

D 2 財務分析に係る資料

1. 作付転換パターンの予想増分純現在価値

- (1) 作付転換パターンの費用及び便益 (A～M)
- (2) 作付転換パターンの予想増分純現在価値の算出例

— 畑地 (テラスなし) からアグロ1 (ベンチテラス) へ —

2. チェックダムの予想増分純現在価値

3. デモプロの予想増分純現在価値

4. 全体的投資分析における増分のネット・キャッシュ・フロー及び増分純現在価値

1. 作付転換パターンの予想増分純現在価値

(1) 作付転換パターンの費用及び便益 (A~M)

Cropping Pattern A

Financial Analysis 1

Change from <Without Project> Existing Mixed Garden 1
to <With Project> Forest 2

Table 1: Parameter Table

Item	Annual Benefit and Cost				Without Project Existing Mixed Garden 1			
	<With Project> Forest 2	<Without Project> Forest 2	<With Project> Forest 1	<Without Project> Forest 1	Base Year	Base Year	Base Year	Base Year
	Quantity	Quantity	Quantity	Quantity	Price	Price	Price	Price
	(Kg, M3)	(Kg, M3)	(Kg, M3)	(Kg, M3)	(Rp)	(Rp)	(Rp)	(Rp)
Economic Indicator								
Domestic Inflation Rate	8.0%	0.0%	0.0%	0.0%	285,000	300	950	0.0%
Foreign Inflation Rate	5.0%	0.0%	0.0%	0.0%	495,000	300	1,450	0.0%
Interest Rate (Lending)	12.0%	0.0%	0.0%	0.0%	317,500	50	6,350	0.0%
Interest Rate (Saving)					0	0	0	0.0%
Exchange Rate per US\$ (Base Year 1982)	2.050	3.20	80,000	32,000	Albizia, tree	25,000	1.60	40,000
		5.40	32,000	Albizia, fire	5,000	2.20	16,000	16,000
		2,000	1,000,000	Jack Fruit	500	2,000	1,000,000	1,000,000
		500	0	Avocado	0	0	0	0
Financing								
Total Benefits	2,149,500 (note**)	2,149,500 (note**)	2,149,500 (note**)	2,149,500 (note**)				2,093,500
Increase caused by Agricultural Input =	0.0%	0.0%	0.0%	0.0%				0.0%
Increase caused by Soil Conservation =	0.0%	0.0%	0.0%	0.0%				0.0%
Interest Rate	12.0%							
Discount Rate								
Total Investment	10.0%	40	70,000	40	70,000	1,750	40	70,000
Farmers' View Point	9.0%	15	52,500	15	52,500	3,500	15	52,500
		3	10,500	3	10,500	3	3,500	10,500
		0	0	0	0	0	0	0
		100	40,000	100	40,000	100	200	20,000
		250	50,000	250	50,000	250	200	50,000
		1,750	0	1,750	0	1,750	0	0
		0	0	0	0	0	0	0
		50	250,000	50	250,000	50	5,000	250,000
		300	150,000	300	150,000	300	500	150,000
		250	250,000	250	250,000	250	250	0
		20,000	40,000	20,000	40,000	20,000	2	40,000
		3,000	18,000	3,000	18,000	3,000	6	18,000
		3,000	483,000	3,000	483,000	3,000	150	450,000
		3,000	66,000	3,000	66,000	3,000	15	45,000
		40.0%	of costs	40.0%	of costs	40.0%	of costs	40.0%
		50,000	50,000	50,000	50,000	50,000	50,000	50,000
		1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,205,000

Cropping Pattern B

Financial Analysis 1
 Change from <Without Project> Existing Mixed Garden 2
 to <With Project> Forest 3

