ANNEX I-8-3 Poultry/Livestock Raised in Municipalities Related to the Marikina Watershed

Municipality	No Answer				Chiken				Poultry Product				Other Poultry				Carabao				Cattle	
	No. of T.O.		No. raised		No. of T.O.		No. raised		No. of T.O.		No. raised		No. of T.O.		No. raised		No. of T.O.		No. raised		No. of T.O.	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
ANTIPOLO	331	15.72	0	0.00	515	24.47	8,269	25.11	4	0.19	45	0.14	2	0.10	12	0.04	200	9.50	330	1.00	30	1.43
BARAS	14	0.67	0	0.00	50	2.38	758	2.30									10	0.48	16	0.05	3	0.14
JALA-JALA	3	0.14	0	0.00	60	2.85	1,070	3.25	2	0.10	22	0.07					44	2.09	79	0.24	43	2.04
RODORIGUES	93	4.42	0	0.00	367	17.43	6,146	18.66	1	0.05	14	0.04					16	0.76	23	0.07	18	0.86
SAN MATEO	18	0.86	0	0.00	64	3.04	1,928	5.85	16	0.76	271	0.82	2	0.10	12	0.04	34	1.62	55	0.17	1	0.05
TANAY	36	1.71	0	0.00	335	15.91	8,386	25.46	8	0.38	271	0.82	5	0.24	13	0.04	129	6.13	243	0.74	62	2.95
TERESA	24	1.14	0	0.00	59	2.80	823	2.50									18	0.86	30	0.09	3	0.14
Total	519	24.66	0	0.00	1,450	68.88	27,380	83.13	31	1.47	623	1.89	9	0.43	37	0.11	451	21.43	776	2.36	160	7.60

continue

Municipality	Cattle		Pigs				Goats				Livestock Prod.				Other Livestock Prod.				Total			
	No. raised		No. of T.O.		No. raised		No. of T.O.		No. raised		No. of T.O.		No. raised		No. of T.O.		No. raised		No. of T.O.		No. raised	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
ANTIPOLO	73	0.22	289	13.73	646	1.96	35	1.66	143	0.43	6	0.29	74	0.22	6	0.29	62	0.19	925	43.94	9,654	29.31
BARAS	4	0.01	11	0.52	20	0.06	3	0.14	11	0.03					1	0.05	2	0.01	69	3.28	811	2.46
JALA-JALA	105	0.32	16	0.76	36	0.11	14	0.67	36	0.11									72	3.42	1,348	4.09
RODORIGUES	1,037	3.15	183	8.69	348	1.06	22	1.05	98	0.30	6	0.29	32	0.10	4	0.19	35	0.11	479	22.76	7,733	23.48
SAN MATEO	1	0.00	36	1.71	111	0.34	11	0.52	32	0.10	1	0.05	3	0.01	6	0.29	15	0.05	86	4.08	2,428	7.37
TANAY	186	0.56	159	7.55	326	0.99	114	5.42	610	1.85	31	0.14	6	0.02	9	0.43	31	0.09	389	18.48	10,072	30.58
TERESA	4	0.01	10	0.48	15	0.05	4	0.19	18	0.05									85	4.04	890	2.70
Total	1,410	4.28	704	33.44	1,502	4.56	203	9.64	948	2.88	16	0.76	115	0.35	26	1.24	145	0.44	2,105	100.00	32,936	100.00

Remark: multiple choice by the householders

ANNEX I-8-4 Types of Government Services in Municipalities Related to the Marikina Watershed

Municipality	Technology/Application Agroforestry Tech.		Distribution of Seed		Livestock Disposal / Breeding		Marketing		Credit Loan		Others		Households who availed		Households who not availd		Total Households	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
ANTIPOLO	583	32.21	280	15.47	86	4.75	21	1.16	7	0.39	365	20.17	984	38.01	234	9.04	1,218	47.05
BARAS	40	2.21	10	0.55							41	2.27	84	3.24	31	1.20	115	4.44
JALA-JALA	8	0.44	2	0.11							2	0.11	10	0.39	61	2.36	71	2.74
RODORIGUES	62	3.43	119	6.57	1	0.06					17	0.94	195	7.53	299	11.55	494	19.08
SAN MATEO	3	0.17	1	0.06							23	1.27	25	0.97	58	2.24	83	3.21
TANAY	14	0.77	14	0.77	12	0.66	1	0.06			24	1.33	48	1.85	478	18.46	526	20.32
TERESA	53	2.93	8	0.44			2	0.11			11	0.61	66	2.55	16	0.62	82	3.17
Total	763	42.15	434	23.98	99	5.47	24	1.33	7	0.39	483	26.69	1,412	54.54	1,177	45.46	2,583	100.00

Remark:ratio is related to the households who availed

ANNEX I-8-5 Issues Identified in Municipalities Related to the Marikina Watershed

Municipality	Financial Asst.		Lack of Technician		Water Supply		Land Tenure		Peace & Order		Low Prod.		Marketing		Transportation		Employment		Others		Total		No Problem		Ground Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
ANTIPOLO	509	7.25	25	0.36	492	7.00	603	8.58	90	1.28	17	0.24	23	0.33	375	5.34	416	5.92	688	9.79	1,201	46.39	17	0.66	1,218	47.05
BARAS	55	0.78	1	0.01	35	0.50	48	0.68	1	0.01	2	0.03	15	0.21	33	0.47	18	0.26	39	0.56	98	3.79	17	0.66	115	4.44
JALA-JALA	33	0.47	1	0.01	37	0.53	17	0.24	1	0.01			6	0.09	33	0.47	13	0.19	5	0.07	56	2.16	15	0.58	71	2.74
RODORIGUES	349	4.97	37	0.53	83	1.18	75	1.07	11	0.16	104	1.48	156	2.22	392	5.58	132	1.88	102	1.45	482	18.62	12	0.46	494	19.08
SAN MATEO	15	0.21	6	0.09	34	0.48	39	0.56			3	0.04	13	0.19	47	0.67	15	0.21	68	0.97	83	3.21	0	0.00	83	3.21
TANAY	220	3.13	83	1.18	142	2.02	212	3.02	21	0.30	11	0.16	285	4.06	432	6.15	55	0.78	37	0.53	524	20.24	2	0.08	526	20.32
TERESA	51	0.73			27	0.38	31	0.44	4	0.06	13	0.19	17	0.24	53	0.75			18	0.26	76	2.94	6	0.23	82	3.17
Total	1,232	17.54	153	2.18	850	12.10	1,025	14.59	128	1.82	150	2.14	515	7.33	1,365	19.43	649	9.24	957	13.62	2,520	97.33	69	2.67	2,589	100.00

Remark:multiple choice by the householders

ANNEX I-8-6 Basis of Forest Occupancy in Municipalities Related to the Marikina Watershed

Municipality	No Answer		Land Title		Tax Declaration		Deed of Sale		Purchase of Rights		Inheritance of Rights		CFSA		CSC		Others		Total	
	No. of Percel	Area	No. of Percel	Area	No. of Percel	Area	No. of Percel	Area	No. of Percel	Area	No. of Percel	Area	No. of Percel	Area	No. of Percel	Area	No. of Percel	Area	No. of Percel	Area
ANTIPOLO	42	125.35					2	9.00	304	795.50	52	84.54			3	4.00	593	1798.46	996	2826.86
BARAS	4	4.91			1	2.45			9	14.19	4	8.82					51	108.55	69	138.92
JALA-JALA			3	9.93					12	33.81	11	30.23					47	95.70	73	169.67
RODORIGUES	51	93.94	2	6.96			2	2.98	169	574.08	28	56.38			1	6.00	229	809.60	482	1349.94
SAN MATEO	5	19.00							10	26.39	1	1.99					71	284.99	87	332.37
TANAY	21	66.52	5	17.94	1	4.95	2	7.98	34	109.91	49	151.01					286	1089.96	398	1448.27
TERESA	14	21.49					1	2.95	7	24.80	1	1.44	3	2.89	6	11.83	53	134.81	85	200.21
Total	137	331.21	10	34.83	2	7.40	7	22.91	545	1578.68	146	344.42	3	2.89	10	21.83	1330	4122.08	2190	6466.25

ANNEX I-9 Educational Institutions within the Marikina Watershed

Barangay/Citio	Name of School
Pintong Bocaue	Pintong Bocaue Elementary School
Boso-Boso	Boso-Boso Elementary Schoool
〃	Boso-Boso High School
Kilingan	Kilingan Elementary Schoool
San Isidro	San Isidro Elementary Schoool (Public)
〃	San Isidro High School (Private)
San Jose	San Jose Elementary Schoool

ANNEX III-1 Criteria for Interpreting Land Use and Vegetation in Aerial Photographs

Categories of Land Use and Vegetation		Mark	Criteria
Forest	Dipterocarp Forest Height: 35 m or more, Crown Density 71% or more	D1A	Dominated by crowns of tree height, 35 m or higher. Slightly bright ash gray.
	" 41 - 70%	D1B	
	" 40 or less	D1C	
	Height: 30 - 34 m, Crown Density 71% or more	D2A	Dominated by crowns of tree height, 30 to 34 m high. Slightly bright ash gray.
	41 - 70%	D2B	
	40 or less	D2C	
	Height: 20 - 29 m, Crown Density 71% or more	D3A	Dominated by crowns of tree height, 20 to 29 m high. Slightly bright ash gray.
	41 - 70%	D3B	
	40 or less	D3C	
	Height: 10 m or less, Crown Density 71% or more	D4A	Dominated by crowns of tree height, 19 m or lower. Slightly bright ash gray.
	41 - 70 %	D4B	
	40 or less	D4C	
	Mossy forest	M	Low and thick at an altitude of about 1,000 m or more. Dark gray
	Shrub, thick, crown density: 51% or more	S1	Tree height, about 6 m or lower. Gray
	Thin, crown density: 50% or less	S2	
	Plantation	A	Trees with almost the same height planted in lines or seemingly almost in lines. Bright to dark colors. Mixed planting in many cases.
Non-forest	Grassland	G	White to gray. Much on slopes.
	Landslide	L	Gray. Distributed on steep slopes.
	Rocky area	R	Confirmed by field survey and on reference to topographical maps.
	Orchard	O	Clearly lined. Distributed near houses and huts. Dark gray.
	Paddy	F1	Divided clearly and horizontally. Bright dark gray.
	Dry field	F2	Clearly divided. More whitish than paddy. Distributed in flats and on gentle slopes.
	Village	V1	Confirmed by field survey and on reference to topographical maps.
	Facilities	V2	
	Road	P	
	Lake/swamp	W	
	River system	St	

III-2 Area according to Criteria for Interpreting Land Use and Vegetation

LAND CLASSIFICATION	AREA (ha)
D1A	0.0
D1B	2,434.2
D1C	0.0
D2A	3,272.5
D2B	369.1
D2C	0.0
D3A	132.6
D3B	466.1
D3C	125.9
RD2B	127.0
RD2C	45.9
RD3A	17.6
RD3B	344.7
RD3C	713.9
M	239.5
S1	3,320.0
S1(O)	360.4
S2	1,392.7
A	2,016.2
G	6,567.8
L	11.9
R	38.3
O	595.2
F1	655.8
F2	236.3
V1	38.0
V2	14.8
P	0.0
W	1.3
St.	26.3
SUB TOTAL	23,564.0
Private Land	4,845.7
TOTAL	28,409.7

PART II

ANNEX IV-1 Yield Prediction Table

(1) Gmelina arborea

AGE	AVE. HEIGHT	V m³/ha	ANNUAL INCRE.	MEAN INCRE.	AGE	AVE. HEIGHT	V m³/ha	ANNUAL INCRE.	MEAN INCRE.
2	2.49				14	17.82	83.61	3.80	5.97
3	7.18	8.13		2.71	15	18.00	87.10	3.49	5.80
4	10.23	19.15	11.02	4.79	16	18.16	90.33	3.23	5.64
5	12.20	29.64	10.49	5.92	17	18.30	93.33	3.00	5.49
6	13.57	38.94	9.30	6.49	18	18.43	96.13	2.80	5.34
7	14.56	47.06	8.12	6.72	19	18.54	98.75	2.62	5.20
8	15.91	54.19	7.13	6.77	20	18.65	101.21	2.46	5.06
9	16.38	60.48	6.29	6.72	21	18.74	103.53	2.32	4.93
10	16.77	66.00	5.52	6.60	22	18.83	105.72	2.21	4.80
11	17.10	71.12	5.12	6.47	23	18.91	107.79	2.07	4.69
12	17.37	75.67	4.55	6.31	24	18.98	109.75	1.96	4.57
13	17.61	79.81	4.14	6.14	25	19.05	111.62	1.87	4.46

Source "STUDY REPORT"of GERARDO CABRERROS
Site Index 18m Spacing 2X3

(2) Swietenia macrophylla

AGE	AVE. HEIGHT	V m³/ha	ANNUAL INCRE.	MEAN INCRE.	AGE	AVE. HEIGHT	V m³/ha	ANNUAL INCRE.	MEAN INCRE.
15	11.8	21.3		1.42	36		223.9	10.5	6.22
16		27.4	6.1	1.71	37		234.3	10.4	6.33
17		34.2	6.8	2.01	38		244.6	10.3	6.44
18		41.7	7.5	2.32	39		254.7	10.1	6.53
19		49.8	8.1	2.62	40	25.0	264.5	10.1	6.61
20	14.7	58.4	8.6	2.92	41		274.5	10.0	6.70
21		67.4	9.0	3.20	42		284.6	9.8	6.78
22		76.8	9.4	3.49	43		294.3	9.7	6.84
23		86.6	9.8	3.76	44		303.8	9.5	6.90
24		96.6	10.0	4.03	45	27.4	313.3	9.5	6.96
25	17.4	106.9	10.3	4.28	46		322.5	9.2	7.01
26		117.3	10.4	4.51	47		331.7	9.2	7.06
27		127.8	10.5	4.73	48		340.7	9.0	7.10
28		138.5	10.7	4.95	49		349.6	8.9	7.13
29		149.2	10.7	5.14	50	29.7	358.3	8.7	7.17
30	20.1	160.0	10.8	5.33	51		366.9	8.6	7.19
31		170.7	10.7	5.51	52		375.4	8.5	7.22
32		181.4	10.7	5.67	53		383.7	8.3	7.24
33		192.1	10.7	5.82	54		391.9	8.2	7.26
34		202.8	10.7	5.96	55	31.9	400.0	8.1	7.27
35	22.6	213.4	10.6	6.10					

Source "A YIELD PREDICTION MODEL FOR Swietenia macrophylla King PLANTATION"of
ADOLFO V.REVILLA JR..MARCELO BONITA and LEONIDA L.DIMAPILIS
Site Index 25m

(3) Gmelina arborea

(Stand V. and Saw Timber V.)

AGE	V m³/ha	Saw T. m³/ha	%	AGE	V m³/ha	Saw T. m³/ha	%
2	1.02			14	80.66	24.22	30.0
3	7.52			15	84.09	26.82	31.9
4	16.49			16	87.20	29.35	33.7
5	25.93	1.15	4.4	17	90.04	31.82	35.3
6	34.90	3.09	8.9	18	92.65	34.23	36.9
7	43.09	5.41	12.6	19	95.04	36.53	38.4
8	50.04	7.96	15.9	20	97.24	38.86	40.0
9	56.98	10.64	18.7	21	99.28	41.00	41.3
10	62.82	13.33	21.2	22	101.17	43.25	42.7
11	68.03	16.16	23.8	23	102.93	45.35	44.0
12	72.69	18.37	25.3	24	104.57	47.42	45.3
13	76.88	21.57	28.1	25	106.10	49.42	46.6

From "STUDY REPORT" of GERARDO CABREROS

Site Index 18m,

ANNEX IV-2 Transition Table of Planting and Harvesting

Items	Sub items		1 year	2 Year	3 year	4 Year	5 year	6 Year	7 year	8 Year	9 Year	10 year	11 Year
(Afforestation)	(Plannting Sp. Area:ha)												
R.D.I.F.A.	M/S G.Wild.	63											7
S.&Sh.(Shrub 1)	Fast G.	661	33	33	33	33	33	33	33	33	33	33	33
S.H.S.A.	Mixed	1,553	95	95	95	95	95	85	95	95	85	45	89
Sh.H.S.A.	F.G.+M/S G.	992	64	64	64	64	32	64	64	64	64	32	61
	M/S G.	1,985	128	128	128	128	64	128	128	128	128	63	120
	SUB TOTAL	5,254	320	320	320	320	224	320	320	320	320	173	310
(Reforestation)													
Sh.H.S.A.	F.G.+M/S G.	Exiting					32					49	
	M/S G.	Plant.					64					98	
	SUB TOTAL	778					96					147	
Total		6,032	320	320	320	320	320	320	320	320	320	320	310
	Stocked Plantation		1,098	1,418	1,738	2,058	2,282	2,602	2,922	3,242	3,562	3,735	4,045
Harvesting	Harvesting Area					96						147	
	Harvesting Volume(d)					8,716						15,878	

Items	Sub items	12 year	13 Year	14 year	15 Year	16 year	17 Year	18 year	19 Year	20 Year	21 year	22 Year
(Afforestation)	(Plannting Sp. Area:ha)											
D.R.I.F.A.	M/S G.Wild.	7	7	6	6	6	6	6	6	6		
S.&Sh.(Shrub 1)	Fast G.	33	33	33	15	33	50	33	57	11		
S.H.S.A.	Mixed	89	89	86		83	70	62	85			
Sh.H.S.A.	F.G.+M/S G.	61	57	59		52	44	47	24			6
	M/S G.	120	114	116		105	90	92	48		4	12
	Sub total	310	300	300	21	280	260	240	220	17	4	18
(Reforestation)												
S.&Sh.(Shrub 1)	Fast G.										33	33
S.H.S.A.	Wild.(Under Planting)										91	91
Sh.H.S.A.	F.G.+M/S G.				87					55	82	61
	M/S G.				172					148		
	Sub total				259					203	206	185
Total		310	300	300	280	280	260	240	220	260	210	203
	Stocked Plantation	4,355	4,655	4,955	4,976	5,256	5,516	5,756	5,976	5,993	5,997	6,015
Harvesting	Harvesting Area				259					203	206	185
	Harvesting Volume(d)				27,734					22,242	20,849	18,724

(continued)

Items	Sub items	23 year	24 Year	25 year	26 Year	27 year	28 Year	29 year	30 Year	31 Year	32 year	33 Year
(Afforestation)	(Plannting Sp. Area:ha)											
Sh.H.S.A.	F.G.+M/S G.	5										
	M/S G.	12										
	Sub total	17										
(Reforestation)												
S.&Sh.(Shrub 1)	Fast G.	33	33	33	33	33	33	33	66	33	33	33
S.H.S.A.	Wild.(Under Planting)	91	91	91	91	91	91	91	43	86	86	86
Sh.H.S.A.	F.G.+M/S G.	67	96	116	134	136	136	138	154	119	116	116
	M/S G.											
	Sub total	191										
Total		208	220	240	258	260	260	262	263	238	235	235
	Stocked Plantation	6,032	6,032	6,032	6,032	6,032	6,032	6,032	6,032	6,032	6,032	6,032
Harvesting	Harvesting Area	191	220	240	258	260	260	262	263	238	235	235
	Harvesting Volume(㎥)	19,331	22,266	24,863	26,664	26,315	26,315	26,517	26,618	24,088	23,784	23,784

Items	Sub items	34 year	35 Year	36 year	37 Year	38 year	39 Year	40 year
(Reforestation)	(Plannting Sp. Area:ha)							
S.&Sh.(Shrub 1)	Fast G.	15	33	50	33	57	11	33
S.H.S.A.	Wild.(Under Planting)	83	60	67	80	82		91
Sh.H.S.A.	F.G.+M/S G.	138	130	100	98	79	226	82
	M/S G.							61
Total		236	223	217	211	218	237	318
	Stocked Plantation	6,032	6,032	6,032	6,032	6,032	6,032	6,032
Harvesting	Harvesting Area	236	223	217	211	218	237	318
	Harvesting Volume(㎥)	23,886	22,569	21,863	21,355	22,064	23,987	26,517

Note

D.R.I.F.A. :Dipterocarp Residual Forest Area
S.H.S.A. :Selective Harvest System Area
Sh.H.S.A. :Shifting Haervest System Area
S.&Sh.(Shrub 1) :Shrub 1 in area of S.H.S.A.& Sh.H.S.A.
M/S G.& Wild. :Medium & Slow Growth species ,Wildlings
Fast G.or F.G. :Fast Growth Species
Mixed :M/S & F.G
Harvesting Volume is derived from" Yield prediction table"

