	0
8 Marita	1 x/week	2 x/mo	0
9 San Martin	1 x/week	2 x/mo	0
10 Baluto	-	-	-
11 Lilibangan	-	-	-
12 San Bartolome	3 x/week	1 x/mo	0
13 San Isidro	-	2 x/mo	-
14 Lucong	1 x/week	-	0
15 Magao	3 x/week	-	0
16 Tinang	-	1 x/week	-
17 Sto Rosario	1 x/week	-	0
18 Sta Monica	1 x/week	1 x/week	0
19 Caluluan	1 x/week	-	0

Note/ */ Mark "0" means availavility of ICO

M.4 Socio-Economic Problems and Constraints

The problems and constraints from viewpoint of development process of agriculture are tabulated through the field survey. Generally, three development processes are to be pursued for the formal development of agriculture, these are, i) consolidation of agro-infrastructure, ii) increasing of production, and iii) upgrading of production quality and stabilizing of farm gate price, in this order. This section deals with the examination, after picking up the existing problems in the area by CIS, of the relationship between these problems and the indicators for crop production.

To look for the problems on the first process, the relationship between the existing irrigation facilities and cropping intensity or yield by CIS were surveyed. Also, to clarify the relationship between palay production method and production yield for the second process, the major problems on crop production were investigated. The problems on palay quality and farm gate price were surveyed and compared with the data on farm gate price of palay by CIS. The problems on institutional aspects are considered to affect to all development processes of agriculture, thus, the relationship between the problems and gross production per hectare by CIS is investigated (refer to Tables M-4-1 to M-4-5).

Tables entail, as a whole, that the 19 CISs hold critical problems concerning especially on water shortage, in the dry season, and insufficient post harvest facilities in physical term, and financial insufficiency, and administrative undoing in institutional term.

Correlation between agro-infrastructure and yield of palay can not be clearly verified numerically, while rather high coefficient of correlation can be analyzed between the following items.

Relationship (A-B)	Coefficient of Correlation
Method of Planting-Yield	0.56
Fertilizer Application-Yield	0.35
Availability Thresher-Farmgate Price	0.44
Availability of Dryer-Farmgate Price	0.48
Accessibility to Market-Farmgate Price	0.40
Availability of IA Fund-Gross Production per Hectare	0.66
IA Fund Collection Rate-Gross Production per Hectare	0.73

M.4.1 Socio-Economic Problems on 19 CISs

1) Financial Environment

Three municiparities are involved in the Study area. Budget

allocation of three municiparities have mushroomed since new administration; for example, the municipal budget of Concepcion in 1985 at 3.8 million pesos grew to 4.8 million pesos in 1986, to 5.2 million pesos in 1987. The 1989 municipal budget of Concepcion attained about 1.7 times of that in 1985, amounted to 6.7 million pesos. Per capita local budget in 1988 ranged from 42 pesos in Bamban Municiparity to 71 pesos in Capas Municiparity and averaged at 55 pesos in three municiparities. (refer to Tables M-4-6 to M-4-7).

2) Land Tenure and Land Holding Area

There are four tenure classes in the Study area, namely, owner-cultivator, amortizing owner, lease holder, and share-tenant. Amortizing owners constitute the highest percentage of 50%, followed by owner-cultivators of 45%, lease holders of 3%, and share-tenant of 2%. There are no available data for owner-cultivator and share-tenant, but the information in DAR has revealed that the number of amortizing owner and lease holder in the Study area is at 6,100 and 300, respectively. The amortizing owner shares a total of 14,400 hectares of land with 2.4 hectares of average land holding area, while the lease holder covers 740 hectares in total with 2.3 hectares of average land holding area. The information presents areal difference of land holding area: viz. among three municiparities, Concepcion Municiparity has the biggest average holdings at 2.7 hectares, while Bamban Municiparity has the smallest at 1.7 hectares (refer to Table M-4-8).

Little statistical distribution can be observed on average land holding area of 19 CISs. Most of farms are classified to "middle sized farm" with 2.0 to 3.0 hectares of land holding area. out of 4,600 farms in 19 CISs, 3,000 or 65% are classified into middle sized farms followed by small sized farms (less than 2.0 hectares of land holding area) of 1,500 (30%), and large sized farms (-ditto-, 3.0 hectares over) of 100 (less than 5%). Agrarian Reform is being achieved favorably, but as far as the large areas owned by a bundle of holders are not emancipated, small farms or share-tenants will not be able to escape from poverty bracket. The number of such big-land holder is estimated at more or less 20 (refer to Tables M-4-9 to M-4-10).

3) Income and Expenditures

According to "1985 Family Income and Expenditures Survey" published by NCSO, the average annual income of household in the Tarlac Province is at 27,596 pesos, while the average annual expenditures are estimated at 24,673 pesos. These figures would have been mushroomed in recent years due to increasing investment to the Province. However, there still remains the poverty bracket with low income, high expenditures, no formal education, and temporary house. Sacobia Development Authority presented the data about it. Since however, all information are stated by the farmers who wish to obtain some financial aid from SOLVe, the readers should have an eye to their overstatement. According to the data, out of 73 Barangays in the Study area, 36 Barangays or

50% are classified as depressed Barangays. Among the households which are categorized as rural poor, about 30% is the share-tenant (refer to Tables M-4-11 to M-4-12).

M.4.2 Problems on Financial Institution

It was revealed that about 2,000 farmers were loaning from the governmental and private banks in the area. Major sources of crediting service are LBP in Concepcion in terms of number of borrower at 657, and Rural Bank in Concepcion in terms of the area covered by the loan at 4,650 hectares, respectively. The Rural Bank in Concepcion is also predominant in terms of loan amount granted at 14.4 million pesos (refer to Table M-4-13).

Out of 206 million pesos of total loans made by the 11 available banking institutions, agriculture loan accounts for 34 million pesos or 16% of the total, while the biggest share at 78% is held by other loans spend for housing construction and other miscellaneous purposes. As of the mid of August, 1989, the loan target at 286 million pesos in the total of aforesaid 11 banking institutions is being favorably attained at 199 million pesos accounting for 70%. The total amount of loan in 1988 were recorded at 571 million pesos, and out of these amount, 222 million pesos or 39% were borrowed on the purpose of agriculture (refer to Table M-4-14).

The individual borrowers have a disadvantage in the interest of loan. The major banks for the farmers, namely LBP and Rural Bank in Concepcion are granting a loan to the agricultural cooperatives at 12% of annual interest rate, while to the individuals, the interest rate at 15 to 24% are adopted. Out of 11 banks, only 7 banks provide the borrowers with medium term loan, but actually few application was made in 1988. As mentioned in Main Report, increasing of IA fund through time deposit system is proven to be advantageous. The interest rate of this system is about two times higher than that of normal saving account system (refer to Table M-4-15).

M.4.3 Problems and Constraints on Irrigation Fee Collection

Low collection rate level of amortization fee was the biggest problem which the PIO faced in recent years. The collection rate in 1989 recorded unfavorable figure at 57 percent. (average of 14 CIS which are amortizing to NIA at 1.5 cavans per ha per year). This low collection rate can be observed not only in the amortization to NIA, but also in the irrigation fee collection being undertaken among the IA members.

However, it is observed that farmers pay back their debts to the private lenders even though the amount is much higher than the irrigation fee and/or amortization charges. For the discussion of this problem, this section will focus on several CISs selected as samples.

(1) Bamban CIS

Amortization to NIA will start on 1991. The CIS is now collecting the IA association due which is utilized for operation and maintenance of CIS facilities and other managerial and miscellaneous expenses. The IA association due is one cavan/member/cropping and usually collected two times a year; i.e. during the wet and dry seasons. The 7 BODs are exempted from payment. A total of 15 collectors are in-charge of fee collection. In this CIS there exists seven irrigation sectors and within each sector, one to three collectors are assigned. Average area covered by each collector is about 76 ha with 75 farmer members. The collectors are given an incentive, viz, 10% of their collection. So, if they successfully collect the dues they could obtain 7.5 cavans on the average.

The conditions of due payment are mentioned in the by-laws of the CIS. According to the by-laws, in case a farmer could harvest more than 40 cavans per hectare, he is regarded as an affordable farmer but if his production is less than 30 cavans per hectare, he can be considered as exempted farmer. If his production is between 30 to 40 cav/ha he can make a compromise with the BODs. If the farmer could not produce enough paddy, he can pay his due by selling his other crops such as sugarcane and other diversified crops. But in this, case the BODs are to help him in the marketing of his commodities. Unfortunately, few farmers have made compromises so far.

There is a loophole on this by-law, that is, the association due is applicable only to water users on paddy cultivation. On the other hand, sugarcane farmers using irrigation water do not have the legal obligation to pay irrigation fees. This is the biggest reason why the sugarcane plantation is increasing in the CIS area. As of dry seasons in 1990, new plantation area of irrigated sugarcane has a tendency to expand.

The collection rate of irrigation fees during the wet season of 1989 was very low with a record of 10% more or less. It means that about 90% of farmers have reported a yield of less than 30 cav/ha and that is another problem confronting irrigation fee collection. Based on the estimates of the Study Team, the yield of palay in Bamban CIS during the wet season of 1989, is at least more than 50 cavans per hectare. Thus, the problem arises as who will determine and accept the yield which a farmer has reported. In Bamban CIS, the farmer first reports his yield. Then the collector will investigate its veracity. If found correct, he accepts it. In case there exists a big difference between the reported and investigated yield, the BOD will make the final decision.

(2) Lilibangan CIS

The CIS has no obligation to pay amortization to NIA. The

IA was established at the initial stage of NIA's participatory program in 1979 and has been registered with the Farm System Development Corporation (FSDC). The irrigation water during the wet season comes from Bamban River through San Martin CIS, but during the dry season, due to unavailable water supply from the river, groundwater is being utilized through 50 units of irrigation pumps owned by individual farmers. Accordingly, the IA activities are undertaken only during the wet season.

The IA officials, nine BODs and four water tenders who also act as collector of the association dues, are elected every year. The IA association due is collected from 116 IA members. IA officials are exempted from payment. The amount of association due is one cav/ha/year. In order to avoid complaints from the members, the IA officials are replaced every year. The IA association due is utilized mainly for operation and maintenance of the CIS. The collection rate of IA association due is almost 100% every year.

The reasons why they can achieve a high collection rate are as follows: i) no amortization pay to NIA, ii) reasonable collection method, iii) fairly high yield of palay, and iv) success of diversified crops during the dry season.

In the past, the association had a diversion dam named Pritil dam which was located on the northern side of the CIS. The Pritil dam provided irrigation water from the Lucong River even during the dry season. During the 1960's, the dam was damaged by flood and since then, it has not been rehabilitated. Since the dam was constructed by the Hacienderos, the IA members have never paid amortization.

The 116 IA members are composed of 100 inhabitants of the barangay and more or less 15 transient farmers from other barangay. It is a practice that an irrigation fee collector goes to the farmers' house who has just harvested paddy to collect irrigation fee before traders and private lenders could visit him.

Since they are utilizing surplus water from San Martin CIS, they can easily manage the irrigation water, and consequently, they are economizing and adequately supplying water for paddy cultivation during the wet season. This activity brings comparatively high yield during the wet season. During the dry season, farmers save water due to high cost of fuel of individual pump. As a result, suitable water management is undertaken unknowingly.

The introduction of diversified crops is helping the farmers in the payment of irrigation fee. Watermelon, eggplant and corn are planted on contract basis. Due to their good marketability, many farmers prefer to plant such crops rather than paddy. One evidence of this increase of farm income is the increase of collection rate even though the IA render its services only during the wet season.

(3) Lucong CIS

The total area of the CIS is 2,250 ha and within this area, 11 collectors are assigned to collect amortization and IA association dues. Each collector is in charge of 40 to 50 households with a total of 70 to 80 ha of farm area. Amortization collection rate in 1989 is 100 %, the highest among the 14 amortizing CIS in the province. However, the collection rate of IA association dues in 1989 is only 60 %. The reasons are explained as follows:

The collection criteria whether a farmer can pay or not and whether he should pay or not is not defined consistently. Collection solely depends on the judgment of the collector-in-charge. Generally, collectors in the upstream of the irrigation canals collect from the members association dues even if members use their own irrigation pumps during the dry season. On the other hand, collectors at the downstream of the irrigation canals regard this area as exempted.

Judgment regarding the affordability of farmers to pay vary among collectors. Some collectors based their judgment on the ocular inspection of the production of the farmer-member, while other collectors consider the debts and expenditures of the farm household. Generally, decision whether the farmer can pay or not depends on the farm income for that specific cropping season. It is assumed that a farmer with two ha and a family member of six and with an income from 30,000 to 33,000 pesos will be able to pay his dues. The amount of 30,000 to 33,000 pesos is considered the break-even income. In this case, the break-even yield considered is 70 cavans per ha.

Thus, the fee collection rate is greatly influenced by the character and personality of the collector. For IA association dues, the collection rate ranged from a maximum of 90% to a minimum of 20% with an average collection rate of 60%.

As an incentive, collectors are given 10% of the collected amount from amortization and association dues. This is considered one of the main reasons for the 100% collection rate for amortization. There are some irrigation sections where the BODs are assigned as the collectors. Some of them hesitate to collect the 10% incentive pay because they already collect 60.00 pesos per meeting.

(4) Baluto CIS

The IA of Baluto CIS was established in 1976. During this period, there existed a tie-up venture between NIA and FSDC concerning the CIS development. Since then, NIA has been taking charge of the irrigation system as well as its institutional support. However, the efforts failed. IN 1987, the NIA Provincial Irrigation Office (PIO) fielded ICOs to organize the Irrigators Associations (IAs). However, the members were not satisfied with the way the irrigation facilities were constructed, hence,

they refuse to pay amortization. The ICOs were then forced to withdraw in 1988. To date, NIA , have not yet recovered its investment cost of 262,422 pesos.

Of the 600 ha, only 380 ha are irrigated by pumps during the dry season. Because of this, the IAs undertake its activities only during the wet season. Chargeable costs like repair and maintenance costs is accumulating every year. Whenever the brush dam or the main canal are damaged, the IA usually request NIA to repair them, hence charges accrue and accumulate as chargeable cost in the CIS. It is understood that NIA will never be able to recover cost of the CIS unless adequate facilities are further provided.

Table M-4-1 Problems on Agro-Infrastructure (1)

Name of CIS	1.1 Structure: Permanent (Places)	1.1 Structure: Temporary (Places)	1.2 Gated (Places)	1.2 Ungated	1.3 Main Canal: Easy	1.3 Main Canal: Hard	1.3 Main Canal: Density (m/ha)	1.3 Main Canal: Lined (km)	1.3 Main Canal: Unlined (km)	1.4 Lateral Canal: Density (m/ha)	1.4 Lateral Canal: Lined (km)	1.4 Lateral Canal: Unlined (km)	1.5 Cropping Intensity: Wet: HA	1.5 Cropping Intensity: Wet: %	1.5 Cropping Intensity: Dry: HA	1.5 Cropping Intensity: Dry: %
1 Bamban		1				*	12.0	0.20	12.37				1,051	100	822	79
2 San Pedro		1				*	18.2		4.40				120	100	120	100
3 Malonzo		2				*	19.9		4.78	1.8		9.92	175	75	240	100
4 Bangcu		1				*	3.0		3.50				700	100	500	71
5 Susuba-CutCut			1			*	45.5		1.82				40	100	8	20
6 Telebanca		3				*	14.2		5.55	4.0		1.54	388	100	389	100
7 Sta. Rita			1		*		15.8	1.21	8.57	9.2	0.46	0.68	115	85	115	85
8 Marita		1				*	28.6	0.84	2.82	6.0		9.88	100	100	85	85
9 San Martin		4				*	26.5		7.42				248	80	168	57
10 Baluto			2		*		10.4	1.88	5.82	5.1		2.78	600	81	600	81
11 Lilibangan		1				*	19.5		2.46	9.9		2.38	248	100	248	100
12 San Bartolome	2					*	3.8		2.53	0.6		0.34	228	92	228	92
13 San Isidro							5.0		5.38				450	71	450	71
14 Lucong			1			*	4.7	4.68	5.87	10.3	2.68	50.67	2,900	89	2,788	80
15 Nagao	2				*		18.8		8.18	8.6		5.24	468	75	628	100
16 Tinang			1			*	9.1		2.78				850	100	700	82
17 Sto. Rosario			1			*	18.1	1.38	3.24	12.8		2.60	150	75	150	75
18 Sta. Monica			1			*	8.8	8.76	5.78	4.1		3.83	300	41	740	100
19 Caluluan	1					*	-						83	100	83	100

Table M-4-2 Problems on Agro-Infrastructure (2)

Name of CIS	1.4 Supplemented by Pump: % in wet	1.4 Supplemented by Pump: % in dry	1.5 Ave. Land Holding	1.6 Water Management	1.6 Water Tender: No.	1.6 Water Tender: HA per Persn.	Yeild (cavan): Wet	Yeild (cavan): Dry
1 Bamban	0	0	1.1	A	1	376	54	60
2 San Pedro	0	0	2.0	A	1	120	76	86
3 Malonzo	0	0	1.0	A	2	120	46	66
4 Bangcu	0	0	2.5	A	1	700	66	86
5 Susuba-CutCut	0	0	3.0	C	0	-	60	60
6 Telebanca	0	0	2.4	A	4	97	60	76
7 Sta. Rita	0	25	2.3	A	1	115	80	90
8 Marita	0	54	2.0	A	1	100	76	83
9 San Martin	0	63	2.0	A	2	120	76	86
10 Baluto	37	100	4.0	B	0	-	86	90
11 Lilibangan	0	55	4.0	B	6	-	90	100
12 San Bartolome	0	54	2.8	B	2	-	76	96
13 San Isidro	0	100	3.0	B	0	-	76	86
14 Lucong	0	14	1.5	A	7	286	80	84
15 Nagao	0	25	3.5	B	3	-	76	90
16 Tinang	0	0	2.0	A	5	50	86	90
17 Sto. Rosario	0	33	1.5	A	4	50	86	90
18 Sta. Monica	0	80	3.0	A	2	370	76	90
19 Caluluan	0	100	2.3	B	0	-	80	60

Table M-4-3 Problems on Palay Production

Name of CIS	2.1 Draft Animal	2.2 Machinery	2.3 Seed	2.4 Method of Seedling	2.5 Land Preparatn.	2.6 Method of Fertilizatn.	2.7 Fertilizer Applicat'n	2.8 Pest Control	Yeild (cavan): Wet	Yeild (cavan): Dry
1 Bamban	C	C	B	B	B	B	C	A	54	60
2 San Pedro	B	C	A	B	A	A	B	A	76	86
3 Malonzo	C	C	A	C	A	B	B	C	46	66
4 Bangcu	C	C	A	C	A	B	B	A	66	86
5 Susuba-CutCut	A	A	A	C	B	B	C	B	60	60
6 Telebanca	B	C	A	C	B	C	A	A	60	76
7 Sta. Rita	B	A	A	B	B	C	B	C	80	90
8 Marita	C	B	A	C	C	B	B	B	76	83
9 San Martin	B	A	A	C	B	A	B	C	76	86
10 Baluto	C	A	A	C	B	B	B	B	86	90
11 Lilibangan	A	B	A	B	A	B	A	A	90	100
12 San Bartolome	A	A	A	A	B	B	A	A	76	96
13 San Isidro	A	A	A	A	B	C	B	A	76	86
14 Lucong	C	C	A	B	B	A	B	B	80	84
15 Nagao	B	C	A	A	A	B	B	B	76	90
16 Tinang	A	A	A	A	C	B	A	B	86	90
17 Sto. Rosario	C	A	A	C	B	A	B	B	86	90
18 Sta. Monica	C	B	A	B	B	B	B	B	76	90
19 Caluluan	C	A	A	B	B	B	B	B	88	60

2. Problems on Palay Production

2.1 Draft Animal
- A --- Carabao Population Density more than 0.8 head/ha
- B --- Carabao Population Density between 0.4 and 0.8 head/ha
- C --- Carabao Population Density less than 0.4 head/ha

2.2 Machinery
- A --- Total Horse Power Density of Tractors more than 1.0 ps/ha
- B --- - ditto -, between 0.5 and 1.0 ps/ha
- C --- - ditto -, less than 0.5 ps/ha

2.3 Seed
- A --- Using High Yield Variety
- B --- Using High Yield Variety and Traditional Variety
- C --- Using Traditional Variety

2.4 Method of Seedling
- A --- Wet Bed 100%
- B --- Wet Bed 51% to 99%
- C --- Wet Bed less than 50%

2.5 Land Preparation
- A --- Mechanized
- B --- Mechanized & Conventional
- C --- Conventional

2.6 Method of Fertilization
- A --- Basal and Top Dressing
- B --- Side Dressing and Top Dressing
- C --- Side Dressing

2.7 Fertilizer Application
- A --- Proper
- B --- Fair
- C --- Improper

2.8 Pest Control
- A --- Preventive and Curative
- B --- Preventive
- C --- Curative

Table M-4-4 Problems on Palay Quality & Farmgate Price

Name of CIS	4.1 Availability of IA	4.2 IA Fund	4.3 Fund Collection Rate	4.4 Funct'n of Coop.	4.5 Water Del. Schedule	4.6 Cropping Calendar	4.7 Produc'n Loan Availa'ty	4.8 Mass Work	Gross Production per Hectare Wet(P'000)	Dry(P'000)
1 Bamban	O	O	x	Δ	x	x	O	O	9.6	12.0
2 San Pedro	x	O	O	x	x	x	x	O	13.2	17.2
3 Malonzo	O	O	x	x	x	x	x	x	5.8	11.6
4 Bangcu	x	x	x	x	x	x	O	O	10.6	10.1
5 Susuba-CutCut	x	x	x	x	x	x	x	x	7.8	12.9
6 Telebanca	O	x	x	x	x	x	x	O	11.7	16.7
7 Sta. Rita	O	x	x	x	O	O	x	x	15.2	20.3
8 Marita	O	x	x	x	O	O	x	O	7.6	13.7
9 San Martin	O	x	x	x	x	x	x	O	10.3	15.1
10 Baluto	O	x	x	Δ	x	x	O	O	16.2	18.0
11 Lilibangan	O	O	O	x	x	x	x	O	15.8	17.5
12 San Bartolome	O	x	x	x	x	x	x	O	11.4	19.2
13 San Isidro	x	x	x	x	x	x	x	x	11.4	17.6
14 Lucong	O	O	x	Δ	O	O	x	O	11.6	15.5
15 Magao	O	x	x	x	O	x	O	O	12.2	20.3
16 Tinang	O	x	x	Δ	O	x	O	O	15.9	20.5
17 Sto. Rosario	O	O	O	x	O	O	x	O	10.3	16.9
18 Sta. Monica	O	O	x	Δ	O	x	O	O	8.4	10.8
19 Caluluan	O	x	x	O	x	x	O	x	16.0	15.8

4. Problems on Institutional Aspects

4.1 Availability of IA
- o --- IA has already formatted
- x --- No IA has formatted

4.2 IA Fund
- o --- Collecting an association charge from the beneficiaries
- x --- Not collecting

4.3 Fund Collection Rate
- o --- More than 90% of the beneficiaries pay an association Charge
- x --- Less than 90% of the beneficiaries pay an association Charge or not collecting

4.4 Function of Cooperative
- o --- Well functioning
- Δ--- More than two cooperatives are duplicating in one IA, and some are functioning well but others are not.
- x --- No cooperative or not functioning

4.5 Water Delivery Schedule
- o --- Following
- x --- Not following
- Δ--- Only in dry season

4.6 Cropping Calendar
- o --- Following
- x --- Not following

4.7 Production Loan Availability
- o --- borrowing loan through cooperative
- x --- Not borrowing loan through cooperative, or no available cooperative.

4.8 Mass Work
- o --- Mass work (to clean the irrigation canal) with penalty for non-participant is undertaken.
- x --- No mass work or there is but without penalty for non-participant.

Table M-4-5 Problems on Institutional Aspect

Name of CIS	3.1 Thresher	3.2 Dryer	3.3 Werehouse	3.4 Rice Mill	3.5 Transpotation	3.6 Accessability	Farm Gate Price of Palay Wet(P/kg)	Dry(P/kg)
1 Bamban	C	C	C	C	B	A	3.5	4.0
2 San Pedro	B	C	B	C	C	A	3.2	4.0
3 Malonzo	B	C	C	C	C	C	2.5	3.5
4 Bangcu	C	C	C	C	C	B	3.2	4.2
5 Susuba-CutCut	A	C	C	C	A	A	2.6	4.3
6 Telebanca	B	C	C	C	C	B	3.9	4.4
7 Sta. Rita	B	C	A	C	A	A	3.8	4.5
8 Marita	C	C	C	C	A	A	2.0	3.3
9 San Martin	B	C	B	C	C	A	2.7	3.5
10 Baluto	B	C	C	C	C	C	3.8	4.0
11 Lilibangan	C	C	C	C	C	C	3.5	3.5
12 San Bartolome	B	C	C	C	C	C	3.0	4.0
13 San Isidro	A	B	A	C	C	C	3.0	4.1
14 Lucong	C	B	A	C	C	A	2.9	3.7
15 Magao	C	B	C	C	C	C	3.2	4.5
16 Tinang	B	C	C	C	C	C	3.7	4.5
17 Sto. Rosario	C	C	C	C	B	B	2.4	4.2
18 Sta. Monica	C	C	B	C	C	B	2.2	4.0
19 Caluluan	A	A	C	C	A	C	4.0	5.0

3. Problems on Palay Quality and Market Price

3.1 Thresher
- A --- Necessary time to Thresh All the Wet Palay less than 10 days
- B --- - ditto -, between 10 and 30 days
- C --- - ditto -, between 10 more than 30 days.

3.2 Dryer
- A --- Sufficient
- B --- Fair
- C --- Insufficient

3.3 Warehouse
- A --- Sufficient
- B --- Fair
- C --- Insufficient

3.4 Rice Mill
- A --- Necessary time to Mill All the Wet Palay less than 10 days
- B --- - ditto -, between 10 and 30 days
  - ditto -, more than 30 days
- C --- No Availability of Rice Mill

3.5 Transportation
- A --- Total Number of Tricycle and Jeepney per hectare > 1
- B --- 0.5 < - ditto - < 1
- C --- - ditto - < 0.5

3.6 Accessibility
- A --- Reaching Time to Municiparity less than 15 minutes.
- B --- - ditto - between 15 and 45 minutes.
- C --- - ditto - more than 45 minutes.

Table M-4-6 Budget Allocation per Hectare & per Person by Municiparity

Municipality	Administrative Area(sq.km.)	Population (1988)	1988 Budget Allocation (P)	BA Ratio (P/sq.km.)	BA Ratio (P/Person)
Concepcion	245.7	110,946	5,687,440	23,150	51
Bamban	133.1	33,311	1,404,615	10,555	42
Capas	440.0	48,388	3,437,855	7,815	71
Total	818.8	192,645	10,529,910	12,860	55

Table M-4-7 Budget Allocation by Municiparity

(Unit : Pesos , %)

Municipality	FY 1985	%	FY 1986	%	FY 1987	%	FY 1988	%	FY 1989	%
Concepcion	3,880,860	100	4,844,955	125	5,200,315	134	5,687,440	147	6,666,045	172
Bamban	1,003,275	100	1,171,335	117	1,247,595	124	1,404,615	140	2,165,110	216
Capas	1,836,280	100	1,860,790	101	2,804,305	153	3,437,855	187	4,054,845	221
Total	6,720,415	100	7,877,080	117	9,252,215	138	10,529,910	157	12,886,000	192

/ Base Year = 1985(100%) ; it consists of Special Education, Infrastructure and General Funds.