Table 1: Parameter Table

Item	Annual Benefit and Cost <With Project> Forest 3			Annual Benefit and Cost <Without Project> Existing Mixed Garden 2		
	Base Year Price	Quantity (kg, M3)	Increase in* Value/Year (Rp)	Base Year Price	Quantity (kg, M3)	Increase in* Value/Year (Rp)
Economic Indicator						
Domestic Inflation Rate			0.0%			0.0%
Foreign Inflation Rate			0.0%			0.0%
Interest Rate (Lending)			0.0%			0.0%
Interest Rate (Saving)			0.0%			0.0%
Exchange Rate per US\$ (Base Year 1992)	2.050					
Financing						
Interest Rate			12.0%			12.0%
Discount Rate						
Total Investment	10.0%					
Farmers' View Point	9.0%					
Investment Cost						
Terrace (1st Year)	0					
Maintenance Cost (2nd yr) (after 2nd yr)	20.0%					
Maintenance of Existing Terrace	10.0%					
Working Capital						
With Project	70.0%					
Without Project	70.0%					
In-Use Value of Land	0					
Costs						
(Seeds)						
Red Beans	1,750	40	70,000	1,750	40	70,000
Maize	3,500	15	52,500	3,500	15	52,500
Cassava	3	3,500	10,500	3	3,500	10,500
Albizia tree	0	100	65,000	0	100	65,000
Jack Fruit	250	100	25,000	250	100	25,000
Avocado	1,750	0	0	1,750	0	0
(Fertilizers)						
Manure	50	5,000	250,000	50	5,000	250,000
Chemical	300	300	150,000	300	300	150,000
Lime	250	1,000	250,000	250	1,000	250,000
(Pesticide)						
Calran	20,000	2	40,000	20,000	2	40,000
Butiran	3,000	6	18,000	3,000	6	18,000
(Labor)						
Labor Cost						
Crop and	3,000	161	483,000	3,000	150	450,000
Vegetable	3,000	27	81,000	3,000	9	27,000
Tree						
Maintenance and Harvesting		40.0% of costs			40.0% of costs	
(Others)						
Agricultural Equipment		50,000			50,000	
Total Expenditure			1,545,000			1,158,000
Total Benefits			1,733,500			1,593,500
Increase caused by Agricultural Input =			0.0%			0.0%
Increase caused by Soil Conservation =			0.0%			0.0%

Cropping Pattern D

Financial Analysis 1

Change from <Without Project> Dry Farming with Terrace
to <With Project> Forest 1

Table 1: Parameter Table

Item	Annual Benefit and Cost <With Project> Forest 1				Annual Benefit and Cost <Without Project> Dry Farming with Terrace			
	Price (\$/kg)	Quantity (kg/ha)	Increase in Productivity (%)	Total Value/Year (\$/ha)	Price (\$/kg)	Quantity (kg/ha)	Increase in Productivity (%)	Total Value/Year (\$/ha)
(per Ha)								
Economic Indicator								
Domestic Inflation Rate		300	15.0%	327,750		300	15.0%	327,750
Foreign Inflation Rate	8.0%	300	15.0%	1,000,500		300	15.0%	1,000,500
Interest Rate (Lending)	5.0%	1,300	15.0%	448,500		50	15.0%	448,500
Interest Rate (Saving)		800	15.0%	588,000		50	15.0%	588,000
Exchange Rate per US\$ (base year 1992)	2.050	8.00		200,000		0		200,000
		16.00		80,000		0		80,000
		500		0		0		0
		500		0		0		0
Financing								
Interest Rate	12.0%			2,554,750				2,554,750
Benefit and Cost								
				Total Benefits				
				Increase caused by Agricultural Input =				
				Increase caused by Soil Conservation =				
				Increase caused by Agricultural Input =				
				Increase caused by Soil Conservation =				
(Cost)								
(Seeds)								
Red Beans	1,750	30	52,500					
Maize	3,500	30	105,000					
Upland Paddy	650	40	26,000					
Ground Nuts	1,500	30	45,000					
Albizia, tree	100	1,000	100,000					
Jack Fruit	250	0	0					
Avocado	1,750	0	0					
(Fertilizers)								
Manure	50	10,000	500,000					
Chemical	300	600	180,000					
Lime	250	1,000	250,000					
(Pesticide)								
Calran	20,000	4	80,000					
Butiran	3,000	20	60,000					
(Labor Cost)								
Labor Cost	3,000	341	1,023,000					
Crop and	3,000	35	105,000					
Vegetable	3,000	40.0%	of costs					
Tree	3,000	40.0%	of costs					
Maintenance and								
Harvesting								
[Others]								
Agricultural Equipment			50,000					
Total Expenditure								
				2,575,500				
(Benefit)								
(Crop and								
Upland Paddy	300	2,210	663,000					
Maize	300	1,430	429,000					
Cassava	50	6,350	317,500					
Albizia, tree	25,000	0.00	0					
Albizia, fire	5,000	0.00	0					
Jack Fruit	500	0.00	0					
Avocado	500	0.00	0					
(Fertilizers)								
Manure	53	5,000	250,000					
Chemical	300	500	150,000					
Lime	250	0	0					
(Pesticide)								
Calran	20,000	2	40,000					
Butiran	3,000	10	30,000					
(Labor Cost)								
Labor Cost	3,000	200	600,000					
Crop and	3,000	0	0					
Vegetable	3,000	40.0%	of costs					
Tree	3,000	40.0%	of costs					
Maintenance and								
Harvesting								
[Others]								
Agricultural Equipment			50,000					
Total Expenditure								
				1,228,500				