ANNEX IV-3 Partial List of Proposed Planting Tree Species

Scientific Name	Common Name	Growth Rate			Shade Conditions				Deep Rooted	Planting Method				
		Fast	Med.	Slow	Open	Light	Med.	Heavy		Pot-ted	Bare root	Wild-ling	Direct seeding	Cutting
Acacia auriculiformis	Auri	○			○	○			○	○	○			
A.mangium	Mangium	○			○	○			○	○				
Anisoptera thurifera	Palosapis			○		○	○	○	○	○		○		
Anthocephalus chinensis	Kaatoan Bangkal	○			○	○	○			○				
Artocarpus spp.	Antipolo		○		○	○	○			○	○	○	○	
Cannarium ovatum	Pili			○	○	○	○	○		○				
Calliandra confusa	Calliandra	○			○	○			○				○	○
Cassia spectabilis	Anchoan Dilaw		○		○	○	○		○	○	○	○	○	
Casuarina spps.	Agoho		○		○	○			○	○				
Dipterocarpus grandiflorus	Apitong			○			○	○		○		○	○	
Gliricidia sepium	Kakawate	○			○	○			○		○			○
Gmelina arborea	Gemelina	○			○	○			○		○		○	
Intsia bijuga	Ipil			○		○	○			○		○	○	
Leucaena spp.	Ipil-ipil	○			○	○			○		○	○	○	
Paraserianthes falcataria	Falcata	○			○	○	○		○	○				
Parashorea plicata	Bagtikan		○			○	○	○	○	○		○		
Pentacme contorta	White Lauan		○				○			○				
Pterocarpus indicus	Narra		○		○	○	○	○	○	○	○	○	○	
Samanea saman	Acacia		○		○	○	○		○	○	○	○	○	
Swietenia macrophylla	Mahogany		○			○	○	○		○	○	○	○	

PART III

ANNEX II-1 Unit Costs of Plantation Establishment

(1) Mix Planting of Fast Growth Species(2x4) and Medium Growth Species(2x4) at SELECTIVE HARVEST SYSTEM AREA

(Unit per ha)

Itemes	Activities	Quantity	Unit of measure	Unit price	Performance man-day	Wage	Cost	Remarks
SURVEY,MAPPING & PLANNING							675	DENR-NFDO Estimates
NURSARY OPERATION	Seed Procurement	M.G 2.4	Kg	150p			360	DENR-R4
		F.G 1.6	kg	120			192	
	Seedling	M.G 1650	Sdlng	1.57			2,591	DENR R4 EstimatesxWage hike rate
	Production	F.G 1650	Sdlng	1.18			1,848	
PLANTATION ESTABLISH-MENT	Site Prparation							
	Strip Brushing				8.3	102	847	DENR Estimates
	Staking	2500	Stake		8.3	102	847	300 stakes/m·d 2,500stakes/300=8.3 m·d
	Holing	2500	Hole		27.8	102	2,836	90 holes/m·d 2,500holes/90=27.8 m·d
	Planting	2500	Sdlng		11.1	102	1,132	225 Sdlng/m·d 2,500Sdlng/225=11.1 m·d
	Maintenance							
	Weeding	2500	Tree					
	1st Y.1st				16.7	102	1,703	Ring Weed,cultivate,fertilize 150 tree/m·d 2,500tree/150=16.7 m·d
	1st Y.2nd				10.4	102	1,061	Ring Weed/circular brushing
	2nd Y.2times					102	2,122	240 tree/m·d 2,500tree/240=10.4 m·d
	3rd Y.2times					102	2,122	2nd Y.& 3rd Y.x 2times
	Fertilizer							
	1st Y.						700	DENR R4 Estimates
	2nd Y.						875	
	3rd Y.						875	
	Replannting							
	2nd Y.	500	Tree		2.2	102	225	20% of Planting
PROTECTION	Patrol work							DENR R4 Estimates
	1st Y.						280	0.112p/tree/qtrx2500x1qtr
	2nd Y.						560	280x2qtr
	3rd Y.						560	280x2qtr
COMMUNITY ORGANIZATION	1st Y.						750	DENR NFDO Estimates
	2nd Y.						3,100	
ADMINIST-RATIVE COST	1st Y.						1,166	DENR NFDO Estimates
	2nd Y.						42	
	3rd Y.						167	
Total	1st Y.						16,988	
	2nd Y.						6,924	
	3rd Y.						3,724	

Figures are based on N F P CONTRACT REFORESTATION COST ESTIMATES and DENR staffs' experience.
Daily wage : 102 pesos(91x1.12=102)= Minimum wage

(2) Under Planting after harvest of Fast Growth Species at SELECTIVE HARVEST SYSTEM AREA

(Unit per ha)

Itemes	Activities	Quantity	Unit of measure	Unit price	Pperformance man·day	Wage /m·d	Cost	Remarks
SURVEY,MAPPING & PLANNING							675	DENR-NFDO Estimates
NURSARY OPERATION	Seedling Production	Wild-ling 1650	Sdlng	2.8			4,620	DENR R4 Estimates
PLANTATION ESTABLISH-MENT	Site Prparation							
	Strip Brushing				8.3	102	847	DENR R4 Estimates
	Holing	1250	Hole		13.9	102	1,418	90 holes/m·d 1,250holes/90=13.9 m·d
	Planting	1250	Sdlng		5.6	102	571	225 Sdlng/m·d 1,250Sdlng/225=5.6 m·d
	Maintenance							
	Weeding	1250	Tree					
	2nd Y.				8.3	102	847	Ring Weed,cultivate,fertilize 150 tree/m·d 1,250tree/150=8.3 m·d
	3rd Y.				5.2	102	530	Ring Weed/circular brushing 240 tree/m·d 1,250tree/240=5.2 m·d
	Fertilizer							
	2nd Y.						700	DENR R4 Estimates
	3rd Y.						875	
	Replanting							
	2nd Y.	250	Tree		1.1	102	112	20% of Planting
PROTECTION	Patrol work							DENR R4 Estimates
	1st Y.						140	0.112p/tree/qtrx1250x1qtr
	2nd Y.						280	280x2qtr
	3rd Y.						280	
COMMUNITY ORGANIZATION								DENR NFDO Estimates
	1st Y.						750	
	2nd Y.						3,100	
ADMINIST-RATIVE COST								DENR NFDO Estimates
	1st Y.						1,166	
	2nd Y.						42	
	3rd Y.						167	
Total	1st Y.						10,187	
	2nd Y.						5,061	
	3rd Y.						1,852	

(3) Mix Planting of Fast Growth Species(2x4) and Medium Growth Species(4x4) at SHIFTING HARVEST SYSTEM AREA I&II

(Unit per ha)

Itemes	Activities	Quantity	Unit of measure	Unit price	Performance man-day	Wage	Cost	Remarks
SURVEY,MAPPING & PLANNING							675	DENR-NFDO COST Estimates
NURSARY OPERATION	Seed Procurement	M.G 1.2	Kg	150			180	DENR-R4
		F.G 1.6	kg	120			192	
	Seedling	M.G 825	Sdlng	1.57			1,295	DENR R4 EstimatesxWage hike rate
	Production	F.G 1650	Sdlng	1.18			1,848	
PLANTATION ESTABLISH-MENT	Site Prparation							
	Strip Brushing				8.3	102	847	DENR Estimates
	Staking	1875	Stake		6.3	102	643	300 stakes/m·d 1,875stakes/300=6.3 m·d
	Holing	1875	Hole		20.8	102	2,122	90 holes/m·d 1,875holes/90=20.8 m·d
	Planting	1875	Sdlng		8.3	102	847	225 Sdlng/m·d 1,875Sdlng/225=8.3 m·d
	Maintenance							
	Weeding	1875	Tree					
	1st Y.1st				12.5	102	1,275	Ring Weed,cultivate,fertilize 150 tree/m·d 1,875tree/150=12.5 m·d
	1st Y.2nd				7.8	102	796	Ring Weed/circular brushing
	2nd Y.2times					102	1,592	240 tree/m·d 1,875tree/240=7.8 m·d
	3rd Y.2times					102	1,592	2nd Y.& 3rd Y.x 2times
	Fertilizer							
	1st Y.						525	DENR R4 Estimates
	2nd Y.						656	
	3rd Y.						656	
	Replannting							
	2nd Y.	375	Tree		1.7	102	173	20% of Planting
PROTECTION	Patrol work							DENR R4 Estimates
	1st Y.						210	0.112p/tree/qtrx1875x1qtr
	2nd Y.						420	210x2qtr
	3rd Y.						420	210x2qtr
COMMUNITY ORGANIZATION								DENR NFDO Estimates
	1st Y.						750	
	2nd Y.						3,100	
ADMINIST-RATIVE COST								DENR NFDO Estimates
	1st Y.						1,166	
	2nd Y.						42	
	3rd Y.						167	
Total	1st Y.						13,371	
	2nd Y.						5,983	
	3rd Y.						2,835	

(4) Fast Growth Species(2x3) at SHIFTING HARVEST SYSTEM AREA I&II

(Unit per ha)

Itemes	Activities	Quantity	Unit of measure	Unit price	Performance man·day	Wage	Cost	Remarks
SURVEY,MAPPING & PLANNING							675	DENR-NFDO Estimates
NURSARY OPERATION	Seed Procurement	2.2	Kg	150			330	1.6kg×1667/1250=2.2kg
	Seedling Production	2200	Sdlng	1.18			2,596	DENR R4 Estimates×Wage hike rate
PLANTATION ESTABLISH-MENT	Site Prparation							
	Strip Brushing		ha		8.3	102	847	DENR Estimates
	Staking	1667	Stake		5.6	102	571	300 stakes/m·d 1,667stakes/300=5.6 m·d
	Holing	1667	Hole		18.5	102	1,887	90 holes/m·d 1,667holes/90=18.5 m·d
	Planting	1667	Sdlng		7.4	102	755	225 Sdlng/m·d 1,667Sdlng/225=7.4 m·d
	Maintenance							
	Weeding	1667	Tree					
	1st Y.1st				11.1	102	1,132	Ring Weed,cultivate,fertilize 150 tree/m·d 1,667tree/150=11.1 m·d
	1st Y.2nd				6.9	102	704	Ring Weed/circular brushing
	2nd Y.2times					102	1,408	240 tree/m·d 1,667tree/240=6.9 m·d
	3rd Y.2times					102	1,408	2nd Y.& 3rd Y.× 2times
	Fertilizer							
	1st Y.						470	DENR R4 Estimates×1667/2500
	2nd Y.						586	
	3rd Y.						586	
	Replannting							
	2nd Y.	333	Tree		1.5	102	153	20% of Planting
PROTECTION	Patrol work							DENR R4 Estimates
	1st Y.						187	0.112p/tree/qtr×1667×1qtr
	2nd Y.						374	187×2qtr
	3rd Y.						374	187×2qtr
COMMUNITY ORGANIZATION								DENR NFDO Estimates
	1st Y.						750	
	2nd Y.						3,100	
ADMINIST-RATIVE COST								DENR NFDO Estimates
	1st Y.						1,166	
	2nd Y.						42	
	3rd Y.						167	
Total	1st Y.						12,070	
	2nd Y.						5,663	
	3rd Y.						2,535	

(5) Fast Growth Species(1x1)at FIRE TREE BELT

(Unit per ha)

Itemes	Activities	Quantity	Unit of measure	Unit price	Performance man·day	Wage	Cost	Remarks
SURVEY,MAPPING & PLANNING							675	DENR-NFDO COST Estimates
NURSARY OPERATION	Seed Procurement	12.8	kg	120			1,536	DENR-R4 EstimatesxWage hike rate
	Seedling Production	10,000	Sdlng	1.18			11,800	
PLANTATION ESTABLISH-MENT	Site Prparation							
	Clear Brushing		ha		16.4	102	1,680	DENR EstimatesxWage hike rate
	Holing	10,000	Sdlng		111.1	102	11,332	90 Sdlng/m·d 10,000Sdlng/90=111.1 m·d
	Planting	10,000	Sdlng		44.4	102	4,528	225 Sdlng/m·d 10,000Sdlng/225=44.4 m·d
	Replannting							
	2nd Y.	2,000	Tree		8.9	102	908	20% of Planting
COMMUNITY ORGANIZATION								DENR NFDO Estimates
	1st Y.						750	
	2nd Y.						3,100	
ADMINIST-RATIVE COST								DENR NFDO Estimates
	1st Y.						1,166	
	2nd Y.						42	
	3rd Y.						167	
Total	1st Y.						33,468	
	2nd Y.						4,050	
	3rd Y.						167	

(6) Enrichment Planting(2x2) at DIPTEROCARP RESIDUAL FOREST IMPROVEMENT AREA

(Unit per ha)

Items	Activities	Quantity	Unit of measure	Unit price	Performance man·day	Wage	Cost	Remarks
SURVEY, MAPPING & PLANNING							675	DENR-NFDO Estimates
NURSARY OPERATION	Wildling	3,300	Sdlng	2.8			9,240	DENR-R4 Estimates
ENRICHMENT PLANTING	Site Prparation							
	Strip Brushing		ha		8.3	102	847	DENR Estimates×wage hike rate
	Planting	2,500	Sdlng		11.1	102	1,132	225 Sdlng/m·d 2,500Sdlng/225=11.1 m·d
	Replannting							
	2nd Y.	500	Tree		2.2	102	224	20% of Planting
COMMUNITY ORGANIZATION								DENR NFDO Estimates
	1st Y.						750	
	2nd Y.						3,100	
ADMINIST-RATIVE COST								DENR NFDO Estimates
	1st Y.						1,166	
	2nd Y.						42	
	3rd Y.						167	
TOTAL	1st Y.						13,810	
	2nd Y.						3,366	
	3rd Y.						167	

(7) Forest Stand Improvement at DIPTEROCARP RESIDUAL FOREST IMPROVEMENT AREA

(Unit per ha)

Items	Activities	Quantity	Unit of measure	Unit price	Performance man·day	Wage	Cost	Remarks
LIBERATION & REFINING					5.0	102	510	

ANNEX II-2 Unit Costs of Felling and Hauling

(1) Sawlog (Pesos per ㎥)

Operation	Performance	Unit	Wage	Cost	Remarks
Felling	0.66	man·day	102	67	
Topping & De-limbing	0.2	ditto	102	20	
Handsawing into boards & Flitches	5.0	ditto	102	510	Conversion rate 250bd.ft./㎥ 250bd.ft.recovery per ㎥ /50bd.ft.per man·day
Skidding to roadside	2.5	man·animalday	160	400	100bd.ft.(=0.4㎥)/trip 1trip/man·animal day
Total				997	

(2) Fuelwood (Pesos per ㎥)

Operation	Performance	Unit	Wage	Cost	Remarks
Bucking, Spilitting & bundling	1.5	man·day	102	153	60bundles/㎥ 40bundles/m·d
Houling to roadside	1.22	man·animalday	160	195	25bundles(=0.41㎥)/trip 2trip/man·animal day
Tying materials				15	0.25p/bundle×60bundle/㎥
Total				363	

ANNEX II-3 Total Costs of Forest Road Improvement Work

Amount in Pesos

Item	Quantity	Unit Cost	Amount	Ist Year	2nd Year	3rd year
Subgrade improvement	1 km	156,270	156,270	156,270		
Surfacing	11 km	405,600	4,461,600	1,487,200	1,487,200	1,487,200
Side ditch	5 km	9,630	48,150	48,150		
Cross ditch	320	37	11,840	11,840		
Overhead	30 %		1,403,360	511,040	446,160	446,160
Total			6,081,220	2,214,500	1,933,360	1,933,360

Note: Cross ditch 4 km: 1 ditch/25 m; 8 km: 1 ditch/50 m

(1) Unit Costs of Subgrade Improvement Work

per km

Item	Dimension	Quantity	Unit Cost	Amount	Remarks
Cutting	1m x 3m x 1000m	3000 m^3	20.4	61,200	2.0 men/day/10m^3 102p/man/day
Banking		3000 m^3	19.4	58,200	1.9 men/day/10m^3
Grading	3.1m x 1000m	3100 m^3	5.7	17,670	5.6 men/day/100m^3
Compaction	4m x 1000m	4000 m^3	4.8	19,200	Bulldozer 294m^3/h Charter 1400p/h
Total				156,270	

Note: Bulldozer's work per hour: A = V x W x E x 1/N = 294 m^3/h
where A: m^3/h, V:compaction speed 3500 m/h,
W: compaction 0.7 m once, E:work efficiency 0.6,
N: frequency of compaction 5 times

(2) Unit Costs of Surfacing Work

per km

Item	Dimension	Quantity	Unit Cost	Amount	Remarks
Surfacing	4m x 1000m	4000 m^3	1.4	5,600	Grader 990m^2/h Charter 1400p/h
Gravel	m^3/m x1000m	1000 m^3	400	400,000	
Total				405,600	

Note: V: surfacing speed 1800 m/h, W:blade width 3 m,
E: work efficiency 0.55, N: frequency of surfacing 3 times

(3) Unit Costs of Side Ditch Construction Work

per km

Item	Dimension	Quantity	Unit Cost	Amount	Remarks
Side ditch construction	1m x 0.5m x 0.3m x 1000m	225 m^3	42.8	9,630	4.2 men/day/10m^3
Total				9,630	

(4) Unit Costs of Cross Ditch Construction Work

per site

Item	Dimension	Quantity	Unit Cost	Amount	Remarks
Digging	0.3m x 0.2m x 4m	0.10 man	102	10	4.2 men/day/10m^3
Wood fitting	0.05m x 4m	6 pieces	4.5	27	incl. material & labor costs
Total				37	

ANNEX II-4 Unit Costs of Foot Paths Construction Work and Maintenance

per km

Item	Quantity (men)	Unit Cost	Amount	Remarks
Trail construction	54.95	102	5,605	18.2 m/man/day
Forest road Maintenance	6.6	102	673	3km/man/day, 20 times/y
Trail maintenance	2.4	102	245	5km/man/day, 12 times/y

ANNEX II-5 Unit Costs of Small Water Impoundment Construction Work

per site

Item	Feature	Quantity	Unit Cost	Amount	
Excavation	10 x 10 x 0.5	50 m^3	51p	2,550p	$2m^3$/man/day,102p/man/day
Removal & compaction		50	51p	2,550p	
Sowing	80 m3	0.5 kg	80p	40p	incl. Centrosema seed & labor costs
Water gate construction	7 sandbags x 3 lines Exit/entrance on both sides	42 bags	4.9p	206p	packing, laying, 21 bags/man/day
	Material	42 bags	6p	252p	sandbag cost
Total				5,598p	

ANNEX II-6 Costs of Other Facilities and Materials

Amount in Pesos

Item	Feature	Q'ty	Unit Cost	Amount	Remarks
Nursery	Potting house 25m²	11	12,500	137,500	Other facility costs are included in seedling cost
Lookout tower	6 m high	6	10,152	60,912	Timber cost 1,350p/m Other material costs 990p/m Wages 252p/m Total 1,692p/m 10,152p per tower
Fire-fighting equipment	bolos, etc.	16 sets	4,250	68,000	15 bolos, 5 spades, 5 pick mattocks 4,250p per set
Radio system	Key station Transceiver	1 6	13,000 9,200	13,000 55,200	
Total				334,612	

ANNEX II-7 Costs of Forest Watcher Scheme

Amount in Pesos

Item	Person	Unit Cost	Amount	Remarks
Watcher	6	5,000/y	30,000	Scope of work: Unscheduled watch on forests in specified districts. (Report to PENR about growth, diseases, damage by insects, and illegal cutting.) Annual renewal of contract.