Table M-4-8 Description of Farms by Tenure
- Project Area as of September, 1989 -

Municipality	Barangay	No. of HHs		Area Covered		Ave.L.H.A(ha)	
		A.O	L.H	A.O	L.H	A.O	L.H
1. Capas	Cut-Cut I	19	4	101	15	5.3	4.0
	Cut-Cut II						
	Sto Rosario(Pob.)	45	10	178	17	4.0	1.7
	Sto Domingo I(Pob.)	23	4	56	17	2.4	4.3
	Sto Domingo II						
	Arangoran	220	23	496	73	2.3	3.2
	Manlapig	43		69		1.6	
	Estrada	262	1	335	4	1.3	4.0
	Lawy	171	6	318	11	1.9	1.8
	Sta Rita	208		264		1.3	
	Mangga	91		129		1.4	
	Dolores	238	1	376	3	1.6	3.0
	Talaga	150		268		1.8	
	Sta Lucia	22	12	52	15	2.4	1.3
	O'donnell	50	1	127	10	2.5	10.0
	Bueno						
	Sta Juliana						
	Maruglu						
	Cub-Cub(Pob.)	4		9		2.3	
	Sub-Total	1,538	62	2,777	166	1.8	2.7
2. Bamban	Malonzo	159		245		1.5	
	Bangcu	110		159		1.4	
	San Pedro	37		57		1.5	
	Culubasa	62	42	139	81	2.2	1.9
	Pacalcal	145	20	231	29	1.6	1.5
	San Rafael	69	12	113	18	1.7	1.5
	Dela Cruz	28	13	48	21	1.7	1.6
	La Paz	11	3	10	7	0.9	2.3
	Banaba	21		33		1.6	
	Lourdes		9		12		1.3
	San Roque		26		49		1.9
	San Nicolas(Pob.)	28		49		1.8	
	Anupul	45	14	152	23	3.4	1.6
	Sto Nino						
	San Vicente						
	Sub-Total	714	139	1,236	240	1.7	1.7
3. Concepcion	San Nicolas(Pob.)						
	Minane						
	San Francisco	183	5	482	12	2.6	2.4
	Dungan	85		172		2.0	
	Alfonso	7	4	25	15	3.6	3.8
	Santiago	149		261		1.8	
	Dutung A Metas	26		67		2.6	
	San Juan	64	9	184	28	2.9	3.1
	Sto Nino	96		296		3.1	
	Sta Rosa	125	12	253	21	2.0	1.8
	San Agustin						
	Tinang	186		393		2.1	
	Talimon,San Miguel	93	15	204	30	2.2	2.0
	Corazon De Jesus	48		135		2.8	
	Pitabunan	32	9	63	23	2.0	2.6
	Sta Maria	17	6	44	13	2.6	2.2
	San Jose	29	3	49	9	1.7	3.0
	Sta Cristo	4		10		2.5	
	Sta Cruz	186	9	596	28	3.2	2.2
	Sto Rosario	36	6	115	17	3.2	2.8
	Sta Monica	226	13	621	44	2.7	3.4
	Caluluan	37	3	99	7	2.7	2.3
	Parulong	57	7	130	16	2.3	2.3
	Pando						
	Mabilog						
	Parang	13		29		2.2	
	Cafe	57		193		3.4	
	Culalingan	145		458		3.2	
	Sta Rita	148		393		2.7	
	San Martin	157	1	358	6	2.3	6.0
	Lilibangan	138		242		1.8	
	Magao	26		98		3.5	
	Castillo	140		453		3.2	
	San Nicolas Balas	112		301		2.7	
	San Vicente	71		203		2.9	
	San Antonio	129	10	519	33	4.0	3.3
	Baluto	182	1	571	4	3.1	4.0
	San Bartolome	131	2	378	7	2.9	3.5
	San Isidro	123		436		3.5	
	Caflus Gueco	79	1	179	1	2.3	1.0
	Panalicgan	113	7	257	24	2.3	3.4
	Talimondoc Marimura	145		478		3.3	
	Telabanca	178		435		2.4	
	Malupa	85	1	212	2	2.5	2.0
	Green Village						
	Sub-Total	3,858	124	10,381	332	2.7	2.7
	Total	6,110	325	14,394	738	2.4	2.3

Note/ A.O -- Amortizing Owner
L.O -- Lease Holder
Ave. L.H.A. -- Average Land Holding Area
Columns in blank mean zero(0.00).

Source: DAR Municipal Offices in Capas, Bamban and Concepcion.

Table M-4-9 Land Holding Area By CIS

No.	Name of CIS	Potent'l Area(ha)	Farm Size Small(HHs)	Middle(HHs)	Large(HHs)
1	Bamban	1,051	416	200	2
2	San Pedro	120	75	127	1
3	Malonzo	240	135	52	1
4	Bangcu	700	21	158	1
5	Susuba-Cutcut	40	5	160	1
6	Telabanca	389	43	176	1
7	Sta Rita	135	1	140	1
8	Marita	100	15	125	1
9	San Martin	280	45	146	1
10	Baluto	740	1	29	30
11	Lilibangan	240	2	22	22
12	San Bartolome	375	14	148	2
13	San Isidro	635	26	220	9
14	Lucong	2,250	550	450	1
15	Magao	620	36	200	16
16	Tinang	850	18	228	1
17	Sto Rosario	200	11	86	1
18	Sta Monica	740	73	210	2
19	Caluluan	80	5	129	1
	Total	9,785	1,492	3,006	95

Source; Farm Economy Survey conducted by Study Team.
Discrepancies between the interviews and CIS statistics are estimated and adjusted.

Table M-4-10 Land Holding Area By CIS

No.	Name of CIS	Farm Size 0.5ha less	0.5-1.0ha	1.0-2.0ha	2.0-3.0ha	3.0-4.0ha	4.0-5.0ha	5.0ha Over
1	Bamban	-	295	121	200	-	1	1
2	San Pedro	-	9	66	127	1	-	-
3	Malonzo	6	60	69	52	-	-	1
4	Bangcu	-	8	13	158	-	1	-
5	Susuba-Cutcut	-	-	5	160	-	-	1
6	Telabanca	2	16	25	176	-	1	-
7	Sta Rita	-	1	-	140	-	-	1
8	Marita	-	1	14	125	1	-	-
9	San Martin	-	10	35	146	-	1	-
10	Baluto	-	-	1	29	21	8	1
11	Lilibangan	-	1	1	22	10	9	3
12	San Bartolome	-	2	12	148	1	1	-
13	San Isidro	-	-	26	220	5	3	1
14	Lucong	-	23	527	450	-	-	1
15	Magao	-	1	35	200	10	2	4
16	Tinang	-	1	17	228	-	1	-
17	Sto Rosario	-	2	9	86	-	-	1
18	Sta Monica	-	8	65	210	1	-	1
19	Caluluan	-	1	4	129	-	-	1
	Total	8	439	1,045	3,006	50	28	17

Source; Farm Economy Survey conducted by Study Team.
Discrepancies between the interviews and CIS statistics are estimated and adjusted.

Table M-4-11 List of Depressed Barangays

-- Project Area --

Municiparity		Barangay	Average Daily Income(P)	Average Food Consumption per Day(P)	Total Population	No. of farms	No. of Tenant	(%)	No. of Persons w/ no formal Education	No. of Temporary House
Capas	1	Maluglo	35	50	1,040	N.A	0	-	370	100
	2	Bueno	40	50	246	N.A	0	-	50	65
	3	Sta. Juliana	45	50	2,001	N.A	0	-	150	299
	4	Talaga	50	60	2,105	355	207	58%	430	100
	5	Sta. Rita	30	50	1,138	307	0	0%	200	
	6	Manga	30	50	880	65	0	0%	70	15
	7	Sto. Domingo II	25	30	2,948	30	0	0%	110	100
		Average	36.4	48.6	1,479.7	189.3		15%	197.1	113.2
Bamban	1	Pacalcal	25	50	1,099	329	161	49%	128	89
	2	Bangcu	25	50	215	68	7	10%	47	25
	3	Culbasa	25	40	211	62	3	5%	35	33
	4	Malonzo	12	50	829	303	121	40%	156	98
	5	De La Cruz	33	50	2,650	199	150	75%	100	180
	6	Anupul	30	40	4,480	380	216	57%	200	300
	7	San Pedro	30	30	1,831	263	161	61%	200	190
		Average	25.7	44.3	1,616.4	229.1		42%	124.9	138.7
Concepcion	1	Mabilog	37	35	1,780	N.A	170	-	215	115
	2	Caluluan	40	50	3,262	305	0	0%	155	286
	3	San Francisco	20	40	4,130	20	0	0%	28	29
	4	Cafe	33	40	2,638	114	64	56%	50	191
	5	San Juan	23	40	3,671	71	64	90%	85	153
	6	Sta. Monica	24	40	4,171	464	0	0%	83	300
	7	Parang	15	30	2,172	N.A	0	-	129	125
	8	Ligaya(Sitio)	22	30	4,130	25	0	0%	83	20
	9	Pando	23	60	1,591	N.A	0	-	56	91
	10	Sto. Cristo	30	65	852	25	6	24%	3	46
	11	Sta. Cruz	25	65	3,560	395	184	47%	39	111
	12	Sta. Maria	22	50	918	46	17	37%	6	70
	13	Lilibangan	23	50	660	120	59	49%	88	41
	14	San Vicente	27	75	773	134	64	48%	11	52
	15	Dungan	25	50	663	173	85	49%	10	88
	16	Castillo	23	65	1,868	291	133	46%	60	173
	17	San Bartolome	33	80	1,060	259	123	47%	35	81
	18	Magao	28	65	1,346	55	26	47%	11	84
	19	Sto. Rosario	22	20	1,271	96	36	38%	45	105
	20	Panalicsican	20	30	2,039	127	50	39%	263	100
	21	Pitabunan	22	30	1,152	71	32	45%	93	70
	22	Culatingan	15	15	2,703	199	0	0%	50	50
		Average	25.1	46.6	2,109.5	157.4		35%	72.6	108.3

Source: Sacobia Development Authority, Tarlac, Tarlac

Table M-4-12 Total NO. of Families, Total and Average Family Income and Expenditures by Expenditure Class in 1985

TARLAC

Expenditure Class / Area	Total Number of Families	Income		Expenditure	
		Total (P'000)	Average (P)	Total (P'000)	Average (P)
Under 10,000	16,576	134,325	8,104	110,871	6,689
10,000-14,999	26,559	380,450	14,325	336,019	12,652
15,000-19,999	22,808	479,216	21,011	402,653	17,654
20,000-29,999	35,250	974,248	27,638	853,533	24,214
30,000-39,999	17,061	634,801	37,208	590,715	34,624
40,000-59,999	11,026	623,772	56,573	524,930	47,608
60,000 and over	6,065	507,883	83,740	520,323	85,791

Source: Family Income and Expenditure Survey, 1985 (NCSO)

Table M-4-13 Number of Farmers Served, Area Covered and Amount of Production Loan Granted (Project Area 1988)

Bank	Nomber of Farmers Served	Area Covered (ha)	Amount of Loan (Pesos)	Muximum Loan Per HA
Government Banks				
PNB	5	105	283,000	3,000
DBP	167	207	955,163	5,000
LBP-Tarlac	636	2,235	6,701,386	3,000
LBP-Concepcion */	657	1,424	5,136,000	3,750
Commercial Banks				
PCIB	-	-	-	**/
UCPB	-	-	-	-
Cooperative Rural Bank of Tarlac	23	65	194,300	3,000
Tarlac Development Bank	25	38	69,446	***/
Rural Banks				
- Concepcion	350	4,650	14,372,020	3,750
- Bamban	214	650	2,368,400	3,750
NFA				
NFA	1	90	140,000	***/
Total	2,078	9,464	30,219,715	-

Source; Agri-support Survey conducted by Study Team

Note/ N.A -- Not Available
*/ In charge of Bamban and Capas Municiparities.
**/ Production Amount x 60% or less than Collateral.
***/ Depend upon Collateral.

Table M-4-14 Status of Formal Credit (P million)
- August, 1989 -

Bank	Total Loans	Agri. Loans	Industri. Comm. Loans	Other Loans	Attainment Target (Deposit)	Annual Loans (1988)	Annl. Agri Loans (1988)
Government Banks							
PNB	1.062	0.282	0.780	-	132.290 167.461	73.720	2.490
DBP	71.814	16.096	8.911	46.807	4.659 13.120	78.920	20.303
LBP-Tarlac	18.274	18.274	-	-	24.000 13.000	9.245	9.245
LBP-Concepcion */	1.693	1.693	-	-	7.600 14.000	5.700	5.700
Commercial Banks							
PCIB	-	-	-	-	-	-	-
UCPB	-	-	-	-	-	-	-
Cooperative Rural Bank of Tarlac	1.045	0.194	0.619	0.232	3.955 2.520	161.320	161.320
Tarlac Development Bank	6.825	0.853	0.740	5.232	N.A	6.224	0.772
Rural Banks							
- Concepcion	1.480	0.585	0.762	0.133	20.498 32.500	27.062	17.803
- Bamban	2.877	2.033	0.844	-	4.866 3.191	5.724	2.368
NFA							
NFA	108.592	1.600	-	106.992	1.600 40.000	283.504	1.600
Total	205.662	33.618	12.656	159.396	198.668 285.792 (69.5%)	571.419	221.591

Source: Agri-support Survey conduoted by Study Team

Note/ N.A -- Not Available
*/ In oharge of Bamban and Capas Municiparities.

Table M-4-15 Bank Interest Rate

Bank	Loans		Deposits	
	Short-Term Intrst.Rate(%)	Medium-Term Intrst.Rate(%)	Savings Accnt. Interest(%)	Time Deposit Interest(%)
Government Banks				
PNB	22.5%	24.5%	5%	9-13.5%
DBP	24%	24%	5%	13-17%
LBP-Tarlac, and Concepcion	To Coop. 12% To Indivsls 15%	18%	-	-
Commercial Banks				
PCIB *****/	23-27%	19-24%	6%	10-16%
UCPB *****/	22%	22%	4%	9-10%
Cooperative Rural Bank of Tarlac	20%	-	4.5%	8-11%
Tarlac Development Bank	24%	29%	6%	10-16%
Rural Banks				
- Concepcion	To Coop.*/ 12% To Coop.**/ 18% To Indivsls 24%	12%	5%	8-13.5%
- Bamban	27%	-	Same as above	8-16%
Others				
NFA	12-16% ***/	-	-	-
DTI	18% ****/	-	-	-

Source; Agri-support Survey conducted by Study Team

Note/ N.A -- Not Available
*/ Under Rural Industrization Can Happen (RICH) program. (1988-1992)
**/ Under Bagong Kilusang Kabuhayan at Kaunlaran (BKKK) program.
***/ Under Quedan Financing Program for Food Market Retailers
****/ Dealing with industrial loan only. DTI rends the loan to Tarlac People economic Foundation (TPEF) at the interest of 7% per annum, and TPEF extends it to the borrowers at 18% of annual interest. Individual borrowers can apply the loan at 25,000 pesos at max. As of September, 1989 a total of 65 borrowers are utilizing this loan, wherein, two from Capas, 10 from Concepcion, and one from Bamban Municiparity. Loan repayment is fevorablly at 100%. This loan is made by the name of TULONG SA TAO program.
*****/ Dealing with commercial loan only.

M.5 Felt Needs Survey

1) Expected Time to be Improved

Out of 45 Barangay Captains in the Concepcion Municiparity, the 42 Captains were interviewed. The question to them was "when will the subject development items realize?", and five kinds of selectable answers were prepared: viz. i) will be realized within 5 years, ii) -ditto-, within 10 years, iii) -ditto-, after 10 years, iv) impossible to realize, and v) no idea. In the tabulation table, the answers from i) to ii) are shown by mark "1", while the answers from iii) to v) are represented by mark "0". Since it is considered that the respondents tend to have the time horizon of a short time, mark "1" is considered as hopeful, while mark "0" is regarded as hopeless (refer to Tables M-5-1 to M-5-2).

Tabulation shows the considerable difference by item. The development items on which more than 50% of Barangay Captains considered to be hopeless are tabled as follows:

Development Item	Number of Barangay Captains Replied as Hopeless	%
Peace & Order in the Brgy.	23	55%
Post Office in the Brgy.	22	52%

While, the development items on which more than 80% of the respondents regarded to be hopeful are:

Development Item	Number of Barangay Captains Replied as Hopeless	%
Increasing of Farm to Market Rds.	35	83%
Upgrading of Educational Facilities	35	83%
Upgrading of Educational Quality	35	83%
Increasing of Health Care Personnel	35	83%

As of now, the majority of investment to the Province is allocated to above mentioned items, therefore these responses are considered as the reflection of the status quo in the area (refer to Tables M-5-1 to M-5-2).

2) Degree of Necessity for Each Item

The selectable answers constituted as: i) urgently needed, ii) needed in the near future, iii) needed in the far future, and iv) no need or no idea. The question were made toward 24 development items. Since the respondents are tend to have an overexpectation to the interviewer to implement the inquired development items, the readers should read between the lines.

According to the tabulation, more than 90% of respondents expressed the urgency for development toward the following items:

Development Items	Number of Barangay Captain who expressed the urgency	%
Farm to Market Road	39	93%
Health Care Facilities	38	90%

On the contrary, nearly a half respondents recognized the followings as not necessarily be developed so soon.

Development Items	Number of Barangay Captain who expressed the urgency	%
Potable Water	22	52%
College & University	29	69%
Institutional Development	19	45%

Through the field survey by the Consultant, the potable water in the area is proven to be superior both in quantitative and qualitative terms. There also exists enough number of college and university in the area, therefore, this is the reason why the respondents did not put the high priority on above items. They also put the low priority on institutional development because the inhabitants have seen so many failures and ineffectiveness of the institutional development projects which have been done solely by the lead of the Government (refer to Table M-5-3).

3) Degree of Satisfaction

For the respondents, five selectable answers were prepared. Those answers are classified by the degree of satisfaction for each item: viz. i) very satisfied, ii) satisfied, iii) no complaint, iv) unsatisfied, and v) very satisfied. In the analysis, the answers from i) to iii) are regarded to be no problem with the mark of "0", while iv) to v) are considered to be with prob-

lem with the mark of "1".

Tabulation revealed that more than 70% of Barangay Captains expressed their unsatisfaction for the following items:

Item	Number of Barangay Captain who expressed unsatisfaction	%
Supplementary Income Source	34	81%
Employment Opportunity	33	79%
Farm to Market Road	37	88%
Communication Facilities	30	71%
Irrigation Facilities	31	74%
Marketing Facilities	31	74%
Crediting Facilities	31	74%
Health Care Equipment	32	76%

While it was revealed that the following items were mostly satisfying the inhabitants in the area.

Item	Number of Barangay Captain who expressed unsatisfaction	%
Potable Water	6	14%
Electricity	15	36%
Population Control	14	33%
Agrarian Reform	10	24%

Most farmers in the area are unsatisfactory to the facilities related to income generation. For the preference of the Project therefore, the improvement not only for irrigation facilities, but also for post-harvest facilities inclusive of transportation and agro-processing fields are to be incorporated. Also, suitable suggestions on crediting institution are to be made. Rural development (a part of our project title) should be mainly stressed on the improvement of rural roads since the other

items are mostly satisfying the inhabitants in the area (refer to Tables M-5-4 to M-5-5).

The breakdown of five most needed items interviewed to 42 Barangay Captains proves above theory. With the exception of health care projects, their felt needs are mostly concentrating to the income generation projects such as improvement of road conditions, post-harvest and marketing facilities, and irrigation facilities. Institutional development through accelerating of the maximum inhabitants' participation to the Project needs corresponding implementation with the physical development, unless otherwise, the benefits accruable from the Project will be monopolized by a bundle of rich people as has ever happened in the country (refer to Table M-5-6).

Table M-5-1 Expected Time to be Improved (1)

Tabulation Format No. 5B
Felt Needs Survey

No.	Name	Living Condition		Financial & Eco Condition				Supporting Services			Supporting Services			Supporting Services			
		1.a	1.b	1.c	2.a	2.b	2.c	2.d	3.a	3.b	3.c.1	3.c.2	3.d	3.e.1	3.e.2	3.e.3	3.e.4
1	San Nicolas (Pob.)																
2	Minane	1	1	1	1	0	1	0	1	1	1	1	0	1	0	1	1
3	San Francisco	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	Dungan	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	Alfonso	1	0	1	1	0	1	1	1	0	1	1	1	1	0	0	0
6	Santiago	1	1	1	1	0	0	1	1	0	1	1	1	1	0	0	1
7	Dutung a Matas	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1
8	San Juan	0	1	0	0	0	0	0	1	0	1	1	1	1	0	0	1
9	Sto. Nino	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1
10	Sta. Rosa	1	0	0	1	1	1	1	0	0	1	1	0	1	1	1	0
11	San Agustin	1	0	0	1	0	0	0	0	0	1	1	0	1	1	1	1
12	Tinang	1	1	0	1	1	1	1	0	1	1	1	1	0	0	0	0
13	Talimundoc San Miguel	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1
14	Corazon de Jesus	1	0	1	1	0	0	1	0	0	1	0	0	1	0	0	0
15	Pitabunan	1	1	0	0	0	0	0	1	1	1	0	1	0	0	1	1
16	Sta. Maria	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1
17	San Jose	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Sto. Cristo																
19	Sta. Cruz	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	Sto. Rosario	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1
21	Sta. Monica	1	1	1	1	0	0	1	1	1	1	1	0	1	1	1	0
22	Caluluan	0	0	1	1	0	1	0	0	0	1	1	0	0	0	0	0
23	Parulong	0	0	1	0	0	1	0	0	0	1	1	0	0	0	0	0
24	Pando	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
25	Mabilog	1	0	1	0	0	0	1	0	0	1	1	0	1	1	1	0
26	Parang	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1
27	Cafe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
28	Culatingan	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
29	Sta. Rita	0	0	0	1	1	0	0	0	1	0	1	0	1	1	1	1
30	San Martin	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
31	Lilibangan																
32	Magao	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
33	Castillo	1	0	1	1	1	1	1	0	1	1	1	1	1	0	0	0
34	San Nicolas Balas	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
35	San Vicente	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
36	San Antonio	0	1	0	0	0	0	0	1	1	1	1	1	0	0	0	1
37	Baluto																
38	San Bartolome	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	San Isidro																
40	Calius Gueco	0	0	0	1	1	0	1	1	1	1	1	1	0	0	0	0
41	Panalicsican	0	0	0	1	1	1	1	0	0	0	0	1	0	0	0	0
42	Talimundoc Marimla	1	1	1	0	0	0	0	0	1	1	1	0	1	1	1	1
43	Telabanca	0	0	1	1	1	0	1	1	0	1	1	1	1	1	1	1
44	Malupa	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1
45	Green Village	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Total	27	19	26	29	22	23	26	22	23	35	33	25	28	20	23	26

Codes :
0 - Hopeless
1 - Hopeful

1 - General living condition
1.a - Daily living condition
1.b - Peace and order situation
1.c - Cost of living
2 - Financial/Economic condition
2.a - Satisfaction of income from agriculture
2.b - Live without depending on income from other sources
2.c - Area of farmland owned
2.d - Employment opportunities offered to the barangay
3 - Support services
3.a - Quality and quantity of drinking water
3.b - Electricity in the barangay
3.c - Farm to market roads
3.c.1 - Number
3.c.2 - Quality
3.d - Number of transportation plying the area
3.e - Communication facilities
3.e.1 - Telephone
3.e.2 - Post office
3.e.3 - Telegram
3.e.4 - Radio

(CONTINUED) Table M-5-2 Expected Time to be Improved (2)

Tabulation Format No. 58
Felt Needs Survey

Supporting Services			Supporting Services				Social Services			Social Services			Social Serc		Othe Gov	People Part
3.e.5	3.f	3.g	3.h	3.i.1	3.i.2	3.j	4.a	4.b	4.c.1	4.c.2	4.c.3	4.d	4.e	4.f	5	6
0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0
0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
0	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	0
1	1	1	1	1	1	1	1	1	0	0	0	1	0	1	0	0
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	0	0	1	1	1	0	1	1	1	1	1	1	0	1	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
0	1	1	0	0	0	0	1	1	1	0	0	1	0	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	1	1
0	0	0	0	0	0	1	1	1	1	1	0	0	0	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	1	1	1	1	1	1	1	0	1	1	0
1	1	1	0	0	0	0	1	0	1	1	1	0	1	0	0	0
1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	0	1
1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
26	30	28	29	29	30	29	35	35	35	33	33	28	29	31	32	22

3.e.5 - Newspaper
3.f - Irrigation facilities
3.g - Drainage facilities
3.h - Availability of farm machineries and tools
3.i - Post harvest and marketing facilities
3.i.1 - Availability
3.i.2 - Quality
3.j - Credit institutions
4 - social services
4.a - Educational physical facilities
4.b - Quality of services offered by the institution
4.c - Health services
4.c.1 - Personnel
4.c.2 - Health equipment
4.c.3 - Medicines
4.d - Moderate population growth
4.e - Commercial establishments
4.f - Agrarian Reform Program completely implemented
5 - Other governmental services reaching the area
6 - More active community participation by the people

