

APPENDIX K PROJECT EVALUATION

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APPENDIX K-1 ESTIMATED SCHEDULE OF EXPENDITURES (FINANCIAL)

(Unit: thousand pesos)

	1976		1977		1978		1979		1980		1981		Total	
	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC
I. Initial Cost														
a. Preparation Works	-	-	-	2,875	-	1,150	-	1,150	-	575	-	-	-	5,750
b. Construction Works	-	-	13,259	1,938	15,110	20,442	23,074	16,604	4,416	15,709	2,861	10,257	58,720	64,950
c. Materials	-	-	1,407	-	3,517	-	1,407	-	704	-	-	-	7,035	-
d. Land Acquisition..	-	713	-	1,783	-	713	-	357	-	-	-	-	-	3,566
e. Engineering	1,411	510	1,040	712	832	261	832	261	832	261	832	261	5,779	2,266
Sub-total	1,411	(2,634)	15,706	(8,577)	19,459	22,566	25,313	18,372	5,952	16,545	3,693	(13,697)	71,554	(99,312)
II. Gov't Administration	-	132	-	429	-	1,484	-	1,173	-	1,064	-	685	-	4,967
Sub-total	1,411	1,355	15,706	7,737	19,459	24,050	25,313	19,545	5,952	17,609	3,693	11,203	71,554	81,499
III. Contingency	212	203	2,356	1,161	2,919	3,608	3,797	2,932	893	2,641	554	1,681	10,731	12,226
IV. Equipments	-	-	-	56,387	-	-	-	-	-	-	-	-	-	56,387
V. Total	1,623	1,558	74,449	8,898	22,378	27,658	29,110	22,477	6,845	20,250	4,247	12,884	138,652	93,725
VI. Price Escalation	65	62	8,934	1,068	4,923	6,085	9,024	6,968	2,806	8,303	2,208	6,700	27,960	29,186
VII. Grand Total	1,688	1,620	83,383	9,966	27,301	33,743	38,134	29,445	9,651	28,553	6,455	19,584	166,612	122,911
(US\$ x 10 ³)	225	216	11,118	1,329	3,640	4,499	5,085	3,926	1,287	3,807	861	2,611	22,215	16,388

Note: Figures in parenthesis are including indirect foreign currency costs.

Price escalation has been enumerated by computing the estimated rate (8% per annum for both the foreign and local cost) of price increase in prior year and one half of the rate of increase in the year concerned.

APPENDIX K-2 ESTIMATED SCHEDULE OF EXPENDITURES (ECONOMIC)

(Unit: Thousand Pesos)

	1976		1977		1978		1979		1980		1981		Total	
	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC
Project Cost*	1,623	1,558	18,062	8,898	22,378	27,658	29,110	22,477	6,845	20,250	4,247	12,884	82,265	93,725
Equipment Cost	-	-	5,728	-	11,866	-	12,684	-	6,547	-	4,092	-	40,917	-
Total	1,623	1,558	23,790	8,898	34,244	27,658	41,794	22,477	13,392	20,250	8,339	12,884	123,182	93,725
Less:														
Tax on Local Contractor	-	-	-	182	-	861	-	685	-	631	-	403	-	2,762
Land Acquisition	-	713	-	1,670	-	713	-	357	-	-	-	-	-	3,453
Total	-	713	-	1,852	-	1,574	-	1,042	-	631	-	403	-	6,215
Economic Cost	1,623	845	23,790	7,046	34,244	26,084	41,794	21,435	13,392	19,619	8,339	12,481	123,182	87,510
	2,468		30,836		60,328		63,229		33,011		20,820		210,692	

Note: * Initial Investment cost excluding Price Escalation and Equipment Cost Salvage value of equipments is estimated at \$15,470,000 (27.4% of total equipment cost).