ANNEX II-8 Unit Costs on Delineation Boundary and Issuance of Tenure Document

(1) Performance

per ha

Items	Unit	Units per ha	Base of computation
Delination			
Surveyor	m.d.	1	1ha accomplishment per team per day with one
Labor	"	6	6 men team : 1 ha accomplishment per day
Materials	pc.	20	Average of 20 hardatakes or others
Issuance			
A/S	m.d.	1	Administrative Staff
T/S	"	1	Technical staff

(2) Unit cost per hectare

Items	Unit	Units per ha	Daily Rate (P)	Cost per ha (P)
Delination				
Surveyor	m.d.	1	250	250
Labor	"	6	102	612
Materials	pc.	20	10	200
Issuance				
A/S	m.d.	1	200	200
T/S	"	1	200	200
Total				1,462

Cost share : Gov't P 1,462
Comm. 0

ANNEX II-9 Unit Costs of Infrastructure

-SOCIAL FORESTRY PROGRAMME-

ITEM	UNIT	COST	COMPUTATION
1. Trail	Km.	44,188	Dimension: Width-1.0m, Cost: P 5,600/km for 39km of Community Forest Cost: P63,000/km for 80km of Agroforestry Farm Average: P44,188/km
2. Multi-purpose Building	No.	56,000	Dimension: 100sq.m(10×10m) Cost: 100Sq.m×P560/sq.m=P56,000
3. Small-scale Nursery	No.	15,812	Dimension: 600sq.m(20m×30m) Cost: 1.Land preparation(600sq.m): 600sq.m×1/100sq.m/MD=6MD 2.Canal construction(500m): Width0.5m×Depth0.5m×500=125cu.m 125×1/2.5cu.m/MD(Excavation)=50MD 3.Storage(20sq.m-5m×4m): Construction 50MD, Material P5,000 Total Cost: (6+50+50)MD×P102+P5,000=P15,812
4. Potable Water Facility - Artesian Well	No.	28,000	Cost: 1.Labor cost: P8,400 : 2.Material: P19,600 Total Cost: P28,000
- SWIS	No.	55,499	Dimension of Water Tank: 24cu.m(2×3×4m) Cost: 1.Labor cost: P19,890 2.Material: P30,564 3.Contingency: P5,045--(1.+2.)×10% Total Cost: P19,890+P30,564+P5,045=P55,499

ITEM	UNIT	COST	COMPUTATION
5. Drainage	m	113	Dimension: Width-1m, Depth-0.5m, Length-991m Cost: 1. Excavation: Volume-1m×0.5m×991m×1/3=165cu.m 165cu.m×1/2cu.m/MD=82.5MD 82.5MD×1/990m=0.08MD/m 2. Preparation of cogon band: Collection: 10sheaf/MD (1sheaf=10bands) 10sheaf×10bands=100bands 100bands×1/15bands/m=6.6m 6.6m×1/2rows=3.3m/MD=0.3MD/m : Binding: 50bands/MD 50bands×1/15bands/m=3.3m/MD 3.3m/MD=0.3MD/m 3. Installment of cogon band: 10m/3MD=3.3m/MD=0.3MD/m 4. Collection of pile: Dimension: Diameter-5-7cm, length-80cm 990m×1/0.3m×2rows=6,600piles 6,600×1/50piles/MD=132MD, 132MD×1/990m=0.13MD/m Total cost: (0.08+0.3+0.3+0.3+0.13)MD×P102=1.11MD×P102=P113.22=P113
6. Demonstration Farm	No.	4,776	Dimension: 1,000sq.m (50m×20m) Cost: 1. Land preparation: 10m×5m=50sq.m/MD 1,000×1/50=20MD 2. Drainage: 20m×8rows=160m, 160m×1/20m/MD=8MD 3. Soil conservation measurement: 20m×8rows×P12/Li.m=P1,920 (Hedgerow plantation) Total cost: (20+8)MD×P102+P1,920=P4,776

ANNEX II-10 Unit Costs of Agroforestry

(1) Derived from Basic Assumptions and Performance Standards

A. LAND USE PLAN

A.1 Farms will consist of mixtures of seasonal crops (i.e. food crops) and permanent crops (e.g. trees and bamboo). Land use plans (i.e. farm development plans) will not be standardized because each farmer will have his/her own preferences and also because terrain and soil conditions will vary from farm to farm. However, for computing estimated costs and benefits, it is assumed that thirty-five percent (35%) of the land area of each farm will be planted to food crops and that the general land use plan for each hectare of agroforestry farm will be more or less as follows:

	Number of plants/trees	Area (sq.m.)	Percent of land area (%)
Food Crops:			
(a) Grain crops such as corn and/or upland rice	(variable)	2,000	20 %
(b) Root crops such as camotes and cassava	(variable)	1,000	10 %
(c) Vegetables such as beans, tomato, squash, pechay, etc.	(variable)	500	5 %
sub-total		3,500	35 %
Others (i.e. Permanent Crops):			
(d) Mango trees at 10 m. X 20 m. spacing [approximately 200 square meters per tree]	10	2,000	20 %
(e) Jackfruit trees at 5 m. X 7 m. spacing [approximately 35 square meters per tree]	20	700	7 %
(f) Tamarind (Sampaloc) trees at 10 m. X 10 m. spacing [approximately 100 square meters per tree]	10	1,000	10 %
(g) Citrus at 4 m. X 5 m. spacing [approximately 20 square meters per tree]	50	1,000	10 %
(h) Fuelwood trees at 2 m. X 2 m. spacing [approximately 4 square meters per tree]	200	800	8 %
(i) Bamboo clumps planted on the boundary lines (perimeter) [approximately 50 square meters per clump]	20	1,000	10 %
sub-total		6,500	65 %
TOTAL		10,000	100 %

A.2 In the areas planted to grain, root crops and vegetables (about 3,500 sq. m.), erosion control hedgerows will be planted on the contours for soil and water conservation using the Sloping Agricultural Land Technology (SALT) system. The hedgerows will consist of five (5) double lines (i.e. 2 lines) of permanent plants such as Kakawate and Ipil-ipil planted at a distance of fifty centimeters (50 cm.) between the lines and twenty centimeters (20 cm.) in the line (i.e. distance between plants). Thus each hedgerow will contain about 1,000 plants and the five (5) hedgerows will comprise about 5,000 plants.

(100 meters long X 5 plants per meter at 20 cm. spacing X 2 lines) = 1,000 plants

(1,000 plants per hedgerow X 5 hedgerows) = 5,000 plants

A.3 Covercrop species will be planted on the areas devoted to fruit trees in order to prevent erosion, conserve moisture and improve fertility. These covercrop species shall consist of perennial legumes such as Centro (Centrosema pubescens), Siratro (Macroptilium Atropurpureum) , Kudzu (Pueraria javanica), Calopo (Calopogonium spp.) , Desmodium spp. and others.

(Average approximate number of covercrop planting spots) = 400 per ha

B. DAILY WAGE FOR FARM LABOR = 102 pesos

(2) Summary of Cost Estimates 1 - Agroforestry Farm Development

(One Hectare)

(Costs in Pesos)

Item	Year 1 Amt. (Com.) (P)	Year 1 Amt. (Gov.) (P)	Year 1 Amt. Total (P)	Year 2 Amt. (Com.) (P)	Year 2 Amt. (Gov.) (P)	Year 2 Amt. Total (P)	Year 3 Amt. (Com.) (P)	Year 3 Amt. (Gov.) (P)	Year 3 Amt. Total (P)	Yr.4 Amt. (Com.) (P)	Yr.5 Amt. (Com.) (P)	Yr.6 Amt. (Com.) (P)	Yr.7 Amt. (Com.) (P)	Yr.8 Amt. (Com.) (P)	Yr.9 Amt. (Com.) (P)	TOTAL COST SHARE Com. (P)	TOTAL COST SHARE Gov. (P)	TOTAL COST SHARE Total (P)
1.0 SEEDLING PRODUCTION AND PROCUREMENT OF SEEDS	961	867	1,828	1,276	510	1,786	273	50	323								1,427	1,427
2.0 SITE PREPARATION				3,857	63	3,920										3,857	63	3,920
3.0 PLANTING				1,964	80	2,044										1,964	80	2,044
4.0 REPLANTING							332		332							332		332
5.0 MAINTENANCE				9,445		9,445	8,486		8,486	8,129	7,997	7,966	7,966	7,905	7,905	65,799		65,799
Yearly total	961	867	1,828	16,542	653	17,195	9,091	50	9,141	8,129	7,997	7,966	7,966	7,905	7,905	74,462	1,570	76,032

(3) Summary of Cost Estimates 2 - Agroforestry Farm Development

(Base Costs - One Hectare)

(Costs in Pesos)

Item	Yr.1 Amt. (Com.) (P)	Yr.1 Amt. (Gov.) (P)	Yr.1 Total (P)	Year 2 Amt. (Com.) (P)	Year 2 Amt. (Gov.) (P)	Year 2 Total (P)	Year 3 Amt. (Com.) (P)	Year 3 Amt. (Gov.) (P)	Year 3 Total (P)	Yr.4 Amt. (Com.) (P)	Yr.5 Amt. (Com.) (P)	Yr.6 Amt. (Com.) (P)	Yr.7 Amt. (Com.) (P)	Yr.8 Amt. (Com.) (P)	Yr.9 Amt. (Com.) (P)	TOTAL COST SHARE Com. (P)	TOTAL COST SHARE Gov. (P)	TOTAL (P)
1.0 SEEDLING PRODUCTION AND PROCUREMENT OF SEEDS (a)																		
1.1 Mango	44	82	126	41	20	61	7		7							92	102	194
1.2 Jackfruit				30	60	90	6	12	18							36	72	108
1.3 Tamarind	22	57	79	20	16	36	4		4							46	73	119
1.4 Citrus	73	152	225	63	30	93	10		10							146	182	328
1.5 Bamboo	88	333	421	69	41	110	7		7							164	374	538
1.6 Fuelwood				98	157	255	19	38	57							117	195	312
1.7 Hedgerow	734	243	977	955	66	1,021	220		220							1,909	309	2,218
1.8 Covercrop					40	40											40	40
1.9 Foodcrops					80	80											80	80
sub-total	961	867	1,828	1,276	510	1,786	273	50	323							2,510	1,427	3,937
2.0 SITE PREPARATION																		
2.1 Staking				698		698										698		698
2.1 Holing				587		587										587		587
2.3 Cultivation				2,572		2,572										2,572		2,572
2.4 Tools					63	63											63	63
sub-total				3,857	63	3,920										3,857	63	3,920
3.0 PLANTING																		
3.1 Food crops				714		714										714		714
3.2 Hedgerows				510		510										510		510
3.3 Covercrop				204		204										204		204
3.4 Fruit Trees				230		230										230		230
3.5 Fuelwood Trees				204		204										204		204
3.6 Bamboo				102		102										102		102
3.7 Fertilizer					80	80											80	80
sub-total				1,964	80	2,044										1,964	80	2,044
4.0 REPLANTING																		
4.1 Hedgerows							192		192							192		192
4.2 Fruit Trees							61		61							61		61
4.3 Fuelwood Trees							51		51							51		51
4.4 Bamboo							28		28							28		28
sub-total							332		332							332		332
5.0 MAINTENANCE																		
5.1 Permanent Crops																		
5.1.1 Ringweeding				1,540		1,540	836		836	479	347					3,202		3,202
5.1.2 Brushing												316	316	255	255	1,142		1,142
5.2 Hedgerows				765		765	510		510	510	510	510	510	510	510	4,335		4,335
5.3 Food Crops				7,140		7,140	7,140		7,140	7,140	7,140	7,140	7,140	7,140	7,140	57,120		57,120
sub-total				9,445		9,445	8,486		8,486	8,129	7,997	7,966	7,966	7,905	7,905	65,799		65,799
sub-tot: (Com.)	961		961	16,542		16,542	9,091		9,091	8,129	7,997	7,966	7,966	7,905	7,905	74,462		74,462
sub-tot: (Gov.)		867	867		653	653		50	50								1,570	1,570
TOTAL			1,828			17,195			9,141	8,129	7,997	7,966	7,966	7,905	7,905			76,032

LEGEND:

Amt. (Gov.) - Government share of costs

Amt. (Com.)- Community's share of costs (i.e. value of labor input by local residents)

1.A Seed Procurement

Item	Planting Target (a) (b)			Total	Allowance for failure to germinate in the nursery	Gross total of seeds, propagules, kgs. required (i.e. Planting Target + Allowance)				Cost per seed, kg. or propagule (P)	Seed, propagule procurement cost (in pesos)			
	Unit	Yr. 1	Yr. 2	Yr. 3		Yr. 1	Yr. 2	Yr. 3	Total		Yr. 1	Yr. 2	Yr. 3	Total
			(No.)	(No.)										
Mango	sdlng.	12	3		15	30 %	16 seeds	4 seeds		20 seeds	0.25	4.00	1.00		5.00
Jackfruit	"		24	5	29	20 %		29 "	6 seeds	35 "	0.15		4.35	0.90	5.25
Tamarind	"	12	3		15	20 %	14 "	4 "		18 "	0.10	1.40	0.40		1.80
Citrus	"	60	12		72	30 %	78 "	16 "		94 "	0.05	3.90	0.80		4.70
Bamboo	prop.	24	3		27	15 %	28 prop.	3 prop.		31 prop.	2.00	56.00	6.00		62.00
Fuelwood	sdlng.		240	48	288	20 %		0.25 kg.	0.1 kg.	0.35 kg.	120		30.00	12.00	42.00
Hedgerow	"	6,000	1,800		7800	20 %	1 kg.	0.25 "		1.25 "	120	120.00	30.00		150.00
Covercrop*	p.s.		400		400	none		0.5 "		0.50 "	80		40.00		40.00
Foodcrops	sq.m.		3,500		3500	none		2 "		2 "	40		80.00		80.00
											Total	185.3	192.55	12.9	390.75

(a)
"Planting Target" refers to the number of seedlings to be propagated within the year for planting in Year 2 or replanting in Year 3. Planting will begin in Year 2 to allow time for community organization, trail construction and seedling propagation.

Propagation of Mango, Tamarind, Citrus, Bamboo and Hedgerows will begin in Year 1 to be ready for planting in Year 2. Mango, Tamarind and Citrus will be grafted/budded; Bamboo will be propagated by marcotting; Hedgerows will be bare root sdlngs. Jackfruit and Fuelwood seedlings will be grown in Year 2 for planting in the same year.

Propagation of Mango, Tamarind, Citrus, Bamboo and Hedgerows for replanting will begin in Year 2 to be ready for replanting in Year 3. Jackfruit and Fuelwood seedlings for replanting in Year 3 will be grown in Year 3.

Covercrop and Foodcrops will be direct seeded.
(b)
Seedling production and seed/propagule targets by year are estimated as follows:

Species	YEAR 1				YEAR 2				YEAR 3			
	Planting Target (in Year 2)	Allowance for Mortality and cull in nursery	Total for Yr.1	Replanting Target (in Year 3	sub-total	Mortality & cull in nursery	Total for Yr.2	Replanting Target (in Year 3)	sub-total	Mortality & cull in nursery	Total for Yr.3
Mango	10 +	20 % =	12	20 % =	2 +	20 % =	3				
Jackfruit	20				+	20 % =	24	20 % =	4	20 % =	5
Tamarind	10 +	20 % =	12	20 % =	2 +	20 % =	3				
Citrus	50 +	20 % =	60	20 % =	10 +	20 % =	12				
Bamboo	20 +	20 % =	24	10 % =	2 +	20 % =	3				
Fuelwood	200				+	20 % =	240	20 % =	40	20 % =	48
Hedgerow	5000 +	20 % =	6000	30 % =	1500 +	20 % =	1800				
Covercrop*	400			None		None	400				
Foodcrops**	3500			None		None	3500				

* target in planting spots
** target in sq.m.
Note: Totals by year rounded off to the nearest complete number

1.B Plastic Bags

Item	No. of plastic bags required				Size of plastic bag	Cost per Bag	Cost by Year			Total (P)
	Planting Target (from Table 2. A)			Net Total no.			Yr.1 (P)	Yr.2 (P)	Yr.3 (P)	
	Yr. 1	Yr. 2	Yr. 3							
Mango	12	3		15	25 X 40 cm.	0.30	3.60	0.90		4.50
Jackfruit		24	5	29	20 X 30 cm.	0.20		4.80	1.00	5.80
Tamarind	12	3		15	20 X 30 cm.	0.20	2.40	0.60		3.00
Citrus	60	12		72	15 X 20 cm.	0.15	9.00	1.80		10.80
Bamboo	24	3		27	30 X 40 cm.	0.80	19.20	2.40		21.60
Fuelwood		240	48	288	10 X 15 cm.	0.10		24.00	4.80	28.80
						Total	34.20	34.50	5.80	74.50

No Plastic Bags required for hedgerow species. These will be propagated as bare root seedlings or planted as cuttings.

1.C Potting Soil (Collection, screening, mixing, sterilization, etc.)

Species	Size of bag	Amount of potting soil required									Perfor-mance per m.d. (cu.m.)	No. m.d. by year (I, J & K divided by L)			Rate per m.d. (P)	Cost by Year (P x M, N, & O)			Total (P)
		Net Volume per sdlng. (cu.m.)	Allow for Waste (%)	Gross Volume per sdlng. (cu.m.)	No. of Sdlngs.			Soil Required (cu.m.) (E x F,G & H)				Yr.1	Yr.2	Yr.3		Yr.1 (P)	Yr.2 (P)	Yr.3 (P)	
					Yr.1	Yr.2	Yr.3	Yr.1	Yr.2	Yr.3									
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Mango	25 X 40	0.0196	25	0.0245	12	3		0.29	0.07		1.00	0.29	0.07		102	29.58	7.14		36.72
Jackfruit	20 X 30	0.0094	25	0.0118		24	5		0.28	0.06	1.00		0.28	0.06	102		28.56	6.12	34.68
Tamarind	20 X 30	0.0094	25	0.0118	12	3		0.14	0.04		1.00	0.14	0.04		102	14.28	4.08		18.36
Citrus	15 X 20	0.0035	25	0.0044	60	12		0.26	0.05		1.00	0.26	0.05		102	26.52	5.10		31.62
Bamboo	30 X 40	0.0283	25	0.0354	24	3		0.85	0.11		1.00	0.85	0.11		102	86.70	11.22		97.92
Fuelwood	10 X 15	0.0012	25	0.0015		240	48		0.36	0.07	1.00		0.36	0.07	102		36.72	7.14	43.86
							sub-total	1.54	0.91	0.13		1.54	0.91	0.13		157.08	92.82	13.26	263.16

Note: No potting soil required for hedgerow species which will be propagated as bare root seedlings.

1.D Filling plastic bags with potting soil & arranging in plots

Species	No. of bags			Performance per m.d.	No. of m.d.			Rate per m.d.	Cost per ha.			Total
	Yr.1	Yr.2	Yr.3		Yr.1	Yr.2	Yr.3		Yr.1	Yr.2	Yr.3	
Mango	12	3		100	0.12	0.03		102	12.24	3.06		15.30
Jackfruit		24	5	150		0.16	0.03	102		16.32	3.06	19.38
Tamarind	12	3		150	0.08	0.02		102	8.16	2.04		10.20
Citrus	60	12		200	0.30	0.06		102	30.60	6.12		36.72
Bamboo	24	3		50	0.48	0.06		102	48.96	6.12		55.08
Fuelwood		240	48	400		0.60	0.12	102		61.20	12.24	73.44
				Total	0.98	0.93	0.15		99.96	94.86	15.30	210.12

1.E Sowing Seeds and Marcotting Bamboo

Species	No. of seeds or marcots			Performance per m.d.	No. of m.d.			Rate per m.d.	Cost per ha.			Total
	Yr.1	Yr.2	Yr.3		Yr.1	Yr.2	Yr.3		Yr.1	Yr.2	Yr.3	
Mango	12	3		300	0.04	0.01		102	4.08	1.02		5.10
Jackfruit		24	5	400		0.06	0.01	102		6.12	1.02	7.14
Tamarind	12	3		500	0.02	0.01		102	2.04	1.02		3.06
Citrus	60	12		1,000	0.06	0.01		102	6.12	1.02		7.14
Bamboo (a)	24	3		20	1.20	0.15		102	122.40	15.30		137.70
Fuelwood		240	48	5,000		0.05	0.01	102		5.10	1.02	6.12
Hedgerow	6,000	1,800		5,000	1.20	0.36		102	122.40	36.72		159.12
				Total	2.52	0.65	0.02		257.04	66.30	2.04	325.38

(a) No. refers to the number of bamboo nodes to be marcotted.

1.F Grafting and Budding

Species	of sdings.			Performance per m.d.	No. of m.d.			Rate per m.d.	Cost per ha.			Total
	Yr.1	Yr.2	Yr.3		Yr.1	Yr.2	Yr.3		Yr.1	Yr.2	Yr.3	
LABOR												
Mango	12	3		100	0.12	0.03		102	12.24	3.06		15.30
Tamarind	12	3		100	0.12	0.03		102	12.24	3.06		15.30
Citrus	60	12		200	0.30	0.06		102	30.60	6.12		36.72
			Total -Labor		0.54	0.12			55.08	12.24		67.32

SCION MATERIAL (i.e. Budwood, Graftwood, budding tape, etc.)

Species	No. of sdings. to bud or graft			No. of buds/ scions	Allowance for mortality (%)	Total No. of buds/scions		Unit cost (P)	Cost per ha.		Total
	Yr.1	Yr.2	Yr.3			Yr.1	Yr.2		Yr.1	Yr.2	
Mango	12	3		15	40	16.80	4.20	1	16.80	4.20	21.00
Tamarind	12	3		15	30	15.60	3.90	1	15.60	3.90	19.50
Citrus	60	12		72	50	90.00	18.00	0.5	45.00	9.00	54.00

TOTAL: LABOR AND SCION MATERIAL

	Labor			Scion Material			Labor & Material		
	Yr.1	Yr.2	Total	Yr.1	Yr.2	Total	Yr.1	Yr.2	Total
Mango	12.24	3.06	15.30	16.80	4.20	21.00	29.04	7.26	36.30
Tamarind	12.24	3.06	15.30	15.60	3.90	19.50	27.84	6.96	34.80
Citrus	30.60	6.12	36.72	45.00	9.00	54.00	75.60	15.12	90.72
TOTAL	55.08	12.24	67.32	77.40	17.10	94.50	132.48	29.34	161.82

1.G Seedling Maintenance (Watering, weeding, etc.)