Table M-5-3 Degree of Necessity for Each Item

Tabulation Format No. 5C
Felt Needs Survey

No.	Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	San Nicolas (Pob.)																								
2	Minane	3	3	3	3	3	2	3	3	3	2	3	3	3	3	3	2	2	0	3	3	0	3	3	3
3	San Francisco	3	3	3	3	3	2	2	3	3	2	3	2	3	3	3	3	3	3	3	3	3	3	3	2
4	Dungan	3	3	3	3	3	2	2	3	3	3	3	1	3	3	2	3	3	3	3	2	3	2	3	1
5	Alfonso	3	3	3	3	3	0	0	3	3	3	3	3	3	3	3	3	3	0	3	3	3	3	3	3
6	Santiago	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	0	3	3	3	3	3	3
7	Dutung a Matas	3	2	3	2	2	2	2	2	2	1	2	3	3	3	2	3	3	3	3	2	3	1	3	2
8	San Juan	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	0	3	3	0	0	3	3
9	Sto. Nino	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	0	3	3	2	3	3	3
10	Sta. Rosa	3	3	3	2	3	0	1	3	3	0	2	3	3	3	3	3	3	0	3	3	0	3	3	0
11	San Agustin	3	3	2	2	2	0	0	3	3	0	3	3	0	0	3	3	3	0	0	3	1	2	0	0
12	Tinang	3	3	2	3	3	0	2	3	2	2	0	3	3	3	1	3	3	0	3	2	3	3	3	3
13	Talimundoc San Miguel	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	0	3	3	3	3	3	3
14	Corazon de Jesus	3	3	3	3	3	0	0	3	3	0	3	3	3	3	3	2	2	0	3	3	3	0	3	0
15	Pitabunan	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	3	3	3	3	3	3
16	Sta. Maria	3	3	3	3	3	3	0	3	3	2	2	2	3	3	3	2	2	1	3	3	2	2	2	2
17	San Jose	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	3	3	3	3
18	Sto. Cristo																								
19	Sta. Cruz	3	3	3	3	3	3	0	3	3	3	3	3	3	3	3	3	3	0	3	3	3	3	3	3
20	Sto. Rosario	3	3	3	3	3	1	1	3	3	2	3	2	2	3	3	2	1	1	3	2	2	1	3	1
21	Sta. Monica	3	3	3	3	3	3	3	3	3	0	3	3	0	0	3	3	3	0	3	0	3	0	3	0
22	Calutuan	3	2	2	3	3	0	0	3	3	3	0	3	3	3	3	3	3	0	3	3	0	3	3	0
23	Parulong	3	3	3	3	3	0	0	3	3	0	3	3	3	3	3	3	0	0	3	3	0	3	3	0
24	Pando	3	0	3	0	0	0	0	3	3	3	3	0	0	0	3	3	3	3	3	3	0	0	3	0
25	Mabilog	3	0	3	0	3	0	0	3	3	3	3	0	0	0	3	3	3	0	3	3	3	0	3	0
26	Parang	3	3	3	3	2	2	2	3	3	2	3	3	3	3	3	3	3	3	3	2	3	3	3	2
27	Cafe	3	3	3	3	3	0	0	3	3	3	3	3	3	3	3	3	3	0	3	0	3	3	3	3
28	Culatingan	3	3	3	3	3	1	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3
29	Sta. Rita	2	3	3	2	3	1	3	3	3	3	3	3	3	3	3	3	0	0	3	3	3	3	3	2
30	San Martin	3	3	3	3	3	1	2	3	3	3	3	2	3	3	3	3	3	3	3	2	3	2	3	2
31	Lilibangan																								
32	Magao	3	3	3	3	3	2	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	2	3	2
33	Castillo	3	3	3	3	3	3	3	3	3	0	2	3	3	3	3	3	3	0	3	0	3	3	3	0
34	San Nicolas Balas	3	3	3	3	3	0	3	3	3	3	3	3	3	3	3	3	3	0	3	3	3	3	3	3
35	San Vicente	3	3	0	3	3	0	0	3	3	3	0	3	3	3	3	3	0	0	3	0	3	3	3	0
36	San Antonio	3	3	3	3	3	3	3	3	3	3	1	3	3	3	3	3	3	2	3	3	1	3	3	3
37	Baluto																								
38	San Bartolome	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
39	San Isidro																								
40	Calius Gueco	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	0	3	3	3	3	3	3
41	Panalicsican	3	3	3	3	3	0	3	3	3	0	0	3	3	3	3	3	0	0	3	3	0	3	3	0
42	Talimundoc Marimla	3	3	3	3	3	0	3	3	3	3	0	3	3	3	3	3	0	0	3	0	3	3	3	0
43	Telabanca	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
44	Malupa	3	3	3	3	3	2	2	3	3	2	3	2	3	3	3	3	3	3	3	2	3	2	3	1
45	Green Village	2	3	3	3	3	2	2	3	3	2	3	3	3	3	3	3	3	2	3	3	3	3	3	3
	Total	115	109	112	107	111	59	71	116	115	86	97	103	104	105	113	113	96	48	114	93	89	92	113	68

Codes :
0 - No need or no idea
1 - Needed in the far future
2 - Needed in the near future
3 - Urgently needed

1 - Living condition
2 - Income from agriculture
3 - Income from other sources
4 - Land holding area so that farmers can create enough income
5 - Employment opportunities in the barangay so that farmers can get off-farm jobs
6 - Quantity and quality of drinking water
7 - Electricity
8 - Farm to market road
9 - Road condition
10 - Means of transportation
11 - Communication facilities such as telephone, post office, etc.
12 - Irrigation and drainage facilities in order to obtain bigger production
13 - Quality of farm machinery and tools to smoothen the farming activities
14 - Post harvest and marketing facilities
15 - Credit institution
16 - Education facilities
17 - Educational institution up to high school
18 - Educational institution up to college
19 - Health care facilities and services
20 - Attainment of ideal growth with decrease of malnutrition and prolongment of average life span
21 - Commercial areas
22 - Implementation of agrarian reform program
23 - Number of government programs reaching the area
24 - Community participation of the residents

Table M-5-4 Degree of Satisfaction (1)

Tabulation Format No. 5A
Felt Needs Survey

No.	Name	Living Condition			Financial & Eco Condition				Supporting Services			Supporting Services			Supporting Services				Supporting Services
		1.a	1.b	1.c	2.a	2.b	2.c	2.d	3.a.1	3.a.2	3.b	3.c	3.d	3.e	3.f.1	3.f.2	3.f.3	3.f.4	3.g
1	San Nicolas (Pob.)																		
2	Minane	0	0	1	1	1	1	1	0	0	0	1	1	0	0	1	1	0	1
3	San Francisco	1	1	1	1	1	1	1	0	0	0	1	1	0	1	1	1	0	0
4	Dungan	1	0	1	1	1	1	1	0	0	0	1	1	1	1	1	1	0	0
5	Alfonso	1	0	1	1	1	1	1	0	0	1	1	1	0	0	0	0	0	1
6	Santiago	0	0	1	1	1	1	1	0	0	0	1	1	1	1	1	1	0	1
7	Dutung a Matas	1	0	0	1	1	1	0	0	0	0	0	1	0	1	1	1	1	1
8	San Juan	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	0	1
9	Sto. Nino	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1
10	Sta. Rosa	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	0	1	1
11	San Agustin	1	0	1	1	1	1	1	0	0	0	0	1	0	1	1	1	1	1
12	Tinang	1	0	1	0	1	1	1	0	0	1	1	1	0	1	1	1	0	1
13	Talimundoc San Miguel	1	0	1	0	0	1	1	0	0	0	1	1	1	1	1	1	0	1
14	*Corazon de Jesus*	1	0	1	1	0	1	1	0	0	0	0	1	0	1	1	1	0	1
15	Pitabunan	1	0	1	1	0	1	1	0	0	0	1	1	1	1	1	1	0	1
16	Sta. Maria	1	0	1	1	1	1	1	1	1	0	1	1	1	0	0	0	0	1
17	San Jose	1	0	1	1	1	1	1	1	1	0	1	1	0	1	1	0	0	1
18	Sto. Cristo																		
19	Sta. Cruz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
20	Sto. Rosario	1	0	1	1	1	1	1	0	0	0	1	1	1	1	1	1	0	0
21	Sta. Monica	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	0	1
22	Caluluan	1	0	1	1	1	1	1	0	0	0	1	1	1	0	0	0	1	1
23	Parulong	0	0	1	1	1	1	1	0	0	0	1	1	0	0	0	0	1	1
24	Pando	1	0	1	1	1	1	0	0	0	1	1	1	0	0	0	0	1	0
25	Mabiloc	0	0	1	0	0	0	0	0	0	0	1	1	0	1	1	1	1	0
26	Parang	1	0	1	1	1	0	1	0	0	0	1	1	0	1	1	1	0	1
27	Cafe	1	0	1	1	0	1	1	0	0	0	1	1	0	1	1	1	0	1
28	Culatingan	1	0	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	1
29	Sta. Rita	1	0	0	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1
30	San Martin	1	0	1	1	1	0	1	0	0	1	1	1	0	1	1	1	1	1
31	Lilibangan																		
32	Magao	1	0	1	1	0	1	1	0	0	1	1	1	1	1	1	1	1	0
33	Castillo	1	0	1	1	0	1	1	0	1	1	1	1	1	1	1	0	0	1
34	San Nicolas Balas	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	0	1
35	San Vicente	1	0	1	1	1	1	1	0	0	0	1	1	1	1	1	1	0	1
36	San Antonio	0	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	0	1
37	Baluto																		
38	San Bartolome	1	0	0	1	1	1	0	0	0	0	0	1	1	0	0	0	0	0
39	*San Isidro*																		
40	Calius Gueco	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
41	Panalicsican	0	0	1	1	1	1	1	0	0	1	1	1	1	0	0	0	0	1
42	Talimundoc Marimla	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	1	1
43	Telabanca	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0
44	Malupa	1	0	1	1	1	1	1	0	0	0	1	1	0	1	1	1	0	1
45	Green Village	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	31	6	34	34	29	34	33	6	7	15	33	37	20	38	31	28	10	31

Codes :
0 - No Problem
1 - With Problem

1 - General living perception in the barangay
1.a - Daily living condition
1.b - Peace and order situation
1.c - Cost of living
2 - Financial/Economic condition
2.b - Total area of farmland in the barangay as source of income
2.c - Income from other occupation
2.d - Employment opportunities offered by the barangay/municipality to residents
3 - Support services
3.a.1 - Drinking water quantity
3.a.2 - Drinking water quality
3.b - Electricity in the barangay
3.c - Farm to market roads
3.d - Condition of road and other thorougfares in the barangay
3.e - Availability of transportation plying the area
3.f - Availability of communication facilities in the area
3.f.2 - Telephone
3.f.3 - Post office
3.f.4 - Radio
3.f.5 - Newspaper
3.g - Operation of irrigation facilities

(CONTINUED)

Table M-5-5 Degree of Satisfaction (2)

Tabulation Format No. 5A
Felt Needs Survey

Supporting Services				Supporting Services			Social Services			Social Services		Social Services		Social Services			Social Services			CARP
3.h	3.i	3.j	3.j.1	3.k	3.k.1	3.l	4.a.1	4.a.2	4.a.3	4.b.1	4.b.2	4.b.3	4.c.1	4.c.2	4.c.3	4.d	4.e.1	4.e.2	5
1	0	1	1	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
1	0	1	1	1	1	1	0	0	0	1	0	0	0	0	0	0	1	1	1
1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0	1	1	0
1	1	0	1	0	0	0	1	1	1	1	1	1	0	1	1	0	1	1	0
0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
0	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0
1	1	1	1	1	1	0	1	0	0	0	1	0	1	1	1	0	0	0	0
1	0	0	0	1	1	1	0	0	0	0	0	0	0	1	1	1	0	0	0
0	0	0	0	1	1	1	0	1	1	0	1	1	1	0	1	1	1	1	0
0	0	1	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	1	1	0	1	1	0	1	1	1	0	1	1	1	1	0
0	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	0	1	1	0
1	1	1	1	1	1	1	1	0	0	1	0	0	1	1	1	0	0	0	1
1	1	1	1	1	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0
1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
0	0	0	1	1	1	1	0	1	1	1	1	1	0	1	1	0	1	1	0
0	0	0	0	1	1	1	0	1	1	0	1	1	1	0	1	1	1	1	0
0	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	0	1	1	0
1	1	1	1	1	1	1	1	0	0	1	0	0	1	1	1	0	0	0	1
1	1	1	1	1	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0
1	1	0	0	1	1	1	1	1	0	1	1	0	1	1	1	0	1	1	1
1	1	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	1	0	0
1	1	1	1	1	1	1	1	0	0	1	0	0	1	1	1	0	0	0	1
1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	0	1	1	0
1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1
1	0	0	0	1	1	1	0	0	0	0	0	0	1	1	1	0	0	0	0
1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	0	1	1	1
0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	1	1	0
1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	25	27	26	32	30	31	25	27	18	21	23	17	22	31	32	14	30	29	18

3.h - Operation of drainage facilities in the area
3.i - Availability of farm machinery and tools in the barangay
3.j - Availability of post-harvest facilities in the area
3.j.1 - Quality of post-harvest facilities in the area
3.k - Availability of marketing facilities in the area
3.k.1 - Quality of marketing facilities in the area
3.l - Availability of lending/credit institutions in the area
4 - Social services
4.a - Sufficient educational institutions in the area
4.a.1 - Elementary school
4.a.2 - High school
4.a.3 - College
4.b - Services offered by the educational institutions
4.b.1 - Elementary
4.b.2 - High school
4.b.3 - College
4.c - Health services offered in the barangay
4.c.1 - Health personnel (i.e. nurse, midwife, etc.)
4.c.2 - Health equipment
4.c.3 - Medicine
4.d - Effectivity of population control measures in the area
4.e - Commercial establishments in the area
4.e.1 - Number
4.e.2 - Items offered
5 - Progress of Agrarian Reform Program in the area

Table M-5-6 Five (5) Most Needed Items by Barangay

Felt Needs Survey

No.	Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	San Nicolas (Pob.)																								
2	Minane			1		1			1	1			1												
3	San Francisco								1				1	1	1					1					
4	Dungan					1			1				1			1				1					
5	Alfonso								1	1			1	1			1								
6	Santiago					1			1				1	1						1					
7	Butung a Matas					1				1			1	1						1					
8	San Juan	1	1			1										1	1								
9	Sto. Nino					1				1			1							1					
10	Sta. Rosa								1			1	1			1				1					
11	*San Agustin*								1	1			1			1	1								
12	Tinang	1				1			1				1		1										
13	Talimundoc San Miguel			1					1	1					1									1	
14	Corazon de Jesus			1		1			1							1				1					
15	Pitabunan					1				1			1	1						1					
16	Sta. Marie								1	1					1	1				1					
17	San Jose					1				1			1							1		1			
18	Sto. Cristo																								
19	Sta. Cruz	1								1							1			1					1
20	Sto. Rosario								1					1	1		1			1					
21	Sta. Monica											1	1			1	1			1					
22	Caluluan					1					1	1	1				1								
23	Parulong								1			1	1				1			1					
24	Pando								1		1	1					1			1					
25	Mabilog									1	1						1			1		1			
26	Parang								1				1				1			1			1		
27	Cafe								1				1		1		1			1					
28	Culatingan		1						1	1			1							1					
29	Sta. Rita							1		1		1	1			1									
30	San Martin								1				1	1	1					1					
31	Lilibangan																								
32	Magao							1	1					1	1					1					
33	Castillo							1		1			1			1	1								
34	San Nicolas Balas								1	1					1		1			1					
35	San Vicente								1		1		1		1									1	
36	San Antonio					1				1			1		1					1					
37	Baluto																								
38	San Bartolome								1						1	1				1				1	
39	San Isidro																								
40	*Callus Gueco*							1	1	1			1			1									
41	Panalicsican							1	1	1						1				1					
42	Taliaundoc Mariala							1	1				1			1				1					
43	Talabanca					1			1					1		1								1	
44	Malupa								1				1	1	1					1					
45	Green Village					1			1	1			1			1									
	Total	3	2	3	0	14	0	6	28	19	4	6	27	10	13	15	14	0	0	27	0	2	1	4	1

Codes :

1 - Living condition
2 - Income from agriculture
3 - Income from other sources
4 - Land holding area so that farmers can create enough income
5 - Employment opportunities in the barangay so that farmers can get off-farm jobs
6 - Quantity and quality of drinking water
7 - Electricity
8 - Farm to market road
9 - Road condition
10 - Means of transportation
11 - Communication facilities such as telephone, post office, etc.
12 - Irrigation and drainage facilities in order to obtain bigger production
13 - Quality of farm machinery and tools to smoothen the farming activities
14 - Post harvest and marketing facilities
15 - Credit institution
16 - Education facilities
17 - Educational institution up to high school
18 - Educational institution up to college
19 - *Health care facilities and services*
20 - Attainment of ideal growth with decrease of malnutrition and prolongment of average life span
21 - Commercial areas
22 - Implemetation of agrarian reform program
23 - Number of government programs reaching the area
24 - Community participation of the residents

M.6 Crop Budget Analysis

Paddy cultivation is the predominant in the Study area. For a long time, the arguments for the importance of crop diversification have been continuously made in the country, however the difficulty in crop selection in terms of marketability is preventing the producers from its promotion. Crop budget analysis for the major crops in the area denote that presently, the cash production cost per hectare ranges from 4,870 pesos at the minimum for rainfed paddy to 12,184 pesos at the maximum for dry season paddy irrigated by pump. The cash production costs affect to farmers' intention for crop diversification, because it will directly reflect the farmers' present cash holding amount: say, if he dose not have enough capital for investment, he can not afford to introduce profitable crops with costly production cost.

Through the Project, the profit cost ratio of crop production will increase. The biggest increase will be brought about by the conversion from pump irrigated palay to GCC irrigated palay (both in dry season cultivation) at the rate from 0.38 to 1.05 (or 2.76 times). As of now, due to the business upturn of world sugar market, profit cost ratio of sugarcane is superior to other crops at 1.81. Although its cash balance is higher than that of wet season palay, it is lower than the sum of wet and dry season palay. It means that in case palay cultivation is undertaken only once a year, sugarcane is more profitable, vise-versa, if palay is harvested more than once a year, palay cultivation generate better income.

Young corn cultivation is recommended as aspiring crop diversification in the area. Presently, potential demand of corn as the feeding material of duck raising is mushrooming especially in the Tarlac Province and almost all corn for feed is forwarded from other provinces. Also, young corn has favorable market in Manila metropolitan area especially for Chinese inhabitants. Table M-6-8 shows not so good ratio, but actually if quality of the product will be upgraded, there has much possibility to exceed the level of estimated ratio at 0.40.

Egg plantation is mainly performed in Lilibangan CIS with high profitability. Although its plantation is costly in cash, the producers are getting good income obtained through contract forwarding to Manila. This fact proves that higher marketability is brought about not only from the kind of crops he cultivated, but also from the method he sold.

The profit cost ratio of livestock is rather high comparing with crops. However, the farmers are very hard to increase the number of livestock due to the requirement of high initial capital and continual cash cost for feeding (refer to Tables M-6-1 to M-6-13).

Crop budget analysis in economic viewpoint is shown in the succeeding pages (refer to Tables N-14 to N-24 in Appendix N).

Table M-6-1 Production Cost per Hectare - Gravity-Irrigated Palay - PRESENT & FUTURE W/O PROJECT SITUATION

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor	53 Md	52 Md	65	65	3,445	3,380
2. Material Inputs						
- Seeds	75 kg	90 kg	3.76	3.76	282	338
- Fertilizer						
* Urea	2.5 Bag	3.5 Bag	210	210	525	735
* Complete (14-14-14)	2 Bag	2 Bag	250	250	500	500
- Pesticides/Chemicals						
* Granular Insecticide	1 Bag	1 Bag	310	310	310	310
* Quarts Contact Insecticide	1 qt.	1 qt.	250	250	250	250
* Herbicides	0.4 l	0.3 l	170	170	68	51
3. Others */					2,152	2,226
4. Sub-total					7,532	7,790
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Seedbed Preparation	1.3 Md	1.1 Md	65	65	85	72
- Land Preparation	8.3 Md	5.6 Md	65	65	540	364
- Repair of Dikes	1.1 Md	1.3 Md	65	65	72	85
- Pulling and Terms-planting	3.3 Md	2.4 Md	65	65	215	156
- Transplanting	6.6 Md	4.8 Md	65	65	429	312
- Fertilizer Application	0.7 Md	0.8 Md	65	65	46	52
- Weeding	2.4 Md	4 Md	65	65	156	260
- Chemical Application	0.7 Md	0.5 Md	65	65	46	33
- Water Management	1.7 Md	2.3 Md	65	65	111	150
- Harvesting & Others	13.6 Md	3.7 Md	65	65	884	241
- Threshing and Winnowing **/	0.7 Md	1.3 Md	65	65	46	85
- Drying, Hauling, Transpotation & Others	1.1 Md	0.8 Md	65	65	72	52
2. Others ***/					135	93
3. Sub-total					2,803	1,952
III. Total Production Costs					10,365	9,742
IV. Total Returns	74 cav	82 cav	155	205	11,470	16,810
V. Cash Costs			****/	****/	7,532	7,790
VI. Cash Balance					3,938	9,020
VII. Profit Cost Ratio					0.52	1.16

Note; */ Include land rental/amortization, interest on loan, irrigation fee, land tax, and other miscellaneous expenses.
**/ Man-animal and man-machine costs combined.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.
****/ Average farm gate price multiplied by 50 kg (= 1 cavan).
Average farm gate price of palay is P3.1/kg in wet season, and P4.1/kg in dry season, respectively.

Source; Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,MOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table M-6-2 Production Cost per Hectare - Gravity-Irrigated Palay - FUTURE W/ PROJECT SITUATION

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor	61 Md	69 Md	65	65	3,965	4,485
2. Material Inputs						
- Seeds	60 kg	60 kg	3.76	3.76	226	226
- Fertilizer						
* Nitrogen	75 Kg	98 Kg	9.1	9.1	683	892
* Phosphorous	28 Kg	28 Kg	11.9	11.9	333	333
* Potassium	28 Kg	28 Kg	4.9	4.9	137	137
- Pesticides/Chemicals						
* Insecticide	2 l	2 l	300	300	600	600
* Fungicide	1 l	1 l	280	280	280	280
* Herbicides	10 kg	10 kg	6	6	60	60
3. Others */					2,513	2,805
4. Sub-total					8,797	9,818
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Seedbed Preparation	1 Md	1 Md	65	65	65	65
- Land Preparation	8 Md	8 Md	65	65	520	520
- Repair of Dikes	1 Md	1 Md	65	65	65	65
- Pulling and Terms-planting	3 Md	3 Md	65	65	195	195
- Transplanting	7 Md	7 Md	65	65	455	455
- Fertilizer Application	2 Md	2 Md	65	65	130	130
- Weeding	4 Md	4 Md	65	65	260	260
- Chemical Application	2 Md	2 Md	65	65	130	130
- Water Management	4 Md	5 Md	65	65	260	325
- Harvesting & Others	16 Md	4 Md	65	65	1,040	260
- Threshing and Winnowing **/	1 Md	1 Md	65	65	65	65
- Drying, Hauling, Transpotation & Others	2 Md	1 Md	65	65	130	65
2. Others ***/					166	127
3. Sub-total					3,481	2,662
III. Total Production Costs					12,278	12,480
IV. Total Returns	90 cav	100 cav	200	250	18,000	25,000
V. Cash Costs			****/	****/	8,797	9,818
VI. Cash Balance					9,204	15,182
VII. Profit Cost Ratio					1.05	1.55

Note; */ Include land rental/amortization, interest on loan, irrigation fee, land tax, and other miscellaneous expenses.
**/ Man-animal and man-machine costs combined.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.
****/ Farm gate prices of palay of P4.0/kg in wet season and P5.0/kg in dry season were assumed

Source; Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,MOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table M-6-3 Production Cost per Hectare
- Pump-Irrigated Palay -
PRESENT & FUTURE W/O PROJECT SITUATION

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs	1/		1/		1/	
1. Farm Labor						
- Hired Farm Labor	53 Md	52 Md	65	65	3,445	3,380
2. Material Inputs						
- Seeds	75 kg	90 kg	3.76	3.76	282	338
- Fertilizer						
* Urea	2.5 Bag	3.5 Bag	210	210	525	735
* Complete (14-14-14)	2 Bag	2 Bag	250	250	500	500
- Pesticides/Chemicals						
* Granular Insecticide	1 Bag	1 Bag	310	310	310	310
* Quarts Contact Insecticide	1 qt.	1 qt.	250	250	250	250
* Herbicides	0.4 l	0.3 l	170	170	68	51
3. Pumping Cost						
-Fuel(diesel) 2/	360 l	360 l	5.12	5.12	1,843	1,843
-Oil and Lubricants	1 LS.	1 LS.	150	150	150	150
-Repair	1 LS.	1 LS.	500	500	500	500
4. Others */					2,052	4,126
5. Sub-total					9,925	12,184
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Seedbed Preparation	1.3 Md	1.1 Md	65	65	85	72
- Land Preparation	8.3 Md	5.6 Md	65	65	540	364
- Repair of Dikes	1.1 Md	1.3 Md	65	65	72	85
- Pulling and Trans-planting	3.3 Md	2.4 Md	65	65	215	156
- Transplanting	6.6 Md	4.8 Md	65	65	429	312
- Fertilizer Application	0.7 Md	0.8 Md	65	65	46	52
- Weeding	2.4 Md	4 Md	65	65	156	260
- Chemical Application	0.7 Md	0.5 Md	65	65	46	33
- Water Management	1.7 Md	2.3 Md	65	65	111	150
- Harvesting & Others	13.6 Md	3.7 Md	65	65	884	241
- Threshing and Winnowing **/	0.7 Md	1.3 Md	65	65	46	85
- Drying, Hauling, Transpotation & Others	1.1 Md	0.8 Md	65	65	72	52
2. Others ***/					135	93
3. Sub-total					2,833	1,952
III. Total Production Costs					12,758	14,136
IV. Total Returns	74 cav	82 cav	155	205	11,470	16,810
V. Cash Costs			****/	****/	9,925	12,184
VI. Cash Balance					1,545	4,626
VII. Profit Cost Ratio					0.16	0.38

Note: */ Include land rental/amortization, interest on loan, land tax, annual payment for loan of pump facilities and other miscellaneous expenses. Annual payment for loan of pump facilities was estimated at P2,000.
**/ Man-animal and man-machine costs combined.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.
****/ Average farm gate price multiplied by 50 kg (= 1 cavan). Average farm gate price of palay is P3.1/kg in wet season, and P4.1/kg in dry season, respectively.
1/ Only a part of Baluto CIS is by pump-irrigation during the wet season.
2/ Dry Season; @ 4lit./day x 90days, Wet Season(Baluto CIS); @4lit./day x 90days.

Source; Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,MOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table M-6-4 Production Cost per Hectare
- Pump-Irrigated Palay by Existing Facilities -
FUTURE W/ PROJECT SITUATION

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor	69 Md		65			4,485
2. Material Inputs						
- Seeds	60 kg		3.76			226
- Fertilizer						
* Nitrogen	98 Kg		9.1			892
* Phosphorous	28 Kg		11.9			333
* Potassium	28 Kg		4.9			137
- Pesticides/Chemicals						
* Insecticide	2 l		300			600
* Fungicide	1 l		280			280
* Herbicides	10 kg		6			60
3. Pumping Cost						
-Fuel(diesel) 1/	360 l		5.12			1,843
-Oil and Lubricants	1 LS.		150			150
-Repair	1 LS.		500			500
4. Others */						4,705
5. Sub-total						14,211
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Seedbed Preparation	1 Md		65			65
- Land Preparation	8 Md		65			520
- Repair of Dikes	1 Md		65			65
- Pulling and Trans-planting	3 Md		65			195
- Transplanting	7 Md		65			455
- Fertilizer Application	2 Md		65			130
- Weeding	4 Md		65			260
- Chemical Application	2 Md		65			130
- Water Management	5 Md		65			325
- Harvesting & Others	4 Md		65			260
- Threshing and Winnowing **/	1 Md		65			65
- Drying, Hauling, Transpotation & Others	1 Md		65			65
2. Others ***/						127
3. Sub-total						2,662
III. Total Production Costs						16,873
IV. Total Returns	100 cav		250			25,000
V. Cash Costs					****/	14,211
VI. Cash Balance						10,789
VII. Profit Cost Ratio						0.76

Note; */ Include land rental/amortization, interest on loan, land tax, annual payment for loan of pump facilities and other miscellaneous expenses. Annual payment for loan of pump facilities was estimated at P2,000.
**/ Man-animal and man-machine costs combined.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.
****/ Farm gate price of palay of P5.0/kg in dry season is assumed.
1/ @ 4lit./day x 90days.