APPENDIX K-3 CALCULATION OF WATER CHARGE

	First Crop		Second Crop		Total	
	Total	per ha	Total	per ha	Total	per ha
I. Cropped Area (ha)	12,790	-	13,200	-	25,990	-
II. O & M Cost (₱)						
a. Maintenance of Canal	755,400	59.06	779,600	59.06	1,535,000	59.06
b. Maintenance of Pump	149,600	11.70	154,400	11.70	304,000	11.70
c. Operation of Pump*	711,200	55.61	1,066,800	80.82	1,778,000	68.41
d. Maintenance of Road**	319,900	25.01	330,100	25.01	650,000	25.01
e. Miscellaneous	226,900	17.74	234,100	17.74	461,000	17.74
Total	<u>2,163,000</u>	<u>169.12</u>	<u>2,565,000</u>	<u>194.53</u>	<u>4,728,000</u>	<u>181.92</u>

Note: * 40% in first crop and 60% in second crop
 ** Excluding the maintenance cost for the trunk road (₱272,000).

Appendix K-4 : FARM BUDGET

K-4-1. General Condition

1) Living cost

According to the results of 558 farms survey, the average size farm household is 6 persons and the living cost consisting of the regular items and the special items is worked out P2,388.26 per year. 20 percent increment of this living cost has been proposed for future farmers' living standard.

2) Home consumption of paddy

It is planned that 118 kg of milled rice per head per year is to be consumed in farm household, and total consumption of paddy in farm household will be 1,182 kg, considering the milling recovery rate of 60 percent.

3) Labor balance

Table K-4-1 shows the labor balance of the typical farms. Principally, the shortage of family labor in both 2 ha and 3 ha farms will be supplemented by hiring other labor and no introduction of farm machinery is planned.

4) Sharing arrangement

There are four sharing arrangement between farmers and landlords in the area, namely: 75-25, 67-33, 60-40 and 50-50%. According to the said farm survey, the most common one is 67-33 and the next 75-25. After completion of the construction works, farmers will be required to introduce so intensified farming that the recommendable sharing arrangement would be 75-25 which is adopted in this farm budget analysis.

K-4-2. Amortization of Foreign Currency Loan

It is planned that the foreign currency portion of the project cost would be loaned by the Japanese government. Following the terms of the fourth Japanese Yen Loan, requirement and repayment schedule of

the loan is to be assumed as Table K-4-2. Assuming that the total amount to be repaid by the Philippine government, would be amortized by farmers after attaining full benefit with 20 years' repayment period starting from 1987, the amount to be amortized by farmers is estimated at P584 per ha per season.

K-4+3. Conclusion

The result of the farm budget analysis is shown in Table K-4-3 to K-4-8.

TABLE K-4-2. REQUIREMENT AND REPAYMENT OF LOAN

Interest Rate: 3.25%
 Repayment Period: 25 years
 Grace Period: 7 years

(Unit: US\$ $\times 10^3$)

Year	Month	Financing (Disbursement)	Repayment		Remarks
			Interest during Grace Period	Amortization of Principle	
1976	June	225	-	-	
	Aug.	-	4	-	
1977	Jan.	11,118	-	-	
	Feb.	-	184	-	
	Aug.	-	185	-	
1978	Jan.	3,640	-	-	
	Feb.	-	243	-	
	Aug.	-	244	-	
1979	Jan.	5,085	-	-	
	Feb.	-	326	-	
	Aug.	-	326	-	
1980	Jan.	1,287	-	-	
	Feb.	-	347	-	
	Aug.	-	347	-	
1981	Jan.	861	-	-	
	Feb.	-	361	-	
	Aug.	-	361	-	
1982	Feb.	-	361	-	
	Aug.	-	361	-	
1983	Feb.	-	-	820	
	Aug.	-	-	820	
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2000	Feb.	-	-	820	
	Mar.	-	-	820	
Total		22,216	3,650	29,520	