Species	No. of seedlings to maintain			No. of maintenance days (a)			Average Performance per m.d.	No. of m.d.			Rate per m.d.	Cost per ha.			Total (P)
	Yr.1	Yr.2	Yr.3	Yr.1	Yr.2	Yr.3		Yr.1	Yr.2	Yr.3		Yr.1	Yr.2	Yr.3	
Mango	12	15	3	216	198	36	500	0.43	0.40	0.07	102	43.86	40.80	7.14	91.80
Jackfruit		24	5		288	60	1,000		0.29	0.06	102		29.58	6.12	35.70
Tamarind	12	15	3	216	198	36	1,000	0.22	0.20	0.04	102	22.44	20.40	4.08	46.92
Citrus	60	72	12	1,080	936	144	1,500	0.72	0.62	0.10	102	73.44	63.24	10.20	146.88
Bamboo	24	27	3	432	342	36	500	0.86	0.68	0.07	102	87.72	69.36	7.14	164.22
Fuelwood		240	48		1,920	384	2,000		0.96	0.19	102		97.92	19.38	117.30
Hedgerow	6,000	7,800	1,800	36,000	46,800	10,800	5,000	7.20	9.36	2.16	102	734.40	954.72	220.32	1,909.44
							Total	9.43	12.51	2.69		961.86	1,276.02	274.38	2,512.26

(a) Computation of maintenance days

MANGO	No. of sdlings.	No. of days per month	No. of mo.	Total
Year 1	12	2	9	216
Year 2	12	2	6	144
	3	2	9	54
		Total Year 2		198
Year 3	3	2	6	36

TAMARIND	No. of sdlings.	No. of days per month	No. of mo.	Total
Year 1	12	2	9	216
Year 2	12	2	6	144
	3	2	9	54
		Total Year 2		198
Year 3	3	2	6	36

BAMBOO	No. of sdlings.	No. of days per month	No. of mo.	Total
Year 1	24	2	9	432
Year 2	24	2	6	288
	3	2	9	54
		Total Year 2		342
Year 3	3	2	6	36

JACKFRUIT	No. of sdlings.	No. of days per mo.	No. of mo.	Total
Year 2	24	2	6	288
Year 3	5	2	6	60

CITRUS	No. of sdlings.	No. of days per month	No. of mo.	Total
Year 1	60	2	9	1,080
Year 2	60	2	6	720
	12	2	9	216
		Total Year 2		936
Year 3	12	2	6	144

HEDGE-ROW	No. of sdlings.	No. of days per month	No. of mo.	Total
Year 1	6,000	1	6	36,000
Year 2	6,000	1	6	36,000
	1,800	1	6	10,800
		Total Year 2		46,800
Year 3	1,800	1	6	10,800

FUEL-WOOD	No. of sdlings.	No. of days per mo.	No. of mo.	Total
Year 2	240	2	4	1,920
Year 3	48	2	4	384

1.H Summary of Seedling Production Costs (Details by Year)

Species	Seeds			Plastic bags			Potting Soil			Fill bags & arrange in plots			Sowing seeds/ marcot bamboo			Grafting & Budding		Maintenance			Cost by Year				No. ps. sdings. sq.m.	Cost per sdlng,p.s. sq.m.
	Yr.1	Yr.2	Yr.3	Yr.1	Yr.2	Yr.3	Yr.1	Yr.2	Yr.3	Yr.1	Yr.2	Yr.3	Yr.1	Yr.2	Yr.3	Yr.1	Yr.2	Yr.1	Yr.2	Yr.3	Yr.1	Yr.2	Yr. 3	Total		
Mango	4.00	1.00		3.60	0.90		29.58	7.14		12.24	3.06		4.08	1.02		29.04	7.26	43.86	40.80	7.14	126.40	61.18	7.14	194.72	15	12.98
Jackfruit		4.35	0.90		4.80	1.00		28.56	6.12		16.32	3.06		6.12	1.02				29.58	6.12		89.73	18.22	107.95	29	3.72
Tamarind	1.40	0.40		2.40	0.60		14.28	4.08		8.16	2.04		2.04	1.02		27.84	6.96	22.44	20.40	4.08	78.56	35.50	4.08	118.14	15	7.88
Citrus	3.90	0.80		9.00	1.80		26.52	5.10		30.60	6.12		6.12	1.02		75.60	15.12	73.44	63.24	10.20	225.18	93.20	10.20	328.58	72	4.56
Bamboo	56.00	6.00		19.20	2.40		86.70	11.22		48.96	6.12		122.40	15.30				87.72	69.36	7.14	420.98	110.40	7.14	538.52	27	19.95
Fuelwood		30.00	12.00		24.00	4.80		36.72	7.14		61.20	12.24		5.10	1.02				97.92	19.38		254.94	56.58	311.52	288	1.08
Hedgerow	120.00	30.00											122.40	36.72				734.40	954.72	220.32	976.80	1021.44	220.32	2218.56	7,800	0.28
Covercrop		40.00																				40.00		40.00	400	0.10
Foodcrops		80.00																				80.00		80.00	3,500	0.02
Total by Yr.	185.30	192.55	12.90	34.20	34.50	5.80	157.08	92.82	13.26	99.96	94.86	15.30	257.04	66.30	2.04	132.48	29.34	961.86	1276.02	274.38	1827.92	1786.39	323.68	3937.99	12,146	50.57

1.I Summary of Seedling Production Costs (by Item of Expenditure)

Species	Seeds	Plastic bags	Potting Soil	Fill bags & arrange in plots	Sowing seeds/ marcot bamboo	Grafting & Budding	Maintenance	Total	No. of sdings. p.s. or sq.m.	Cost per sdlng. p.s. or sq.m.
Mango	5.00	4.50	36.72	15.30	5.10	36.30	91.80	194.72	15	12.98
Jackfruit	5.25	5.80	34.68	19.38	7.14		35.70	107.95	29	3.72
Tamarind	1.80	3.00	18.36	10.20	3.06	34.80	46.92	118.14	15	7.88
Citrus	4.70	10.80	31.62	36.72	7.14	90.72	146.88	328.58	72	4.56
Bamboo	62.00	21.60	97.92	55.08	137.70		164.22	538.52	27	19.95
Fuelwood	42.00	28.80	43.86	73.44	6.12		117.30	311.52	288	1.08
Hedgerow	150.00				159.12		1909.44	2218.56	7,800	0.28
Covercrop	40.00							40.00	400	0.10
Foodcrops	80.00							80.00	3,500	0.02
TOTAL	390.75	74.50	263.16	210.12	325.38	161.82	2,512.26	3,937.99	12,146	50.57

Note: No. of planting spots (p.s.), seedlings (sdlng) or square meters (sq.m.) is equivalent to the seedling production target or requirement not counting the allowance for seeds that fail to germinate. Germination failures are part of the total cost that is incurred to attain the production target/ requirement.

(4) - 2 Site Preparation

	Item	Unit	Units per ha	Performance per m.d. (no. of units)	m.d. per ha	Daily Wage (P)	Cost per ha (P)
2.1.1	Cut/gather stakes & carry to planting site:						Item
	(a) For Hedgerows - [500 linear meters with one stake every 5 meters]	stake	500				(No.)
	(b) For Fruit trees	"	90				
	(c) For Fuelwood species		200				
	(d) For Bamboo		20				
	sub-total		810	250	3.24	102	330.48
2.1.2	Align and place stakes at respective planting spots (p.s.) for trees and on contour line (c.l.) for hedgerows						
	(a) For Hedgerows	c.l.	5	5	1.00		
	(b) For Fruit trees	p.s.	90	100	0.90		
	(c) For Fuelwood species		200	200	1.00		Total
	(d) For Bamboo		20	100	0.20		
	sub-total				3.10	102	316.20
2.1.3	Restaking for hedgerows (a)	c.l.	5	10	0.50	102	51.00
	Total 2.1.1 + 2.1.2 + 2.1.3:				6.84	102	697.68

Note:
The hedgerows will be staked two times. The first time, contour lines will be marked to indicate where to cultivate prior to planting of hedgerows. During cultivation, these stakes will be removed. The second time ("Restaking for hedgerows" - item 2.1.3) the stakes will be put back in place to provide an accurate guide for planting on the contours.

2.2 Holing: (Year 2 Cost)

	Item	Unit	Units per ha	Performance per m.d. (no. of holes)	m.d. per ha	Daily Wage (P)	Cost per ha (P)
2.2.1	For Fruit trees (medium size hole - 30 X 45 cm.)	hole	90	40	2.25	102	229.50
2.2.2	For Fuelwood species (small hole - 15 X 20 cm.)	"	200	80	2.5	102	255.00
2.2.3	For Bamboo (large hole - 40 X 50 cm.)	"	20	20	1	102	102.00
	Total				5.75	102	586.50

Note: No holing needed for planting of cuttings and bare root seedlings in hedgerows because the contour lines will be cultivated.

2.3 Cultivation (Year 2 Cost)

	Item	Unit	Units per ha	Performance per m.d. (no. of holes)	m.d. per ha (a) (b)	Daily Rate (P)	Cost per ha (P)
2.3.1	For planting of food crops	sq.m.	3,500	250	14.00	160	2,240.00
2.3.2	For planting of hedgerows (500 l.m. X 0.5 m width)	"	250	200	1.25	102	127.50
2.3.3	For covercrop planting	p.s.	400	200	2.00	102	204.00
	Total				17.25	--	2,571.50

Note: (a) Rate for item 2.3.1 is for one man-animal day @ P160 to plow and harrow.
(b) Item 1.3.2 to be implemented by manual digging since contour lines may be on terrain that is too steep for animal-powered plowing.

2.4 TOOLS (Year 2 Cost)

Item		No.	Unit Cost (P)	Sub-total (P)	Charge * (%)	Amount (P)
2.4.1	Shovel	2	200	400	10	40
2.4.2	Pick mattock	1	150	150	10	15
2.4.3	Digging bar	1	80	80	10	8
	Total			630		63

* It is estimated that there will be one set of tools for every ten (10) hectares. Thus, only 10% of costs are charged per hectare.

(4) - 3 Planting (Year 2 Cost)

3.1 Labor

	Item	Unit	Unit per ha	Performance per m.d. (a)	m.d. per ha	Daily Rate (P)	Cost per ha (P)
3.1	Food crops	sq.m.	3,500	500	7.00	102	714.0
3.2	Hedgerows	p.s.	5,000	1,000	5.00	102	510.0
3.3	Covercrop	"	400	200	2.00	102	204.0
3.4	Fruit Trees	"	90	40	2.25	102	229.5
3.5	Fuelwood	"	200	100	2.00	102	204.0
3.6	Bamboo	"	20	20	1.00	102	102.0
	Total				19.25	102	1,963.5

(a) Includes hauling from nursery to planting site.

3.2 Fertilizer (Year 2 Cost - for application at planting)

	Species	kgs. per p.s.	No. of planting spots	Quantity in kgs.	Cost per kg. (P)	Amount (P)
3.2.1	Mango	0.150	10	1.50	4.00	6.00
3.2.2	Jackfruit	0.100	20	2.00	4.00	8.00
3.2.3	Tamarind	0.100	10	1.00	4.00	4.00
3.2.4	Citrus	0.050	50	2.50	4.00	10.00
3.2.5	Bamboo	0.150	20	3.00	4.00	12.00
3.2.6	Fuelwood	0.050	200	10.00	4.00	40.00
				20.00	Total	80.00

(4) - 4 Replanting (Year 3 Cost)

	Item	Unit	Units per ha	Allowance for mortality (%)	Allowance for mortality (No)	Performance per m.d. (a)	m.d. per ha	^Daily Rate (P)	Cost per ha (P)
4.1	Hedgerows	p.s.	5,000	30	1500	800	1.88	102	191.76
4.2	Fruit Trees	"	90	20	18	30	0.60	102	61.20
4.3	Fuelwood	"	200	20	40	80	0.50	102	51.00
4.4	Bamboo	"	20	20	4	15	0.27	102	27.54
						Total	3.25	102	331.50

(1) Includes hauling from nursery to planting site. Performance per man day is estimated at only 80% of performance during original planting (Table 3.0) because of greater distance between planting spots.

(4) - 5 Maintenance

5.1 Permanent Crops

5.1.1 Ringweeding of Permanent Crops (Years 2-5)

Year	Mango			Jackfruit			Tamarind			Citrus			Bamboo			Fuelwood			Total	Performance	No. of	Rate	Total Cost
	No.	X	s.t.	No.	X	s.t.	No.	X	s.t.	No.	X	s.t.	No.	X	s.t.	No.	X	s.t.	RW	per m.d.	m.d.	per m.d.	per ha
2	10	5	50	20	5	100	10	5	50	50	5	250	20	4	80	200	3	600	1,130	75	15.1	102	1,540.20
3	10	4	40	20	4	80	10	4	40	50	4	200	20	3	60	200	2	400	820	100	8.2	102	836.40
4	10	3	30	20	3	60	10	3	30	50	3	150	20	2	40	200	2	400	710	150	4.7	102	479.40
5	10	3	30	20	3	60	10	3	30	50	3	150	20	2	40	200	1	200	510	150	3.4	102	346.80

Legend:
- No. - No. of trees planted and to be maintained by ringweeding
- X - No. of ringweeding passes per year
- s.t. - Sub-total; No. of trees X No. of ringweeding passes
- Total RW - Total ringweedings for the year

Note: Trees will be planted in Year 2 and ringweeding will be implemented until the trees are four (4) years old. When the trees are four (4) years old, most of the weeds will be shaded out and ringweeding will no longer be necessary.

5.1.2 Brushing of Permanent Crops (Years 6- 9)

Year	Mango			Jackfruit			Tamarind			Citrus			Bamboo			Fuelwood			Total	Performance	No. of	Rate	Total Cost
	No.	X	s.t.	No.	X	s.t.	No.	X	s.t.	No.	X	s.t.	No.	X	s.t.	No.	X	s.t.	Brush	per m.d.	m.d.	per m.d.	per ha
6	10	2	20	20	2	40	10	2	20	50	2	100	20	2	40	200	2	400	620	200	3.1	102	316.20
7	10	2	20	20	2	40	10	2	20	50	2	100	20	2	40	200	2	400	620	200	3.1	102	316.20
8	10	2	20	20	2	40	10	2	20	50	2	100	20	2	40	200	2	400	620	250	2.5	102	255.00
9	10	2	20	20	2	40	10	2	20	50	2	100	20	2	40	200	2	400	620	250	2.5	102	255.00

Legend:
- No. - No. of trees planted and to be maintained by brushing
- X - No. of brushing passes per year
- s.t. - Sub-total; No. of trees X No. of brushing passes
- Total Brush - Total brushings for the year

Note: Brushing will start in the 6th year, when the trees are five (5) years old. After trees are eight (8) years old, brushing maintenance will be considered as part of production costs.

5.2 Maintenance of Hedgerows (Weeding in Yr.2; periodic trimming from Years 3-10)

Year	No. meters hedgerows	maintenace passes per year	Total linear meters	Performance per m.d. (linear meters)	No. of m.d.	Rate per m.d. (P)	Cost per ha (P)
2	500	3	1,500	200	7.5	102	765
3	500	2	1,000	200	5.0	102	510
4	500	2	1,000	200	5.0	102	510
5	500	2	1,000	200	5.0	102	510
6	500	2	1,000	200	5.0	102	510
7	500	2	1,000	200	5.0	102	510
8	500	2	1,000	200	5.0	102	510
9	500	2	1,000	200	5.0	102	510

5.3 Planting, maintenance and harvesting of food crops

Year	No. of square meters				No. of times per year	Total sq.m.	Performance per m.d.	No. of m.d.	Rate per m.d.	Total (P)
	Grain crops	Root crops	Veget.	Sub-total						
2	2,000	1,000	500	3,500	10	35,000	500	70	102	7,140
3	2,000	1,000	500	3,500	10	35,000	500	70	102	7,140
4	2,000	1,000	500	3,500	10	35,000	500	70	102	7,140
5	2,000	1,000	500	3,500	10	35,000	500	70	102	7,140
6	2,000	1,000	500	3,500	10	35,000	500	70	102	7,140
7	2,000	1,000	500	3,500	10	35,000	500	70	102	7,140
8	2,000	1,000	500	3,500	10	35,000	500	70	102	7,140
9	2,000	1,000	500	3,500	10	35,000	500	70	102	7,140

Note: "No. of times per year" indicates the average number of planting, maintenance and harvesting cycles in one year.

ANNEX II-11 Unit Costs of Community Forest

(1) ANR Treatments

1st year

per ha

Items	Unit	No.	Rate (P)	Cost per ha (P)
1. Labor				
Ringweeding of pioneers				
500 pioneers per ha/100 per man day	m.d.	5	102	510
Lodging cogon, talahib, etc.				
10,000 sq.meters/1,000 sq.m. per manday	"	10	102	1,020
Cultivate covercrop planting spots				
400 planting spots per ha/80 spots per manday	"	5	102	510
Plant covercrop				
400 planting spots per ha/200 planting spots per manday	"	2	102	204
Sub-total				2,244
2. Material				
Covercrop seeds	kg	2	80	160
Total				2,404

Cost share : Gov't P 160

Comm. P 2,244

2nd year

per ha

Items	Unit	No.	Rate (P)	Cost per ha (P)
Labor				
Ringweeding of pioneers				
500 pioneers per ha/100 per manday	m.d.	5	102	510
Lodging cogon, talahib, etc.				
10,000 sq.meters/1,000 sq.m. per manday	"	10	102	1,020
Cultivate covercrop planting spots				
400 planting spots x3 cycles/200 per manday	"	6	102	612
Total				2,142

Cost share : Gov't P 0

Comm. P 2,142

(2) Firebreak

per km

Items	Unit	No.	Rate (P)	Cost per ha (P)
1. Firebreak Establishment				
10 ha planting block with 1,400 meter perimeter x 10 meter width = 14,000sq.m. 1,000m/1,400m x 14,000 sq.m.=10,000sq.m. per km/100 sq.m. accomplishment per manday	m.d.	100	102	10,200
2. Firebreak Maintenance				
10,000 sq.m./250 sq.m. accomplishment per manday	"	40	102	4,080
Total				14,280

Cost share : Gov't P 0

Comm. P 14,280

(3) Seedling Production

Species	Seedlings per ha	Proposed Area (ha)	Total No. of seedlings	Unit cost (P)	Total cost (P)
Bamboo spp.	50	348	17,400	15	261,000
Timber spp.	120	348	41,760	2	83,520
Fuel spp.	250	348	87,000	1	87,000
Total	420		146,160		431,520

Average unit cost : P 2.95/sdling (431,520/146,160)

(4) Afforestation / Reforestation

A. Afforestation (New Plantation)

per ha

Items	Unit	No.	Rate (P)	Cost per ha (P)
1. Labor (Planting including application of fertilizer):				
Staking : 340 planting spots per ha/100 spots per manday	m.d.	3.4		
Holing : 40 large size holes (for bamboo)/20 holes per manday	"	2.0		
100 medium size holes (for timber species)/50 holes per mandy	"	2.0		
200 small size holes (for fuelwood & misc. species)/80 holes per manday	"	2.5		
Haul seedlings : 340 seedlings per ha/20 sdlings. per trip/8trips per manday	"	2.1		
(i.e. one trip per hour, equivalent to 160 sdlings. per manday)				
Plant 340 seedlings per ha/80 seedlings per manday	"	4.2		
Labor (replanting-approx. 20% of original 340, i.e. 80)	"			
Haul seedlings : 80 seedlings per ha/20 sdlings. per trip/8 trips per manday	"	0.5		
Plant 80 seedlings per ha/80 seedlings per manday	"	1.0		
Sub-total		17.7	102	1,805
2. Materials :				
Stakes : 340 planting spots x 1 stake per planting spot	stake	340	1	340
Fertilizer : 100 timber species + 40 bamboo sdlings. x 0.25 kilograms per sdling	kg	80	6	480
100 timber species + 40 bamboo sdlings. x 0.25 kilograms per sdling = 60 kg				
200 fuelwood & miscellaneous sdlings x 0.1 kilogarams per sdling = 20kg				
Sub-total				820
Total				2,625

Cost share : Gov't P 0

Comm. P 2,625

B. Reforestation

per ha

Items	Unit	No.	Rate (P)	Cost per ha (P)
1. Labor				
Staking : 150 planting spots per ha/200 spots per manday	m.d.	0.8		
Holing : 150 holes/80 holes per manday	"	1.9		
Haul seedlings : 150 seedlings per ha/20 sdlings. per trip/8trips per manday	"	0.9		
Plant 150 seedlings per ha/80 seedlings per manday	"	1.9		
Sub-total	"	5.5	102	561
2. Materials :				
Seedlings : 150	"	150.0	2	300
Stakes : 150	"	150.0	1	150
Fertilizer : 150 sdlings x 0.25kg = 38kg	"	38.0	6	228
Sub-total	"			678
Total		349.0	102	1,239

Cost share : Gov't P 0

Comm. P 1,239

(5) Weeding

A. Afforestation (New Plantation) — per ha

Items	Unit	No.	Rate (P)	Cost per ha (P)
Ringweeding (1st-3rd year)				
340 planted seedlings x 2 cycles / 100 per manday	m.d.	6.8	102	693
500 pioneers x 2 cycles / 100 per manday	"	10.0	102	1,020
Total	"	16.8		1,713