Source; Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,MOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table M-6-5 Production Cost per Hectare
- Pump-Irrigated Palay by Proposed Facilities -
FUTURE W/ PROJECT SITUATION

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor	69 Md		65		4,485	
2. Material Inputs						
- Seeds	60 kg		3.76		226	
- Fertilizer						
* Nitrogen	98 Kg		9.1		892	
* Phosphorous	28 Kg		11.8		333	
* Potassium	28 Kg		4.9		137	
- Pesticides/Chemicals						
* Insecticide	2 l		300		600	
* Fungicide	1 l		280		280	
* Herbicides	10 kg		6		60	
3. Pumping Cost						
-Fuel(diesel) 1/	380 l		5.12		1,843	
-Oil and Lubricants	1 LS.		150		150	
-Repair	1 LS.		500		500	
4. Others */					2,705	
5. Sub-total					12,211	
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Seedbed Preparation	1 Md		65		65	
- Land Preparation	8 Md		65		520	
- Repair of Dikes	1 Md		65		65	
- Pulling and Terms-planting	3 Md		65		195	
- Transplanting	7 Md		65		455	
- Fertilizer Application	2 Md		65		130	
- Weeding	4 Md		65		260	
- Chemical Application	2 Md		65		130	
- Water Management	5 Md		65		325	
- Harvesting & Others	4 Md		65		260	
- Threshing and Winnowing **/	1 Md		65		65	
- Drying, Hauling, Transpotation & Others	1 Md		65		65	
2. Others ***/					127	
3. Sub-total					2,662	
III. Total Production Costs					14,673	
IV. Total Returns	100 cav		250		25,000	
V. Cash Costs			****/		12,211	
VI. Cash Balance					12,789	
VII. Profit Cost Ratio					1.05	

Note; */ Include land rental/amortization, interest on loan, land tax and other miscellaneous expenses.
**/ Man-animal and man-machine costs combined.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.
****/ Farm gate price of palay of P5.0/kg in dry season is assumed.
1/ @ 4lit./day x 80days.

Source; Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,NOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table M-6-6 Production Cost per Hectare
- Rainfed Palay -

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor	40 Md		65		2,600	
2. Material Inputs						
- Seeds	75 kg		3.76		282	
- Fertilizer						
* Urea	1.5 Bag		210		315	
* Complete (14-14-14)	1 Bag		250		250	
- Pesticides/Chemicals						
* Granular Insecticide	1 bag		310		310	
* Quarts Contact Insecticide	1 qt.		250		250	
* Herbicides	0.3 l		170		51	
3. Others */					812	
4. Sub-total					4,870	
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Seedbed Preparation	1.4 Md		65		91	
- Land Preparation	4.2 Md		65		273	
- Repair of Dikes	1.2 Md		65		78	
- Pulling and Terms-planting	3.5 Md		65		228	
- Transplanting	3.9 Md		65		254	
- Fertilizer Application	0.6 Md		65		39	
- Weeding	3.4 Md		65		221	
- Chemical Application	0.9 Md		65		59	
- Water Management	2.9 Md		65		189	
- Harvesting & Others	4.1 Md		65		267	
- Threshing and Winnowing **/	1.1 Md		65		72	
- Drying, Hauling, Transpotation & Others	1.6 Md		65		104	
2. Others ***/					34	
3. Sub-total					1,966	
III. Total Production Costs					6,836	
IV. Total Returns	40 cav		155		6,200	
V. Cash Costs			****/		4,870	
VI. Cash Balance					1,330	
VII. Profit Cost Ratio					0.27	

Note; */ Include land rental/amortization, interest on loan, land tax, and other miscellaneous expenses.
**/ Man-animal and man-machine costs combined.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.
****/ Farm gate price of palay at P3.1/kg was assumed.

Source; Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,NOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table M-6-7 Production Cost per Hectare
- Corn -
PRESENT & FUTURE W/O SITUATION

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor		61 Md		65		3,965
2. Material Inputs						
- Seeds		16 kg		6.5		104
- Fertilizer						
* Urea		2 Bag		210		420
* Complete (14-14-14)						
- Pesticides/Chemicals						
* Granular Insecticide						
* Quarts Contact Insecticide		1 l		300		300
* Herbicides						
3. Others */						1,916
4. Sub-total						6,705
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Land Preparation		5.9 Md		65		384
- Seeding		4 Md		65		260
- Fertilizer Application		3.5 Md		65		228
- Chemical Application		2.8 Md		65		182
- Cultivation		15.9 Md		65		1,034
- Water Management		2.9 Md		65		189
- Harvesting & Others		12.4 Md		65		806
- Hauling, Transpotation & Others		2.7 Md		65		176
2. Others ***/						163
3. Sub-total						3,420
III. Total Production Costs						10,125
IV. Total Returns		60 sac (50kg/sack)		150		9,000
V. Cash Costs						6,705
VI. Cash Balance						2,295
VII. Profit Cost Ratio						0.34

Note; */ Include land rental/amortization, interest on loan, land tax, and other miscellaneous expenses.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.

Source; Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,MOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table M-6-8 Production Cost per Hectare
- Corn -
FUTURE W/ SITUATION

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor		71 Md		65		4,615
2. Material Inputs						
- Seeds		20 kg		6.5		130
- Fertilizer						
* Nitrogen		95 kg		9.1		865
* Phosphorous		28 kg		11.9		333
* Potassium		28 kg		4.9		137
- Pesticides/Chemicals						
* Granular Insecticide						
* Quarts Contact Insecticide		3 l		300		900
* Herbicides						
3. Others */						2,792
4. Sub-total						9,772
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Land Preparation		8 Md		65		520
- Seeding		4 Md		65		260
- Fertilizer Application		4 Md		65		260
- Chemical Application		3 Md		65		195
- Cultivation		16 Md		65		1,040
- Water Management		3 Md		65		195
- Harvesting & Others		15 Md		65		975
- Hauling, Transpotation & Others		3 Md		65		195
2. Others ***/						182
3. Sub-total						3,822
III. Total Production Costs						13,594
IV. Total Returns		75 sac (50kg/sack)		183		13,725
V. Cash Costs						9,772
VI. Cash Balance						3,953
VII. Profit Cost Ratio						0.40

Note; */ Include land rental/amortization, interest on loan, land tax, and other miscellaneous expenses.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.

Source; Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,MOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table M-6-9 Production Cost per Hectare
- Mongo -
PRESENT & FUTURE W/O PROJECT SITUATION

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor		35 Md		65		2,275
2. Material Inputs						
- Seeds		23 kg		45		1,035
- Fertilizer						
* Urea		2 Bag		210		420
* Complete (14-14-14)						
- Pesticides/Chemicals						
* Granular Insecticide						
* Pesticide		2 l		300		600
* Herbicides						
3. Others */						1,732
4. Sub-total						6,062
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- *Land Preparation*		8.4 Md		65		546
- Seeding		0.3 Md		65		20
- Spot Weeding		4 Md		65		260
- Chemical Application		1.2 Md		65		78
- Cultivation		0 Md		65		0
- Water Management		0 Md		65		0
- Harvesting & Others		20.7 Md		65		1,346
- Hauling, Transpotation & Others		7 Md		65		455
2. Others ***/						135
3. Sub-total						2,839
III. Total Production Costs						8,901
IV. Total Returns		850 kg		10		8,500
V. Cash Costs						6,062
VI. Cash Balance						2,438
VII. Profit Cost Ratio						0.40

Note; */ Include land rental/amortization, interest on loan, land tax, and other miscellaneous expenses.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.

Source; Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,MOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table M-6-10 Production Cost per Hectare
- Mongo -
FUTURE W/ SITUATION

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor		38 Md		65		2,470
2. Material Inputs						
- Seeds		25 kg		45		1,125
- Fertilizer						
* Nitrogen		66 kg		9.1		601
* Phosphorous		21 kg		11.9		250
* Potassium		21 kg		4.9		103
- Pesticides/Chemicals						
* Granular Insecticide						
* Pesticide		3 l		300		900
* Herbicides						
3. Others */						2,179
4. Sub-total						7,827
II. Non-cash Costs						
1. *Unpaid* Labor (Family)						
- Land Preparation		9 Md		65		585
- Seeding		1 Md		65		65
- Spot Weeding		5 Md		65		325
- Chemical Application		1 Md		65		65
- Cultivation		4 Md		65		260
- Water Management		0 Md		65		0
- Harvesting & Others		21 Md		65		1,365
- Hauling, Transpotation & Others		7 Md		65		455
2. Others ***/						156
3. Sub-total						3,276
III. Total Production Costs						10,903
IV. Total Returns		1000 kg		12		12,000
V. Cash Costs						7,627
VI. Cash Balance						4,373
VII. Profit Cost Ratio						0.57

Note; */ Include land rental/amortization, interest on loan, land tax, and other miscellaneous expenses.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.

Source; Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,MOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table M-6-11 Production Cost per Hectare - Ratooned Sugarcane -

Unit: Pesos

Item	Input Quantity Wet & Dry	Unit Value Wet & Dry	Production Costs Wet & Dry
I. Cash Costs			
1. Farm Labor			
- Hired Farm Labor	66 Md	65	4,290
2. Material Inputs			
- Cane Points	12,000 pcs	0.01	120
- Fertilizer			
* Nitrogen	108 kg	9.1	983
* Phosphorous	20 kg	11.9	238
* Potassium	120 kg	4.9	588
3. Others */			2,488
4. *Sub-total*			8,707
II. Non-cash Costs			
1. Unpaid Labor (Family)			
- Field *Clearing*	4.4 Md	65	286
- Stable Sharing	3.2 Md	65	208
- Cane Points Preparation	2.2 Md	65	143
- Distribution of Cane Points	2.3 Md	65	150
- Replanting	5.1 Md	65	332
- Cultivation			
* Off-Barring	2.8 Md	65	182
* Hilling-up	4.3 Md	65	280
- Fertilizer Application	2 Md	65	130
- Havesting & Others			
* Cutting	5 Md	65	325
* Hauling **/	3.1 Md	65	202
2. Others ***/			224
3. *Sub-total*			2,460
III. Total Production Costs			11,167
IV. Total Returns	85 pcl	443	37,655
IV-1 Farmer's Share ****/			24,476
V. Cash Costs			8,707
VI. Cash Balance			15,769
VII. Profit Cost Ratio			1.81

Note; */ Include land rental/amortization, interest on loan, land tax, and other miscellaneous expenses.
**/ Man-animal and man-machine costs combined.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous *expenses*.
****/ Approximately 55% of total returns because the transpotation charge entrusted to traders are deducted.

Source; Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,MOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team
-Interviews to Hacienda Luisita sugar refining factory

Table M-6-12 Production Cost per Hectare - Eggplant -

Unit: Pesos

Item	Input Quantity Wet	Dry	Unit Value Wet	Dry	Production Costs Wet	Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm *Labor*	97 Md		65		6,305	
2. Material Inputs						
- Seeds	0.5 kg		250		125	
- Fertilizer						
* Urea	1 Bag		210		210	
* Phosphorous	13 kg		11.9		155	
* Potassium	8 kg		4.9		39	
- Pesticides/Chemicals						
* Granular Insecticide	0.7 l		300		210	
* Pesticides	2 l		300		600	
* Herbicides						
3. Others */					3,058	
4. Sub-total					10,702	
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Land Preparation	10.4 Md		65		676	
- *Seeding*	14.4 Md		65		936	
- Spot Weeding	4 Md		65		260	
- Chemical Application	12.4 Md		65		806	
- Fertilizer Application	3.7 Md		65		241	
- *Cultivation*	10.2 Md		65		663	
- Water Management	10.8 Md		65		702	
- Harvesting & Others	22.3 Md		65		1,450	
- Hauling, Transpotation & Others	15.2 Md		65		988	
2. Others ***/					155	
3. Sub-total					6,876	
III. Total Production Costs					17,578	
IV. Total Returns	400 Bag (23kg/bag)		50		20,000	
V. *Cash Costs*					10,702	
VI. Cash Balance					9,298	
VII. Profit Cost Ratio					0.87	

Note; */ *Include land rental/amortization*, interest on loan, land tax, and other miscellaneous expenses.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.

Source; Consultants' estimate using the folloing data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,MOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm *Economy Survey conducted by Study Team*

Table M-6-13 Production Cost of Livestocks

Item	Carabao (P/head)	Swine (P/head)	Chicken (P/head)	Duck (P/head)
I. Cash Costs				
1. Farm Labor				
- Hired Human Labor	0	0	0	0
2. Feeding Material				
- Costs of Livestock Bought	277	170	8	12
- Feed/Supplement	832	484	20	70
- Veterinary/Medicine Expenses	46	26	11	21
- Maintenance/Repair	20	0	3	5
3. Others */	235	136	8	22
4. Sub-total	1,410	816	50	130
II. Non-cash Costs				
- Unpaid Labor (Family)	375	120	4	30
- Supplies/Supplementary Food	370	23	0	0
- Depreciation	18	12	10	10
- Others **/	153	31	3	8
= Sub-total	916	186	17	48
III. Total Production Costs	2,326	1,002	67	178
IV. Total Returns ***/	5,350	2,219	127	450
V. Cash Costs	1,410	816	50	130
VI. Cash Balance ****/	3,024	1,217	60	272
VII. Profit Cost Ratio *****/	2.14	1.49	1.20	2.09

Note; */ Include interest on loan, land tax, and other miscellaneous expenses.
**/ Include interest on capital investment and other miscellaneous expenses.
***/ Cash reciept from sales, consumed and utilities as draft animal.
****/ Total returns minus total production cost.
*****/ Cash balance devided by cash costs.

Source; Consultants' estimate using the following data.
- Farm Economy Survey conducted by Study Team.
- Production Cost of livestocks (Livestock and Development Council)

Table M-6-14 Physical Parameters of Typical Farm Model (Present and W/O Project Situations)

Unit: Hectare

	No. of Farm	Hectare Covered	Paley A. in wet	Paley A. in dry	Mongo in dry	Sugar-cane	Corn in dry	Fallow in wet	Fallow in dry	Sub-T in wet	Sub-T in dry	Idle L. in wet	Idle L. in dry
Model1 Small Farm Model													
- Owner-Cultivator	445	732	522	414	29	51	23	48	51	619	619	113	113
- Part-Owner	985	1,484	1,123	888	84	151	27	185	219	1,379	1,379	25	25
- Share-Tenant	82	185	98	65	24	9	5	0	2	185	185	0	0
SUB-TOTAL	1,492	2,241	1,741	1,377	108	211	55	151	272	2,183	2,183	138	138
Model2 Middle Farm Model													
- Owner-Cultivator	1,862	2,811	1,978	1,677	282	197	98	175	381	2,358	2,567	481	244
- Part-Owner	1,791	4,119	2,318	2,739	245	443	81	388	554	4,961	4,961	58	58
- Share-Tenant	152	387	288	192	69	27	13	0	0	387	387	6	0
SUB-TOTAL	3,805	7,237	5,588	4,607	617	667	184	493	881	6,718	8,336	519	382
Model3 Large Farm Model													
- Owner-Cultivator	84	397	213	168	62	22	21	19	38	254	294	53	13
Total	4,581	9,785	7,622	6,144	865	900	260	663	1,193	9,075	9,332	710	453

Table M-6-15 Physical Parameters of Typical Farm Model (Future W/ Present Situation)

Unit: Hectare

	No. of Farm	Hectare Covered	Paley A. in wet	Paley A. in dry	Mongo in dry	Sugar-cane	Corn in dry	Fallow in wet	Fallow in dry	Sub-T in wet	Sub-T in dry	Idle L. in wet	Idle L. in dry
Model1 Small Farm Model													
- Owner-Cultivator	445	732	543	551	0	51	98	19	10	613	793	119	29
- Part-Owner	985	1,484	1,101	1,040	0	151	91	99	42	1,397	1,330	7	74
- Share-Tenant	82	185	95	70	0	9	16	0	0	185	185	0	0
SUB-TOTAL	1,492	2,241	1,798	1,670	0	211	197	195	52	2,115	2,137	126	104
Model2 Middle Farm Model													
- Owner-Cultivator	1,862	2,811	2,177	1,988	0	197	246	42	58	2,416	2,567	395	224
- Part-Owner	1,791	4,119	3,354	3,282	0	443	289	236	197	4,835	4,191	94	18
- Share-Tenant	152	387	288	231	0	27	23	0	1	387	282	0	25
SUB-TOTAL	3,805	7,237	5,811	5,588	0	667	837	269	186	6,758	6,978	479	267
Model3 Large Farm Model													
- Owner-Cultivator	84	387	247	229	0	22	46	4	4	273	291	24	6
Total	4,581	9,765	7,859	7,494	0	900	808	288	223	9,146	9,489	629	377

M.7 Farm Economy in Priority Area

1) Population and Labor Force in the Priority Area

The priority area includes 5 barangays which covers 3 CIS, namely: Marita CIS, Sta. Rita CIS, and Baluto CIS. The priority area covers a total of about 1,062 has, 815 has of which are classified as agricultural area with 815 has of paddy field planted during the wet season and 450 has planted during the dry season. The remaining areas are classified as idle and residential areas.

The 1989 population of the area is estimated at 12,700 of which 8,000 are engaged in farming activities. The number of household is estimated at 1,800 with average family size of 5.0 persons which is 1.7 persons less than the average of the project area. Among these households, 1,140 or 63% are considered as farm household. The population and number of household in year 2010 are projected at 17,000 and 2,500, respectively, adopting the population growth rate mentioned in the Interim Report.

The economic labor force (age groups 15 to 64 years) is about 8,000 persons out of which 3,600 persons or 46% are unemployed and underemployed.

2) Agro-Economy

a) Input Supplies

Major input supplies such as seed, fertilizer and agro-chemicals are purchased individually by the farmers. In the priority area, palay seed (certified seed) is mostly purchased from private traders. One cavan of certified palay seeds (46 kg content) is sold at an average of P330.00. However, price varies by variety. IR-60, IR-70, IR72 and IR74 are popular varieties. Farmers store about half of palay seeds needed for the next cropping season. The one half of palay seed however, is purchased from the seed traders.

Fertilizers and agro-chemicals are purchased from retail stores in the Poblacion, with the price fluctuating daily or weekly. Generally, the farmers are rather aggressive in fertilizer and agro-chemical application. Jeepneys and tricycles are often used in transporting these commodities except during the wet season.

Carabaos are raised by 30% of the farmers and are used as draft animals and also for milking purposes. The total number of carabaos in the three CISs are 292 heads. These carabaos are hired for land preparation with a hiring rate between 70 to 100 pesos day. Among the three CISs, Baluto CIS has the highest number of carabaos at 200 heads, however, Sta. Rita CIS leads in terms of carabao population density at 0.4 to 0.8 head per hectare. Marita and Baluto CIS have lower density of less than 0.4

head per hectare. As for the other farm machinery, a total of 50 units of tractors, 15 units of threshers, 2 units of semi-cono and 3 units of warehouses are available.

b) Marketing

There are two to four private buyers who buys paddy directly from the farmers. However, since October 1988, paddy purchasing price of NFA has increase hence, the farmers started selling their paddy to NFA instead of the middlemen or private buyers. During the wet season of 1989, the buying price of NFA has increased from an average of 3% in the previous season to 10 to 15%.

Marketability of dry season crops is one of the reasons why farmers are slowing down on crop diversification. Dry season crops, such as peanuts, corn, and eggplants are often sold below cash production cost. Worst, various kinds of dry season crops with better quality sold at lower price come from Baguio, appear in the market affecting the marketability of their crops.

However, experiments are being undertaken at nearby Liliban-gan CIS where some farmers sell eggplant directly to the wholesalers in Manila at higher prices.

There are 9 duck raisers in the priority area with 1,300 head of ducks. Duck eggs are sold to "balut" dealers at 2.40 pesos per egg. About 60 to 80% of ducks produce eggs in the area. Accordingly about 900 eggs, equivalent to 2,000 pesos a day are earned by them. Duck eggs still maintains good marketability.

APPENDIX N Project Evaluation

N.1 General Information

Table N-1-1 Annual Disbursement Schedule (Financial)

(Unit: Million Pesos)

Description	1 L/C	1 F/C	2 L/C	2 F/C	3 L/C	3 F/C	4 L/C	4 F/C	5 L/C	5 F/C	6 L/C	6 F/C	Total L/C	Total F/C	Total
(Phase-I)															
1.1 Agri. Infra.															
Canal	4.5	3.48	10.5	8.12									15	11.6	26.6
Intake Structure	1.4	0.9											1.4	0.9	2.3
Diversion Dams	0.15	0.87	0.35	2.03									0.5	2.9	3.4
GCC	7.56	12.27	17.64	28.63									25.2	40.9	66.1
Shallow Wells	0.27	0.51	0.63	1.19									0.9	1.7	2.6
1.2 Farm Road															
Barangay	8.61	5.74	3.69	2.46									12.3	8.2	20.5
Farm-to-Market	0.09	0.06	0.21	0.14									0.3	0.2	0.5
1.3 Agri. Develop.															
FTDFP	0.018	0.042	0.042	0.098									0.06	0.14	0.2
SMS	0.18	0.84	0.42	1.96									0.6	2.8	3.4
FPMS	3.06	23.31	7.14	53.69									10.2	76.7	86.9
PTDFP			0.14	0.36									0.14	0.36	0.5
1.4 Insti. Develop.															
IAs	0.6	1.3											0.6	1.3	1.9
MFIA	0.36	1.11	0.84	2.59									1.2	3.7	4.9
Se.&Tr.	0.1	0.5	0.1	0.5									0.2	1	1.2
Total	26.898	50.632	41.702	101.788									68.6	152.4	221
Annual		77.53		143.47											

Description	1 L/C	1 F/C	2 L/C	2 F/C	3 L/C	3 F/C	4 L/C	4 F/C	5 L/C	5 F/C	6 L/C	6 F/C	Total L/C	Total F/C	Total
(Phase-II)															
2. Agri. Infra.															
Intake					4.75	3.25	4.75	3.25					9.5	6.5	16
Canal							39.5	31	39.5	31			79	62	141
Diversion Dams							3.7	3.3	3.7	3.3			7.4	6.6	14
GCC(San Martin)					5	9.75	5	9.75					10	19.5	29.5
GCC(Lilibangan)									5.5	11.75	5.5	11.75	11	23.5	34.5
Shallow Wells							1	1	1	1	1	1	3	3	6
Drainage							1.6	1.07	1.6	1.07	1.6	1.06	4.8	3.2	8
3. Farm Road															
Barangay					22.8	15.7	22.8	15.7					45.6	31.4	77
Farm-to-Market							5.8	3.87	5.8	3.87	5.8	3.86	17.4	11.6	29
4. Agri. Develop.															
FTDFP					0.075	0.175	0.075	0.175	0.075	0.175	0.075	0.175	0.3	0.7	1
PMS					5	38	5	38	5	38			15	114	129
PTDFP					0.1	0.23	0.1	0.23	0.1	0.24			0.3	0.7	1
Duck Raising							1.15	0.35	1.15	0.35			2.3	0.7	3
Fishery Pond					0.4	0.1	0.4	0.1					0.8	0.2	1
5. Insti. Develop.															
IAs					1.3	0.2	1.3	0.2					2.6	0.4	3
MFIA							0.83	0.03	0.83	0.03	0.64	0.04	1.9	0.1	2
FIAs									0.2	0.05	0.2	0.05	0.4	0.1	0.5
CIAs											0.4	0.1	0.4	0.1	0.5
ASS					0.575	0.05	0.575	0.05	0.575	0.05	0.575	0.05	2.3	0.2	2.5
Se.&Tr.					0.1	0.025	0.1	0.025	0.1	0.025	0.1	0.025	0.4	0.1	0.5
Total					40.1	87.48	93.48	108.1	84.93	90.91	15.89	18.11	214.4	284.6	499
Annual						107.58		201.58		155.84		34			
Grand Total		77.53		143.47		107.58		201.58		155.84		34	283	437	720

Table N-1-2 Annual Disbursement Schedule (Economic)

(Unit: Million Pesos)

Description	1 L/C	1 F/C	2 L/C	2 F/C	3 L/C	3 F/C	4 L/C	4 F/C	5 L/C	5 F/C	6 L/C	6 F/C	Total L/C	Total F/C	Total
(Phase-I)															
1.1 Agri. Infra.															
Canal	2.97	3.48	6.93	8.12									9.90	11.60	21.50
Intake Structure	0.92	0.90											0.92	0.90	1.82
Diversion Dams	0.10	0.87	0.23	2.03									0.33	2.90	3.23
GCC	4.99	12.27	11.64	28.63									16.63	40.90	57.53
Shallow Wells	0.18	0.51	0.42	1.19									0.59	1.70	2.29
1.2 Farm Road															
Barangay	5.68	5.74	2.44	2.46									8.12	8.20	16.32
Farm-to-Market	0.06	0.06	0.14	0.14									0.20	0.20	0.40
1.3 Agri. Develop.															
FTDFP	0.01	0.04	0.03	0.10									0.04	0.14	0.18
SMS	0.12	0.84	0.28	1.96									0.40	2.80	3.20
PPMS	2.02	23.01	4.71	53.69									6.73	76.70	83.43
PTDFP			0.09	0.36									0.09	0.36	0.45
1.4 Insti. Develop.															
IAs	0.40	1.30											0.40	1.30	1.70
MFIA	0.24	1.11	0.55	2.59									0.79	3.70	4.49
Se.&Tr.	0.07	0.50	0.07	0.50									0.13	1.00	1.13
Total	17.75	50.63	27.52	101.77									45.28	152.40	197.68
Annual		58.38		129.29											

Description	1 L/C	1 F/C	2 L/C	2 F/C	3 L/C	3 F/C	4 L/C	4 F/C	5 L/C	5 F/C	6 L/C	6 F/C	Total L/C	Total F/C	Total
(Phase-II)															
2. Agri. Infra.															
Intake					3.14	3.25	3.14	3.25					6.27	6.50	12.77
Canal							26.07	31.00	26.07	31.00			52.14	62.00	114.14
Diversion Dams							2.44	3.30	2.44	3.30			4.88	6.60	11.48
GCC(San Martin)					3.30	9.75	3.30	9.75					6.60	19.50	26.10
GCC(Lilibangan)									3.63	11.75	3.83	11.75	7.26	23.50	30.76
Shallow Wells							0.66	1.00	0.66	1.00	0.66	1.00	1.98	3.00	4.98
Drainage							1.06	1.07	1.06	1.07	1.06	1.06	3.17	3.20	6.37
3. Farm Road															
Barangay					15.05	15.70	15.05	15.70					30.10	31.40	61.50
Farm-to-Market							3.83	3.87	3.83	3.87	3.83	3.86	11.48	11.60	23.08
4. Agri. Develop.															
FTDFP					0.05	0.18	0.05	0.18	0.05	0.18	0.05	0.18	0.20	0.70	0.90
PMS					3.30	38.00	3.30	38.00	3.30	38.00			9.90	114.00	123.90
PTDFP					0.07	0.23	0.07	0.23	0.07	0.24			0.20	0.70	0.90
Duck Raising							0.76	0.35	0.76	0.35			1.52	0.70	2.22
Fishery Pond					0.26	0.10	0.26	0.10					0.53	0.20	0.73
5. Insti. Develop.															
IAs					0.86	0.20	0.86	0.20					1.72	0.40	2.12
MFIA							0.42	0.03	0.42	0.03	0.42	0.04	1.25	0.10	1.35
FIAs									0.13	0.05	0.13	0.05	0.26	0.10	0.36
CIAs											0.26	0.10	0.26	0.10	0.36
ASS					0.38	0.05	0.38	0.05	0.38	0.05	0.38	0.05	1.52	0.20	1.72
Se.&Tr.					0.07	0.03	0.07	0.03	0.07	0.03	0.07	0.03	0.28	0.10	0.38
Total					28.47	67.48	61.70	108.10	42.85	90.91	10.49	18.11	141.50	284.80	426.10
Annual						93.95		169.80		133.76		28.60			
Grand Total		88.38		129.29		93.95		169.80		133.76		28.60	186.78	437.00	623.78