Cropping Pattern E

Financial Analysis 1

Change from <Without Project> Dry Farming with Terrace
to <With Project> Agroforestry 1

Table 1: Parameter Table

Item	Annual Benefit and Cost		<With Project> Agroforestry 1		<Without Project> Dry Farming with Terrace	
	Base Price	Quantity	Base Price	Quantity	Base Price	Quantity
Economic Indicator						
Domestic Inflation Rate	8.0%					
Foreign Inflation Rate	5.0%					
Interest Rate (Lending)						
Interest Rate (Saving)						
Exchange Rate per US\$ (Base Year 1992)	2.050					
Financing						
Interest Rate	12.0%					
Discount Rate						
Total Investment	10.0%					
Farmers' View Point	9.0%					
Maintenance of Existing Terrace (With Case)						
In-use Value of Terrace	425,000					
Maintenance Cost (2nd yr) (after 2nd yr)	10.0%					
Maintenance of Existing Terrace (Without Case)	10.0%					
Working Capital						
With Project	35.0%					
Without Project	70.0%					
In-Use Value of Land	0					
Annual Benefit and Cost						
Item	Base Price	Quantity	Base Price	Quantity	Base Price	Quantity
(Benefit)						
Upland Paddy	300	1,300	448,500	300	2,210	300
Maize	300	2,960	1,000,500	300	1,450	300
Red Beans	300	550	327,500	50	6,350	50
Ground Nuts	800	650	598,000			
Albizia tree	25,000	3,30	80,000	25,000	0.00	0
Albizia tree	5,000	6,40	32,000	Albizia tree	0.00	0
Jack Fruit	500	1,500	750,000	Jack Fruit	5,000	0
Avocado	500	2,500	1,250,000	Jack Fruit	500	0
(Cost)						
Upland Paddy	550	40	26,000	Upland Paddy	650	40
Maize	300	30	105,000	Maize	3,500	20
Red Beans	1,750	30	52,500	Cassava	3	3,500
Ground Nuts	1,500	30	45,000	Albizia tree	0	0
Albizia tree	100	200	20,000	Jack Fruit	100	0
Jack Fruit	1,000	100	100,000	Jack Fruit	250	0
Avocado	1,750	100	175,000			
(Fertilizers)						
Manure	50	10,000	500,000	Manure	50	5,000
Chemical	300	600	180,000	Chemical	300	500
Lime	250	1,000	250,000	Lime	250	0
(Pesticide)						
Caltran	20,000	4	80,000	Caltran	20,000	2
Butiran	3,000	20	60,000	Butiran	3,000	10
(Labor)						
Labor Cost				Labor Cost		
Crop and Vegetable	3,000	341	1,023,000	Crop and Vegetable	3,000	200
Tree Maintenance and Harvesting	3,000	15	45,000	Tree Maintenance and Harvesting	3,000	0
Others				Others		
Agricultural Equipment				Agricultural Equipment		
Total Expenditure			2,711,500	Total Expenditure		1,226,500
Total Expenditure			2,711,500	Total Expenditure		1,226,500
Increase caused by Agricultural Input =			5.0%	Increase caused by Agricultural Input =		
Increase caused by Soil Conservation =			10.0%	Increase caused by Soil Conservation =		
Total Benefits			4,488,750	Total Benefits		1,557,050
Increase caused by Agricultural Input =			5.0%	Increase caused by Agricultural Input =		0.0%
Increase caused by Soil Conservation =			10.0%	Increase caused by Soil Conservation =		10.0%