Cost share : Gov't P 0
Comm. P 1,713

B. Reforestation — per ha

Items	Unit	No.	Rate (P)	Cost per ha (P)
Ringweeding (1st-3rd year)				
150 planted seedlings x 2 cycles / 80 per manday	m.d.	3.8	102	388

Cost share : Gov't P 0
Comm. P 388

(6) Refining and Liberation — per ha

Items	Unit	No.	Rate (P)	Cost per ha (P)
5th year				
500 pioneers + 100 timber spp. + 200 misc. spp./200 per manday	m.d.	4.0	102	408
8th year				
200 pioneers + 100 timber spp./100 per manday	"	3.0	102	306
Total		7.0		714

Cost share : Gov't P 0
Comm. P 714

(7) Logging and Hauling

1. Fuelwood

Computation	No. of m.d.	Rate (P)	Amount	Unit
(Based on Estimated Harvest Volume for Year 5)				
Felling : Pollard cutting of 100 trees x 50 trees per manday (m.d.)	2	102	204	
Bucking, Splitting and bundling : 100 trees x 2 bundles per tree/40 bundles per m.d.	5	102	510	
Hauling to roadside : 200 bundles/25 bundles per trip/8 trips per man-carabao day	1	160	160	
Tying materials : P 0.25 per bundle x 200 bundles			50	
Sub-total	8		924	
Production cost per cubic meter : P 924/3.25 cu.m.			284.30	cu.m.
Rounded off			284.00	"

2. Bamboo

Computation	No. of m.d.	Rate (P)	Amount	Unit
(Based on Estimated Harvest Volume for Year 10-20)				
Felling and trimming : 40 clumps x 3 poles per clump (i.e. 120 poles)/20 poles per manday	6	102	612	
Skidding to roadside : 120 poles/10 poles per trip/4 trips per man-animal day	3	160	480	
Sub-total	9		1,092	
Production cost per bamboo pole : P 1,092/120 poles			9.10	pole
Rounded-off			9.00	"

3. Poles

Computation	No. of m.d.	Rate (P)	Amount	Unit
(Based on Estimated Harvest Volume for Year 14)				
Tree marking : 10 trees/40 trees per manday	0.25	102	25.50	
Felling : 10 trees/5 trees per manday	2.00	102	204.00	
Topping and de-limbing : 10 trees/20 trees per manday	0.50	102	51.00	
Skidding to roadside : 10 trees x 1 tree per trip/5 trips per man-animal day	2.00	160	320.00	
Sub-total	4.75		600.50	
Production cost per pole : 10 trees x 0.15 cubic meters per tree = 1.5 cubic meters				
P 600.50/1.5 cubic meters			400.33	cu.m.
Rounded-off			400.00	"

4. Sawlogs (Year 23)

Computation	No. of m.d.	Rate (P)	Amount	Unit
Tree marking : 30 trees/30 trees per manday	1	102	102	
Felling : 30 trees/3 trees per manday	10	102	1,020	
Topping and de-limbing : 30 trees/10 trees per manday	3	102	306	
Handsawing into boards and flitches :				
30 trees x 0.5 cubic meters per tree x 250 bd.ft. recovery per cu.m./50 bd.ft. per m.d.	75	102	7,650	
(conversion rate of 250 bd.ft. per cubic meter)				
Skidding to roadside :				
30 trees x 0.5 cubic meters per tree x 250 bd.ft. recovery per cu.m.=3,750 bd.ft.				
3,750 bd.ft./100 bd.ft. per trip/4 trips per man-animal day	9.375	160	1,500	
Sub-total	98		10,578	
Production cost per cubic meter : P 10,578/15 cubic meters			705.2	cu.m.
Rounded off			705.0	"

(4) Units of Performance and Cost Estimates - Agroforestry Farm Development

(Base Costs - One Hectare)

(Costs in Pesos)

Item		Unit	Unit Cost	Year 1				Year 2				Year 3				Year 4		Year 5		Year 6		Year 7		Year 8		Year 9		TOTAL			
				No.	Amt. (Com.) (P)	Amt. (Gov.) (P)	Total (P)	No.	Amt. (Com.) (P)	Amt. (Gov.) (P)	Total (P)	No.	Amt. (Com.) (P)	Amt. (Gov.) (P)	Total (P)	No.	Amt. (Com.) (P)	No.	Amt. (Com.) (P)	No.	Amt. (Com.) (P)	No.	Amt. (Com.) (P)	No.	Amt. (Com.) (P)	No.	Amt. (Com.) (P)	NO. MAN-DAYS	COST SHARE Com. (P)	COST SHARE Gov. (P)	Total (P)
1.0	SEEDLING PRODUCTION AND PROCUREMENT OF SEEDS (a)																													
1.1	Mango	sdlng	12.98	–	44	82	126	–	41	20	61	–	7		7													92	102	194
1.2	Jackfruit	"	3.72	–				–	30	60	90	–	6	12	18													36	72	108
1.3	Tamarind	"	7.88	–	22	57	79	–	20	16	36	–	4		4													46	73	119
1.4	Citrus	"	4.56	–	73	152	225	–	63	30	93	–	10		10													146	182	328
1.5	Bamboo	"	19.95	–	88	333	421	–	69	41	110	–	7		7													164	374	538
1.6	Fuelwood	"	1.08	–				–	98	157	255	–	19	38	57													117	195	312
1.7	Hedgerow	"	0.28	–	734	243	977	–	955	66	1,021	–	220		220													1,909	309	2,218
1.8	Covercrop	kg	80					0.50		40	40																		40	40
1.9	Foodcrops	kg	40					2.00		80	80																		80	80
2.0	SITE PREPARATION																													
2.1	Staking	m.d	102					6.84	698		698																	6.8	698		698
2.2	Holing	"	102					5.75	587		587																	5.8	587		587
2.3	Cultivation	"						17.25	2,572		2,572																	17.3	2,572		2,572
2.4	Tools	lot	63					1.00		63	63																			63	63
3.0	PLANTING																													
3.1	Food crops	m.d	102					7.00	714		714																	7.0	714		714
3.2	Hedgerows	"	102					5.00	510		510																	5.0	510		510
3.3	Covercrop	"	102					2.00	204		204																	2.0	204		204
3.4	Fruit Trees	"	102					2.25	230		230																	2.3	230		230
3.5	Fuelwood Trees	"	102					2.00	204		204																	2.0	204		204
3.6	Bamboo	"	102					1.00	102		102																	1.0	102		102
3.7	Fertilizer	kg	4					20.00		80	80																			80	80
4.0	REPLANTING																													
4.1	Hedgerows	m.d	102									1.88	192		192													1.9	192		192
4.2	Fruit Trees	"	102									0.60	61		61													0.6	61		61
4.3	Fuelwood Trees	"	102									0.50	51		51													0.5	51		51
4.4	Bamboo	"	102									0.27	28		28													0.3	28		28
5.0	MAINTENANCE																													
5.1	Permanent Crops																													
5.1.1	Ringweeding	m.d	102					15.10	1,540		1,540	8.20	836		836	4.70	479	3.40	347									31.4	3,202		3,202
5.1.2	Brushing	"	102																	3.10	316	3.10	316	2.50	255	2.50	255	11.2	1,142		1,142
5.2	Hedgerows	"	102					7.50	765		765	5.00	510		510	5.00	510	5.00	510	5.00	510	5.00	510	5.00	510	5.00	510	42.5	4,335		4,335
5.3	Food Crops	"	102					70.00	7,140		7,140	70.00	7,140		7140	70.00	7,140	70.00	7,140	70.00	7,140	70.00	7,140	70.00	7,140	70.00	7,140	560.0	57,120		57,120
	sub-tot: (Com.)				961				16,542		16,542		9,091		9,091		8,129		7,997		7,966		7,966		7,905		7,905		74,462		74,462
	sub-tot: (Gov.)					867				653	653			50	50															1,570	1,570
	sub-tot: (m.d.)			0				142				86				80		78		78		78		78		78		698			
	TOTAL						1,828				17,195				9,141		8,129		7,997		7,966		7,966		7,905		7,905				76,032

(a) Seedling production costs are spread over Yrs. 1 and 3 to allow time for slow-growing seedlings and for species that will be propagated by grafting, budding or marcotting.

LEGEND:

Amt. (Gov.) - Government share of costs

Amt. (Com.) - Community's share of costs (i.e. value of labor input by local residents)

ANNEX III-1 Derivation of Sawlog Market Prices

Assumptions:	
Species	*Gmelina arborea*
Harvesting method	After felling and bucking, the logs will be converted into boards and/or flitches by local residents using two-man handsaws (i.e. pit-saws). The boards and flitches will be cut into English dimensions (i.e. board feet) because this is the normal practice in the Philippines.
Conversion ratio	One cubic meter of round logs contains 424 board feet on the Brereton scale. After cutting into boards or flitches each cubic meter will yield approximately 250 board feet, (i.e. conversion ratio of 59%) 250 bd.ft.divided by 424 bd.ft. = 59%
Market price	The market price for Gmelina arborea lumber will be equivalent to the average price for high grade lumber (i.e. Philippine mahogany) and low grade lumber (i.e. coconut lumber).

Computation		
Current price of Philippine mahogany lumber (e.g. lauan)	P 20	per bd.ft.
Current price of coconut lumber	P 8	per bd.ft.
	P 28	per bd.ft.
Average price : P28.00 divided by 2	P 14	per bd.ft.
250 board feet per cubic meter×P14 per board foot	P 3,500	per cu.m.
Minus : Cost of conversion to boards and flitches		
250 b.d.ft.per cubic meter×4.00	P 1,000	per cu.m.
Net farmgate value	P 2,500	per cu.m.

ANNEX III-2-1 Production and Sales by Year (Agroforestry)

(1) Mango

(In Thousand Pesos) [P'000]

Year Planted		Years Harvested																	
		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
2	No.of ha	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
	Income per ha	1,000	1,000	4,000	3,000	8,000	5,000	12,000	7,000	16,000	9,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000
	Income ('000)	150	150	600	450	1,200	750	1,800	1,050	2,400	1,350	3,000	1,500	3,000	1,500	3,000	1,500	3,000
3	No.of ha		200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
	Income per ha		1,000	1,000	4,000	3,000	8,000	5,000	12,000	7,000	16,000	9,000	20,000	10,000	20,000	10,000	20,000	10,000
	Income ('000)		200	200	800	600	1,600	1,000	2,400	1,400	3,200	1,800	4,000	2,000	4,000	2,000	4,000	2,000
4	No.of ha			300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
	Income per ha			1,000	1,000	4,000	3,000	8,000	5,000	12,000	7,000	16,000	9,000	20,000	10,000	20,000	10,000	20,000
	Income ('000)			300	300	1,200	900	2,400	1,500	3,600	2,100	4,800	2,700	6,000	3,000	6,000	3,000	6,000
5	No.of ha				350	350	350	350	350	350	350	350	350	350	350	350	350	350
	Income per ha				1,000	1,000	4,000	3,000	8,000	5,000	12,000	7,000	16,000	9,000	20,000	10,000	20,000	10,000
	Income ('000)				350	350	1,400	1,050	2,800	1,750	4,200	2,450	5,600	3,150	7,000	3,500	7,000	3,500
6	No.of ha					400	400	400	400	400	400	400	400	400	400	400	400	400
	Income per ha					1,000	1,000	4,000	3,000	8,000	5,000	12,000	7,000	16,000	9,000	20,000	10,000	20,000
	Income ('000)					400	400	1,600	1,200	3,200	2,000	4,800	2,800	6,400	3,600	8,000	4,000	8,000
7	No.of ha						400	400	400	400	400	400	400	400	400	400	400	400
	Income per ha						1,000	1,000	4,000	3,000	8,000	5,000	12,000	7,000	16,000	9,000	20,000	10,000
	Income ('000)						400	400	1,600	1,200	3,200	2,000	4,800	2,800	6,400	3,600	8,000	4,000
8	No.of ha							400	400	400	400	400	400	400	400	400	400	400
	Income per ha							1,000	1,000	4,000	3,000	8,000	5,000	12,000	7,000	16,000	9,000	20,000
	Income ('000)							400	400	1,600	1,200	3,200	2,000	4,800	2,800	6,400	3,600	8,000
9	No.of ha								472	472	472	472	472	472	472	472	472	472
	Income per ha								1,000	1,000	4,000	3,000	8,000	5,000	12,000	7,000	16,000	9,000
	Income ('000)								472	472	1,888	1,416	3,776	2,360	5,664	3,304	7,552	4,248
	Yearly Total	150	350	1,100	1,900	3,750	5,450	8,650	11,422	15,622	19,138	23,466	27,176	30,510	33,964	35,804	38,652	38,748

Year Planted		Years Harvested																
		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
2	No.of ha	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	
	Income per ha	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	
	Income ('000)	1,500	3,000	1,500	3,000	1,500	3,000	1,500	3,000	1,500	3,000	1,500	3,000	1,500	3,000	1,500	3,000	
3	No.of ha	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	
	Income per ha	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	
	Income ('000)	4,000	2,000	4,000	2,000	4,000	2,000	4,000	2,000	4,000	2,000	4,000	2,000	4,000	2,000	4,000	2,000	
4	No.of ha	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	
	Income per ha	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	
	Income ('000)	3,000	6,000	3,000	6,000	3,000	6,000	3,000	6,000	3,000	6,000	3,000	6,000	3,000	6,000	3,000	6,000	
5	No.of ha	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	
	Income per ha	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	
	Income ('000)	7,000	3,500	7,000	3,500	7,000	3,500	7,000	3,500	7,000	3,500	7,000	3,500	7,000	3,500	7,000	3,500	
6	No.of ha	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	
	Income per ha	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	
	Income ('000)	4,000	8,000	4,000	8,000	4,000	8,000	4,000	8,000	4,000	8,000	4,000	8,000	4,000	8,000	4,000	8,000	
7	No.of ha	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	
	Income per ha	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	
	Income ('000)	8,000	4,000	8,000	4,000	8,000	4,000	8,000	4,000	8,000	4,000	8,000	4,000	8,000	4,000	8,000	4,000	
8	No.of ha	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	
	Income per ha	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	
	Income ('000)	4,000	8,000	4,000	8,000	4,000	8,000	4,000	8,000	4,000	8,000	4,000	8,000	4,000	8,000	4,000	8,000	
9	No.of ha	472	472	472	472	472	472	472	472	472	472	472	472	472	472	472	472	
	Income per ha	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	20,000	10,000	
	Income ('000)	9,440	4,720	9,440	4,720	9,440	4,720	9,440	4,720	9,440	4,720	9,440	4,720	9,440	4,720	9,440	4,720	
	Yearly Total	40,940	39,220	40,940	39,220	40,940	39,220	40,940	39,220	40,940	39,220	40,940	39,220	40,940	39,220	40,940	39,220	

(2) Jackfruit (Langka)

(In Thousand Pesos) [P'000]

Year Planted		Years Harvested 8	9	10	11	12	13	14	15	16	17	18	19 - 40
2	No.of ha	150	150	150	150	150	150	150	150	150	150	150	
	Income per ha	2,500	5,000	7,500	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	
	Income ('000)	375	750	1,125	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	
3	No.of ha		200	200	200	200	200	200	200	200	200	200	
	Income per ha		2,500	5,000	7,500	10,000	10,000	10,000	10,000	10,000	10,000	10,000	
	Income ('000)		500	1,000	1,500	2,000	2,000	2,000	2,000	2,000	2,000	2,000	
4	No.of ha			300	300	300	300	300	300	300	300	300	
	Income per ha			2,500	5,000	7,500	10,000	10,000	10,000	10,000	10,000	10,000	
	Income ('000)			750	1,500	2,250	3,000	3,000	3,000	3,000	3,000	3,000	
5	No.of ha				350	350	350	350	350	350	350	350	each year, the same as year 18
	Income per ha				2,500	5,000	7,500	10,000	10,000	10,000	10,000	10,000	
	Income ('000)				875	1,750	2,625	3,500	3,500	3,500	3,500	3,500	
6	No.of ha					400	400	400	400	400	400	400	
	Income per ha					2,500	5,000	7,500	10,000	10,000	10,000	10,000	
	Income ('000)					1,000	2,000	3,000	4,000	4,000	4,000	4,000	
7	No.of ha						400	400	400	400	400	400	
	Income per ha						2,500	5,000	7,500	10,000	10,000	10,000	
	Income ('000)						1,000	2,000	3,000	4,000	4,000	4,000	
8	No.of ha							400	400	400	400	400	
	Income per ha							2,500	5,000	7,500	10,000	10,000	
	Income ('000)							1,000	2,000	3,000	4,000	4,000	
9	No.of ha								472	472	472	472	
	Income per ha								2,500	5,000	7,500	10,000	
	Income ('000)								1,180	2,360	3,540	4,720	
	Yearly Total	375	1,250	2,875	5,375	8,500	12,125	16,000	20,180	23,360	25,540	26,720	

(3) Tamarind

(In Thousand Pesos) [P'000]

Year Planted		Years Harvested 8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24 - 40
2	No.of ha	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	
	Income per ha	1,600	2,400	3,200	4,000	4,800	5,600	6,400	7,200	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	
	Income ('000)	240	360	480	600	720	840	960	1,080	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	
3	No.of ha		200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	
	Income per ha		1,600	2,400	3,200	4,000	4,800	5,600	6,400	7,200	8,000	8,000	8,000	8,000	8,000	8,000	8,000	
	Income ('000)		320	480	640	800	960	1,120	1,280	1,440	1,600	1,600	1,600	1,600	1,600	1,600	1,600	
4	No.of ha			300	300	300	300	300	300	300	300	300	300	300	300	300	300	
	Income per ha			1,600	2,400	3,200	4,000	4,800	5,600	6,400	7,200	8,000	8,000	8,000	8,000	8,000	8,000	
	Income ('000)			480	720	960	1,200	1,440	1,680	1,920	2,160	2,400	2,400	2,400	2,400	2,400	2,400	
5	No.of ha				350	350	350	350	350	350	350	350	350	350	350	350	350	each year,
	Income per ha				1,600	2,400	3,200	4,000	4,800	5,600	6,400	7,200	8,000	8,000	8,000	8,000	8,000	the same as year 23
	Income ('000)				560	840	1,120	1,400	1,680	1,960	2,240	2,520	2,800	2,800	2,800	2,800	2,800	
6	No.of ha					400	400	400	400	400	400	400	400	400	400	400	400	
	Income per ha					1,600	2,400	3,200	4,000	4,800	5,600	6,400	7,200	8,000	8,000	8,000	8,000	
	Income ('000)					640	960	1,280	1,600	1,920	2,240	2,560	2,880	3,200	3,200	3,200	3,200	
7	No.of ha						400	400	400	400	400	400	400	400	400	400	400	
	Income per ha						1,600	2,400	3,200	4,000	4,800	5,600	6,400	7,200	8,000	8,000	8,000	
	Income ('000)						640	960	1,280	1,600	1,920	2,240	2,560	2,880	3,200	3,200	3,200	
8	No.of ha							400	400	400	400	400	400	400	400	400	400	
	Income per ha							1,600	2,400	3,200	4,000	4,800	5,600	6,400	7,200	8,000	8,000	
	Income ('000)							640	960	1,280	1,600	1,920	2,240	2,560	2,880	3,200	3,200	
9	No.of ha								472	472	472	472	472	472	472	472	472	
	Income per ha								1,600	2,400	3,200	4,000	4,800	5,600	6,400	7,200	8,000	
	Income ('000)								755	1,133	1,510	1,888	2,266	2,643	3,021	3,398	3,776	
	Yearly Total	240	680	1,440	2,520	3,960	5,720	7,800	10,315	12,453	14,470	16,328	17,946	19,283	20,301	20,998	21,376	

(4) Citrus

(In Thousand Pesos) [P'000]