Note; Economic investment costs are computed using following conversion factors:

- Foreign Cost; 1.00
- Local Cost; 0.86 (=70%x0.78(SCF) + 30%x0.39, Where 0.39 is shadow wage rate of common construction labor)

Table N-1-3 Annual Operation and Maintenance Cost

(Unit: '000P)

Description	Year	1	2	3	4	5	6	7	8	9	10->
(Phase-I)											
1.1 Agri. Infra.											
Canal		0	122	408	408	408	408	408	408	408	408
Intake Structure		0	56	56	56	56	56	56	56	56	56
Diversion Dams		0	39	129	129	129	129	129	129	129	129
GCC		0	612	2,040	2,040	2,040	2,040	2,040	2,040	2,040	2,040
Shallow Wells		0	23	77	77	77	77	77	77	77	77
1.2 Farm Road											
Barangay		0	231	330	330	330	330	330	330	330	330
Farm-to-Market		0	3	10	10	10	10	10	10	10	10
1.3 Agri. Develop.											
FTDFP		0	18	60	60	60	60	60	60	60	60
SMS		0	0	130	130	130	130	130	130	130	130
PPMS		0	0	1,890	1,890	1,890	1,890	1,890	1,890	1,890	1,890
PTDFP		0	0	70	70	70	70	70	70	70	70
1.4 Insti. Develop.											
IAs		0	50	50	50	50	50	50	50	50	50
MFIA		0	36	120	120	120	120	120	120	120	120
Se.&Tr.		0	25	50	50	50	50	50	50	50	50
F. Total		0	1,215	5,420	5,420	5,420	5,420	5,420	5,420	5,420	5,420
(E. Total)		0	717	3,198	3,198	3,198	3,198	3,198	3,198	3,198	3,198

Description	1	2	3	4	5	6	7	8	9	10->
(Phase-II)										
2. Agri. Infra.										
Intake			0	230	460	460	460	460	460	460
Canal			0	0	1,565	3,130	3,130	3,130	3,130	3,130
Diversion Dams			0	0	215	430	430	430	430	430
GCC(San Martin)			0	0	926	926	926	926	926	926
GCC(Lilibangan)			0	0	0	0	1,084	1,084	1,084	1,084
Shallow Wells			0	0	40	80	120	120	120	120
Drainage			0	0	60	120	180	180	180	180
3. Farm Road										
Barangay			0	835	1,670	1,670	1,670	1,670	1,670	1,670
Farm-to-Market			0	0	210	420	630	630	630	630
4. Agri. Develop.										
FTDFP			0	35	70	105	140	140	140	140
PMS			0	957	1,913	2,870	2,870	2,870	2,870	2,870
PTDFP			0	23	47	70	70	70	70	70
Duck Raising			0	0	55	110	110	110	110	110
Fishery Pond			0	35	70	70	70	70	70	70
5. Insti. Develop.										
IAs			0	35	70	70	70	70	70	70
MFIA			0	0	17	33	50	50	50	50
FIAs			0	0	0	10	20	20	20	20
CIAs			0	0	0	0	20	20	20	20
ASS			0	15	30	45	60	60	60	60
Se.&Tr.			0	5	10	15	20	20	20	20
F. Total			0	2,170	7,428	10,634	12,130	12,130	12,130	12,130
(E. Total)			0	1,280	4,383	6,274	7,157	7,157	7,157	7,157
Grand Total (F.)	0	1,215	5,420	7,590	12,848	16,054	17,550	17,550	17,550	17,550
Grand Total (E.)	0	717	3,198	4,478	7,580	9,472	10,355	10,355	10,355	10,355

Note; F.,Financial Cost ; E.,Economic Cost,
; Economic O&M costs are computed using following conversion factor:
- CF; 0.59 (=50%x0.78(SCF) + 50%x0.39, Where 0.39 is shadow wage rate of common labor)

Table N-1-4 *Conversion Factors Adopted in Analysis*

Goods and Services	World Bank 1/	ADB 2/	Consult't Estimate 3/
Standard Conversion Factors	0.86	0.66	0.78
Group Conversion Factors			
-Capital Goods	0.86	0.75 4/	0.85
-Utilities	0.80	0.64 5/	0.70
-Transport	0.80	0.62 6/	0.70
-Construction	0.84	0.60	0.65
-Consumption	0.85	NA	NA
Specific Conversion Factors			
-Skilled Labor	NA	0.66	0.66
-Urban Unskilled Labor	NA	0.64	0.60
-Rural Unskilled Labor	NA	0.38	0.60
-Consumption			
urban High Income	NA	0.66	0.66
rural High Income	NA	0.64	0.60
rural	NA	0.64	0.60

NA; not available

Note; The conversion factors are applied to costs of producing goods and services (not tariffs in the case of utilities and transport). Whereever possible, the operating costs are segregated into category costs to enable application of specific conversion factors to local cost items.

1/ Factors forwarded to ADB (Program Dept.) by World Bank in 1985. No details provided as to methodology used for estimates but indications are that the estimates were for 1983.

2/ 'Draft Working Paper on Estimating Accounting Prices for Project Appraisal in the Philippines', Economic Offices, ADB, March, 1987.

3/ Consultant's estimates reflect structural adjustments in the account of the economic situation and level of economic activity in Tarlac Province.

4/ Average for metal products, machinery, and electrical and transport equipment.

5/ Average for electricity and water.

6/ Average for buslines, jeepneys, road freight and shipping.

Table N-1-5 Financial and Economic Price of Major Farm Inputs & Outputs

	Financial (1990)	Conversion Factor	Ecnomic (1990)	Ecnomic (2000)	Weighted Index 1/ (1990 to 2000)
	P		P	P	
Farm Output					
Palay (W/O Project Case, kg)	2.92	1.05	3.08	3.24	1.051
Palay (W/ Project Case, kg)	3.27	1.05	3.43	3.60	1.051
Sugarcane (kg)	4.59	0.80	3.68	3.46	0.939
Mongobean (kg)	10.00	0.78	7.80	8.44	1.082 */
Eggplant (kg)	2.17	0.78	1.69	1.83	1.082 */
Corn (kg)	2.96	1.00	2.96	3.48	1.177
Farm Input (Seeds)					
Palay (kg)	3.76	0.78	2.93	3.17	1.082 */
Corn (kg)	6.50	0.78	5.07	5.49	1.082 */
Mongobean (kg)	45.00	0.78	35.10	37.98	1.082 */
Sugarcane (100 pcs)	1.00	0.78	0.78	0.84	1.082 */
Eggplant (kg)	250.00	0.78	195.00	210.99	1.082 */
Labor (md)	65	0.6	39	42	1.082 */
Fertilizer					
Urea (kg)	11.1	0.97	10.8	10.2	0.942
Phosphorous (kg)	15.2	0.95	14.5	18.3	1.259
Potassium (kg)	6.1	0.95	5.8	6.6	1.136
Complete (14-14-14) (kg) 2/	5	0.96	5	5	1.082 */
Granular Insecticide (bag) 2/	310	0.96	298	322	1.082 */
Quarts Contact Insecti. (l) 2/	300	0.96	288	312	1.082 */
Herbicide (l) 2/	170	0.96	163	177	1.082 */
Pesticide (l) 2/	300	0.96	288	312	1.082 */
Diesel (l)	5.12	0.86 3/	4.40	6.00	1.364

Note; 1/ The indexes with '*/' are estimated using World Bank's weighted index of commodity prices on total agricultural commodities during the period of 1990 to 2000. The others with no mark are obtained from World Bank's commodity price projection in July, 1989.

2/ Financial farmgate prices are based on market prices. Average conversion factor of urea, phosphorous and potassium is applied to convert to economic prices.

3/ Conversion factor of diesel is derived from the existing study report.

Table N-1-6 Import Parity Price for Rice (W/O Project Case)

(1990)

		Financial P/ton	Conversion Factor	Economic P/ton
Export price, Thai, white, milled, 5% broken, f.o.b. Bangkok 1/	US$	252		252
Grade differential (less 20%)	-	50.4		50.4
Ocean freight and insurance to Philippine port	+	35		35
Import price, rice, CIF Manila	=	236.6		236.6
Peso equivalent 2/	P	5,323.5		5,323.5
Port charge 3/	+	30	0.78	23.4
Whole sale price, Manila	=	5,353.5		5,346.9
Administrative and storage costs ,NFA	-	42	0.66	27.7
Transport cost, Project area to Manila 4/	-	110.4		75.8
Ex-mill price of rice	=	5,201.1		5,243.4
Yield of white rice (%) 5/	=	3,333.9		3,361.0
Milling cost per mt of rice 6/	-	350	0.78	273
Value of milling by-product	+	143	1	143
Imputed price of palay at mill	=	3,126.9		3,231.0
Margin of grain dealer 7/	-	125.1	0.78	97.6
Transport and handling costs from farm to mill 8/	-	85		58
Farmgate price of palay	=	2,916.8		3,075.4

1/ Based on World Bank's commodity price projection, July, 1989.
2/ US$1.0=P22.5
3/ Include wharfage dues, storage, arrastre and stevedoring charges and ancillary service fee.
4/ Based on 106km Conception to Manila at 0.9 pesos/mt/km and two handling charges of 7.5 pesos/mt. Financial costs adjusted by a conversion factor of 0.7 for transport and 0.6 for handling.
5/ Processing ratio (recovery) of white rice weighted according to estimated throughputs of palay of 90% for private (64% recovery) and 10% for NFA (65% recovery) mills.
6/ Include bagging, cleaning and handling costs adjusted by a standard conversion factor of 0.78.
7/ Approximately 4% of imputed price of palay at mill.
8/ Based on an average distance of 20km at 3.5 pesos/mt/km and two handling charges of 7.5 pesos/mt. Financial costs adjusted by a conversion factor of 0.7 for transport and 0.6 for handling.

Table N-1-7 Import Parity Price for Rice (W/ Project Case)
(1990)

		Financial P/ton	Conversion Factor	Economic P/ton
Export price, Thai, white, milled, 5% broken, f.o.b. Bangkok 1/	US$	252		252
Grade differential (less 10%)	-	25.2		25.2
Ocean freight and insurance to Philippine port	+	35		35
Import price, rice, CIF Manila	=	261.8		261.8
Peso equivalent 2/	P	5,890.5		5,890.5
Port charge 3/	+	30	0.78	23.4
Whole sale price, Manila	=	5,920.5		5,913.9
Administrative and storage costs ,NFA	-	42	0.66	27.7
Transport cost, Project area to Manila 4/	-	110.4		75.8
Ex-mill price of rice	=	5,768.1		5,810.4
Yield of white rice (%) 5/	=	3,697.4		3,724.5
Milling cost per mt of rice 6/	-	350	0.78	273
Value of milling by-product	+	143	1	143
Imputed price of palay at mill	=	3,490.4		3,594.5
Margin of grain dealer 7/	-	139.6	0.78	108.9
Transport and handling costs from farm to mill 8/	-	85		58
Farmgate price of palay	=	3,265.8		3,427.6

1/ Based on World Bank's commodity price projection, July, 1989.
2/ US$1.0=P22.5
3/ Include wharfage dues, storage, arrastre and stevedoring charges and ancillary service fee.
4/ Based on 106km Conception to Manila at 0.9 pesos/mt/km and two handling charges of 7.5 pesos/mt. Financial costs adjusted by a conversion factor of 0.7 for transport and 0.6 for handling.
5/ Processing ratio (recovery) of white rice weighted according to estimated throughputs of palay of 90% for private (64% recovery) and 10% for NFA (65% recovery) mills.
6/ Include bagging, cleaning and handling costs adjusted by a standard conversion factor of 0.78.
7/ Approximately 4% of imputed price of palay at mill.
8/ Based on an average distance of 20km at 3.5 pesos/mt/km and two handling charges of 7.5 pesos/mt. Financial costs adjusted by a conversion factor of 0.7 for transport and 0.6 for handling.

Table N-1-8 Import Parity Price for Yellow Corn

		- 1990 - Financial P/ton	Conversion Factor	Economic P/ton
Import price, US, No.2, yellow, f.o.b. Gulf Ports 1/	US$	98		98
Ocean freight and insurance to Philippine port	+	35		35
Import price, yellow corn, CIF Manila	=	133		133
Peso Equivalent 2/	P	2,992.5		2,992.5
Port charge 3/	+	30	0.78	23.4
Administrative and storage costs, NFA	+	42	0.66	27.7
Transport cost, Manila to the Project area 4/	+	110.4		75.8
Imputed price of corn at dealer's store	=	3,174.9		3,119.4
Margin of grain dealer 5/	-	127.0	0.78	99.1
Transport and handling costs from farm gate to grain dealer	-	85		58
Farmgate price of yellow corn	=	2,962.9		2,962.3

1/ Based on World Bank's commodity price projection, July, 1989.
2/ US$1.0=P22.5
3/ Include wharfage dues, storage, arrastre and stevedoring charges and ancillary service fee.
4/ Based on 106km Conception to Manila at 0.9 pesos/mt/km and two handling charges of 7.5 pesos/mt. Financial costs adjusted by a conversion factor of 0.7 for transport and 0.6 for handling.
5/ Approximately 4% of imputed price of corn at dealer's store.
6/ Based on an average distance of 20km at 3.5 pesos/mt/km and two handling charges of 7.5 pesos/mt. Financial costs adjusted by a conversion factor of 0.7 for transport and 0.6 for handling.

Table N-1-9 Export Parity Price for Sugarcane

		- 1990 - Financial P/ton	Conversion Factor	Economic P/ton
Composit price of sugar per picul 1/	P	403	0.78	314
Sugarcane price equivalent per ton cane 2/	P	403	0.78	314
Value of by-product 3/	+	45	1.0	45
Sugarcane price equivalent per ton, ex-mill	=	448		359
Farmgate price of sugarcane per picul 4/	=	291		234
Per ton equivalent 5/	=	4,586		3,678

1/ Philippine sugar allocation for sugar export is around 11% and for domestic sugar is around 50% and for reserved 39%. Export price is P490/picul; domestic price P450/picul and for reserved P315/picul.
2/ Ton cane to picul sugar is 1 : 1.
3/ Price of mollasses is estimated at 10.3 pesos per gallon.
4/ Equivalent to farmers' share of 65%.
5/ Weight of one picul is 63.5kg.

Table N-1-10 Import Parity Price for Urea

		- 1989 - Financial P/ton	Conversion Factor	Economic P/ton
Import price, any origin, bagged, f.o.b. N.W. Europe 1/	US$	170		170
Ocean freight and insurance to Philippine port	+	35		35
Import price, urea, CIF Manila	=	205		205
Peso Equivalent 2/	P	4,612.5		4,612.5
Port charge 3/	+	30	0.78	23.4
Administrative and storage costs	+	42	0.6	25.2
Transport cost, Manila to the Project area 4/	+	110.4		75.8
Imputed price of urea at dealer's store	=	4,794.9		4,736.9
Margin of dealer 5/	+	239.7	0.78	187.0
Transport and handling costs from dealer to farm gate	+	85		58
Farmgate price of urea	=	5,119.6		4,981.9
Nitrogen farmgate price (per kg, nutrient)		11.1		10.8

1/ Based on World Bank's commodity price projection, July, 1989.
2/ US$1.0=P22.5
3/ Include wharfage dues, storage, arrastre and stevedoring charges and ancillary service fee.
4/ Based on 106km Conception to Manila at 0.9 pesos/mt/km and two handling charges of 7.5 pesos/mt. Financial costs adjusted by a conversion factor of 0.7 for transport and 0.6 for handling.
5/ Approximately 5% of imputed price of urea at dealer's store.
6/ Based on an average distance of 20km at 3.5 pesos/mt/km and two handling charges of 7.5 pesos/mt. Financial costs adjusted by a conversion factor of 0.7 for transport and 0.6 for handling.

Table N-1-11 Import Parity Price for TSP

				- 1990 -
		Financial P/ton	Conversion Factor	Economic P/ton
Import price, bulk, f.o.b. US Gulf 1/	US$	185		185
Bagging cost	+	50		50
Ocean freight and insurance to Philippine port	+	35		35
Import price, TSP, CIF Manila	=	270		270
Import tax	+	8		
Peso Equivalent 2/	P	6,255.0		6,075.0
Port charge 3/	+	30	0.78	23.4
Administrative and storage costs	+	42	0.6	25.2
Transport cost, Manila to the Project area 4/	+	110.4		75.6
Imputed price of TSP at dealer's store	=	6,437.4		6,199.4
Margin of dealer 5/	+	321.9	0.78	251.1
Transport and handling costs from dealer to farm gate	+	85		58
Farmgate price of TSP	=	6,844.3		6,508.5
Phosphorous farmgate price (per kg, nutrient)		15.2		14.5

1/ Based on World Bank's commodity price projection, July, 1989.
2/ US$1.0=P22.5
3/ Include wharfage dues, storage, arrastre and stevedoring charges and ancillary service fee.
4/ Based on 106km Conception to Manila at 0.9 pesos/mt/km and two handling charges of 7.5 pesos/mt. Financial costs adjusted by a conversion factor of 0.7 for transport and 0.6 for handling.
5/ Approximately 5% of imputed price of TSP at dealer's store.
6/ Based on an average distance of 20km at 3.5 pesos/mt/km and two handling charges of 7.5 pesos/mt. Financial costs adjusted by a conversion factor of 0.7 for transport and 0.6 for handling.

Table N-1-12 Import Parity Price for Muriate of Potash (KCL)

- 1990 -

		Financial P/ton	Conversion Factor	Economic P/ton
Import price, bulk, f.o.b. Vancouver 1/	US$	105		105
Ocean freight and insurance to Philippine port	+	35		35
Import price, KCL, CIF Manila	=	140		140
Import tax (approx. 3% of above)	+	4		
Peso Equivalent 2/	P	3,240.0		3,150.0
Port charge 3/	+	30	0.78	23.4
Administrative and storage costs	+	42	0.6	25.2
Transport cost, Manila to the Project area 4/	+	110.4		75.8
Imputed price of KCL at dealer's store	=	3,422.4		3,274.4
Margin of dealer 5/	+	171.1	0.78	133.5
Transport and handling costs from dealer to farm gate	+	85		58
Farmgate price of KCL	=	3,678.5		3,465.9
Potassium farmgate price (per kg, nutrient)		6.1		5.8

1/ Based on World Bank's commodity price projection, July, 1989.
2/ US$1.0=P22.5
3/ Include wharfage dues, storage, arrastre and stevedoring charges and ancillary service fee.
4/ Based on 106km Conception to Manila at 0.9 pesos/mt/km and two handling charges of 7.5 pesos/mt. Financial costs adjusted by a conversion factor of 0.7 for transport and 0.6 for handling.
5/ Approximately 5% of imputed price of KCL at dealer's store.
6/ Based on an average distance of 20km at 3.5 pesos/mt/km and two handling charges of 7.5 pesos/mt. Financial costs adjusted by a conversion factor of 0.7 for transport and 0.6 for handling.

Table N-1-13

Economic Vehicle Operating Costs
(Pesos Per Kilometer)
- Operating + Fixed + Time -
1990 (Estimated)

Vehicle Type	Paved				Gravel				Stone	Earth	
	Good	Fair	Bad	Very Bad	Good	Fair	Bad	Very Bad	Very Bad	Bad	Very Bad
Car/Jeep	1.39	1.63	2.16	2.93	1.74	2.16	2.67	3.28	4.61	3.28	4.42
Jeepney/Van	1.68	1.97	2.87	4.04	2.03	2.50	3.33	4.36	6.98	4.36	6.80
Small Bus	2.84	3.33	4.98	7.04	3.39	4.16	5.67	7.54	12.39	7.54	12.11
Large Bus	5.19	6.09	9.32	13.33	6.15	7.50	10.45	14.13	24.01	14.13	23.58
Truck	3.56	4.01	5.50	7.49	4.48	5.52	6.83	8.41	11.80	8.41	11.30
Large Truck	3.28	3.85	5.19	7.15	4.10	5.04	6.33	7.95	11.59	7.95	11.14
Motor Tricycle	0.69	0.80	1.16	1.93	0.86	1.03	1.34	2.05	3.44	2.05	3.37
Motor Cycle	0.45	0.52	0.74	1.09	0.57	0.71	0.91	1.22	1.79	1.22	1.73

* Converted to constant price of 1990 from 1982 adopting WB inflation index of 1.541.

Source: 'Planning Mannual' from IBRD Assisted Rural Roads Improvement Project, Ministry of Local Government

N.2 Crop Budget Analysis (Economic)

Table N-2-1 Economic Net Return per Hectare - Gravity-Irrigated Palay - PRESENT & FUTURE W/O PROJECT SITUATION

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor	53 Md	52 Md	42	42	2,226	2,184
2. Material Inputs						
- Seeds	75 kg	90 kg	3.17	3.17	238	285
- Fertilizer						
* Urea	2.5 Bag	3.5 Bag	235	235	588	823
* Complete (14-14-14)	2 Bag	2 Bag	250	250	500	500
- Pesticides/Chemicals						
* Granular Insecticide	1 Bag	1 Bag	322	322	322	322
* Quarts Contact Insecticide	1 qt.	1 qt.	260	260	260	260
* Herbicides	0.4 l	0.3 l	177	177	71	53
3. Others */					1,816	1,879
4. Sub-total					6,020	6,306
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Seedbed Preparation	1.3 Md	1.1 Md	42	42	55	46
- Land Preparation	8.3 Md	5.6 Md	42	42	349	235
- Repair of Dikes	1.1 Md	1.3 Md	42	42	46	55
- Pulling and Terms-planting	3.3 Md	2.4 Md	42	42	139	101
- Transplanting	6.6 Md	4.8 Md	42	42	277	202
- Fertilizer Application	0.7 Md	0.8 Md	42	42	29	34
- Weeding	2.4 Md	4 Md	42	42	101	168
- Chemical Application	0.7 Md	0.5 Md	42	42	29	21
- Water Management	1.7 Md	2.3 Md	42	42	71	97
- Harvesting & Others	13.6 Md	3.7 Md	42	42	571	155
- Threshing and Winnowing **/	0.7 Md	1.3 Md	42	42	29	55
- Drying, Hauling, Transpotation & Others	1.1 Md	0.8 Md	42	42	46	34
2. Others ***/					114	78
3. Sub-total					1,857	1,280
III. Total Production Costs					7,877	7,585
IV. Total Returns	74 cav	82 cav	162	162	11,988	13,284
V. Cash Costs					6,020	6,306
VI. Net Return					4,111	5,699

Note: */ Include land rental/amortization, interest on loan, irrigation fee, land tax, and other miscellaneous expenses.
**/ Man-animal and man-machine costs combined.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.

Source: Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,NDA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table N-2-2 Economic Net Return per Hectare - Gravity-Irrigated Palay - FUTURE W/ PROJECT SITUATION

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor	61 Md	69 Md	42	42	2,562	2,898
2. Material Inputs						
- Seeds	60 kg	60 kg	3.17	3.17	190	190
- Fertilizer						
* Nitrogen	75 Kg	98 Kg	10.2	10.2	765	1,000
* Phosphorous	28 Kg	28 Kg	18.3	18.3	512	512
* Potassium	28 Kg	28 Kg	6.6	6.6	185	185
- Pesticides/Chemicals						
* Insecticide	2 l	2 l	312	312	624	624
* Fungicide	1 l	1 l	291	291	291	291
* Herbicides	10 kg	10 kg	6	6	60	60
3. Others */					2,121	2,367
4. Sub-total					7,310	8,127
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Seedbed Preparation	1 Md	1 Md	42	42	42	42
- Land Preparation	8 Md	8 Md	42	42	336	336
- Repair of Dikes	1 Md	1 Md	42	42	42	42
- Pulling and Terms-planting	3 Md	3 Md	42	42	126	126
- Transplanting	7 Md	7 Md	42	42	294	294
- Fertilizer Application	2 Md	2 Md.	42	42	84	84
- Weeding	4 Md	4 Md	42	42	168	168
- Chemical Application	2 Md	2 Md	42	42	84	84
- Water Management	4 Md	5 Md	42	42	168	210
- Harvesting & Others	16 Md	4 Md	42	42	672	168
- Threshing and Winnowing **/	1 Md	1 Md	42	42	42	42
- Drying, Hauling, Transpotation & Others	2 Md	1 Md	42	42	84	42
2. Others ***/					140	107
3. Sub-total					2,282	1,745
III. Total Production Costs					9,592	9,873
IV. Total Returns	90 cav	100 cav	180	180	16,200	18,000
V. Cash Costs					7,310	8,127
VI. Net Return					6,608	8,127

Note: */ Include land rental/amortization, interest on loan, irrigation fee, land tax, and other miscellaneous expenses.
**/ Man-animal and man-machine costs combined.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.

Source: Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,NDA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table N-2-3

Economic Net Return per Hectare
- Pump-Irrigated Palay -
PRESENT & FUTURE W/O PROJECT SITUATION

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs	1/		1/		1/	
1. Farm Labor						
- Hired Farm Labor	53 Md	52 Md	42	42	2,226	2,184
2. Material Inputs						
- Seeds	75 kg	90 kg	3.17	3.17	238	285
- Fertilizer						
* Urea	2.5 Bag	3.5 Bag	235	235	588	823
* Complete (14-14-14)	2 Bag	2 Bag	250	250	500	500
- Pesticides/Chemicals						
* Granular Insecticide	1 Bag	1 Bag	322	322	322	322
* Quarts Contact Insecticide	1 qt.	1 qt.	260	260	260	260
* Herbicides	0.4 l	0.3 l	177	177	71	53
3. Pumping Cost						
-Fuel(diesel) 2/	360 l	360 l	6	6	2,160	2,160
-Oil and Lubricants	1 LS.	1 LS.	127	127	127	127
-Repair	1 LS.	1 LS.	422	422	422	422
4. Others */					1,732	3,482
5. Sub-total					8,645	10,818
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Seedbed Preparation	1.3 Md	1.1 Md	42	42	55	46
- Land Preparation	8.3 Md	5.6 Md	42	42	349	235
- Repair of Dikes	1.1 Md	1.3 Md	42	42	46	55
- Pulling and Trans-planting	3.3 Md	2.4 Md	42	42	139	101
- Transplanting	6.6 Md	4.8 Md	42	42	277	202
- Fertilizer Application	0.7 Md	0.8 Md	42	42	29	34
- Weeding	2.4 Md	4 Md	42	42	101	168
- Chemical Application	0.7 Md	0.5 Md	42	42	29	21
- Water Management	1.7 Md	2.3 Md	42	42	71	97
- Harvesting & Others	13.6 Md	3.7 Md	42	42	571	155
- Threshing and Winnowing **/	0.7 Md	1.3 Md	42	42	29	55
- Drying, Hauling, Transpotation & Others	1.1 Md	0.8 Md	42	42	46	34
2. Others ***/					114	78
3. Sub-total					1,857	1,280
III. Total Production Costs					10,502	11,898
IV. Total Returns	74 cav	82 cav	162	162	11,988	13,284
V. Cash Costs					8,645	10,618
VI. Net Return					1,488	1,386

Note; */ Include land rental/amortization, interest on loan, land tax, annual payment for loan of pump facilities and other miscellaneous expenses.
**/ Man-animal and man-machine costs combined.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.
1/ Only a part of Baluto CIS is by pump-irrigation during the wet season.
2/ Dry Season: @ 4lit./day x 90days, Wet Season(Baluto CIS); @4lit./day x 90days.