TABLE K-4-3 FARM BUDGET ANALYSIS WITH PROJECT

Farm Size: 1.0 ha		Crop: Paddy		
Tenure System: Owner		Condition: Fully Irrigated		
		<u>First crop</u>	<u>Second crop</u>	<u>Total</u>
Income:				
Cropped area	(ha)	0.97	1.00	1.97
Yield	(ton/ha)	3.5	4.0	-
Production	(kg)	3,395	4,000	7,395
On-farm Use	(kg)	49	50	99
Share	(kg)	-	-	-
Home Consumption	(kg)	-	-	1,182
Remainder	(kg)	-	-	6,114
Crop Income	(P)	-	-	6,114
Cost:				
Hired Labor	(P)	-	-	-
Fertilizers	(P)	492	555	1,047
Insecticides	(P)	225	232	457
Herbicides	(P)	68	70	138
Miscellaneous	(P)	29	30	59
Water Charge	(P)	164	194	358
Total	(P)	978	1,081	2,059
Net Farm Income	(P)	-	-	4,055
Net Farm Income		4,055		
Off-Farm Income		-		
Farm Family Income		4,055		
Household Expenditures		2,866		
Farm Family Surplus		1,189		

TABLE K-4-4 FARM BUDGET ANALYSIS WITH PROJECT

Farm Size: 2.0 ha		Crop: Paddy		
Tenure System: Owner		Condition: Fully Irrigated		
		<u>First crop</u>	<u>Second crop</u>	<u>Total</u>
Income:				
Cropped Area	(ha)	1.94	2.00	3.94
Yield	(ton/ha)	3.5	4.0	-
Production	(kg)	6,790	8,000	14,790
On-farm Use	(kg)	99	100	199
Share	(kg)	-	-	-
Home Consumption	(kg)	-	-	1,182
Remainder	(kg)	-	-	13,409
Crop Income	(P)	-	-	13,409
Cost:				
Hired Labor	(P)	84	151	235
Fertilizers	(P)	984	1,110	2,094
Insecticides	(P)	450	464	914
Herbicides	(P)	136	140	276
Miscellaneous	(P)	58	60	118
Water Charge	(P)	328	388	716
Total	(P)	2,040	2,313	4,353
Net Farm Income	(P)	-	-	9,056
Net Farm Income		9,056		
Off-Farm Income		-		
Farm Family Income		9,056		
Household Expenditures		2,866		
Farm Family Surplus		6,190		

TABLE K-4-5 FARM BUDGET ANALYSIS WITH PROJECT

Farm Size: 3.0 ha		Crop: Paddy		
Tenure System: Owner		Condition: Fully Irrigated		
		First crop	Second crop	Total
Income:				
Cropped Area	(ha)	2.91	3.00	5.91
Yield	(ton/ha)	3.5	4.0	-
Production	(kg)	10,185	12,000	22,185
On-farm Use	(kg)	146	150	296
Share	(kg)	-	-	-
Home Consumption	(kg)	-	-	1,182
Remainder	(kg)	-	-	20,707
Crop Income	(P)	-	-	20,707
Cost:				
Hired Labor	(P)	607	565	1,172
Fertilizers	(P)	1,475	1,665	3,140
Insecticides	(P)	675	696	1,371
Herbicides	(P)	204	210	414
Miscellaneous	(P)	87	90	177
Water Charge	(P)	492	582	1,074
Total	(P)	3,540	3,808	7,348
Net Farm Income	(P)	-	-	13,359
Net Farm Income		13,359		
Off-Farm Income		-		
Farm Family Income		13,359		
Household Expenditures		2,866		
Farm Family Surplus		10,493		

TABLE K-4-6 FARM BUDGET ANALYSIS WITH PROJECT

Farm Size: 1.0 ha Crop: Paddy
 Tenure System: Share Cropper Condition: Fully Irrigated