Year Planted		Years Harvested																	
		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 - 40
2	No.of ha	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	
	Income per ha	1,500	2,250	3,000	3,750	4,500	5,250	6,000	6,750	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	
	Income ('000)	225	338	450	563	675	788	900	1,013	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	
3	No.of ha		200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	
	Income per ha		1,500	2,250	3,000	3,750	4,500	5,250	6,000	6,750	7,500	7,500	7,500	7,500	7,500	7,500	7,500	
	Income ('000)		300	450	600	750	900	1,050	1,200	1,350	1,500	1,500	1,500	1,500	1,500	1,500	1,500	
4	No.of ha			300	300	300	300	300	300	300	300	300	300	300	300	300	300	
	Income per ha			1,500	2,250	3,000	3,750	4,500	5,250	6,000	6,750	7,500	7,500	7,500	7,500	7,500	7,500	
	Income ('000)			450	675	900	1,125	1,350	1,575	1,800	2,025	2,250	2,250	2,250	2,250	2,250	2,250	
5	No.of ha				350	350	350	350	350	350	350	350	350	350	350	350	350	each year,
	Income per ha				1,500	2,250	3,000	3,750	4,500	5,250	6,000	6,750	7,500	7,500	7,500	7,500	7,500	the same as year 19
	Income ('000)				525	788	1,050	1,313	1,575	1,838	2,100	2,363	2,625	2,625	2,625	2,625	2,625	
6	No.of ha					400	400	400	400	400	400	400	400	400	400	400	400	
	Income per ha					1,500	2,250	3,000	3,750	4,500	5,250	6,000	6,750	7,500	7,500	7,500	7,500	
	Income ('000)					600	900	1,200	1,500	1,800	2,100	2,400	2,700	3,000	3,000	3,000	3,000	
7	No.of ha						400	400	400	400	400	400	400	400	400	400	400	
	Income per ha						1,500	2,250	3,000	3,750	4,500	5,250	6,000	6,750	7,500	7,500	7,500	
	Income ('000)						600	900	1,200	1,500	1,800	2,100	2,400	2,700	3,000	3,000	3,000	
8	No.of ha							400	400	400	400	400	400	400	400	400	400	
	Income per ha							1,500	2,250	3,000	3,750	4,500	5,250	6,000	6,750	7,500	7,500	
	Income ('000)							600	900	1,200	1,500	1,800	2,100	2,400	2,700	3,000	3,000	
9	No.of ha								472	472	472	472	472	472	472	472	472	
	Income per ha								1,500	2,250	3,000	3,750	4,500	5,250	6,000	6,750	7,500	
	Income ('000)								708	1,062	1,416	1,770	2,124	2,478	2,832	3,186	3,540	
	Yearly Total	225	638	1,350	2,363	3,713	5,363	7,313	9,671	11,675	13,566	15,308	16,824	18,078	19,032	19,686	20,040	

(5) Fuelwood

(In Thousand Pesos) [P'000]

Year Planted		Years Harvested										
		4	5	6	7	8	9	10	11	12	13	20 - 40
2	No.of ha	150	150	150	150	150	150	150	150	150	150	
	Income per ha	1,000	1,000	1,500	1,500	2,000	2,000	2,000	2,000	2,000	2,000	
	Income ('000)	150	150	225	225	300	300	300	300	300	300	
3	No.of ha		200	200	200	200	200	200	200	200	200	
	Income per ha		1,000	1,000	1,500	1,500	2,000	2,000	2,000	2,000	2,000	
	Income ('000)		200	200	300	300	400	400	400	400	400	
4	No.of ha			300	300	300	300	300	300	300	300	
	Income per ha			1,000	1,000	1,500	1,500	2,000	2,000	2,000	2,000	
	Income ('000)			300	300	450	450	600	600	600	600	
5	No.of ha				350	350	350	350	350	350	350	each year, the same as year 13
	Income per ha				1,000	1,000	1,500	1,500	2,000	2,000	2,000	
	Income ('000)				350	350	525	525	700	700	700	
6	No.of ha					400	400	400	400	400	400	
	Income per ha					1,000	1,000	1,500	1,500	2,000	2,000	
	Income ('000)					400	400	600	600	800	800	
7	No.of ha						400	400	400	400	400	
	Income per ha						1,000	1,000	1,500	1,500	2,000	
	Income ('000)						400	400	600	600	800	
8	No.of ha							400	400	400	400	
	Income per ha							1,000	1,000	1,500	1,500	
	Income ('000)							400	400	600	600	
9	No.of ha								472	472	472	
	Income per ha								1,000	1,000	1,500	
	Income ('000)								472	472	708	
	Yearly Total	150	350	725	1,175	1,800	2,475	3,225	4,072	4,472	4,908	

(6) Bamboo
(In Thousand Pesos) [P'000]

Year Planted		Years Harvested 5	6	7	8	9	10	11	12	13	14	15 - 40
2	No.of ha	150	150	150	150	150	150	150	150	150	150	
	Income per ha	600	1,200	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	
	Income ('000)	90	180	270	270	270	270	270	270	270	270	
3	No.of ha		200	200	200	200	200	200	200	200	200	
	Income per ha		600	1,200	1,800	1,800	1,800	1,800	1,800	1,800	1,800	
	Income ('000)		120	240	360	360	360	360	360	360	360	
4	No.of ha			300	300	300	300	300	300	300	300	
	Income per ha			600	1,200	1,800	1,800	1,800	1,800	1,800	1,800	
	Income ('000)			180	360	540	540	540	540	540	540	
5	No.of ha				350	350	350	350	350	350	350	each year, the same as year 14
	Income per ha				600	1,200	1,800	1,800	1,800	1,800	1,800	
	Income ('000)				210	420	630	630	630	630	630	
6	No.of ha					400	400	400	400	400	400	
	Income per ha					600	1,200	1,800	1,800	1,800	1,800	
	Income ('000)					240	480	720	720	720	720	
7	No.of ha						400	400	400	400	400	
	Income per ha						600	1,200	1,800	1,800	1,800	
	Income ('000)						240	480	720	720	720	
8	No.of ha							400	400	400	400	
	Income per ha							600	1,200	1,800	1,800	
	Income ('000)							240	480	720	720	
9	No.of ha								472	472	472	
	Income per ha								600	1,200	1,800	
	Income ('000)								283	566	850	
	Yearly Total	90	300	690	1,200	1,830	2,520	3,240	4,003	4,526	4,810	

(7) Rootcrops
(In Thousand Pesos) [P'000]

Year Planted		Years Harvested 2	3	4	5	6	7	8	9	10	11	12	13	14 - 40
2	No.of ha	150	150	150	150	150	150	150	150	150	150	150	150	
	Income per ha	3,000	3,000	4,500	4,500	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	
	Income ('000)	450	450	675	675	900	900	900	900	900	900	900	900	
3	No.of ha		200	200	200	200	200	200	200	200	200	200	200	
	Income per ha		3,000	3,000	4,500	4,500	6,000	6,000	6,000	6,000	6,000	6,000	6,000	
	Income ('000)		600	600	900	900	1,200	1,200	1,200	1,200	1,200	1,200	1,200	
4	No.of ha			300	300	300	300	300	300	300	300	300	300	
	Income per ha			3,000	3,000	4,500	4,500	6,000	6,000	6,000	6,000	6,000	6,000	
	Income ('000)			900	900	1,350	1,350	1,800	1,800	1,800	1,800	1,800	1,800	
5	No.of ha				350	350	350	350	350	350	350	350	350	each year, the same as year 13
	Income per ha				3,000	3,000	4,500	4,500	6,000	6,000	6,000	6,000	6,000	
	Income ('000)				1,050	1,050	1,575	1,575	2,100	2,100	2,100	2,100	2,100	
6	No.of ha					400	400	400	400	400	400	400	400	
	Income per ha					3,000	3,000	4,500	4,500	6,000	6,000	6,000	6,000	
	Income ('000)					1,200	1,200	1,800	1,800	2,400	2,400	2,400	2,400	
7	No.of ha						400	400	400	400	400	400	400	
	Income per ha						3,000	3,000	4,500	4,500	6,000	6,000	6,000	
	Income ('000)						1,200	1,200	1,800	1,800	2,400	2,400	2,400	
8	No.of ha							400	400	400	400	400	400	
	Income per ha							3,000	3,000	4,500	4,500	6,000	6,000	
	Income ('000)							1,200	1,200	1,800	1,800	2,400	2,400	
9	No.of ha								472	472	472	472	472	
	Income per ha								3,000	3,000	4,500	4,500	6,000	
	Income ('000)								1,416	1,416	2,124	2,124	2,832	
	Yearly Total	450	1,050	2,175	3,525	5,400	7,425	9,675	12,216	13,416	14,724	15,324	16,032	

(8) Vegetables
(In Thousand Pesos) [P'000]

Year Planted		Years Harvested												
		2	3	4	5	6	7	8	9	10	11	12	13	14 - 40
2	No.of ha	150	150	150	150	150	150	150	150	150	150	150	150	
	Income per ha	2,500	3,750	5,000	6,250	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	
	Income ('000)	375	563	750	938	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	
3	No.of ha		200	200	200	200	200	200	200	200	200	200	200	
	Income per ha		2,500	3,750	5,000	6,250	7,500	7,500	7,500	7,500	7,500	7,500	7,500	
	Income ('000)		500	750	1,000	1,250	1,500	1,500	1,500	1,500	1,500	1,500	1,500	
4	No.of ha			300	300	300	300	300	300	300	300	300	300	
	Income per ha			2,500	3,750	5,000	6,250	7,500	7,500	7,500	7,500	7,500	7,500	
	Income ('000)			750	1,125	1,500	1,875	2,250	2,250	2,250	2,250	2,250	2,250	
5	No.of ha				350	350	350	350	350	350	350	350	350	each year, the same as year 13
	Income per ha				2,500	3,750	5,000	6,250	7,500	7,500	7,500	7,500	7,500	
	Income ('000)				875	1,313	1,750	2,188	2,625	2,625	2,625	2,625	2,625	
6	No.of ha					400	400	400	400	400	400	400	400	
	Income per ha					2,500	3,750	5,000	6,250	7,500	7,500	7,500	7,500	
	Income ('000)					1,000	1,500	2,000	2,500	3,000	3,000	3,000	3,000	
7	No.of ha						400	400	400	400	400	400	400	
	Income per ha						2,500	3,750	5,000	6,250	7,500	7,500	7,500	
	Income ('000)						1,000	1,500	2,000	2,500	3,000	3,000	3,000	
8	No.of ha							400	400	400	400	400	400	
	Income per ha							2,500	3,750	5,000	6,250	7,500	7,500	
	Income ('000)							1,000	1,500	2,000	2,500	3,000	3,000	
9	No.of ha								472	472	472	472	472	
	Income per ha								2,500	3,750	5,000	6,250	7,500	
	Income ('000)								1,180	1,770	2,360	2,950	3,540	
	Yearly Total	375	1,063	2,250	3,938	6,188	8,750	11,563	14,680	16,770	18,360	19,450	20,040	

(9) Grain Crops
(In Thousand Pesos) [P'000]

Year Planted		Years Harvested													
		2	3	4	5	6	7	8	9	10	11	12	13	14	15 - 40
2	No.of ha	150	150	150	150	150	150	150	150	150	150	150	150	150	
	Income per ha	563	750	938	1,125	1,313	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	
	Income ('000)	84	113	141	169	197	225	225	225	225	225	225	225	225	
3	No.of ha		200	200	200	200	200	200	200	200	200	200	200	200	
	Income per ha		563	750	938	1,125	1,313	1,500	1,500	1,500	1,500	1,500	1,500	1,500	
	Income ('000)		113	150	188	225	263	300	300	300	300	300	300	300	
4	No.of ha			300	300	300	300	300	300	300	300	300	300	300	
	Income per ha			563	750	938	1,125	1,313	1,500	1,500	1,500	1,500	1,500	1,500	
	Income ('000)			169	225	281	338	394	450	450	450	450	450	450	
5	No.of ha				350	350	350	350	350	350	350	350	350	350	each year, the same as year 14
	Income per ha				563	750	938	1,125	1,313	1,500	1,500	1,500	1,500	1,500	
	Income ('000)				197	263	328	394	460	525	525	525	525	525	
6	No.of ha					400	400	400	400	400	400	400	400	400	
	Income per ha					563	750	938	1,125	1,313	1,500	1,500	1,500	1,500	
	Income ('000)					225	300	375	450	525	600	600	600	600	
7	No.of ha						400	400	400	400	400	400	400	400	
	Income per ha						563	750	938	1,125	1,313	1,500	1,500	1,500	
	Income ('000)						225	300	375	450	525	600	600	600	
8	No.of ha							400	400	400	400	400	400	400	
	Income per ha							563	750	938	1,125	1,313	1,500	1,500	
	Income ('000)							225	300	375	450	525	600	600	
9	No.of ha								472	472	472	472	472	472	
	Income per ha								563	750	938	1,125	1,313	1,500	
	Income ('000)								266	354	443	531	620	708	
	Yearly Total	84	225	450	778	1,191	1,679	2,219	2,825	3,204	3,518	3,756	3,920	4,008	

ANNEX III-2-2 Production and Sales per Hectar (Agroforestry)

(1) Mango
(One Hectare)
(Prices at Farmgate)

Year	No.of trees	No. of bearing trees (a)	No. of fruits per tree	Total (fruits)	No.of fruits per kg.	Total (kgs.)	Price per kg. (P)	Total (P)
8	10	10	50	500	5	100	10	1,000
9	10	5	100	500	5	100	10	1,000
10	10	10	200	2,000	5	400	10	4,000
11	10	5	300	1,500	5	300	10	3,000
12	10	10	400	4,000	5	800	10	8,000
13	10	5	500	2,500	5	500	10	5,000
14	10	10	600	6,000	5	1,200	10	12,000
15	10	5	700	3,500	5	700	10	7,000
16	10	10	800	8,000	5	1,600	10	16,000
17	10	5	900	4,500	5	900	10	9,000
18	10	10	1,000	10,000	5	2,000	10	20,000
19	10	5	1,000	5,000	5	1,000	10	10,000
20	10	10	1,000	10,000	5	2,000	10	20,000
21	10	5	1,000	5,000	5	1,000	10	10,000
22	10	10	1,000	10,000	5	2,000	10	20,000
23	10	5	1,000	5,000	5	1,000	10	10,000
24	10	10	1,000	10,000	5	2,000	10	20,000
25	10	5	1,000	5,000	5	1,000	10	10,000
26	10	10	1,000	10,000	5	2,000	10	20,000
27	10	5	1,000	5,000	5	1,000	10	10,000
28	10	10	1,000	10,000	5	2,000	10	20,000
29	10	5	1,000	5,000	5	1,000	10	10,000
30	10	10	1,000	10,000	5	2,000	10	20,000
31	10	5	1,000	5,000	5	1,000	10	10,000
32	10	10	1,000	10,000	5	2,000	10	20,000
33	10	5	1,000	5,000	5	1,000	10	10,000
34	10	10	1,000	10,000	5	2,000	10	20,000
35	10	5	1,000	5,000	5	1,000	10	10,000
36	10	10	1,000	10,000	5	2,000	10	20,000
37	10	5	1,000	5,000	5	1,000	10	10,000
38	10	10	1,000	10,000	5	2,000	10	20,000
39	10	5	1,000	5,000	5	1,000	10	10,000
40	10	10	1,000	10,000	5	2,000	10	20,000

(a) Assume one year of normal harvest followed by one year of poor harvest

(2) Jackfruit (Langka)
(One Hectare)
(Prices at Farmgate)

Year	No.of trees	No. of fruits per tree	Total (fruits)	No.of kgs. per fruit	Total (kgs.)	Price per kg. (P)	Total (P)
8	20	5	100	5	500	5	2,500
9	20	10	200	5	1,000	5	5,000
10	20	15	300	5	1,500	5	7,500
11	20	20	400	5	2,000	5	10,000
12 : : 40	each year, the same as year 11						

(3) Tamarind (Sampaloc)
(One Hectare)
(Prices at Farmgate)

Year	No.of trees	No. of 20 liter cans per tree	Total 20 liter cans	No.of kgs. per can	Total (kgs.)	Price per kg. (P)	Total (P)
8	20	2	40	10	400	4	1,600
9	20	3	60	10	600	4	2,400
10	20	4	80	10	800	4	3,200
11	20	5	100	10	1,000	4	4,000
12	20	6	120	10	1,200	4	4,800
13	20	7	140	10	1,400	4	5,600
14	20	8	160	10	1,600	4	6,400
15	20	9	180	10	1,800	4	7,200
16	20	10	200	10	2,000	4	8,000
17 : : 40	each year, the same as year 16						

(4) Citrus
(One Hectare)
(Prices at Farmgate)

Year	No.of trees	No.of kg. per tree	Total kg.	Price per kg. (P)	Total (P)
4	50	2	100	15	1,500
5	50	3	150	15	2,250
6	50	4	200	15	3,000
7	50	5	250	15	3,750
8	50	6	300	15	4,500
9	50	7	350	15	5,250
10	50	8	400	15	6,000
11	50	9	450	15	6,750
12	50	10	500	15	7,500
13 : : 40	each year, the same as year 12				

(5) Fuelwood
(One Hectare)
(Prices at Farmgate)

Year	No.of trees planted	No.of trees harvested	No.of bundles per tree	Total bundles	No.of bundles per cu.m.	Total cu.m.	Price per cu.m. (P)	Total bundles (P)
4	200	100	2	200	60	3.3	300	1,000
5	200	100	2	200	60	3.3	300	1,000
6	200	100	3	300	60	5.0	300	1,500
7	200	100	3	300	60	5.0	300	1,500
8	200	100	4	400	60	6.7	300	2,000
9 : : 40	each year, the same as year 8							

(6) Bmboo
(One Hectare)
(Prices at Farmgate)

Year	No.of clumps planted	No.of poles per clump	Total poles	Price per pole (P)	Total (P)
5	20	1	20	30	600
6	20	2	40	30	1,200
7	20	3	60	30	1,800
8 : : 40	each year, the same as year 7				

(7) Rootcrops
(One Hectare)
(Prices at Farmgate)

Year	No.of sq. meters planted	No.of kgs. harvested per sq.m.	Total kgs.	Average price per kg. (P)	Total (P)
2	1,000	1	1,000	3	3,000
3	1,000	1	1,000	3	3,000
4	1,000	2	1,500	3	4,500
5	1,000	2	1,500	3	4,500
6	1,000	2	2,000	3	6,000
7	each year, the same as year 6				
:					
:					
40					

(8) Vegetables
(One Hectare)
(Prices at Farmgate)

Year	No.of sq. meters planted	No.of kgs. harvested per sq.m. (a)	Total kgs.	Average price per kg. (P)	Total (P)
2	250	2	500	5	2,500
3	250	3	750	5	3,750
4	250	4	1,000	5	5,000
5	250	5	1,250	5	6,250
6	250	6	1,500	5	7,500
7	each year, the same as year 6				
8					
9					
10					

(a) 3 harvests per year

(9) Grain Crops
(One Hectare)
(Prices at Farmgate)

Year	No.of sq. meters planted	No.of kgs. harvested per sq.m.	Total kgs.	Average price kg. (P)	Total (P)
2	1,250	0.15	188	3	563
3	1,250	0.2	250	3	750
4	1,250	0.25	313	3	938
5	1,250	0.3	375	3	1,125
6	1,250	0.35	438	3	1,313
7	1,250	0.4	500	3	1,500
8	each year, the same as year 7				
9					
10					
11					

ANNEX III-3 Harvest Standard and Computation of Harvest Volume by Year (Community Forest)

(1) Standard of Harvesting

I New Plantation

Havesting volume per ha is as followings.

1. FUELWOOD

Tree age	Computation	Volume by Year
5	100 trees per ha 2 bundles per tree=200 bundles/60 bundles per cu.meter	3.3 ㎥
9	100 trees per ha 3 bundles per tree=300 bundles/60 bundles per cu.meter	5.0 ㎥
13	50 trees per ha 4 bundles per tree=200 bundles/60 bundles per cu.meter	3.3 ㎥
17	50 trees per ha 5 bundles per tree=250 bundles/60 bundles per cu.mweter	4.2 ㎥
2. BAMBOO		
8	40 clumps X1 bamboo pole per clump	40 poles
9	40 clumps X2 bamboo poles per clump	80 poles
10 -	40 clumps X3 bamboo poles per clump	120 poles
3. POLES		
15	10 trees X 0.15 cu.meters per tree	1.5 ㎥
20	10 trees X 0.20 cu.meters per tree	2.0 ㎥
25	10 trees X 0.25 cu.meters per tree	2.5 ㎥
4. SAWLOGS		
25	10 trees X 0.45 cu.meters per tree	4.5 ㎥
32	10 trees X 0.50 cu.meters per tree	5.0 ㎥
40	10 trees X 0.55 cu.meters per tree	5.5 ㎥

II Old Plantation

Harves volum per ha is as followings. The computation is based on 500 of tree number per ha.

1. FUELWOOD

Tree age	Computation	Volume by Year
5	25 trees per ha 2 bundles per tree=50 bundles /60 bundles per cu.meter (5 yrs plantation)	0.8 ㎥
9	50 trees per ha 3 bundles per tree=150 bundles /60 bundles per cu.meter (5 yrs plantation)	2.5 ㎥
13	50 trees per ha 4 bundles per tree=200 bundles /60 bundles per cu.meter (5 yrs plantation)	3.3 ㎥
	100 trees per ha 4 bundles per tree=400 bundles /60 bundles per cu.meter (10 yrs plantation)	6.7 ㎥
15	100 trees per ha 5 bundles per tree=500 bundles /60 bundles per cu.meter (15 yrs plantation)	8.3 ㎥
17	50 trees per ha 5 bundles per tree=250 bundles /60 bundles per cu.meter (5 yrs plantation)	4.2 ㎥
	75 trees per ha 5 bundles per tree=375 bundles /60 bundles per cu.meter(10 yrs plantation)	6.2 ㎥
20	75 trees per ha 5 bundles per tre= 375 bundles /60 bundles per cu.meter (15 yrs plantation)	6.2 ㎥
2. Poles		
15	75 trees 0.15 cu.meter per ha (Harvesting ratio: 15 %)	11.2 ㎥
20	75 trees 0.20 cu.meter per ha (" " : 15 %)	15.0 ㎥
25	50 trees 0.25 cu.meter per ha (" " : 10 %)	12.5 ㎥
3. SAWLOGS		
25	25 trees 0.45 cu.meter per ha (" " : 5 %)	11.2
32	50 trees 0.50 cu.meter per ha (" " : 10 %)	25.0
40	50 trees 0.55 cu.meter per ha (" " : 10 %)	27.5

III Reforested Plantation

Inter/underplanting will be conducted immediately after harvesting. Accordingly ,the stand structure will be multi-storied gradually. Selective cutting system should be applied in the future. Therefore, harvesting from the reforested plantation is not counted. Only harvesting in the first cycle is computed in the study.