Source; Consultants' estimate using the following data
-"Food-Markets"-from Technology Resource Center, Manila
-"Cost of Production of Selected Agricultural Commodities"-from PPD,NOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table N-2-4

Economic Net Return per Hectare
- Pump-Irrigated Palay by Existing Facilities -
FUTURE W/ PROJECT SITUATION

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor	69 Md		42			2,898
2. Material Inputs						
- Seeds	60 kg		3.17			190
- Fertilizer						
* Nitrogen	98 Kg		10.2			1,000
* Phosphorous	28 Kg		18.3			512
* Potassium	28 Kg		6.6			185
- Pesticides/Chemicals						
* Insecticide	2 l		312			624
* Fungicide	1 l		291			291
* Herbicides	10 kg		6			60
3. Pumping Cost						
-Fuel(diesel) 1/	360 l		6			2,160
-Oil and Lubricants	1 LS.		127			127
-Repair	1 LS.		422			422
4. Others */						3,971
5. Sub-total						12,440
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Seedbed Preparation	1 Md		42			42
- Land Preparation	8 Md		42			336
- Repair of Dikes	1 Md		42			42
- Pulling and Trans-planting	3 Md		42			126
- Transplanting	7 Md		42			294
- Fertilizer Application	2 Md		42			84
- Weeding	4 Md		42			168
- Chemical Application	2 Md		42			84
- Water Management	5 Md		42			210
- Harvesting & Others	4 Md		42			168
- Threshing and Winnowing **/	1 Md		42			42
- Drying, Hauling, Transpotation & Others	1 Md		42			42
2. Others ***/						107
3. Sub-total						1,745
III. Total Production Costs						14,185
IV. Total Returns	100 cav		180			18,000
V. Cash Costs						12,440
VI. Net Return						5,815

Note; */ Include land rental/amortization, interest on loan, land tax, annual payment for loan of pump facilities and other miscellaneous expenses.
**/ Man-animal and man-machine costs combined.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.
1/ @ 4lit./day x 90days.

Source; Consultants' estimate using the following data
-"Food-Markets"-from Technology Resource Center, Manila
-"Cost of Production of Selected Agricultural Commodities"-from PPD,NOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table N-2-5 Economic Net Return per Hectare - Pump-Irrigated Palay by Proposed Facilities - FUTURE W/ PROJECT SITUATION

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor	69 Md		42		2,898	
2. Material Inputs						
- Seeds	60 kg		3.17		190	
- Fertilizer						
* Nitrogen	98 Kg		10.2		1,000	
* Phosphorous	28 Kg		18.3		512	
* Potassium	28 Kg		6.6		185	
- Pesticides/Chemicals						
* Insecticide	2 l		312		624	
* Fungicide	1 l		291		291	
* Herbicides	10 kg		6		60	
3. Pumping Cost						
-Fuel(diesel) 1/	360 l		6		2,160	
-Oil and Lubricants	1 LS.		127		127	
-Repair	1 LS.		422		422	
4. Others */					2,283	
5. Sub-total					10,752	
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Seedbed Preparation	1 Md		42		42	
- Land Preparation	8 Md		42		336	
- Repair of Dikes	1 Md		42		42	
- Pulling and Teras-planting	3 Md		42		126	
- Transplanting	7 Md		42		294	
- Fertilizer Application	2 Md		42		84	
- Weeding	4 Md		42		168	
- Chemical Application	2 Md		42		84	
- Water Management	5 Md		42		210	
- Harvesting & Others	4 Md		42		168	
- Threshing and Winnowing **/	1 Md		42		42	
- Drying, Hauling, Transpotation & Others	1 Md		42		42	
2. Others ***/					107	
3. Sub-total					1,745	
III. Total Production Costs					12,497	
IV. Total Returns	100 cav		180		18,000	
V. Cash Costs					10,752	
VI. Net Return					5,503	

Note; */ Include land rental/amortization, interest on loan, land tax and other miscellaneous expenses.
**/ Man-animal and man-machine costs combined.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.
1/ @ 4lit./day x 90days.

Source; Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,NOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table N-2-6 Economic Net Return per Hectare - Rainfed Palay -

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor	40 Md		42		1,680	
2. Material Inputs						
- Seeds	75 kg		3.17		238	
- Fertilizer						
* Urea	1.5 Bag		235		353	
* Complete (14-14-14)	1 Bag		250		250	
- Pesticides/Chemicals						
* Granular Insecticide	.1 bag		322		322	
* Quarts Contact Insecticide	1 qt.		260		260	
* Herbicides	0.3 l		177		53	
3. Others */					685	
4. Sub-total					3,841	
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Seedbed Preparation	1.4 Md		42		59	
- Land Preparation	4.2 Md		42		176	
- Repair of Dikes	1.2 Md		42		50	
- Pulling and Teras-planting	3.5 Md		42		147	
- Transplanting	3.9 Md		42		164	
- Fertilizer Application	0.6 Md		42		25	
- Weeding	3.4 Md		42		143	
- Chemical Application	0.9 Md		42		38	
- Water Management	2.9 Md		42		122	
- Harvesting & Others	4.1 Md		42		172	
- Threshing and Winnowing **/	1.1 Md		42		46	
- Drying, Hauling, Transpotation & Others	1.6 Md		42		67	
2. Others ***/					79	
3. Sub-total					1,289	
III. Total Production Costs					5,130	
IV. Total Returns	40 cav		162		6,480	
V. Cash Costs					3,841	
VI. Net Return					1,350	

Note: */ Include land rental/amortization, interest on loan, land tax, and other miscellaneous expenses.
**/ Man-animal and man-machine costs combined.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.

Source; Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,NOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table N-2-7 Economic Net Return per Hectare - Corn -

PRESENT & FUTURE W/O SITUATION — Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor		61 Md		42		2,562
2. Material Inputs						
- Seeds		16 kg		5.5		88
- Fertilizer						
* Urea		2 Bag		235		470
* Complete (14-14-14)						
- Pesticides/Chemicals						
* Granular Insecticide						
* Quarts Contact Insecticide		1 l		312		312
* Herbicides						
3. Others */						1,617
4. Sub-total						5,049
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Land Preparation		5.9 Md		42		248
- Seeding		4 Md		42		168
- Fertilizer Application		3.5 Md		42		147
- Chemical Application		2.8 Md		42		118
- Cultivation		15.9 Md		42		668
- Water Management		2.9 Md		42		122
- Harvesting & Others		12.4 Md		42		521
- Hauling, Transpotation & Others		2.7 Md		42		113
2. Others ***/						138
3. Sub-total						2,242
III. Total Production Costs						7,291
IV. Total Returns		60 sac (50kg/sack)		174		10,440
V. Cash Costs						5,049
VI. Net Return						3,149

Note; */ Include land rental/amortization, interest on loan, land tax, and other miscellaneous expenses.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.

Source; Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,MOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table N-2-8 Economic Net Return per Hectare - Corn -

FUTURE W/ SITUATION — Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor		71 Md		42		2,982
2. Material Inputs						
- Seeds		20 kg		5.5		110
- Fertilizer						
* Nitrogen		95 kg		10.2		969
* Phosphorous		28 kg		18.3		512
* Potassium		28 kg		6.6		185
- Pesticides/Chemicals						
* Granular Insecticide						
* Quarts Contact Insecticide		3 l		312		936
* Herbicides						
3. Others */						2,356
4. Sub-total						8,051
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Land Preparation		8 Md		42		336
- Seeding		4 Md		42		168
- Fertilizer Application		4 Md		42		168
- Chemical Application		3 Md		42		126
- Cultivation		16 Md		42		672
- Water Management		3 Md		42		126
- Harvesting & Others		15 Md		42		630
- Hauling, Transpotation & Others		3 Md		42		126
2. Others ***/						154
3. Sub-total						2,506
III. Total Production Costs						10,556
IV. Total Returns		75 sac (50kg/sack)		174		13,050
V. Cash Costs						8,051
VI. Net Return						2,494

Note; */ Include land rental/amortization, interest on loan, land tax, and other miscellaneous expenses.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.

Source; Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,MOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team

Table N-2-9 Economic Net Return per Hectare

- Mongo -

PRESENT & FUTURE W/O PROJECT SITUATION

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor		35 Md		42		1,470
2. Material Inputs						
- Seeds		23 kg		38		874
- Fertilizer						
* Urea		2 Bag		235		470
* Complete (14-14-14)						
- Pesticides/Chemicals						
* Granular Insecticide						
* Pesticide		2 l		312		624
* Herbicides						
3. Others */						1,462
4. Sub-total						4,900
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Land Preparation		8.4 Md		42		353
- Seeding		0.3 Md		42		13
- Spot Weeding		4 Md		42		168
- Chemical Application		1.2 Md		42		50
- Cultivation		0 Md		42		0
- Water Management		0 Md		42		0
- Harvesting & Others		20.7 Md		42		869
- Hauling, Transpotation & Others		7 Md		42		294
2. Others ***/						114
3. Sub-total						1,861
III. Total Production Costs						6,761
IV. Total Returns		850 kg		8.4		7,140
V. Cash Costs						4,900
VI. Net Return						379

Note: */ Include land rental/amortization, interest on loan, land tax, and other miscellaneous expenses.

***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.

Source: Consultants' estimate using the following data
- 'Food-Markets'-from Technology Resource Center, Manila
- 'Cost of Production of Selected Agricultural Commodities'-from PPD,NOA
- Production Costs of various crops from Bureau of Agricultural Statistics
- Farm Economy Survey conducted by Study Team

Table N-2-10 Economic Net Return per Hectare

- Mongo -

FUTURE W/ SITUATION

Unit: Pesos

Item	Input Quantity Wet	Input Quantity Dry	Unit Value Wet	Unit Value Dry	Production Costs Wet	Production Costs Dry
I. Cash Costs						
1. Farm Labor						
- Hired Farm Labor		38 Md		42		1,596
2. Material Inputs						
- Seeds		25 kg		38		950
- Fertilizer						
* Nitrogen		66 kg		10.2		673
* Phosphorous		21 kg		18.3		384
* Potassium		21 kg		6.6		139
- Pesticides/Chemicals						
* Granular Insecticide						
* Pesticide		3 l		312		936
* Herbicides						
3. Others */						1,471
4. Sub-total						6,149
II. Non-cash Costs						
1. Unpaid Labor (Family)						
- Land Preparation		9 Md		42		378
- Seeding		1 Md		42		42
- Spot Weeding		5 Md		42		210
- Chemical Application		1 Md		42		42
- Cultivation		4 Md		42		168
- Water Management		0 Md		42		0
- Harvesting & Others		21 Md		42		882
- Hauling, Transpotation & Others		7 Md		42		294
2. Others ***/						132
3. Sub-total						2,148
III. Total Production Costs						8,297
IV. Total Returns		1000 kg		8.4		8,400
V. Cash Costs						6,149
VI. Net Return						103

Note: */ Include land rental/amortization, interest on loan, land tax, and other miscellaneous expenses.

***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.

Source: Consultants' estimate using the following data
- 'Food-Markets'-from Technology Resource Center, Manila
- 'Cost of Production of Selected Agricultural Commodities'-from PPD,NOA
- Production Costs of various crops from Bureau of Agricultural Statistics
- Farm Economy Survey conducted by Study Team

Table N-2-11 Economic Net Return per Hectare
- Ratooned Sugarcane -

Unit: Pesos

Item	Input Quantity Wet & Dry	Unit Value Wet & Dry	Production Costs Wet & Dry
I. Cash Costs			
1. Farm Labor			
- Hired Farm Labor	66 Md	42	2,772
2. Material Inputs			
- Cane Points	12,000 pcs	0.008	96
- Fertilizer			
* Nitrogen	108 kg	10.2	1,102
* Phosphorous	20 kg	18.3	366
* Potassium	120 kg	6.6	792
3. Others */			2,100
4. Sub-total			7,227
II. Non-cash Costs			
1. Unpaid Labor (Family)			
- Field Clearing	4.4 Md	42	185
- Stable Sharing	3.2 Md	42	134
- Cane Points Preparation	2.2 Md	42	92
- Distribution of Cane Points	2.3 Md	42	97
- Replanting	5.1 Md	42	214
- Cultivation			
* Off-Barring	2.8 Md	42	118
* Hilling-up	4.3 Md	42	181
- Fertilizer Application	2 Md	42	84
- Havesting & Others			
* Cutting	5 Md	42	210
* Hauling **/	3.1 Md	42	130
2. Others ***/			189
3. Sub-total			1,634
III. Total Production Costs			8,861
IV. Total Returns	85 pcl	220	18,700
V. Cash Costs			7,227
VI. Net Return			9,839

Note; */ Include land rental/amortization, interest on loan, land tax, and other miscellaneous expenses.
**/ Man-animal and man-machine costs combined.
***/ Include depreciation, supplies/supplementary food, interest on capital investment, and other miscellaneous expenses.
****/ Approximately 65% of total returns because the transpotation charge entrusted to traders are deducted.

Source; Consultants' estimate using the following data
-'Food-Markets'-from Technology Resource Center, Manila
-'Cost of Production of Selected Agricultural Commodities'-from PPD,MOA
-Production Costs of various crops from Bureau of Agricultural Statistics
-Farm Economy Survey conducted by Study Team
-Interviews to Hacienda Luisita sugar refining factory

N.3 Calculation of Agricultural Benefits

Table N-3-1 Summary of Agricultural Benefit

(Unit: '000 Pesos)

CIS	Agri. * Benefit		Phasing Phase-I	Phase-II	Total
1. Bamban	3,943		0	3,943	3,943
2. San Pedro	658		0	658	658
3. Malonzo	1,453		0	1,453	1,453
4. Bangcu	3,679		0	3,679	3,679
5. Susuba Cut-cut	133		0	133	133
6. Telebanca	2,155		0	2,155	2,155
7. Sta Rita	1,027		1,027	0	1,027
8. Marita	801		801	0	801
9. San Martin	2,315		0	2,315	2,315
10. Baluto	6,881		6,881	0	6,881
11. Lilibangan	1,896		0	1,896	1,896
12. San Bartolome	2,027	#	50	1,977	2,027
13. San Isidro	2,995	#	50	2,945	2,995
14. Lucong	11,596	#	50	11,546	11,596
15. Magao	3,155	##	37	3,118	3,155
16. Tinang	964		0	964	964
17. Sto Rosario	1,249	#	50	1,199	1,249
18. Sta Monica	3,175	##	37	3,138	3,175
19. Caluluan	397		0	397	397
Total	50,499		8,983	41,516	50,499

Note #: Two (2) units of shallow wells are proposed in Phase-I for present fallow areas. Each well is designed to irrigate 4.5 ha. Based on the above, agricultural benefit from shallow well development is calculated as follows:

2 units x 4.5 ha/unit x P5,503/ha = P49,527

##: Two (2) units of shallow wells are proposed in Phase-I for present pumped areas to increase pumping capacity. Each well is designed to irrigate 4.5 ha.

2 units x 4.5 ha/unit x (P5,503/ha - P1.386/ha) = P37,053

*: Including benefit from saved loss of palay production.

Table N-3-2 Agricultural Benefit Computation (Whole 19 CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	6,859	3.7	25,378	4,111	28,197
-Pump-Irrigation	219	3.7	810	1,486	325
-Rainfed	444	2	888	1,350	599
Palay (Dry Season)					
-Gravity-Irrigation	4,112	4.1	16,859	5,699	23,434
-Pump-Irrigation	2,032	4.1	8,331	1,386	2,816
Mongo	865	0.85	735	379	328
Corn	260	3	780	3,149	819
Sugarcane	900	85	76,500	9,839	8,855
Total	15,691		130,282		65,374
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	7,658	4.5	35,361	6,608	51,926
Palay (Dry Season)					
-Gravity-Irrigation	5,187	5	25,935	8,127	42,155
-Pump-Irrigation (Existing)	1,209	5	6,045	3,815	4,612
-Pump-Irrigation (Proposed)	1,008	5	5,040	5,503	5,547
Mongo	0	1	0	103	0
Corn	880	3.75	3,300	2,494	2,195
Sugarcane	900	85	76,500	9,839	8,855
Total	17,042		152,181		115,290
Net Benefit					49,915

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	52,269	72,383
2. Quantitative Loss (ton/year) 1/	8,624	7,600
3. Value of Quantitative Loss ('000 P) 2/	27,943	27,361
Value of Quantitative Loss Reduction ('000 P)		584 *

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg* without project and P3.60/kg** with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 50,499

*/ An average error was considered.
**/ Economic price of palay in 1990 was projected for 2,000 adopting 1.50 of price increse rate (refer to WB's Commodity Price Forcast in July, 1989)

Table N-3-3 Agricultural Benefit Computation (1. Bamban CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	532	3.7	1,968	4,111	2,187
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	219	2	438	1,350	296
Palay (Dry Season)					
-Gravity-Irrigation	532	4.1	2,181	5,699	3,032
-Pump-Irrigation	0	4.1	0	1,386	0
Mongo	0	0.85	0	379	0
Corn	0	3	0	3,149	0
Sugarcane	300	85	25,500	9,839	2,952
Total	1,583		30,088		8,466
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	751	4.5	3,380	6,608	4,963
Palay (Dry Season)					
-Gravity-Irrigation	532	5	2,660	8,127	4,324
-Pump-Irrigation (Existing)	0	5	0	3,815	0
-Pump-Irrigation (Proposed)	0	5	0	5,503	0
Mongo	0	1	0	103	0
Corn	0	3.75	0	2,494	0
Sugarcane	300	85	25,500	9,839	2,952
Total	1,583		31,540		12,238
Net Benefit					3772

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	4,588	6,040
2. Quantitative Loss (ton/year) 1/	757	634
3. Value of Quantitative Loss ('000 P) 2/	2,453	2282
Value of Quantitative Loss Reduction ('000 P)		171

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 3,943

Table N-3-4 Agricultural Benefit Computation (2. San Pedro CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	120	3.7	444	4,111	493
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	120	4.1	492	5,699	684
-Pump-Irrigation	0	4.1	0	1,386	0
Mongo	0	0.85	0	379	0
Corn	0	3	0	3,149	0
Sugarcane	0	85	0	9,839	0
Total	240		936		1,177
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	120	4.5	540	6,608	793
Palay (Dry Season)					
-Gravity-Irrigation	120	5	600	8,127	975
-Pump-Irrigation (Existing)	0	5	0	3,815	0
-Pump-Irrigation (Proposed)	0	5	0	5,503	0
Mongo	0	1	0	103	0
Corn	0	3.75	0	2,494	0
Sugarcane	0	85	0	9,839	0
Total	240		1,140		1,768
Net Benefit					591

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	936	1,140
2. Quantitative Loss (ton/year) 1/	154	120
3. Value of Quantitative Loss ('000 P) 2/	499	432
Value of Quantitative Loss Reduction ('000 P)		67

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 658

Table N-3-5 Agricultural Benefit Computation (3. Malonzo CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	179	3.7	662	4,111	736
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	240	4.1	984	5,699	1,368
-Pump-Irrigation	0	4.1	0	1,386	0
Mongo	0	0.85	0	379	0
Corn	0	3	0	3,149	0
Sugarcane	0	85	0	9,839	0
Total	419		1,646		2,104
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	240	4.5	1,080	6,608	1,586
Palay (Dry Season)					
-Gravity-Irrigation	240	5	1,200	8,127	1,950
-Pump-Irrigation (Existing)	0	5	0	3,815	0
-Pump-Irrigation (Proposed)	0	5	0	5,503	0
Mongo	0	1	0	103	0
Corn	0	3.75	0	2,494	0
Sugarcane	0	85	0	9,839	0
Total	480		2,280		3,536
Net Benefit					1,432

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	1,646	2,280
2. Quantitative Loss (ton/year) 1/	272	239
3. Value of Quantitative Loss ('000 P) 2/	881	860
Value of Quantitative Loss Reduction ('000 P)		21

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 1,453

Table N-3-6 Agricultural Benefit Computation (4. Bangcu CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	500	3.7	1,850	4,111	2,056
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	200	2	400	1,350	270
Palay (Dry Season)					
-Gravity-Irrigation	500	4.1	2,050	5,699	2,850
-Pump-Irrigation	0	4.1	0	1,386	0
Mongo	0	0.85	0	379	0
Corn	0	3	0	3,149	0
Sugarcane	0	85	0	9,839	0
Total	1,200		4,300		5,175
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	700	4.5	3,150	6,608	4,626
Palay (Dry Season)					
-Gravity-Irrigation	500	5	2,500	8,127	4,064
-Pump-Irrigation (Existing)	0	5	0	3,815	0
-Pump-Irrigation (Proposed)	0	5	0	5,503	0
Mongo	0	1	0	103	0
Corn	0	3.75	0	2,494	0
Sugarcane	0	85	0	9,839	0
Total	1,200		5,650		8,689
Net Benefit					3,514

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	4,300	5,650
2. Quantitative Loss (ton/year) 1/	710	593
3. Value of Quantitative Loss ('000 P) 2/	2,300	2,135
Value of Quantitative Loss Reduction ('000 P)		165

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.80/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 3,679

Table N-3-7 Agricultural Benefit Computation (5. Susuba Cut-cut CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	40	3.7	148	4,111	164
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	8	4.1	33	5,699	46
-Pump-Irrigation	0	4.1	0	1,386	0
Mongo	0	0.85	0	379	0
Corn	0	3	0	3,149	0
Sugarcane	0	85	0	9,839	0
Total	48		181		210
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	40	4.5	180	6,608	264
Palay (Dry Season)					
-Gravity-Irrigation	8	5	40	8,127	65
-Pump-Irrigation (Existing)	0	5	0	3,815	0
-Pump-Irrigation (Proposed)	0	5	0	5,503	0
Mongo	0	1	0	103	0
Corn	0	3.75	0	2,494	0
Sugarcane	0	85	0	9,839	0
Total	48		220		329
Net Benefit					119

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	181	220
2. Quantitative Loss (ton/year) 1/	30	23
3. Value of Quantitative Loss ('000 P) 2/	97	83
Value of Quantitative Loss Reduction ('000 P)		14

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.80/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 133

Table N-3-8 Agricultural Benefit Computation (6. Telebanca CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	364	3.7	1,347	4,111	1,498
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	25	2	50	1,350	34
Palay (Dry Season)					
-Gravity-Irrigation	364	4.1	1,492	5,699	2,074
-Pump-Irrigation	0	4.1	0	1,386	0
Mongo	19	0.85	16	379	7
Corn	6	3	18	3,149	19
Sugarcane	0	85	0	9,839	0
Total	778		2,873		3,631
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	389	4.5	1,751	6,608	2,571
Palay (Dry Season)					
-Gravity-Irrigation	364	5	1,820	8,127	2,958
-Pump-Irrigation (Existing)	0	5	0	3,815	0
-Pump-Irrigation (Proposed)	0	5	0	5,503	0
Mongo	0	1	0	103	0
Corn	25	3.75	94	2,494	62
Sugarcane	0	85	0	9,839	0
Total	778		3,664		5,591
Net Benefit					1,960

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	2,889	3,571
2. Quantitative Loss (ton/year) 1/	477	375
3. Value of Quantitative Loss ('000 P) 2/	1,545	1,350
Value of Quantitative Loss Reduction ('000 P)		195

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II : '000 P) 2,155

Table N-3-9 Agricultural Benefit Computation (7. Sta Rita CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	115	3.7	426	4,111	473
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	60	4.1	246	5,699	342
-Pump-Irrigation	20	4.1	82	1,386	28
Mongo	27	0.85	23	379	10
Corn	8	3	24	3,149	25
Sugarcane	0	85	0	9,839	0
Total	230		800		878
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	135	4.5	608	6,608	892
Palay (Dry Season)					
-Gravity-Irrigation	135	5	675	8,127	1,097
-Pump-Irrigation (Existing)	0	5	0	3,815	0
-Pump-Irrigation (Proposed)	0	5	0	5,503	0
Mongo	0	1	0	103	0
Corn	0	3.75	0	2,494	0
Sugarcane	0	85	0	9,839	0
Total	270		1,283		1,989
Net Benefit					1,111

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	754	1,283
2. Quantitative Loss (ton/year) 1/	124	135
3. Value of Quantitative Loss ('000 P) 2/	402	486
Value of Quantitative Loss Reduction ('000 P)		-84

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II : '000 P) 1,027

Table N-3-10 Agricultural Benefit Computation (8. Marita CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	100	3.7	370	4,111	411
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	30	4.1	123	5,699	171
-Pump-Irrigation	35	4.1	144	1,386	49
Mongo	15	0.85	13	379	6
Corn	5	3	15	3,149	16
Sugarcane	0	85	0	9,839	0
Total	185		684		652
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	100	4.5	450	6,608	661
Palay (Dry Season)					
-Gravity-Irrigation	100	5	500	8,127	813
-Pump-Irrigation (Existing)	0	5	0	3,815	0
-Pump-Irrigation (Proposed)	0	5	0	5,503	0
Mongo	0	1	0	103	0
Corn	0	3.75	0	2,494	0
Sugarcane	0	85	0	9,839	0
Total	200		950		1,474
Net Benefit					821

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	637	950
2. Quantitative Loss (ton/year) 1/	105	100
3. Value of Quantitative Loss ('000 P) 2/	340	360
Value of Quantitative Loss Reduction ('000 P)		-20

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 801

Table N-3-11 Agricultural Benefit Computation (9. San Martin CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	240	3.7	888	4,111	987
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	30	4.1	123	5,699	171
-Pump-Irrigation	50	4.1	205	1,386	69
Mongo	62	0.85	53	379	23
Corn	18	3	54	3,149	57
Sugarcane	0	85	0	9,839	0
Total	400		1,323		1,307
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	280	4.5	1,260	6,608	1,850
Palay (Dry Season)					
-Gravity-Irrigation	240	5	1,200	8,127	1,950
-Pump-Irrigation (Existing)	0	5	0	3,815	0
-Pump-Irrigation (Proposed)	0	5	0	5,503	0
Mongo	0	1	0	103	0
Corn	40	3.75	150	2,494	100
Sugarcane	0	85	0	9,839	0
Total	560		2,610		3,900
Net Benefit					2,593

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	1,216	2,460
2. Quantitative Loss (ton/year) 1/	201	258
3. Value of Quantitative Loss ('000 P) 2/	651	929
Value of Quantitative Loss Reduction ('000 P)		-278