		<u>First crop</u>	<u>Second crop</u>	<u>Total</u>
Income:				
Cropped Area	(ha)	0.97	1.00	1.97
Yield	(ton/ha)	3.5	4.0	-
Production	(kg)	3,395	4,000	7,395
On-farm Use	(kg)	49	50	99
Share	(kg)	-	-	1,849
Home Consumption	(kg)	-	-	1,182
Remainder	(kg)	-	-	4,265
Crop Income	(₱)	-	-	4,265
Cost:				
Hired Labor	(₱)	-	-	-
Fertilizers	(₱)	492	555	1,407
Insecticides	(₱)	225	232	457
Herbicides	(₱)	68	70	138
Miscellaneous	(₱)	29	30	59
Water Charge	(₱)	164	194	358
Total	(₱)	978	1,081	2,059
Net Farm Income	(₱)	-	-	2,206
Net Farm Income		2,206		
Off-Farm Income		660		
Farm Family Income		2,866		
Household Expenditures		2,866		
Farm Family Surplus		0		

TABLE K-4-7 FARM BUDGET ANALYSIS WITH PROJECT

Farm Size: 2.0 ha Crop: Paddy
 Tenure System: Share Cropper Condition: Fully Irrigated

		<u>First crop</u>	<u>Second crop</u>	<u>Total</u>
Income:				
Cropped Area	(ha)	1.94	2.00	3.94
Yield	(ton/ha)	3.5	4.0	-
Production	(kg)	6,790	8,000	14,790
On-farm Use	(kg)	99	100	199
Share	(kg)	-	-	3,698
Home Consumption	(kg)	-	-	1,182
Remainder	(kg)	-	-	9,711
Crop Income	(P)	-	-	9,711
Cost:				
Hired Labor	(P)	84	151	235
Fertilizers	(P)	984	1,110	2,094
Insecticides	(P)	450	464	914
Herbicides	(P)	136	140	276
Miscellaneous	(P)	58	60	118
Water Charge	(P)	328	388	716
Total	(P)	2,040	2,313	4,353
Net Farm Income	(P)	-	-	5,358
Net Farm Income		5,358		
Off-Farm Income		-		
Farm Family Income		5,358		
Household Expenditures		2,866		
Farm Family Surplus		2,492		

TABLE K-4-8 FARM BUDGET ANALYSIS WITH PROJECT

Farm Size: 3.0 ha		Crop: Paddy		
Tenure System: Share Cropper		Condition: Fully Irrigated		
		<u>First crop</u>	<u>Second crop</u>	<u>Total</u>
Income:				
Cropped Area	(ha)	2.91	3.00	5.91
Yield	(ton/ha)	3.5	4.0	-
Production	(kg)	10,185	12,000	22,185
On-farm Use	(kg)	146	150	296
Share	(kg)	-	-	5,546
Home Consumption	(kg)	-	-	1,182
Remainder	(kg)	-	-	15,161
Crop Income	(P)	-	-	15,161
Cost:				
Hired Labor	(P)	607	565	1,172
Fertilizers	(P)	1,475	1,665	3,140
Insecticides	(P)	675	696	1,371
Herbicides	(P)	204	210	414
Miscellaneous	(P)	87	90	177
Water Charge	(P)	492	582	1,074
Total	(P)	3,540	3,808	7,348
Net Farm Income	(P)	-	-	7,813
Net Farm Income		7,813		
Off-Farm Income		-		
Farm Family Income		7,813		
Household Expenditures		2,866		
Farm Family Surplus		4,947		