(2) Harvest Volume by Year (Community Forest)

Year	Fuelwood (m^3)	Bamboo (pieces)	Pole (m^3)	Sawlog (m^3)	Selective Cutting Area
1					
2	1,681		2,240		229
3	1,627		2,195		196
4	1,340				200
5	1,445				235
6	1,240		5,240		400
7	1,545		5,247		502
8	1,636				320
9	1,785				363
10		4,000			
11	500	12,800	5,031	2,240	529
12	600	26,720	4,757	2,195	522
13	749	36,640			157
14		41,760			
15	330	41,760			100
16	396	41,760	2,630	2,240	349
17	422	41,760	2,457	2,307	434
18		41,760	180	5,000	320
19	420	41,760	192	4,900	424
20	504	41,760			120
21	538	41,760	325	291	157
22		41,760	200		100
23		41,760	240	5,000	320
24		41,760	256	5,150	334
25		41,760			
26		41,760		5,500	200
27		41,760	250	5,580	296
28		41,760	300	1,190	149
29		41,760	320	576	128
30		41,760			
31		41,760		5,500	200
32		41,760		5,665	206
33		41,760			
34		41,760		500	100
35		41,760		600	120
36		41,760		1,355	157
37		41,760			
38		41,760			
39		41,760			
40		41,760			
				Total	7,928

Note: The cutting area will be covered by under-tree planting after cutting. Under-tree planting will be carried out in a period of 36 years after cutting at a rate of 220 ha per year (7,928/36).

(3) Annual Harvest Volume(Fuelwood)

Year	New Plantation									Old Plantation									TOTAL
	Planted in Yr.3			Planted in Yr.4			Planted in Yr.5			5 years			10 years			15 years			
	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	Volume
1																			0
2										26	0.8	21				200	8.3	1,660	1,681
3																196	8.3	1,627	1,627
4													200	6.7	1,340				1,340
5										26	2.5	65	206	6.7	1,380				1,445
6																200	6.2	1,240	1,240
7	100	3.3	330													196	6.2	1,215	1,545
8				120	3.3	396							200	6.2	1,240				1,636
9							128	3.3	422	26	3.3	86	206	6.2	1,277				1,785
10																			0
11	100	5.0	500																500
12				120	5.0	600													600
13							128	5.0	640	26	4.2	109							749
14																			0
15	100	3.3	330																330
16				120	3.3	396													396
17							128	3.3	422										422
18																			0
19	100	4.2	420																420
20				120	4.2	504													504
21							128	4.2	538										538
22																			
23																			
24																			
25																			
26																			
27																			
28																			
29																			
30																			
31																			
32																			
33																			
34																			
35																			
36																			
37																			
38																			
39																			
40																			

(4) Annual Harvest Volume(Bamboo)

Year	New Plantation									TOTAL
	Planted in Yr.3			Planted in Yr.4			Planted in Yr.5			
	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	Volume
1										
2										
3										
4										
5										
6										
7										
8										
9										
10	100	40	4,000							4,000
11	100	80	8,000	120	40	4,800				12,800
12	100	120	12,000	120	80	9,600	128	40	5,120	26,720
13	100	120	12,000	120	120	14,400	128	80	10,240	36,640
14	100	120	12,000	120	120	14,400	128	120	15,360	41,760
15	100	120	12,000	120	120	14,400	128	120	15,360	41,760
16	100	120	12,000	120	120	14,400	128	120	15,360	41,760
17	100	120	12,000	120	120	14,400	128	120	15,360	41,760
18	100	120	12,000	120	120	14,400	128	120	15,360	41,760
19	100	120	12,000	120	120	14,400	128	120	15,360	41,760
20	100	120	12,000	120	120	14,400	128	120	15,360	41,760
21	100	120	12,000	120	120	14,400	128	120	15,360	41,760
22	100	120	12,000	120	120	14,400	128	120	15,360	41,760
23	100	120	12,000	120	120	14,400	128	120	15,360	41,760
24	100	120	12,000	120	120	14,400	128	120	15,360	41,760
25	100	120	12,000	120	120	14,400	128	120	15,360	41,760
26	100	120	12,000	120	120	14,400	128	120	15,360	41,760
27	100	120	12,000	120	120	14,400	128	120	15,360	41,760
28	100	120	12,000	120	120	14,400	128	120	15,360	41,760
29	100	120	12,000	120	120	14,400	128	120	15,360	41,760
30	100	120	12,000	120	120	14,400	128	120	15,360	41,760
31	100	120	12,000	120	120	14,400	128	120	15,360	41,760
32	100	120	12,000	120	120	14,400	128	120	15,360	41,760
33	100	120	12,000	120	120	14,400	128	120	15,360	41,760
34	100	120	12,000	120	120	14,400	128	120	15,360	41,760
35	100	120	12,000	120	120	14,400	128	120	15,360	41,760
36	100	120	12,000	120	120	14,400	128	120	15,360	41,760
37	100	120	12,000	120	120	14,400	128	120	15,360	41,760
38	100	120	12,000	120	120	14,400	128	120	15,360	41,760
39	100	120	12,000	120	120	14,400	128	120	15,360	41,760
40	100	120	12,000	120	120	14,400	128	120	15,360	41,760

(5) Annual Harvest Volume(Pole)

Year	New Plantation									Old Plantation									TOTAL
	Planted in Yr.3			Planted in Yr.4			Planted in Yr.5			5 years			10 years			15 years			
	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	Volume
1																			0
2																200	11.2	2,240	2,240
3																196	11.2	2,195	2,195
4																			0
5																			0
6													200	11.2	2,240	200	15.0	3,000	5,240
7													206	11.2	2,307	196	15.0	2,940	5,247
8																			0
9																			0
10																			0
11										26	11.2	291	200	11.2	2,240	200	12.5	2,500	5,031
12													206	11.2	2,307	196	12.5	2,450	4,757
13																			0
14																			0
15																			0
16										26	15.0	390	200	11.2	2,240				2,630
17	100	1.5	150										206	11.2	2,307				2,457
18				120	1.5	180													180
19							128	1.5	192										192
20																			0
21										26	12.5	325							325
22	100	2.0	200																200
23				120	2.0	240													240
24							128	2.0	256										256
25																			0
26																			0
27	100	2.5	250																250
28				120	2.5	300													300
29							128	2.5	320										320
30																			
31																			
32																			
33																			
34																			
35																			
36																			
37																			
38																			
39																			
40																			

(6) Annual Harvest Volume(Sawlog)

Year	New Plantation									Old Plantation									TOTAL
	Planted in Yr.3			Planted in Yr.4			Planted in Yr.5			5 years			10 years			15 years			
	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	ha	cu.m/ha	Volume	Volume
1																			0
2																			0
3																			0
4																			0
5																			0
6																			0
7																			0
8																			0
9																			0
10																			0
11																200	11.2	2,240	2,240
12																196	11.2	2,195	2,195
13																			0
14																			0
15																			0
16													200	11.2	2,240				2,240
17													206	11.2	2,307				2,307
18																200	25.0	5,000	5,000
19																196	25.0	4,900	4,900
20																			0
21										26	11.2	291							291
22																			0
23													200	25.0	5,000				5,000
24													206	25.0	5,150				5,150
25																			0
26																200	27.5	5,500	5,500
27	100	4.5	450													196	27.5	5,390	5,840
28				120	4.5	540				26	25.0	650							1,190
29							128	4.5	576										576
30																			0
31													200	27.5	5,500				5,500
32													206	27.5	5,665				5,665
33																			0
34	100	5.0	500																500
35				120	5.0	600													600
36							128	5.0	640	26	27.5	715							1,355
37																			0
38																			0
39																			0
40																			0

ANNEX IV-1-1 Calculation of IRR on Forest Management Program

(Unit : P 1,000)

Year	Cost	Benefit	Present Value			Present Value		
			D.R. (3%)	Cost	Benefit	D.R.(4%)	Cost	Benefit
1	7,405	0	1	7,405	0	1	7,405	0
2	8,642	0	0.9709	8,390	0	0.9615	8,310	0
3	9,555	0	0.9426	9,007	0	0.9246	8,834	0
4	7,625	0	0.9151	6,978	0	0.8890	6,779	0
5	13,619	11,464	0.8885	12,100	10,186	0.8548	11,642	9,799
6	7,633	0	0.8626	6,584	0	0.8219	6,274	0
7	7,637	0	0.8375	6,396	0	0.7903	6,036	0
8	7,640	0	0.8131	6,212	0	0.7599	5,806	0
9	7,644	0	0.7894	6,034	0	0.7307	5,585	0
10	17,650	20,294	0.7664	13,527	15,554	0.7026	12,401	14,258
11	7,441	0	0.7441	5,537	0	0.6756	5,027	0
12	7,371	0	0.7224	5,325	0	0.6496	4,788	0
13	7,251	0	0.7014	5,086	0	0.6246	4,529	0
14	7,184	0	0.6810	4,892	0	0.6006	4,315	0
15	24,323	35,093	0.6611	16,080	23,201	0.5775	14,046	20,265
16	6,662	0	0.6419	4,276	0	0.5553	3,699	0
17	6,273	0	0.6232	3,909	0	0.5339	3,349	0
18	5,953	0	0.6050	3,602	0	0.5134	3,056	0
19	5,560	0	0.5874	3,266	0	0.4936	2,745	0
20	19,530	30,587	0.5703	11,138	17,443	0.4746	9,270	14,518
21	17,206	24,603	0.5537	9,527	13,622	0.4564	7,853	11,228
22	15,629	22,095	0.5375	8,401	11,877	0.4388	6,859	9,696
23	15,951	22,811	0.5219	8,325	11,905	0.4220	6,731	9,625
24	17,269	25,745	0.5067	8,750	13,045	0.4057	7,006	10,445
25	16,818	22,733	0.4919	8,273	11,183	0.3901	6,561	8,869
26	17,653	33,197	0.4776	8,431	15,855	0.3751	6,622	12,453
27	21,262	31,052	0.4637	9,859	14,399	0.3607	7,669	11,200
28	21,318	31,052	0.4502	9,597	13,979	0.3468	7,393	10,769
29	21,472	42,427	0.4371	9,385	18,544	0.3335	7,160	14,148
30	21,647	31,409	0.4243	9,186	13,328	0.3207	6,941	10,071
31	19,744	28,423	0.4120	8,134	11,710	0.3083	6,087	8,763
32	19,390	28,066	0.4000	7,756	11,226	0.2965	5,748	8,320
33	19,279	28,066	0.3883	7,487	10,899	0.2851	5,496	8,000
34	19,353	28,185	0.3770	7,297	10,626	0.2741	5,305	7,725
35	18,434	26,632	0.3660	6,748	9,749	0.2636	4,858	7,019
36	17,922	25,915	0.3554	6,369	9,210	0.2534	4,542	6,567
37	17,391	25,199	0.3450	6,000	8,694	0.2437	4,238	6,140
38	17,866	26,050	0.3350	5,985	8,726	0.2343	4,186	6,103
39	19,433	28,306	0.3252	6,320	9,206	0.2253	4,378	6,377
40	32,948	58,839	0.3158	10,403	18,579	0.2166	7,137	12,746
Total	580,583	688,243		307,977	312,745		256,663	245,109
					4,768			-11,554

Note : D.R. - Discount Rate

IRR=3%+(4%-3%)x4,768/(4,768+11,554)=3.3%

ANNEX IV-1-2 Calculation of IRR on Social Forestry Program

(Unit : P 1,000)

Year	Cost	Benefit	Present Value			Present Value		
			D.R. (40%)	Cost	Benefit	D.R. (41%)	Cost	Benefit
1	2,308	0	1	2,308	0	1	2,308	0
2	8,186	4,773	0.7143	5,849	3,409	0.7092	5,807	3,385
3	11,537	6,119	0.5102	5,886	3,122	0.5030	5,803	3,078
4	14,202	5,661	0.3644	5,176	2,063	0.3567	5,066	2,019
5	17,428	9,753	0.2603	4,537	2,539	0.2530	4,409	2,467
6	20,847	23,386	0.1859	3,876	4,348	0.1794	3,741	4,196
7	23,527	30,415	0.1328	3,125	4,039	0.1273	2,994	3,871
8	24,607	31,420	0.0949	2,334	2,981	0.0903	2,221	2,836
9	27,989	41,989	0.0678	1,897	2,845	0.0640	1,792	2,688
10	23,231	51,767	0.0484	1,124	2,506	0.0454	1,055	2,350
11	26,457	76,817	0.0346	915	2,656	0.0322	852	2,473
12	26,377	87,491	0.0247	651	2,161	0.0228	602	1,998
13	23,023	87,303	0.0176	406	1,540	0.0162	373	1,414
14	22,793	98,541	0.0126	287	1,242	0.0115	262	1,132
15	22,858	109,663	0.0090	206	987	0.0081	186	893
16	25,507	130,040	0.0064	164	836	0.0058	147	751
17	25,493	138,663	0.0046	117	637	0.0041	104	568
18	25,985	149,913	0.0033	85	492	0.0029	76	436
19	26,415	155,479	0.0023	62	364	0.0021	54	320
20	22,907	147,327	0.0017	38	247	0.0015	33	215
21	23,252	153,385	0.0012	28	183	0.0010	24	159
22	22,844	154,845	0.0009	20	132	0.0007	17	114
23	26,385	170,631	0.0006	16	104	0.0005	14	89
24	26,497	171,126	0.0004	12	75	0.0004	10	63
25	22,764	160,059	0.0003	7	50	0.0003	6	42
26	26,642	172,089	0.0002	6	38	0.0002	5	32
27	26,981	175,034	0.0002	4	28	0.0001	4	23
28	23,723	161,764	0.0001	3	18	0.0001	2	15
29	23,298	161,979	0.0001	2	13	0.0001	2	11
30	22,764	158,339	0.0001	1	9	0.0000	1	7
31	26,642	173,809	0.0000	1	7	0.0000	1	6
32	26,758	172,501	0.0000	1	5	0.0000	1	4
33	22,764	160,059	0.0000	0	3	0.0000	0	3
34	23,117	159,589	0.0000	0	2	0.0000	0	2
35	23,187	161,559	0.0000	0	2	0.0000	0	1
36	23,719	161,726	0.0000	0	1	0.0000	0	1
37	22,764	160,059	0.0000	0	1	0.0000	0	1
38	22,764	158,339	0.0000	0	1	0.0000	0	0
39	22,406	160,059	0.0000	0	0	0.0000	0	0
40	22,321	158,339	0.0000	0	0	0.0000	0	0
Total	903,271	4,651,805		39,144	39,685		37,972	37,665
					541			-307

Note : D.R. - Discount Rate

IRR=40%+(41%-40%)x541/(541+307)=40.6%

ANNEX IV-2 Derivation of Accounting Price for Sawlog

(Unit : Pesos)

Items	Unit p.	Remarks		
CIF Value/㎥	3,397	Amount of Imported Sawlogs : 487,856㎥		
		Amount of CIF Value : $49,678,885		
		(From "Forestry Stastics"1,992)		
		Unit Price of CIF Value : $101.83/㎥		
		Price hike rate (DEC '93DEC/'92DEC=235/195=1.20 FOB SARAWAK MERANTI)		
		$101.83×1.20=$122.2/㎥		
		Exchange Rate(as of DEC.1993): 27.8P/$		
Transportation & Marketing costs	355	Assumption :Average size importation 2,000㎥		
		Transportation:	P200	Trucking from Manila South Harbor to sawmill in the Metro Manila area.
		Stevedoring Charges :	42.82	77.75P/M Bd.f.÷2.36㎥/M Bd.f 30%equipment standby&labor
		VAT(10%)	4.28	
		Arrastre Services :	37.00	41.9P/t×0.883t/㎥
		VAT(10%)	3.70	(2,000㎥=1,766t)
		Equipment Standby Charges :	3.83	7,667.10P/day/2,000㎥ size
		Wharfage Fee :	20.75	0.883t/㎥×23.5P/t
		Sales Commission	43.08	2,872P/㎥×1.5%
			355.46	
Total	3,752			

ANNEX IV-3-1 Agricultural Products Exportation Profile

Agricultural Crops	Quantity	FOB Value($)	FOB/Unit	Destination Country
Mango	79,843	108,357	1.36	Canada
	64,403	146,079	2.27	UK&North Ireland
	450	510	1.13	Netherlands
	13,680	28,636	2.09	Saudi Arabia
	1,035,880	965,430	0.93	Singapore
	164,204	111,139	0.68	China
	13,494,057	9,934,982	0.74	Hongkong
	7,339,138	12,645,864	1.72	Japan
	224,830	420,168	1.87	Australia
	9,280	16,000	1.72	New Zealand&Western Samoa
Total	22,425,765	24,377,165	1.09	
Jackfruit	50	245	4.90	Arabia Peninsula State
	200	1,080	5.40	Taiwan
Tamarind	5,564	9,393	1.69	Canada
	27,324	47,409	1.74	U.S.
	85	140	1.65	Iceland
	1,967	3,351	1.70	U.K.&North Ireland
	681	1,266	1.86	Netherland
	591	975	1.65	France
	190	352	1.85	Germany
	170	308	1.81	Austria
	75	149	1.99	Switzerland
	2,188	2,925	1.34	Saudi Arabia
	475	569	1.20	Oman
	1,158	2,391	2.06	Arabia Peninsula State
	148	245	1.66	Qatar
	37	61	1.65	Brunei
	118	198	1.68	Hongkong
	4	27	6.75	Japan
	1,002	1,759	1.76	Australia
	64	165	2.58	Guam
	344	567	1.65	Trust Territory, Pac Island
	6,674	12,712	1.90	Hawaii
Total	48,859	84,962	1.74	
Calamansi	1,000	4,273	4.27	Hongkong
Bamboo	184	1,362	7.40	Canada
	882	1,946	2.21	U.S.
	184	676	3.67	U.K.&North Ireland
	231	1,525	6.60	Germany
	260	1,860	7.15	Switzerland
	2,664	13,488	5.06	Portugal
	135	1,092	8.09	Italy
	12,350	19,700	1.60	Saudi Arabia
	1,463	4,238	2.90	Japan
	2,346	1,525	0.65	Australia
	1,688	1,134	0.67	Hawaii
	182	532	2.92	Canary Islands(Spain)
Total	22,569	49,078	2.17	
Camote	24,330	16,243	0.67	Japan
Cassava	1,792	2,725	1.52	U.S.
	57,828	63,254	1.09	Japan(Okinawa)
	180	290	1.61	Australia
Asparagus	16,183	28,679	1.77	Hongkong
	917,074	1,555,167	1.70	Japan
Rice	10,090,183	2,342,143	0.23	General
	10,000,000	2,340,000	0.23	Indonesia, marshall Islands
Corn	21,440	828,368	38.64	Thailand
	1,806,527	252,150	0.14	Malaya
	5,585	113,191	20.27	Indonesia
	2,500	9,306	3.72	Japan
	2,000	120,000	60.00	Egypt
	60	3,600	60.00	Ivory Coast
	600	36,000	60.00	Rhodesia
	19,465,919	3,407,705	0.18	General

Source : Foreign Trade Statistics 1991-1992

ANNEX IV-3-2 Transportation & Other Costs for the Exportation of Fresh Fruit

Items	Pesos /Container		Remarks
Transportation Charges (Farm gate to Port)	San Mateo 29km	4,400 P	Container size 40-Footer Carrying Capacity of 40-footer Container :26.6t
	Rodorigues 29km	5.140	
	Antipolo 29km	5,140	
	Baras 52km	7,965	
	Tanay 55km	8,330	
	(VAT included)		
Arrastre Services	(VAT included)	2,227.5	
Wharfage Fee	(VAT included)	300.8	
Documentary Stamps		53.0	

ANNEX IV-4 Local Wage in the Study Area

(Unit : Pesos)

ITEMS	FARMHOUSE 1	FARMHOUSE 2	FARMHOUSE 3	FARMHOUSE 4	FARMHOUSE 5	FARMHOUSE 6	FARMHOUSE 7	FARMHOUSE 8
Labor			80/m. day, w/lunch	90/m. day, w/o lunch		75/day, w/ lunch 100/day, w/o lunch		
Preparation for rice planting		150/day, w/ carabao					60/hour	
Weeding	100/day, w/o lunch	100/day, w/o lunch						
Spraying insecticides		110/day, w/o lunch						
Kaingin/brushing	100/day, w/o lunch							110/m. day, w/o lunch 75/m. day, w/lunch
Planting	100/day, w/o lunch	100/day, w/o lunch					75/day, w/ lunch	110/m. day, w/o lunch 75/m. day, w/ lunch
Using handtractor								600/day (8 hrs.)
Construction works					150/m. day, w/o lunch			
Skilled worker					300/m. day, w/o lunch			

Note : The average local wage (without lunch) for agriculture and forestry is approximately 100 pesos.