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 2,315

Table N-3-12 Agricultural Benefit Computation (10. Baluto CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	381	3.7	1,410	4,111	1,566
-Pump-Irrigation	219	3.7	810	1,486	325
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	0	4.1	0	5,699	0
-Pump-Irrigation	320	4.1	1,312	1,386	444
Mongo	216	0.85	184	379	82
Corn	64	3	192	3,149	202
Sugarcane	0	85	0	9,839	0
Total	1,200		3,908		2,619
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	740	4.5	3,330	6,608	4,890
Palay (Dry Season)					
-Gravity-Irrigation	570	5	2,850	8,127	4,632
-Pump-Irrigation (Existing)	0	5	0	3,815	0
-Pump-Irrigation (Proposed)	0	5	0	5,503	0
Mongo	0	1	0	103	0
Corn	170	3.75	638	2,494	424
Sugarcane	0	85	0	9,839	0
Total	1,480		6,818		9,946
Net Benefit					7,328

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	3,532	6,180
2. Quantitative Loss (ton/year) 1/	583	649
3. Value of Quantitative Loss ('000 P) 2/	1,869	2,336
Value of Quantitative Loss Reduction ('000 P)		-447

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 6,881

Table N-3-13 Agricultural Benefit Computation (11. Lilibangan CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	240	3.7	888	4,111	987
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	90	4.1	369	5,699	513
-Pump-Irrigation	110	4.1	451	1,386	152
Mongo	30	0.85	26	379	11
Corn	10	3	30	3,149	31
Sugarcane	0	85	0	9,839	0
Total	480		1,764		1,695
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	240	4.5	1,080	6,608	1,586
Palay (Dry Season)					
-Gravity-Irrigation	240	5	1,200	8,127	1,950
-Pump-Irrigation (Existing)	0	5	0	3,815	0
-Pump-Irrigation (Proposed)	0	5	0	5,503	0
Mongo	0	1	0	103	0
Corn	0	3.75	0	2,494	0
Sugarcane	0	85	0	9,839	0
Total	480		2,280		3,536
Net Benefit					1,842

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	1,708	2,280
2. Quantitative Loss (ton/year) 1/	282	239
3. Value of Quantitative Loss ('000 P) 2/	914	860
Value of Quantitative Loss Reduction ('000 P)		54

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 1,896

Table N-3-14 Agricultural Benefit Computation (12. San Bartolome CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	350	3.7	1,295	4,111	1,439
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	120	4.1	492	5,699	684
-Pump-Irrigation	140	4.1	574	1,386	194
Mongo	69	0.85	59	379	26
Corn	21	3	63	3,149	66
Sugarcane	0	85	0	9,839	0
Total	700		2,483		2,409
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	375	4.5	1,688	6,608	2,478
Palay (Dry Season)					
-Gravity-Irrigation	120	5	600	8,127	975
-Pump-Irrigation (Existing)	140	5	700	3,815	534
-Pump-Irrigation (Proposed)	25	5	125	5,503	138
Mongo	0	1	0	103	0
Corn	90	3.75	338	2,494	224
Sugarcane	0	85	0	9,839	0
Total	750		3,450		4,349
Net Benefit					1,940

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	2,361	3,113
2. Quantitative Loss (ton/year) 1/	390	327
3. Value of Quantitative Loss ('000 P) 2/	1,264	1,177
Value of Quantitative Loss Reduction ('000 P)		87

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 2,027

Table N-3-15 Agricultural Benefit Computation (13. San Isidro CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	450	3.7	1,665	4,111	1,850
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	0	4.1	0	5,699	0
-Pump-Irrigation	330	4.1	1,353	1,386	457
Mongo	92	0.85	78	379	35
Corn	28	3	84	3,149	88
Sugarcane	0	85	0	9,839	0
Total	900		3,180		2,430
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	450	4.5	2,025	6,608	2,974
Palay (Dry Season)					
-Gravity-Irrigation	0	5	0	8,127	0
-Pump-Irrigation (Existing)	330	5	1,650	3,815	1,259
-Pump-Irrigation (Proposed)	185	5	925	5,503	1,018
Mongo	0	1	0	103	0
Corn	120	3.75	450	2,494	299
Sugarcane	0	85	0	9,839	0
Total	1,085		5,050		5,550
Net Benefit					3,120

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	3,018	4,800
2. Quantitative Loss (ton/year) 1/	498	483
3. Value of Quantitative Loss ('000 P) 2/	1,614	1,739
Value of Quantitative Loss Reduction ('000 P)		-125

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 2,995

Table N-3-16 Agricultural Benefit Computation (14. Lucong CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	2,000	3.7	7,400	4,111	8,222
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	1,200	4.1	4,920	5,699	6,839
-Pump-Irrigation	190	4.1	779	1,386	263
Mongo	308	0.85	262	379	117
Corn	92	3	276	3,149	290
Sugarcane	0	85	0	9,839	0
Total	3,790		13,637		15,731
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	2,000	4.5	9,000	6,608	13,216
Palay (Dry Season)					
-Gravity-Irrigation	1,200	5	6,000	8,127	9,752
-Pump-Irrigation (Existing)	190	5	950	3,815	725
-Pump-Irrigation (Proposed)	460	5	2,300	5,503	2,531
Mongo	0	1	0	103	0
Corn	400	3.75	1,500	2,494	998
Sugarcane	0	85	0	9,839	0
Total	4,250		19,750		27,222
Net Benefit					11,492

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	13,099	18,250
2. Quantitative Loss (ton/year) 1/	2,161	1,916
3. Value of Quantitative Loss ('000 P) 2/	7,002	6,898
Value of Quantitative Loss Reduction ('000 P)		104

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 11,596

Table N-3-17 Agricultural Benefit Computation (15. Magao CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	468	3.7	1,732	4,111	1,924
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	468	4.1	1,919	5,699	2,667
-Pump-Irrigation	152	4.1	623	1,386	211
Mongo	0	0.85	0	379	0
Corn	0	3	0	3,148	0
Sugarcane	0	85	0	9,839	0
Total	1,088		4,274		4,802
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	468	4.5	2,106	6,608	3,093
Palay (Dry Season)					
-Gravity-Irrigation	468	5	2,340	8,127	3,803
-Pump-Irrigation (Existing)	54	5	270	3,815	206
-Pump-Irrigation (Proposed)	98	5	490	5,503	539
Mongo	0	1	0	103	0
Corn	0	3.75	0	2,494	0
Sugarcane	0	85	0	9,839	0
Total	1,088		5,206		7,641
Net Benefit					2,840

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	4,274	5,206
2. Quantitative Loss (ton/year) 1/	705	547
3. Value of Quantitative Loss ('000 P) 2/	2,284	1,969
Value of Quantitative Loss Reduction ('000 P)		315

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 3,155

Table N-3-18 Agricultural Benefit Computation (16. Tinan CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	250	3.7	925	4,111	1,028
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	100	4.1	410	5,699	570
-Pump-Irrigation	0	4.1	0	1,386	0
Mongo	0	0.85	0	379	0
Corn	0	3	0	3,149	0
Sugarcane	600	85	51,000	9,839	5,903
Total	950		52,335		7,501
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	250	4.5	1,125	6,608	1,652
Palay (Dry Season)					
-Gravity-Irrigation	100	5	500	8,127	813
-Pump-Irrigation (Existing)	0	5	0	3,815	0
-Pump-Irrigation (Proposed)	0	5	0	5,503	0
Mongo	0	1	0	103	0
Corn	0	3.75	0	2,494	0
Sugarcane	600	85	51,000	9,839	5,903
Total	950		52,625		8,368
Net Benefit					867

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	1,335	1,625
2. Quantitative Loss (ton/year) 1/	220	171
3. Value of Quantitative Loss ('000 P) 2/	713	616
Value of Quantitative Loss Reduction ('000 P)		97

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 964

Table N-3-19 Agricultural Benefit Computation (17. Sto Rosario CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	150	3.7	555	4,111	617
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	100	4.1	410	5,699	570
-Pump-Irrigation	50	4.1	205	1,386	69
Mongo	0	0.85	0	379	0
Corn	0	3	0	3,149	0
Sugarcane	0	85	0	9,839	0
Total	300		1,170		1,256
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	200	4.5	900	6,608	1,322
Palay (Dry Season)					
-Gravity-Irrigation	100	5	500	8,127	813
-Pump-Irrigation (Existing)	50	5	250	3,815	191
-Pump-Irrigation (Proposed)	50	5	250	5,503	275
Mongo	0	1	0	103	0
Corn	0	3.75	0	2,494	0
Sugarcane	0	85	0	9,839	0
Total	400		1,900		2,600
Net Benefit					1,344

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	1,170	1,900
2. Quantitative Loss (ton/year) 1/	193	280
3. Value of Quantitative Loss ('000 P) 2/	625	720
Value of Quantitative Loss Reduction ('000 P)		-95

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 1,249

Table N-3-20 Agricultural Benefit Computation (18. Sta Monica CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	300	3.7	1,110	4,111	1,233
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	150	4.1	615	5,699	855
-Pump-Irrigation	590	4.1	2,419	1,386	818
Mongo	0	0.85	0	379	0
Corn	0	3	0	3,149	0
Sugarcane	0	85	0	9,839	0
Total	1,040		4,144		2,906
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	300	4.5	1,350	6,608	1,982
Palay (Dry Season)					
-Gravity-Irrigation	150	5	750	8,127	1,219
-Pump-Irrigation (Existing)	400	5	2,000	3,815	1,526
-Pump-Irrigation (Proposed)	190	5	950	5,503	1,046
Mongo	0	1	0	103	0
Corn	0	3.75	0	2,494	0
Sugarcane	0	85	0	9,839	0
Total	1,040		5,050		5,773
Net Benefit					2,867

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	4,144	5,050
2. Quantitative Loss (ton/year) 1/	684	530
3. Value of Quantitative Loss ('000 P) 2/	2,216	1,908
Value of Quantitative Loss Reduction ('000 P)		308

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 3,175

Table N-3-21 Agricultural Benefit Computation (19. Caluluan CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	80	3.7	296	4,111	329
-Pump-Irrigation	0	3.7	0	1,486	0
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	0	4.1	0	5,699	0
-Pump-Irrigation	45	4.1	185	1,386	62
Mongo	27	0.85	23	379	10
Corn	8	3	24	3,149	25
Sugarcane	0	85	0	9,839	0
Total	160		527		427
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	80	4.5	360	6,608	529
Palay (Dry Season)					
-Gravity-Irrigation	0	5	0	8,127	0
-Pump-Irrigation (Existing)	45	5	225	3,815	172
-Pump-Irrigation (Proposed)	0	5	0	5,503	0
Mongo	0	1	0	103	0
Corn	35	3.75	131	2,494	87
Sugarcane	0	85	0	9,839	0
Total	160		716		788
Net Benefit					361

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	481	585
2. Quantitative Loss (ton/year) 1/	79	61
3. Value of Quantitative Loss ('000 P) 2/	256	220
Value of Quantitative Loss Reduction ('000 P)		36

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 397

N.4 Calculation of Other Benefits

Table N-4-1 Agricultural Transportation Cost Saving from Barangay Road Development

No. Location (Total Length ;km)	Length 1/ (km)	Influenced Area 1/	Total Agri Output 2/ (ton/year)	Trans.Cost ('000P) W/O 3/	W/ 4/	Cost Reduction ('000P)	Cost Saving 5/ ('000P)
1 Provincial Road - San Vicente - San Nicolas Balas (3.3)	1.7	(500ha;Out-of-19CIS)	3,783	79	23	57	62
2 San Antonio - Baluto (2.1)	4.9	(I.A. of No.5,6,7)	10,402	627	178	449	493
3 Baluto - Calius Gueco (2.8)	2.5	(80%; Baluto)	5,291	163	46	116	128
Sub-total (4.9)							
	3.3	(100%; San Isidro)	4,899	199	57	142	156
4 San Isidro - San Bartolome - San Antonio (3.3)	3.3	(800ha;Out-of-19CIS)	6,053	246	70	176	193
	1.1	(70%; San Bartolome)	2,343	32	9	23	25
Sub-total (3.3)							
5 Calius Gueco - Panalicsican (1.1)	2.5	(700ha;Out-of-19CIS)	5,296	163	46	117	128
6 Panalicsican - Talimundoc (5.5)	3.9	(500ha;Out-of-19CIS)	3,783	181	52	130	143
7 Panalicsican - Castillo (2.8)	0.6	(20%; Baluto)	1,323	10	3	7	8
Sub-total (9.4)			10,402				
8 Provincial Road - Telebanca - Malonso (1.8)	4	(100%; Malonzo)	2,212	109	31	78	86
9 Malonso - Banaba (0.9)	2.3	(40%; Telebanca)	1,422	40	11	29	32
10 Malonso - Malonzo (4.4)	1.8	(40%; Telebanca)	1,422	31	9	23	25
Sub-total (7.1)							
	1.3	(30%; Bangcu)	1,644	26	7	19	21
11 Sto Nino - San Pedro - Bangcu (6.8)	5.8	(30%; Bangcu)	1,644	117	33	84	92
12 Bangcu - Dungan - Provin.Road (2.5)	2.4	(100%; San Pedro)	1,106	33	9	23	26
Sub-total (9.3)							
	10.2	(70%; Magao)	3,535	443	126	317	349
13 Sta Rita - San Martin - Lilibangan (6.6)	7.4	(30%; Magao)	1,515	138	39	99	109
	6.6	(100%; Lilibangan)	2,212	180	51	128	141
14 Lilibangan - Magao (1.8)	3.3	(100%; San Martin)	2,532	103	29	74	81
15 Magao - Cap Cap (3.6)	1.7	(100%; Marita)	922	19	5	14	15
Sub-total (12.0)							
16 Tinang - Mabilog (3.6)	1.8	(50%; Tinang)	25,523	565	161	404	445
Total 52.9 km				3,504	997	2,507	2,757

1/ This length corresponds to each influenced area (I.A.) for calculation. Lengthes and I.A.'s used in calculation are judged from the location of barangay roads and CIS's on topo. map.
2/ With future project condition considering loss of 3%.
3/ Agricultural outputs will be transported by following vehicle features without road development:

Vehicle	Rate	Economic V.O.C.(P/km) *
Jeepney (1T)	60%	6.80 (Earth-Very Bad)
Truck (2T)	40%	11.30 (Earth-Very Bad)
Weighted Average	1.4T/Vehicle	8.6

* V.O.C.(Vehicle Operating Cost)

Economic transportation cost rate is calculated as follows:
(1ton/1.4ton)x1kmx2xP8.6=P12.3/ton・km
Where; 2: reciprocating motion.

4/ With road development situation, as follows:

Vehicle	Rate	Economic V.O.C.(P/km)
Jeepney (1T)	50%	1.68 (Paved-Good)
Truck (2T)	50%	3.56 (Paved-Good)
Weighted Average	1.5T/Vehicle	2.62

Economic transportation cost rate is calculated as follows:
(1ton/1.5ton)x1kmx2xP2.62=P3.5/ton・km

5/ Increased by 10% taking into account the transport of agricultural inputs.

Table N-4-2 Non-Agricultural Transportation Cost Saving from Barangay Road Development

No.	Location	Length (km)	Traffic Volume (1990) (Vehicle/Day)	Traffic Volume (2000) (Vehicle/Day)	V.O.C. Cost Saving * (1990) ('000 Pesos/Year)	V.O.C. Cost Saving * (2000) ('000 Pesos/Year)
1	Provincial Road - San Vicente - San Nicolas Balas	3.3	470	695	4,393	6,496
2	San Antonio - Baluto	2.1	849	1,257	5,050	7,477
3	Baluto - Calius Gueco	2.8	849	1,257	6,733	9,969
4	San Isidro - San Bartolome - San Antonio	3.3	474	702	4,430	6,562
5	Calius Gueco - Panalicsican	1.1	502	743	1,564	2,315
6	Panalicsican - Talimundoc	5.5	283	419	4,409	6,527
7	Panalicsican - Castillo	2.8	313	463	2,482	3,672
8	Provincial Road-Telebanca - Malonso	1.8	244	361	1,244	1,840
9	Malonso - Banaba	0.9	178	263	454	670
10	Malonso - Malonzo	4.4	244	361	3,041	4,499
11	Sto Nino - San Pedro - Bangcu	6.8	420	622	8,089	11,980
12	Bangcu - Dungan - Provincial Road	2.5	70	104	496	736
13	Sta Rita - San Martin - Lilibangan	6.6	247	366	4,617	6,842
14	Lilibangan - Magao	1.8	160	238	816	1,213
15	Magao - Cap Cap	3.6	108	159	1,101	1,621
16	Tinang - Mabilog	3.6	369	546	3,763	5,567
	Total	52.9	5,780	8,556	52,682	77,988

Note * V.O.C.(Vehicle Operating Cost) saving is calculated based on the following estimated reduction of economic V.O.C.:

Vehicle	Rate(%)	W/O	W/	Reduction
Tricycle	40	3.37	0.69	
Jeepney	25	6.80	1.68	
Truck	10	11.30	3.56	
Sedan	25	4.42	1.39	
Weighted Ave.(Pesos/km)		5.28	1.40	3.88

Road Condition: W/O, Earth-Very Bad
W/ , Paved-Good

In the calculation, road length is considered as dowbled taking into account round trip for each vehicle.

Table N-4-3 Non-Agricultural Use Traffic Volume Estimation

No. Location (Total Length ;km)	Influenced Barangay	Population (1989)	Traffic Volume per Day (1990) 1/	(2000) 2/
1 Provincial Road - San Vicente	San Vicente	773		
- San Nicolas Balas (3.3)	San Nicolas Balas	5,099		
Sub-total		5,872	470	695
	Talimundoc Mariala	1,499		
	Castillo	1,868		
	Panalicsican	2,039		
	Calius Gueco	866		
2 San Antonio - Baluto (2.1)	Baluto	4,344		
Sub-total		10,616	849	1,257
3 Baluto - Calius Gueco (2.8)	Same to No.2			
Sub-total		10,616	849	1,257
	San antonio	2,575		
4 San Isidro - San Bartolome	San Bartolome	1,060		
- San Antonio (3.3)	San Isidro	2,290		
Sub-total		5,925	474	702
	Calius Gueco	866		
	Talimundoc Mariala	1,499		
	Castillo	1,868		
5 Calius Gueco - Panalicsican (1.1)	Panalicsican	2,039		
Sub-total		6,272	502	743
	Panalicsican	2,039		
6 Panalicsican - Talimundoc (5.5)	Talimundoc Mariala	1,499		
Sub-total		3,538	283	419
	Panalicsican	2,039		
7 Panalicsican - Castillo (2.8)	Castillo	1,868		
Sub-total		3,907	313	463
8 Provincial Road-Telebanca	Malonzo	829		
- Malonso (1.8)	Telebanca	2,224		
Sub-total		3,053	244	361
9 Malonso - Banaba (0.9)	Telebanca	2,224	178	263
10 Malonso - Malonzo (4.4)	Same to No.8	3,053	244	361
	Sto Nino	771		
	San Pedro	1,831		
11 Sto Nino - San Pedro - Bangcu(6.8)	Dela Cruz	2,650		
Sub-total		5,252	420	622
	Dungan	663		
12 Bangcu - Dungan - Provin.Road(2.5)	Bangcu	215		
Sub-total		878	70	104
	Magao	1,346		
13 Sta Rita - San Martin	Lilibangan	660		
- Lilibangan (6.6)	San Martin	1,081		
Sub-total		3,087	247	366
	Lilibangan	660		
14 Lilibangan - Magao (1.8)	Magao	1,346		
Sub-total		2,006	160	238
15 Magao - Cap Cap (3.6)	Magao	1,346	108	159
	Mabilog	1,780		
16 Tinang - Mabilog (3.6)	Tinang	2,835		
Sub-total		4,615	369	546
Total 52.9 km		72,260	5,781	8,556

Note: 1/ Average vehicle use in the year of 1990 is estimated at 8 vehicles per day per 100 population. This figure is derived from the results of traffic volume survey performed by the Study Team and calculated traffic volume for agricultural transportation. For this calculation, population in 1989 in influenced barangay is used.

2/ The future traffic volume is projected by the annual growth rate of 4%.

Table N-4-4 Transportation Cost Saving from Farm to Market Road Development

No.	Barangay	Length (km)	Influenced Area 2/	Total Agri Product,n 3/ (ton/year)	Transport W/O 4/ ('000P)	Cost W/ 5/ ('000P)	Cost Reduction ('000P)	Cost Saving 6/ ('000P)
11	Culubasa	2						
12	La Paz	0.5	50% of					
13	San Rafael	1	1. Bamban					
14	Pacalcal	1.7						
	Sub-total	5.2		2,929	1,828	66	1,762	1,938
			100% of					
8	San Pedro	1.1	2. San Pedro	1,106	146	13	133	147
9	De la Cruz	2	55% of					
10	Bangcu	2	4. Bangcu					
	Sub-total	4		3,014	1,447	58	1,389	1,528
5	Telebanca	3.9	100% of					
6	Malonso	0.5	6. Telebanca					
7	Banaba	0.5						
	Sub-total	4.9		3,554	2,090	77	2,013	2,214
			100% of					
15	Sta Rita	1.1	7. Sta Rita	1,245	164	14	150	165
			100% of					
16	San Martin	0.9 1/	8. Marita	922	100	10	90	98
			100% of					
16	San Martin	2.6 1/	9. San Martin	2,532	790	39	751	826
			5% of					
1	Baluto	0.5	10. Baluto	331	20	3	17	18
			20% of					
17	Lilibangan	0.5	11. Lilibangan	442	27	4	22	24
			25% of					
2	San Bartolome	1	12 San Bartolome	837	100	9	91	100
			100% of					
3	San Isidro	6.5	13. San Isidro	4,899	3,821	127	3,694	4,063
20	San Miguel	3						
23	Sta Cruz	0.5						
25	Cafe	1	65% of					
26	Calatingan	1.2	14. Lucong					
28	Sta Maria	2.3						
29	Pitabunan	2.1						
30	Corazon de Jesus	2.8						
	Sub-total	12.9		12,452	19,276	538	18,738	20,612
			60% of					
18	Magao	3.6	15. Magao	3,030	1,309	55	1,254	1,379
			60% of					
19	Tinang	5	16. Tinang	946	567	21	547	601
			100% of					
27	Sto Rosario	1.9	17. Sto Rosario	1,843	420	25	395	435
			30% of					
22	Sta Monica	2.2	18. Sta Monica	1,470	388	21	367	404
			100% of					
21	Caluluan	1.2	19. Caluluan	695	100	8	92	101
			100 ha					
4	Castillo	1	Out-of-19-CIS,s	757	91	8	82	91
			180 ha					
24	Sta Rosa	1.8	Out-of-19-CIS,s	1,362	294	18	276	304
	Total	57.9		44,363	32,978	1,115	31,863	35,049

1/ These road lengthes are tentative.
2/ Influenced area is assumed as max. distance of 500-600 m from the road.
3/ Production with future project condition considering loss of 3%. This production does not include sugarcane.
4/ In without road develop., almost all agricultural production will be transported by manpower with charge rate of P10 per bag(50kg) per 500 m trip financialy. Based on this figure, economic transportation cost rate is calculated as follows:

(1,000kg/50kg)x(1.0km/0.5km)xP10x0.5x0.6=P120/ton・km
Where; 0.5: half length of the road is considered in the calculation,
0.6: conversion factor for economic cost.

5/ In with road develop., manpower will be substituted by vehicle transportation as follows:

Vehicle	Rate	Economic V.O.C.(P/km)*
Jeepney(1T)	50%	2.50(Gravel-Fair)
Truck(2T)	50%	5.52(Gravel-Fair)
Weighted Ave. 1.5T/Vehicle		4.0

* V.O.C. (Vehicle Operating Cost)

Based on the above, economic transportation cost rate is calculated as follows:

(1ton/1.5ton)x1kmx2xP4.0x0.5 + P8.4/ton=P2.7/ton・km + P8.4/ton
Where; 2: reciprocating motion,
0.5: half length of the road is considered in the calculation,
P8.4/ton: loading and unloading cost to truck and jeepney.

6/ Increased by 10% taking into account the transport of agricultural inputs.

Table N-4-5

Operation and Maintenance Cost Savings from Development of Intake Structures

(Unit: '000 Pesos)

Existing Condition		
Facilities	Type	O/M Cost Saving *
1. Bamban	Brush Dam	3.6
2. San Pedro	Brush Dam	3.6
3. Malonzo No.1	Brush Dam	3.6
Malonzo No.2	Brush Dam	3.6
4. Bangcu	Brush Dam	3.6
6. Telebanca No.1	Brush Dam	3.6
Telebanca No.2	Brush Dam	3.6
Telebanca No.3	Brush Dam	3.6
8. Marita	Brush Dam	3.6
9. San Martin No.1	Brush Dam	3.6
San Martin No.2	Brush Dam	3.6
San Martin No.3	Brush Dam	3.6
San Martin No.4	Brush Dam	3.6
11. Lilibangan	Brush Dam	3.6
Total		50.4

* O/M cost savings are estimated based on annual construction cost of brush dams as follows:

P560/hr(Bulldozer) x 2hr x 4times/year x 0.78(SCF) +
P183/day(Operator) x 0.5day x 0.78(SCF)
=P3,600/unit

N.5 Economic Internal Rate of Return

Table N-5-1 Computation of Economic Internal Rate of Return (Original Case of the Project)

(Million Pesos)

Year	Incremental Cost			Incremental Benefit						Net Benefit
	Capital Items	O&M	Total	Agri. Production	Barangay Road (Agri.)	Barangay Road (Non-Agri.)	Farm-Mar. Road	O&M Cost Saving	Total	
1	68.38	0.00	68.38	0.00	0.00	0.00	0.00	0.00	0.00	-68.38
2	129.29	0.72	130.01	0.00	0.00	12.41	0.00	0.00	12.41	-117.60
3	93.95	3.20	97.15	1.80	0.14	18.51	0.00	0.00	20.45	-76.70
4	169.80	4.48	174.28	3.60	0.27	41.04	0.01	0.03	44.95	-129.33
5	133.76	7.58	141.34	5.39	0.41	65.34	0.01	0.05	71.20	-70.14
6	28.60	9.47	38.07	7.19	0.54	67.87	0.01	0.05	75.66	37.59
7		10.36	10.36	17.29	1.09	70.40	7.03	0.05	95.86	85.51
8		10.36	10.36	25.59	1.51	72.93	14.03	0.05	114.11	103.76
9		10.36	10.36	33.90	1.92	75.46	21.04	0.05	132.37	122.02
10		10.36	10.36	42.20	2.34	77.99	28.04	0.05	150.62	140.27
11		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
12		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
13		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
14		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
15		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
16		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
17		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
18		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
19		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
20		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
21		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
22		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
23		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
24		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
25		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
26		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
27		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
28		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
29		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
30		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
31		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
32		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
33		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
34		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
35		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
36		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
37		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
38		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
39		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
40		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
41		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
42		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
43		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
44		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
45		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
46		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
47		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
48		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
49		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
50		10.36	10.36	50.50	2.76	77.99	35.05	0.05	166.35	156.00
Total	623.78	481.07	1,104.85	2,156.96	118.62	3,621.55	1,472.17	2.33	7,371.63	6,266.79

Net Present Worth at 10 %	459
Net Present Worth at 15 %	100
Net Present Worth at 20 %	-41
EIRR (%)	18

N.6 Financial Analysis

Table N-6-1 Land Resources

Farm Model No.1 = Small =
Tenure : Part-Owner

Category	Present Situation (1990) Wet (ha)	Present Situation (1990) Dry (ha)	Future Situation (1995) W/O Wet (ha)	Future Situation (1995) W/O Dry (ha)	Future Situation (1995) W/ Wet (ha)	Future Situation (1995) W/ Dry (ha)
Farm Size (ha)		1.45		1.45		1.45
Farm Mt Size		6.7		6.7		6.7
Crops						
Palay	1.16	0.93	1.16	0.93	1.2	1.08
Mongo		0.09		0.09		0
Sugarcane	0.16	0.16	0.16	0.16	0.16	0.16
Other Veg.		0		0		0
Corn		0.03		0.03		0.09
Livestocks						
Carabao	1		1		1	
Swine	2		2		2	
Chicken	8		8		8	
Duck	20		20		20	
Idle land	0.13	0.24	0.13	0.24	0.09	0.12
Total	1.45	1.45	1.45	1.45	1.45	1.45

Production Disposal

Farm Model(1)
- Part-Owner -

(Unit: kg)

Variable Description	Present Situation (1990) Production Yield	Production Total	Cons'ption kg	Seed Requ't kg/ha	Seed Total kg	Sale kg	Future W/O Situation Production Yeild kg/ha	Production Total kg	Cons'ption kg	Seed Requ't kg/ha	Seed Total kg	Sale kg	Future W/ Situation Production Yield kg/ha	Production Total kg	Cons'ption kg	Seed Requ't kg/ha	Seed Total kg	Sale kg
Crops	kg/ha	kg	kg	kg/ha	kg	kg	kg/ha	kg	kg	kg/ha	kg	kg	kg/ha	kg	kg	kg/ha	kg	kg
*/ Palay(Wet)	3,700	3,584	575	75	87	2,621	3,700	3,584	575	75	87	2,621	4,500	4,833	575	60	72	3,970
*/ Palay(Dry)	4,100	3,184	575	90	84	2,258	4,100	3,184	575	90	84	2,258	5,000	4,833	575	60	65	3,977
Mongo	850	77	40	23	2	34	850	77	40	23	2	34	1,000	0	0	25	0	0
**/ Sugarcane	85	14	1		0	13	85	14	1		0	13	85	14	1		0	13
***/ Other Veg.	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
****/ Corn	60	2	2	16	0	0	60	2	2	16	0	0	75	7	3	20	2	4
**/ picul																		
***/ Bag(23-28kg)																		
****/ Sack(50kg)																		

	Present Situation (1990) Production Meat Head	Production Egg pc	Cons'ption Meat Head	Cons'ption Egg pc	Sale Meat Head	Sale Egg pc	Future W/O Situation Production Meat Head	Production Egg pc	Cons'ption Meat Head	Cons'ption Egg pc	Sale Meat Head	Sale Egg pc	Future W/ Situation Production Meat Head	Production Egg pc	Cons'ption Meat Head	Cons'ption Egg pc	Sale Meat Head	Sale Egg pc
Livestock																		
Carabao	0		0		0	0	0		0		0	0	0		0		0	0
Swine	16		2		14	0	16		2		14	0	16		2		14	0
Chicken	40	876	40	876	0	0	40	876	40	876	0	0	40	876	40	876	0	0
Duck	120	5,110	120	3,887	0	1,223	120	5,110	120	3,887	0	1,223	120	5,110	120	3,887	0	1,223

Note; */ 16.5% of post-harvest loss was considered in the present and the future without project situation.
Under the project, the post-harvest loss will reduce into 10.5%.
Threshing fee was considered as 7% under present and w/o situation, 4% under w/ project situation.