Cropping Pattern F

Financial Analysis 1

Change from <Without Project> Dry Farming with Terrace
to <With Project> Dry Farming 1

Table 1: Parameter Table

Item	Annual Benefit and Cost <With Project> Dry Farming 1			Annual Benefit and Cost <Without Project> Dry Farming with Terrace		
	Price	Quantity	Increase in Total Value/Year	Price	Quantity	Increase in Total Value/Year
Economic Indicator						
Domestic Inflation Rate		8.0%				
Foreign Inflation Rate		8.0%				
Interest Rate (Lending)						
Interest Rate (Saving)						
Exchange Rate per US\$ (Base Year 1992)	2.050					
Financing						
Interest Rate		12.0%				
Discount Rate						
Total Investment		10.0%				
Farmers' View Point		8.0%				
Maintenance of Existing Terrace (With Case)						
In-use value of Terrace	425,000					
Maintenance Cost (2nd yr) (after 2nd yr)		10.0%				
Maintenance of Existing Terrace (Without Case)						
Working Capital		10.0%				
With Project		35.0%				
Without Project		70.0%				
In-use Value of Land						

Item	Base Year	Quantity	Price	Total Value/Year	Base Year	Quantity	Price	Total Value/Year
(Benefit)								
Tomato	300	5,155	15.0%	1,778,667	300	2,210	10.0%	729,300
Red Beans	300	1,615	15.0%	557,175	300	1,450	10.0%	478,500
Maize	300	1,450	15.0%	500,250	50	6,350	10.0%	349,250
Albizia tree	25,000	0.00	0.00	0	0	0.00	0.00	0
Albizia fire	5,000	0.00	0.00	0	0	0.00	0.00	0
Jack Fruit	500	0.00	0.00	0	0	0.00	0.00	0
Avocado	500	0.00	0.00	0	0	0.00	0.00	0
(Cost)								
Tomato	7,500	10	75,000		550	40	26,000	
Red Beans	1,750	30	52,500		3,500	20	70,000	
Maize	3,500	15	52,500		3	3,500	10,500	
Albizia tree	0	0	0		0	0	0	
Jack Fruit	1,000	0	0		300	0	0	
Avocado	1,000	0	0		250	0	0	
(Fertilizers)								
Manure	50	10,000	500,000		50	5,000	250,000	
Chemical	300	600	180,000		300	500	150,000	
Lime	250	0	0		250	0	0	
(Pesticide)								
Calran	20,000	4	80,000		20,000	2	40,000	
Butiran	3,000	12	36,000		3,000	10	30,000	
(Labor)								
Labor Cost	3,000	325	975,000		3,000	200	600,000	
Vegetable	3,000	0	0		3,000	0	0	
Tree	3,000	0	0		3,000	0	0	
Maintenance and Harvesting		40.0%	of costs			40.0%	of costs	
(Others)								
Agricultural Equipment		50,000				50,000		

Item	Total Benefits	Total Expenditure
note**	2,836,092	2,001,000
note***	3.0% increase caused by Agricultural Input =	3.0% increase caused by Agricultural Input =
	10.0% increase caused by Soil Conservation =	10.0% increase caused by Soil Conservation =
	1,557,050	1,226,500
	0.0%	0.0%
	10.0%	10.0%

Cropping Pattern G

Financial Analysis 1

Change from <Without Project> Dry Farming without Terrace
to <With Project> Forest 1