ANNEX IV-5 Calculation of EIRR by Accounting Price

(Unit : P 1,000)

Year	Cost	Benefit	Present Value			Present Value		
			D.R. (36%)	Cost	Benefit	D.R. (37%)	Cost	Benefit
1	7,413	0	1	7,413	0	1	7,413	0
2	12,457	4,296	0.7353	9,159	3,159	0.7299	9,092	3,136
3	14,979	5,507	0.5407	8,098	2,977	0.5328	7,981	2,934
4	14,764	5,095	0.3975	5,869	2,025	0.3889	5,742	1,981
5	21,325	29,187	0.2923	6,234	8,532	0.2839	6,054	8,285
6	18,964	21,047	0.2149	4,076	4,524	0.2072	3,929	4,361
7	20,516	27,374	0.1580	3,242	4,326	0.1512	3,103	4,140
8	20,704	28,278	0.1162	2,406	3,286	0.1104	2,286	3,122
9	22,730	37,790	0.0854	1,942	3,229	0.0806	1,832	3,045
10	27,111	81,894	0.0628	1,703	5,145	0.0588	1,595	4,817
11	21,728	72,500	0.0462	1,004	3,349	0.0429	933	3,113
12	21,623	82,039	0.0340	734	2,787	0.0313	678	2,571
13	19,075	78,573	0.0250	476	1,962	0.0229	436	1,797
14	18,872	88,687	0.0184	347	1,629	0.0167	315	1,481
15	32,142	159,920	0.0135	434	2,160	0.0122	392	1,949
16	20,417	120,400	0.0099	203	1,195	0.0089	182	1,071
17	20,116	128,262	0.0073	147	936	0.0065	131	833
18	20,284	142,432	0.0054	109	765	0.0047	96	675
19	20,023	147,291	0.0039	79	581	0.0035	69	510
20	28,495	182,623	0.0029	83	530	0.0025	72	461
21	27,063	182,285	0.0021	58	389	0.0018	50	336
22	25,595	178,696	0.0016	40	280	0.0013	34	240
23	28,149	201,690	0.0012	32	233	0.0010	28	198
24	29,208	206,763	0.0008	25	175	0.0007	21	148
25	26,472	185,515	0.0006	17	116	0.0005	14	97
26	29,587	206,728	0.0005	14	95	0.0004	11	79
27	32,609	221,585	0.0003	11	75	0.0003	9	62
28	30,545	202,658	0.0002	8	50	0.0002	6	41
29	30,389	202,353	0.0002	6	37	0.0001	5	30
30	30,123	198,423	0.0001	4	27	0.0001	3	22
31	31,207	215,293	0.0001	3	21	0.0001	2	17
32	30,994	213,727	0.0001	2	15	0.0001	2	12
33	28,340	194,020	0.0001	2	10	0.0000	1	8
34	28,622	194,560	0.0000	1	8	0.0000	1	6
35	27,953	193,718	0.0000	1	6	0.0000	1	4
36	27,899	193,728	0.0000	1	4	0.0000	0	3
37	26,885	188,916	0.0000	0	3	0.0000	0	2
38	27,249	188,903	0.0000	0	2	0.0000	0	2
39	28,133	194,445	0.0000	0	2	0.0000	0	1
40	38,291	239,356	0.0000	0	1	0.0000	0	1
				53,983	54,647		52,518	51,593
					665			-925

Note : D.R. - Discount Rate

EIRR=36%+(37%-36%)×665/(665+925)=36.4%

ANNEX IV-6 Water Supply Price of MWSS

Items	Price
Residential	
Household w/no-added establishment	
First 10 ㎥	28.00 P
Next	3.40P/㎥
Household w/added establishment	
First 10 ㎥	33.50 P
Next	4.10P/㎥
Commercial	
Malls,Office,Hardwear etc	
First 25 ㎥	226,25 P
Next	9.05P/㎥
Industry	
First 25 ㎥	246.25 P
Next	9.85P/㎥
Calculation of Unit Cost	(9.05+9.85)/2=9.45P/㎥

ANNEX IV-7 Soil Erosion Rate under the Different Plant Species Planted in Streambank

Treatment (Species)	Erosion rate		Remarks
	㎥/ha	ton/ha	
Ipil-Ipil	49.0	60.9	All plots have more or less the same % of understory grass vegitation cover.
Bagras	203.0	250.19	
Narra	208.0	256.35	
Teak	46.0	56.7	
Control	271.0	333.99	

Source:"Evaluation of Leucaena leucocephala,Tectona grandis, Pterocarpus indics and Eucalyptus deglupta for stream-bank stabilization in the Agusan River Basin" by SANTIAGO R.BACONGUS

ANNEX IV-8 Trail Calculation of EIRR (including Effects of Water Conservation and Prevention of Soil Erosion)

(Unit : P 1,000)

Year	Cost	Benefit	Present Value			Present Value		
			D.R. (84%)	Cost	Benefit	D.R. (85%)	Cost	Benefit
1	7,413	0	1	7,413	0	1	7413	0
2	12,457	4,296	0.5435	6,770	2,335	0.5405	6733	2322
3	14,979	5,507	0.2954	4,424	1,627	0.2922	4377	1609
4	14,764	24,615	0.1605	2,370	3,951	0.1579	2332	3888
5	21,325	68,227	0.0872	1,860	5,952	0.0854	1821	5825
6	18,964	79,607	0.0474	899	3,775	0.0461	875	3674
7	20,516	105,454	0.0258	529	2,717	0.0249	512	2630
8	20,704	120,022	0.0140	290	1,681	0.0135	279	1618
9	22,730	149,054	0.0076	173	1,134	0.0073	166	1086
10	27,111	212,678	0.0041	112	880	0.0039	107	838
11	21,728	222,804	0.0022	49	501	0.0021	46	474
12	21,623	251,863	0.0012	26	308	0.0012	25	290
13	19,075	258,950	0.0007	13	172	0.0006	12	161
14	18,872	287,974	0.0004	7	104	0.0003	6	97
15	32,142	378,117	0.0002	6	74	0.0002	6	69
16	20,417	356,897	0.0001	2	38	0.0001	2	35
17	20,116	383,059	0.0001	1	22	0.0001	1	20
18	20,284	397,290	0.0000	1	13	0.0000	1	11
19	20,023	420,449	0.0000	0	7	0.0000	0	7
20	28,495	471,641	0.0000	0	4	0.0000	0	4
21	27,063	485,943	0.0000	0	2	0.0000	0	2
22	25,595	495,774	0.0000	0	1	0.0000	0	1
23	28,149	519,605	0.0000	0	1	0.0000	0	1
24	29,208	525,122	0.0000	0	0	0.0000	0	0
25	26,472	504,972	0.0000	0	0	0.0000	0	0
26	29,587	527,222	0.0000	0	0	0.0000	0	0
27	32,609	542,079	0.0000	0	0	0.0000	0	0
28	30,545	523,152	0.0000	0	0	0.0000	0	0
29	30,389	522,847	0.0000	0	0	0.0000	0	0
30	30,123	518,917	0.0000	0	0	0.0000	0	0
31	31,207	535,787	0.0000	0	0	0.0000	0	0
32	30,994	534,221	0.0000	0	0	0.0000	0	0
33	28,340	514,514	0.0000	0	0	0.0000	0	0
34	28,622	515,054	0.0000	0	0	0.0000	0	0
35	27,953	514,212	0.0000	0	0	0.0000	0	0
36	27,899	514,222	0.0000	0	0	0.0000	0	0
37	26,885	509,410	0.0000	0	0	0.0000	0	0
38	27,249	509,397	0.0000	0	0	0.0000	0	0
39	28,133	514,939	0.0000	0	0	0.0000	0	0
40	38,291	559,850	0.0000	0	0	0.0000	0	0
				24,946	25,301		24,713	24,663
					354			-50

Note : D.R. - Discount Rate

EIRR=84%+(85%-84%)×354/(354+50)=84.9%

RECORD OF MEETING

On May 17 to May 18, 1994, the DENR, the JICA Advisory Team and the members of the Study Team held a meeting to discuss the Draft Final Report of the Study on the Marikina Watershed Development Project. The following paragraphs summarize the major points that were discussed.

1. DENR - Is the social forestry (SF) component of the proposed MWDP plan consistent with SF plans contained in the Region IV Master Plan?

   ST - The MWDP plan was prepared with the active collaboration of Region IV personnel who provided key inputs to the plan. Consequently, it seems safe to assume that it is consistent. However, the proper parties to assess consistency would be Region IV management, rather than the ST.

2. DENR - How current and accurate are the demographic statistics contained in the plan?

   ST - Demographic and socio-economic data were derived from a census and survey conducted in mid-1993 by Regional, PENRO and CENRO staff in collaboration with the ST. Thus, the current estimate of about 9,500 permanent residents is considered to be quite accurate. However, some allowance should be made for a "floating" population of part-time and transient residents whom it was not practical to include in the census.

3. DENR - One of the urgent mandates of DENR is establishment of water impoundment structures in the Marikina Watershed. Is this matter addressed in the plan and if so, to what extent?

   ST - The plan identifies fourteen(14) key locations for construction of water impoundments. These proposed locations are based on the need to reduce the risk of floods and siltation and to help recharge underground acquifers. Proposed water impoundment structures are strategically placed to mitigate flooding and related damage. Furthermore, soil and water conservation activities proposed in the social forestry component of the plan include extensive application of water impoundment principles such as (i) the construction of interceptor canals (referred to as "drains" in the plan), (ii) establishment of hedgerows and (iii) contour farming.

4. DENR - Implementation of the project would probably attract new in-migrants anxious to share in project benefits. This could lead to loss of forest cover and conflicts with the present occupants. Were these potential problems considered during formulation of the plan?

ST - These issues were given serious consideration and are addressed by two (2) measures included in the plan. First, no new roads would be constructed since this could induce in-migration and complicate forest protection problems. Proposed investments to improve access are limited to upgrading of existing roads and construction of foot trails. This limitation would help reduce the risk of large-scale in-migration.

Second, following the recommendation of DENR counterparts, the plan calls for expeditious issuance of tenure documents via Community Certificates of Stewardship Contract (CCFS) rather than the time-consuming award of individual Certificates of Stewardship Contract (CSC). The plan assumes that tenure security would provide incentives to resist entry of outsiders. It furthermore assumes that community protection of the site is the most effective deterrent against intrusion.

Admittedly, the two (2) aforementioned measures could be categorized as technical approaches to what is essentially a social issue. Resolution of this issue will rely primarily on institutional measures. The ST did not consider it appropriate to focus on institutional issues since this would have exceeded the bounds of the study. But the ST agrees with the DENR position that the threat of potential in-migration has to be faced and appropriately addressed.

5. DENR - Presidential Proclamation (PP) No. 585 sets aside 1,430 hectares (ha) for Integrated Social Forestry (ISF). However, the plan envisions over 5,000 ha for social forestry. How can these figures be reconciled? Moreover, the map does not indicate the location of areas covered by PP 585.

ST - It would be technically feasible to indicate the boundaries of PP 585 on the existing maps, if DENR will provide an accurate technical description of the area and the location of the appropriate reference points. In respect of the total proposed social forestry area, these are lands considered appropriate for social forestry interventions based on (i) their technical features, (ii) the reality that these additional areas are already occupied, and (iii) recommendations by DENR field staff that said additional areas should be included in ISF coverage.

While recognizing that certain policy issues are involved, and that such issues are beyond the bounds of the study, the ST fully concurs with the aforementioned recommendations of DENR field staff. Individual and communal implementation of agroforestry, treefarm development and soil/water conservation on these proposed additional areas are essential requirements for enhancing the hydrologic functions of the watershed in the context of existing social realities.

DENR - Approximately 4,000 ha in the eastern portion of the watershed have been targetted by the MWSS as a resettlement site. Given its technical features, the proposed site is not appropriate for resettlement.

The Pantabangan experience demonstrates that ill-advised resettlement can create more problems than those it intends to solve. Recently, it has been reported that current residents of the proposed resettlement site will actively resist MWSS intentions. Does the plan address this issue?

ST - Since this is an institutional issue, it is not directly addressed in the plan. However, the study clearly points out that there are already numerous settlers in the proposed MWSS resettlement site. Introduction of additional settlers could be very problematic and the probability of conflict should not be ignored. Furthermore, the site is characterized by low fertility and harsh terrain which is far from ideal for resettlement. Moreover, the site is designated as an important watershed for conservation of the natural environment and the headwaters of rivers. To achieve the purposes of conservation, it is preferable that management of the Marikina Watershed should be entrusted to only one agency.

DENR - Part of the proposed resettlement site is titled in the name of MWSS but the plan recommends social forestry interventions. Normally, titled land is not included in social forestry programs. Why was this titled land recommended for social forestry?

ST - The legal status of the proposed MWSS resettlement site may need to be clarified. The titled area is reportedly 1,507 ha. Subsequently, Presidential Decree No. 2480 issued in 1986 provided that the titled land would be used for resettlement. The same decree also designated an additional 2,917 ha for resettlement, thus increasing the total area for resettlement to 4,424 ha (i.e. 1,507 ha + 2,917 ha).

Can a Presidential Decree dictate how land titled to a government agency such as MWSS will be utilized? If so, this implies that such land is to be administered similar to public domain (i.e. for public benefit). Social forestry is a land use that pertains to public benefit.

On the other hand, a title implies that the owner should be the proper party to decide how land will be used. Which document has legal precedence: the title or the PD?

From a technical perspective, social forestry development would help create a buffer zone to protect nearby virgin forest areas. This would be consistent with the watershed management objectives of the project and the concept that public land should be used for public benefit.

7. DENR - Inclusion of Marikina Watershed in the National Integrated Protected Areas System (NIPAS) could be an impediment to expeditious rehabilitation of the area. NIPAS procedures are time-consuming, while the need for rehabilitation is urgent. Has this constraint been considered in plan formulation?

ST - One assumption of the study was that Marikina Watershed was already part of NIPAS. If this assumption is not valid, the language in the Report can be revised accordingly. This would not affect the technical recommendations however, since these are based on bio-physical and environmental parameters.

One positive feature of NIPAS is the implicit recognition that previous laws, decrees (etc.) imposing strict prohibitions against utilization can be a constraint to community collaboration in sustainable management.

The multiple-use zone concept contained in the NIPAS provides a socially-equitable mechanism for addressing this constraint. But there may be other mechanisms available. When formulating alternatives to NIPAS coverage , inclusion of the multiple-use zone concept would be consistent with the intention to reconcile social and environmental objectives in wateshed management.

8. DENR - PD 324 sets aside 1,728 ha for exploitation. This corresponds to the areas identified with Milestone Farms, Baras Development Corporation and Mountain Resort. Is this reflected in the plan ?

ST - The area covered by PD 324 is excluded from the plan and considered part of the private lands inside the watershed. This is indicated on the map.

9. DENR - Did the Environmental Impact Analysis (EIA) examine the negative impacts of waste water discharge from Foremost Farms?

ST - The study clearly points out that waste water from Foremost Farms is contaminating the Boso-boso River. This may not be a serious problem at present since Boso-boso River is not being utilized as a source of drinking water. But if there is any intention to draw on the river for household use, contamination would be a problem and mitigating measures would be required. Undoubtedly, technical approaches to mitigation will be important, but they are not included in the Report which only deals with public land.

Meanwhile, some watershed residents have complained about pollution from the Foremost Farms. Therefore, it may be timely to consider administrative measures such as those prescribed for issuance of Environmental Clearance Certificates (ECC).

10. DENR - The EIA in the plan identifies certain activities that might have an adverse environmental impact. But appropriate mitigating measures are not clearly described.

ST - The EIA mentions several mitigating measures, but the Study Team recognizes that these should be presented in a more orderly manner. This will be attended to in the revised Final Report, perhaps through a table showing the direct relationship between activities with possible adverse effects and the proposed mitigating measures.

11. DENR - The plan includes a small-scale, shifting harvest system in plantation forests. This may be in conflict with existing policies prohibiting utilization of forest products on proclaimed watersheds. Furthermore, clear-cutting as envisioned in the system might have negative environmental impacts.

ST - Pursuant to the minutes of a meeting held on 6 September 1993 (page 237, item "e" of the Report), small and medium-scale commercial timber production by local residents was identified as a component of plantation management. The Study Team responded to this issue by formulating the proposed small-scale, shifting harvest system.

Undoubtedly, other harvesting options could be considered as alternatives to the proposed system such as:

- selective cutting by parcel or block;
- thinning and pruning, also on a selective basis; and
- shelterbelt cutting.

The Study Team feels that the shifting harvest system would be the most feasible option to follow in terms of management, monitoring and evaluation. In this system, the area subject to harvest would be small and clearly defined. This would simplify supervision, monitoring and evaluation.

By contrast, monitoring of a selective harvest system would be more labor intensive and subject to personal discretion of the evaluator who would be required to consider diameter limits and other variables.

Environmental impacts of the small-scale, shifting harvest system would not be significant from the perspective of watershed management. At any single point in time, more than 90% of the crown cover would remain intact and not disturbed. Furthermore, the disturbed areas (<10%) would not be contiguous. They would be widely dispersed.

12. DENR - The rotation schedules proposed in the small-scale shifting harvest system establish a twenty (20) year harvest cycle for fast-growing species. However, many fast-growing species mature earlier than 20 years. Furthermore, if interplanted with medium and slow-growing trees, many fast-growing species would be shaded out prior to the 20th year.

ST - Harvesting age of short rotation schedule usually viewed from the point of economic benefits. However, the study area is a critical watershed. So, from a conservation perspective, longer rotation are considered preferable to shorter rotation schedule. Although the proposed twenty (20) year harvest cycle is used for the purpose of facilitating financial and economic analysis, it contributes significantly to its conservation. Clearly, this cycle would not be applicable in all cases and for all species. During actual operations, it is assumed that the cycles would be modified and adjusted to respond to conditions prevailing in the future. DENR's comments on this matter are well-taken and will be reflected in the Final Report.

13. DENR - It would be useful to revise the first chapter of the Report, and state therein the basic assumptions of the study as well as the historical background of the site. Among others, the past and present status of the Wawa Dam should be discussed so that readers will appreciate its potential importance in relation to the proposed plan. It would also be useful to include the Terms of Reference as an annex to the report.

ST - The Study Team will revise the first paragraph of Chapter I (General Plan) to further explain the background of the study. This should help clarify the premise for technical recommendations included in the plan and the basic assumptions that were used.

Regarding the Wawa Dam, the Study Team commented that prior to World War II, this dam provided water to Metro Manila. However, the aqueducts were damaged at the end of the War and never repaired. In the 1960's, the Government announced a plan to build a much larger dam at the site, but this plan was abandoned for technical reasons. Since that time, nothing has been done to rehabilitate the dam. This is unfortunate because even if it is not as large as the dam envisioned in the 1960's, the Wawa Dam still has the potential to provide a significant amount of water. This is indicated on tables contained in the report and was verified by ocular inspection during the study. Rehabilitation of the Marikina Watershed would increase this potential.

14. DENR - Some limits should be placed on social forestry which is often being used as an excuse to occupy lands that should be reserved for environmental reasons. Law enforcement is an essential requirement for effective watershed management.

ST - This is a policy issue and is therefore not addressed in the proposed plan which focuses on technical issues.

15. DENR - Only one species (*Leucaena luecocephala)* is mentioned for inclusion in firebreaks. It would be adviseable to include other species such as *Leucaena diversifolia, L. esculenta*, bananas and other agricultural crops.

ST - This suggestion is well-taken and will be reflected in the revised Final Report.

16. DENR - The Report does not discuss proposed organizational and institutional arrangements for project implementation. The DENR requested the Study Team to draw up recommendations on institutional arrangements.

ST - As mentioned earlier, the Study Team focused on technical matters. However, some suggestions are included for consideration when setting up appropriate organizational and institutional arrangements. These suggestions underscore the need for integration of activities which cut across the sectoral mandates of various central and local government agencies, and the sectoral concerns of other stakeholders such as present occupants, private land owners and others.

In addition to the discussions summarized in paragraphs 1 to 16 above, the DENR also brought up the matter of future collaboration on implementation of the plan. The DENR mentioned that it intends to favorably endorse the plan to the National Economic Development Authority (NEDA) for inclusion in the programs to be taken up in bilateral consultations with the Government of Japan.

DENR will also communicate with the Government of Japan through appropriate channels and request assistance in implementation of the project.

Finally, it was agreed that (i) any additional comments from the DENR will be submitted to JICA within one (1) month after the meeting and (ii) the Final Report will be submitted to the DENR within two (2) months after receiving the comments.

The meeting adjourned at 3:15 PM on May 18, 1994.