Table N-6-2 Land Resources

Farm Model No.2 = Middle =
Tenure : Part-Owner

	Present Situation (1990)		Future Situation (1995) W/O		Future Situation (1995) W/	
Farm Size (ha)	2.3		2.3		2.3	
Farm HH Size	6.7		6.7		6.7	
Category	Wet (ha)	Dry (ha)	Wet (ha)	Dry (ha)	Wet (ha)	Dry (ha)
Crops						
Palay	1.85	1.53	1.85	1.53	1.87	1.83
Mongo		0.14		0.14		0
Sugarcane	0.25	0.25	0.25	0.25	0.25	0.25
Other Veg.		0		0		0
Corn		0.05		0.05		0.15
Livestocks						
Carabao	1		1		1	
Swine	2		2		2	
Chicken	8		8		8	
Duck	20		20		20	
Idle Land	0.2	0.33	0.2	0.33	0.18	0.07
Total	2.3	2.3	2.3	2.3	2.3	2.3

Production Disposal Farm Model(2)
- Part-Owner -

(Unit: kg)

Variable Description	Present Situation (1990) Production Yield	Production Total	Cons'ption kg	Seed Requ't	Seed Total	Sale	Future W/O Situation Production Yeild	Production Total	Cons'ption kg	Seed Requ't	Seed Total	Sale	Future W/ Situation Production Yield	Production Total	Cons'ption kg	Seed Requ't	Seed Total	Sale
	kg/ha	kg	kg	kg/ha	kg	kg	kg/ha	kg	kg	kg/ha	kg	kg	kg/ha	kg	kg	kg/ha	kg	kg
Crops																		
*/ Palay(Wet)	3,700	5,716	575	75	139	4,523	3,700	5,716	575	75	139	4,523	4,500	7,531	575	60	112	6,508
*/ Palay(Dry)	4,100	5,238	575	90	138	4,086	4,100	5,238	575	90	138	4,086	5,000	8,189	575	60	110	7,138
Mongo	850	119	40	23	3	76	850	119	40	23	3	76	1,000	0	0	25	0	0
**/ Sugarcane	85	21	1		0	20	85	21	1		0	20	85	21	1		0	20
***/ Other Veg.	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
****/ Corn	60	3	3	16	1	0	60	3	3	16	1	0	75	11	3	20	3	8
**/ picul																		
***/ Bag(23-28kg)																		
****/ Sack(50kg)																		

	Present Situation (1990) Production Meat	Production Egg	Cons'ption Meat	Cons'ption Egg	Sale Meat	Sale Egg	Future W/O Situation Production Meat	Production Egg	Cons'ption Meat	Cons'ption Egg	Sale Meat	Sale Egg	Future W/ Situation Production Meat	Production Egg	Cons'ption Meat	Cons'ption Egg	Sale Meat	Sale Egg
	Head	pc	Head	pc	Head	pc	Head	pc	Head	pc	Head	pc	Head	pc	Head	pc	Head	pc
Livestock																		
Carabao	0		0		0	0	0		0		0	0	0		0		0	0
Swine	16		16		0	0	16		16		0	0	16		16		0	0
Chicken	40	876	40	876	0	0	40	876	40	876	0	0	40	876	40	876	0	0
Duck	120	5,110	120	3,887	0	1,223	120	5,110	120	3,887	0	1,223	120	5,110	120	3,887	0	1,223

Note; */ 16.5% of post-harvest loss was considered in the present and the future without project situation.
Under the project, the post-harvest loss will reduce into 10.5%.
Threshing fee was considered as 7% under present and w/o situation, 4% under w/ project situation.

Table N-6-3 - Financial Analysis -

Farm Model No.1 = Small =
Tenure : Part-Owner

	Present Situation (1990)			Future Situation					
				Without Project			With Project		
	kg	Unit (P/kg)	Amount (Pesos)	kg	Unit (P/kg)	Amount (Pesos)	kg	Unit (P/kg)	Amount (Pesos)
1. Marketable Production									
1.1 Crops									
- Palay (Wet)	2,621	3.1	8,125	2,621	3.1	8,125	3,970	4	15,880
- Palay (Dry)	2,258	4.1	9,258	2,258	4.1	9,258	3,977	5	19,885
- Sugarcane (picul)	13	443	5,759	13	443	5,759	13	443	5,759
- Mongobean	34	10	340	34	10	340	0	12	0
- Eggplant (bag)	0	50	0	0	50	0	0	50	0
- Corn (sack)	0	150	0	0	150	0	4	183	732
Sub-Total			23,482			23,482			42,256
1.2 Livestocks									
- Carabao (head)	0	3,000	0	0	3,000	0	0	3,000	0
- Swine (head)	14	300	4,200	14	300	4,200	14	300	4,200
- Chicken (head)	0	20	0	0	20	0	0	20	0
- Chicken (egg, pc)	0	1	0	0	1	0	0	1	0
- Duck (egg,pc)	1,223	2.4	2,935	1,223	2.4	2,935	1,223	2.4	2,935
Sub-Total			7,135			7,135			7,135
2. Family Consumption									
2.1 Crops									
- Palay (Wet)	575	3.1	1,783	575	3.1	1,783	575	4	2,300
- Palay (Dry)	575	4.1	2,358	575	4.1	2,358	575	5	2,875
- Sugarcane (picul)	1	443	443	1	443	443	1	443	443
- Mongobean	40	10	400	40	10	400	0	12	0
- Eggplant (bag)	0	50	0	0	50	0	0	50	0
- Corn (sack)	2	150	300	2	150	300	3	183	549
Sub-Total			5,283			5,283			6,167
2.2 Livestocks									
- Carabao (head)	0	3,000	0	0	3,000	0	0	3,000	0
- Swine (head)	2	300	600	2	300	600	2	300	600
- Chicken (head)	40	20	800	40	20	800	40	20	800
- Chicken (egg, pc)	876	1	876	876	1	876	876	1	876
- Duck (egg,pc)	3,887	2.4	9,329	3,887	2.4	9,329	3,887	2.4	9,329
Sub-Total			11,605			11,605			11,605
3. Seeds									
- Palay (Wet)	87	3.76	327	87	3.76	327	72	3.76	271
- Palay (Dry)	84	3.76	316	84	3.76	316	65	3.76	244
- Sugarcane (pc.)	0	0.01	0	0	0.01	0	0	0.01	0
- Mongobean	2	45	90	2	45	90	0	45	0
- Eggplant	0	250	0	0	250	0	0	250	0
- Corn (kg)	0	6.5	0	0	6.5	0	2	6.5	13
Sub-Total			733			733			528
4. Payment to Land Owner			7,370			7,370			7,370
5. Production Cost									
5.1 Crops (ha)									
- Palay (Wet-Gravity)	1.16	7,532	8,737	1.16	7,532	8,737	1.2	8,797	10,556
- Palay (Wet-Existing Pump)	0	9,925	0	0	9,925	0	0	0	0
- Palay (Wet-Rainfed)	0	4,870	0	0	4,870	0	0	4,870	0
- Palay (Dry-Gravity)	0.84	7,790	6,544	0.84	7,790	6,544	0.97	9,818	9,523
- Palay (Dry-Existing Pump)	0.09	12,184	1,097	0.09	12,184	1,097	0.06	14,211	853
- Palay (Dry-Proposed Pump)	0	0	0	0	0	0	0.05	12,211	611
- Sugarcane	0.16	8,707	1,393	0.16	8,707	1,393	0.16	8,707	1,393
- Mongobean	0.09	6,062	546	0.09	6,062	546	0	7,627	0
- Eggplant	0	10,702	0	0	10,702	0	0	10,702	0
- Corn	0.03	6,705	201	0.03	6,705	201	0.09	9,772	879
Sub-Total			18,517			18,517			23,816
5.2 Livestocks (head)									
- Carabao	1	1,410	1,410	1	1,410	1,410	1	1,410	1,410
- Swine	2	816	1,632	2	816	1,632	2	816	1,632
- Chicken	8	50	400	8	50	400	8	50	400
- Duck	20	130	2,600	20	130	2,600	20	130	2,600
Sub-Total			6,042			6,042			6,042
6. Net Farm Income			15,576			15,576			29,935
7. Cash Income									
- Crops			23,482			23,482			42,256
- Livestocks			7,135			7,135			7,135
- Off-farm			4,300			4,300			4,300
- Non-farm			0			0			0
Sub-Total			34,917			34,917			53,691
8. Cash Expenditure									
- Crops			25,887			25,887			31,186
- Livestocks			6,042			6,042			6,042
- Others			3,000			3,000			3,000
Sub-Total			34,929			34,929			40,228
9. Farm Cash Balance			-12			-12			13,464

Table N-6-4

- Financial Analysis -

Farm Model No.2 = Middle = Tenure : Part-Owner

	Present Situation (1990)			Future Situation					
				Without Project			With Project		
	kg	Unit (P/kg)	Amount (Pesos)	kg	Unit (P/kg)	Amount (Pesos)	kg	Unit (P/kg)	Amount (Pesos)
1. Marketable Production									
1.1 Crops									
- Palay (Wet)	4,523	3.1	14,021	4,523	3.1	14,021	6,508	4	26,032
- Palay (Dry)	4,086	4.1	16,753	4,086	4.1	16,753	7,138	5	35,690
- Sugarcane (picul)	20	443	8,860	20	443	8,860	20	443	8,860
- Mongobean	76	10	760	76	10	760	0	12	0
- Eggplant (bag)	0	50	0	0	50	0	0	50	0
- Corn (sack)	0	150	0	0	150	0	8	183	1,464
Sub-Total			40,394			40,394			72,046
1.2 Livestocks									
- Carabao (head)	0	3,000	0	0	3,000	0	0	3,000	0
- Swine (head)	0	300	0	0	300	0	0	300	0
- Chicken (head)	0	20	0	0	20	0	0	20	0
- Chicken (egg, pc)	0	1	0	0	1	0	0	1	0
- Duck (egg,pc)	1,223	2.4	2,935	1,223	2.4	2,935	1,223	2.4	2,935
Sub-Total			2,935			2,935			2,935
2. Family Consumption									
2.1 Crops									
- Palay (Wet)	575	3.1	1,783	575	3.1	1,783	575	4	2,300
- Palay (Dry)	575	4.1	2,358	575	4.1	2,358	575	5	2,875
- Sugarcane (picul)	1	443	443	1	443	443	1	443	443
- Mongobean	40	10	400	40	10	400	0	12	0
- Eggplant (bag)	0	50	0	0	50	0	0	50	0
- Corn (sack)	3	150	450	3	150	450	3	183	549
Sub-Total			5,433			5,433			6,167
2.2 Livestocks									
- Carabao (head)	0	3,000	0	0	3,000	0	0	3,000	0
- Swine (head)	16	300	4,800	16	300	4,800	16	300	4,800
- Chicken (head)	40	20	800	40	20	800	40	20	800
- Chicken (egg, pc)	876	1	876	876	1	876	876	1	876
- Duck (egg,pc)	3,887	2.4	9,329	3,887	2.4	9,329	3,887	2.4	9,329
Sub-Total			15,805			15,805			15,805
3. Seeds									
- Palay (Wet)	139	3.76	523	139	3.76	523	112	3.76	421
- Palay (Dry)	138	3.76	519	138	3.76	519	110	3.76	414
- Sugarcane (pc.)	0	0.01	0	0	0.01	0	0	0.01	0
- Mongobean	3	45	135	3	45	135	0	45	0
- Eggplant	0	250	0	0	250	0	0	250	0
- Corn (kg)	1	6.5	7	1	6.5	7	3	6.5	20
Sub-Total			1,183			1,183			854
4. Payment to Land Owner			7,370			7,370			7,370
5. Production Cost									
5.1 Crops (ha)									
- Palay (Wet-Gravity)	1.74	7,532	13,106	1.74	7,532	13,106	1.87	8,797	16,450
- Palay (Wet-Existing Pump)	0	9,925	0	0	9,925	0	0	0	0
- Palay (Wet-Rainfed)	0.11	4,870	536	0.11	4,870	536	0	4,870	0
- Palay (Dry-Gravity)	1.3	7,790	10,127	1.3	7,790	10,127	1.56	9,818	15,316
- Palay (Dry-Existing Pump)	0.23	12,184	2,802	0.23	12,184	2,802	0.14	14,211	1,990
- Palay (Dry-Proposed Pump)	0	0	0	0	0	0	0.13	12,211	1,587
- Sugarcane	0.25	8,707	2,177	0.25	8,707	2,177	0.25	8,707	2,177
- Mongobean	0.14	6,062	849	0.14	6,062	849	0	7,627	0
- Eggplant	0	10,702	0	0	10,702	0	0	10,702	0
- Corn	0.05	6,705	335	0.05	6,705	335	0.15	9,772	1,466
Sub-Total			29,931			29,931			38,986
5.2 Livestocks (head)									
- Carabao	1	1,410	1,410	1	1,410	1,410	1	1,410	1,410
- Swine	2	816	1,632	2	816	1,632	2	816	1,632
- Chicken	8	50	400	8	50	400	8	50	400
- Duck	20	130	2,600	20	130	2,600	20	130	2,600
Sub-Total			6,042			6,042			6,042
6. Net Farm Income			21,224			21,224			44,555
7. Cash Income									
- Crops			40,394			40,394			72,046
- Livestocks			2,935			2,935			2,935
- Off-farm			4,200			4,200			4,200
- Non-farm			0			0			0
Sub-Total			47,529			47,529			79,181
8. Cash Expenditure									
- Crops			37,301			37,301			46,356
- Livestocks			6,042			6,042			6,042
- Others			4,000			4,000			4,000
Sub-Total			47,343			47,343			56,398
9. Farm Cash Balance			186			186			22,783

N.7 Economic Analysis for the Priority Project

Table N-7-1 Agricultural Benefit Computation
(Sta Rita, Narita and Baluto CIS)

I. Net Value of Incremental Crop Production

Crops	Planted Area (ha)	Unit Yield (ton/ha)	Production (ton)	Net Return per ha (P/ha)	Annual Profit ('000 P)
Without Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	596	3.7	2,205	4,111	2,450
-Pump-Irrigation	219	3.7	810	1,486	325
-Rainfed	0	2	0	1,350	0
Palay (Dry Season)					
-Gravity-Irrigation	90	4.1	369	5,699	513
-Pump-Irrigation	375	4.1	1,538	1,386	520
Mongo	258	0.85	219	379	98
Corn	77	3	231	3,149	242
Sugarcane	0	85	0	9,839	0
Total	1,615		5,372		4,149
With Project Condition					
Palay (Wet Season)					
-Gravity-Irrigation	975	4.5	4,388	6,608	6,443
Palay (Dry Season)					
-Gravity-Irrigation	805	5	4,025	8,127	6,542
-Pump-Irrigation (Existing)	0	5	0	3,815	0
-Pump-Irrigation (Proposed)	0	5	0	5,503	0
Mongo	0	1	0	103	0
Corn	170	3.75	638	2,494	424
Sugarcane	0	85	0	9,839	0
Total	1,950		9,050		13,409
Net Benefit					9,261

II. Value of Reduced Quantitative Loss of Paddy

Item	Without Project	With Project
1. Palay Production (ton/year)	4,922	8,413
2. Quantitative Loss (ton/year) 1/	812	883
3. Value of Quantitative Loss ('000 P) 2/	2,631	3,180
Value of Quantitative Loss Reduction ('000 P)		-549

1/ Quantitative losses ;16.5 % without project and 10.5 % with project conditions.
2/ Economic prices of palay ;P3.24/kg without project and P3.60/kg with project conditions.

III. Total Agricultural Benefit (I+II ; '000 P) 8,712

Table N-7-2 Computation of Economic Internal Rate of Return (Original Case of the Pilot CISD)

(Million Pesos)

Year	Incremental Cost			Incremental Benefit **						Net Benefit
	Capital Items	O&M	Total	Agri. Production	Barangay Road (Agri.)	Barangay Road (Non-Agri.)	Farm-Mar. Road	O&M Cost Saving	Total	
1	68.38	0.00	68.38	0.00	0.00	0.00	0.00	0.00	0.00	-68.38
2	129.29	0.72	130.01	0.00	0.00	12.41	0.00	0.01	12.42	-117.59
3		3.20	3.20	1.80	0.14	18.51	0.00	0.01	20.46	17.26
4		3.20	3.20	3.60	0.27	19.28	0.01	0.01	23.16	19.97
5		3.20	3.20	5.39	0.41	20.06	0.01	0.01	25.88	22.68
6		3.20	3.20	7.19	0.54	20.84	0.01	0.01	28.59	25.39
7		3.20	3.20	8.98	0.68	21.61	0.02	0.01	31.30	28.10
8		3.20	3.20	8.98	0.68	22.39	0.02	0.01	32.08	28.88
9		3.20	3.20	8.98	0.68	23.16	0.02	0.01	32.85	29.65
10		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
11		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
12		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
13		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
14		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
15		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
16		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
17		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
18		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
19		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
20		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
21		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
22		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
23		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
24		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
25		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
26		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
27		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
28		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
29		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
30		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
31		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
32		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
33		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
34		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
35		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
36		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
37		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
38		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
39		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
40		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
41		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
42		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
43		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
44		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
45		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
46		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
47		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
48		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
49		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
50		3.20	3.20	8.98	0.68	23.94	0.02	0.01	33.63	30.43
Total	197.67	154.22	351.89	413.10	31.28	1,139.80	0.83	0.35	1,585.36	1,233.47

Net Present Worth at 10 %	63
Net Present Worth at 15 %	-17
Net Present Worth at 20 %	-52
EIRR (%)	13

Note **: Incremental benefit of the Pilot CISD (Phase-I) is attributable to following development:

-- Agricultural Production; Improvement of Sta Rita, Marita and Baluto CISs through physical and institutional development including shallow wells development in San Bartolome, San Isidro, Lucong, Magao, Sto Rosario and Sta Monica CISs,
-- Barangay Roads; Concrete pavement of barangay roads, No.1 Provincial Road-San Vicente-San Nicolas Balas (3.3km), No.2 San Antonio-Baluto (2.1km) and No.3 Baluto-Calius Gueco (2.8km), 8.2km in total,
-- Farm to Market Road; Construction of farm to market road in Baluto Barangay (0.5km), and
-- O&M Cost Saving; Replacement of brush dams (2 sites).

Table N-7-3 Computation of Economic Internal Rate of Return of the Pilot CISD
(10% Increase of Project Cost)

(Million Pesos)

Year	Incremental Cost			Incremental Benefit						Net Benefit
	Capital Items	O&M	Total	Agri. Production	Barangay Road (Agri.)	Barangay Road (Non-Agri.)	Farm-Mar. Road	O&M Cost Saving	Total	
1	75.22	0.00	75.22	0.00	0.00	0.00	0.00	0.00	0.00	-75.22
2	142.22	0.72	142.94	0.00	0.00	12.41	0.00	0.01	12.42	-130.52
3		3.20	3.20	1.80	0.14	18.51	0.00	0.01	20.46	17.26
4		3.20	3.20	3.60	0.27	19.28	0.01	0.01	23.16	19.97
5		3.20	3.20	5.39	0.41	20.06	0.01	0.01	25.88	22.68
6		3.20	3.20	7.19	0.54	20.84	0.01	0.01	28.59	25.39
7		3.20	3.20	8.99	0.68	21.61	0.02	0.01	31.31	28.11
8		3.20	3.20	8.99	0.68	22.39	0.02	0.01	32.09	28.89
9		3.20	3.20	8.99	0.68	23.16	0.02	0.01	32.86	29.66
10		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
11		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
12		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
13		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
14		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
15		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
16		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
17		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
18		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
19		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
20		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
21		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
22		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
23		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
24		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
25		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
26		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
27		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
28		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
29		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
30		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
31		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
32		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
33		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
34		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
35		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
36		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
37		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
38		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
39		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
40		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
41		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
42		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
43		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
44		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
45		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
46		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
47		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
48		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
49		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
50		3.20	3.20	8.99	0.68	23.94	0.02	0.01	33.64	30.44
Total	217.44	154.22	371.66	413.54	31.28	1,139.80	0.83	0.35	1,585.80	1,214.14

Net Present Worth at 10 %	46
Net Present Worth at 15 %	-33
Net Present Worth at 20 %	-66
EIRR (%)	12

Table N-7-4 Computation of Economic Internal Rate of Return of the Pilot CISO
(10% Decrease of Benefit)

(Million Pesos)

Year	Incremental Cost			Incremental Benefit						Net Benefit
	Capital Items	O&M	Total	Agri. Production	Barangay Road (Agri.)	Barangay Road (Non-Agri.)	Farm-Mar. Road	O&M Cost Saving	Total	
1	68.38	0.00	68.38	0.00	0.00	0.00	0.00	0.00	0.00	-68.38
2	129.29	0.72	130.01	0.00	0.00	11.17	0.00	0.01	11.18	-118.83
3		3.20	3.20	1.62	0.13	16.66	0.00	0.01	18.42	15.22
4		3.20	3.20	3.24	0.24	17.35	0.01	0.01	20.85	17.65
5		3.20	3.20	4.85	0.37	18.05	0.01	0.01	23.29	20.09
6		3.20	3.20	6.47	0.49	18.76	0.01	0.01	25.73	22.53
7		3.20	3.20	8.08	0.61	19.45	0.02	0.01	28.17	24.97
8		3.20	3.20	8.08	0.61	20.15	0.02	0.01	28.87	25.67
9		3.20	3.20	8.08	0.61	20.84	0.02	0.01	29.56	26.36
10		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
11		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
12		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
13		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
14		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
15		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
16		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
17		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
18		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
19		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
20		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
21		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
22		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
23		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
24		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
25		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
26		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
27		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
28		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
29		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
30		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
31		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
32		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
33		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
34		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
35		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
36		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
37		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
38		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
39		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
40		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
41		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
42		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
43		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
44		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
45		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
46		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
47		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
48		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
49		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
50		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
Total	197.67	154.22	351.89	371.79	28.15	1,025.82	0.75	0.32	1,426.82	1,074.93

Net Present Worth at 10 %	37
Net Present Worth at 15 %	-33
Net Present Worth at 20 %	-62
EIRR (%)	12

Table N-7-5 Computation of Economic Internal Rate of Return of the Pilot CISD
(10% Increase of Project Cost and 10% Decrease of Benefit)

(Million Pesos)

Year	Incremental Cost			Incremental Benefit						Net Benefit
	Capital Items	O&M	Total	Agri. Production	Barangay Road (Agri.)	Barangay Road (Non-Agri.)	Farm-Mar. Road	O&M Cost Saving	Total	
1	75.22	0.00	75.22	0.00	0.00	0.00	0.00	0.00	0.00	-75.22
2	142.22	0.72	142.94	0.00	0.00	11.17	0.00	0.01	11.18	-131.76
3		3.20	3.20	1.62	0.13	16.66	0.00	0.01	18.42	15.22
4		3.20	3.20	3.24	0.24	17.35	0.01	0.01	20.85	17.65
5		3.20	3.20	4.85	0.37	18.05	0.01	0.01	23.29	20.09
6		3.20	3.20	6.47	0.49	18.76	0.01	0.01	25.73	22.53
7		3.20	3.20	8.08	0.61	19.45	0.02	0.01	28.17	24.97
8		3.20	3.20	8.08	0.61	20.15	0.02	0.01	28.87	25.67
9		3.20	3.20	8.08	0.61	20.84	0.02	0.01	29.56	26.36
10		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
11		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
12		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
13		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
14		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
15		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
16		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
17		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
18		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
19		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
20		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
21		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
22		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
23		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
24		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
25		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
26		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
27		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
28		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
29		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
30		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
31		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
32		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
33		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
34		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
35		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
36		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
37		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
38		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
39		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
40		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
41		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
42		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
43		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
44		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
45		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
46		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
47		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
48		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
49		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
50		3.20	3.20	8.08	0.61	21.55	0.02	0.01	30.26	27.06
Total	217.44	154.22	371.66	371.79	28.15	1,025.82	0.75	0.32	1,426.82	1,055.17

Net Present Worth at 10 %	20
Net Present Worth at 15 %	-49
Net Present Worth at 20 %	-77
EIRR (%)	11