APPENDIX L SUPPLEMENTARY COLLECTED DATA

<u>Name of Data</u>	<u>Periods</u>	<u>Remarks</u>
I. Daily Climatological Data		
Rainfall at Aparri	1950-1975	Collected by Philippine counterparts.
Rainfall at Tuguegarao	1949-1974	
Temperature at Aparri		
Minimum	1950-1975	Collected by Philippine counterparts.
Maximum	"	
Mean	"	
Temperature at Tuguegarao		
Minimum	1949-1974	Collected by Philippine counterparts.
Maximum	"	
Mean	"	
Average Wind Velocity and Prevailing Direction		
at Aparri	1957-1975	Collected by Philippine counterparts
at Tuguegarao	1958-1974	
Maximum Wind Velocity and Direction at Aparri		
at Tuguegarao	1966-1975	Collected by Philippine counterparts
	1961-1963	
	1966-1974	
Relative Humidity		
at Aparri	1966-1975	Collected by Philippine counterparts
at Tuguegarao	1967-1974	
Solar Radiation at Tuguegarao		
	1951-1975	15°, 17.5° and 20° Latitude
Hydrological Data		
1) Daily Gage Height Data in Cagayan River Basin		
at Aparri	1968-1974	Name of Station
at Camalaniugan	(1958-1967)	Namabbalan, Tuguegarao
at Nassiping	(1960-1967)	Cataggaman, Tuguegarao
at Tupang	(1960-1967)	Bayo Iguig
	(1958-1967)	Centro Iguig
		Anquiray Amulung
		Tupang, Alcala
		Nassiping, Gattaran
at Namabbalan	(1958-1967)	Poblacion, Gattaran
		Catayauan, Lal-lo
		Centro, Camalaniugan
		Aparri, Cagayan

<u>Name of Data</u>	<u>Periods</u>	<u>Remarks</u>
2) Daily Discharge Data Naguilian, Isabela (Cagayan River) Pared River	1961-1967 (1968-1972) 1955-1967	Minimum discharge in March-April and May
3) Additional Observation Data		
Water level at Buguey River	17 Nov. 1975 16 Dec. 1975	Near the Buguey Bridge
Water level at Aparri and Pumping site of Magapit	15 Feb. 1976 17 Feb. 1976	2 hours intervals observation
3. Grand Survey Data		
1) Topo-Map Lower Cagayan Alcala-Amulung and Iguig		Scale: 1:4,000
2) Main canal of Lower Cagayan		{43.0 km alternative {Canal {10.5 km last alignment
3) Main canal Alcala-Amulung Main Canal Iguig		10.0 km 7.0 km
4) Main Canal of Drainage at Lower Cagayan		24.0 km
5) Agguigang Creek		6.0 km
6) Main Canal of Drainage at Alcala-Amulung		7.2 km
7) Plane Survey 3 Pumping station		Scale: 1:200
4. Soil Survey (Semi-details)		1,200 ha
5. Boring Test		
Lower Cagayan		30 m
Alcala-Amulung		60 m
Iguig		30 m
6. Bearing Test, Iguig		

<u>Name of Data</u>	<u>Periods</u>	<u>Remarks</u>
7. Design Criteria		
1) General Design Considerations for the upper Pampanga R.P.		
2) Upper Sibuguey River Irrigation Project (Drawings)		116 sheets
8. Reports of other Project and Books		
1) Feasibility reports of Solana-Tuguegarao Pump Irrigation Project, January, 1973.		
2) Feasibility reports of Baggao, Irrigation Project, March, 1973.		
3) Feasibility reports Angat Magat Irrigation Project.		
4) Feasibility reports of Magat River Project.		
5) Tide and Current tables Philippines, 1974		
6) Tropical Cyclones for 1972.		
7) Agricultural Engineering Handbooks		
8) Monthly Progress Report on Solana-Tuguegarao Irrigation Project, NIA.		
9. Characteristics of Present Seed Bed Recommended Lowland Rice Variety for CIADP Cagayan Integrated Agricultural Development Project BPI Region II		
10. Area Harvested and Production of Rice in each municipality concerned to Project Area (Average number of past 5 years, 1969-1974), BAEx Region II		
11. Area harvested, production and input applied with and without credit supervised by Masagana 99, BAEx Region II		
12. General information on Masagana 99, BAEx Region II		
13. Corrected price list of fertilizer, BAEx Region II		

14. Recommended insecticides and retail prices for use in Masagana 99 rice production, BAEX Region II.
15. Tropical disturbances within 100 miles. (1946-1974), PAGASA, Tuguegarao Cagayan
16. Flood Damage Record. (1947-1974); PAGASA, Tuguegarao, Cagayan
17. Average wind velocity and prevailing wind direction, PAGASA, Tuguegarao, Cagayan.
18. Annual climatology review for 1968, PAGASA Central Office
19. Agricultural meteorological bulletin (Apr., May, Jun., 1973), PAGASA Central Office
20. Grain processing equipments manufacture and supplier, NGA
21. The capacity of rice mill and its price, NGA
22. Rice Economy of the Philippines: Leon A. Mears & Other UPLB. 1973.
23. Grain Journal Volume 1 No. 1, February 1976, NGA
24. The regional development program for Cagayan Valley, DLGCD, 1974.
25. The Philippines Cooperatives Development Program
Bureau of Cooperative Development, DLGCD
26. Philippine Agriculture Fact Book & Buyer's Guide
Published by Philippine Almanac Printers Inc.
27. The New Philippine Cooperative Development Program
Clemente E. Terso Jr. Bureau of Cooperative Development,
DLGCD
28. Masagana 99 Management Information System
Kenneth F. Smith U.S.AID
29. Masagana 99 Rice Production Program
Phase IV (November 1975 - April 1976)
30. Grain Industry Profile: Province of Cagayan, NGA

31. The Philippine Community Development Program
Bureau of Community Development, DLGCD
32. Four-year Rural Development Program 1975 - 1978
Bureau of Community Development, DLGCD
33. The Urban Community Development Program
Bureau of Community Development, DLGCD
34. Agricultural and Rural Development in the Philippines
(Post-war period) Amando M. Dalisay, 1974
35. Magalang Cooperative Settlement Project
(Moshau - type), DAR Region III
36. Annual Report 1975, NFAC
37. Masagana 99: Program of Survival, NFAC
38. Situational Report: Cagayan Province CIADP, DA
39. Regional Consumption Patterns for Major Foods, NFAC, 1975
40. Socio Economic Study of Farmers in Selected Towns of Cagayan,
NFAC, February 1976
41. Resettlement Program, DAR
42. Operation Land Transfer: First Quarter, Fiscal year 1973 - 1974,
DAR
43. The Philippine Agrarian Reform Program, DAR
44. From Tenant - Farmer to Owner, Cultivator
45. Standard Operating Procedure on Land Distribution, DAR
46. Agricultural Land Reform Code
47. Standard Operating Procedure on Settler's Affairs, DAR
48. Standard Operational Procedure on Special Projects, DAR

49. Application for Agricultural Settler, DAR
50. Stand Operating Procedures for the Aquisition and Distribution of Work Animals to LA Settlers, DAR
51. Agricultural Land Regorm Code (Republic Act No. 384), DA
52. The Presidential Decree 27, Emancipation of Tenants
53. Vital Documents on Agrian Reform under New Society
54. Letter of implementation No. 23, DAR
55. Department of Agrarian Reform. The New Administrative Machinery, DAR
56. Modes of Payment to Landowners
Presidential Decree No. 251, DAR
57. Provision of the New Constitution Relevant to Agrarian Reform
58. Letter of Instruction No. 372, Malacanang
59. Masagana 99 Program. Summary as of December 31, 1975, DA
60. Letter of Implementation No. 23
61. Summary of Tennants
Issued Land Transfer Certificate as of February 29, 1976, DAR
62. Articles of Incorporation of the Cagayan-Kalinga-Apayao Kilusang Bayan for Marketing Inc.
January 1975 (from Cagayan-Kalinga-Apayao Kilusang Bayan)
63. Masagan 99, Summary of Collections from CIADP
64. Four-year Development Plan FY1974-77
65. NEDA Report on the Economy for fiscal year 1975
66. Prices Received by Farmers, BAEcon
67. Prices Paid by Farmers, BAEcon

68. Farm Wages and Urban Wages, BAEcon
69. 1971 Census of Agriculture, Bureau of Census and Statistics
70. Brief Socio-Economic Profile, Province of Cagayan
71. A Socio-Economic Study of Farmres in Selected Towns of Cagayan, NFAC.
72. Price Indices, Central Bank of Philippines
73. Electric Charge, NEA, 1975.