Table 1: Parameter Table

Item	Annual Benefit and Cost <With Project> Forest 1			Annual Benefit and Cost <Without Project> Dry Farming without Terrace		
	Base Year	Quantity	Price	Base Year	Quantity	Price
Economic Indicator						
Domestic Inflation Rate	8.0%					
Foreign Inflation Rate	3.0%					
Interest Rate (Lending)						
Interest Rate (Saving)						
Exchange Rate per US\$ (Base Year 1992)	2.050					
Financing						
Interest Rate	12.0%					
Discount Rate						
Total Investment	10.0%					
Farmers' View Point	9.0%					
Investment Cost						
Terrace (1st year)	0					
Subsidy	0					
Maintenance Cost (2nd yr) (after 2nd yr)	29.8%					
Maintenance of Existing Terrace	10.0%					
Working Capital						
With Project	35.0%					
Without Project	70.0%					
In-Use Value of Land	0					
Annual Benefit and Cost <With Project> Forest 1						
Item	Base Year	Quantity	Price	Base Year	Quantity	Price
(Benefit)						
Upland Paddy	300	1,300	5.0%	408,500	300	2,210
Red Beans	300	2,850	3.0%	288,250	300	1,450
Maize	300	2,800	3.0%	513,500	300	6,350
Ground Nuts	800	2,850	3.0%	248,000	300	0
Albizia tree	25,000	8,000		200,000	25,000	0.00
Albizia tree	3,000	16,000		30,000	3,000	0.00
Jack Fruit	0	0		0	0	0.00
Avocado	300	0		0	300	0
(Benefit)						
Upland Paddy						
Maize						
Albizia tree						
Jack Fruit						
(Cost)						
Upland Paddy	650	40	26,000	650	40	26,000
Red Beans	1,750	30	52,500	1,750	30	52,500
Maize	3,580	30	105,000	3,580	30	105,000
Ground Nuts	1,500	30	45,000	1,500	30	45,000
Albizia tree	100	1,000	100,000	100	1,000	100,000
Jack Fruit	1,000	0	0	1,000	0	0
Avocado	1,750	0	0	1,750	0	0
(Fertilizers)						
Manure	50	10,000	500,000	50	10,000	500,000
Chemical	300	600	180,000	300	600	180,000
Lime	250	1,000	250,000	250	1,000	250,000
(Pesticide)						
Cairan	20,000	4	80,000	20,000	4	80,000
Butiran	3,000	20	60,000	3,000	20	60,000
(Labor)						
Labor Cost	3,000	341	1,023,000	3,000	341	1,023,000
Crop and						
Vegetable	3,000	35	105,000	3,000	35	105,000
Tree						
Maintenance and						
Harvesting						
(Others)						
Agricultural Equipment			50,000			50,000
Total Expenditure			2,976,500			2,976,500
Annual Benefit and Cost <Without Project> Dry Farming without Terrace						
Item	Base Year	Quantity	Price	Base Year	Quantity	Price
(Benefit)						
Upland Paddy	300	2,210	0.0%	435,000	300	0.0%
Maize	300	1,450	0.0%	435,000	300	0.0%
Albizia tree	25,000	0.00	0.0%	0	25,000	0.0%
Jack Fruit	300	0.00	0.0%	0	300	0.0%
(Benefit)						
Upland Paddy						
Maize						
Albizia tree						
Jack Fruit						
(Cost)						
Upland Paddy	650	40	26,000	650	40	26,000
Maize	3,580	30	105,000	3,580	30	105,000
Albizia tree	100	1,000	100,000	100	1,000	100,000
Jack Fruit	1,000	0	0	1,000	0	0
Avocado	1,750	0	0	1,750	0	0
(Fertilizers)						
Manure	50	10,000	500,000	50	10,000	500,000
Chemical	300	600	180,000	300	600	180,000
Lime	250	1,000	250,000	250	1,000	250,000
(Pesticide)						
Cairan	20,000	4	80,000	20,000	4	80,000
Butiran	3,000	20	60,000	3,000	20	60,000
(Labor)						
Labor Cost	3,000	341	1,023,000	3,000	341	1,023,000
Crop and						
Vegetable	3,000	35	105,000	3,000	35	105,000
Tree						
Maintenance and						
Harvesting						
(Others)						
Agricultural Equipment			50,000			50,000
Total Expenditure			2,976,500			2,976,500

Cropping Pattern I

Financial Analysis 1

Change from <Without Project> Dry Farming without Terrace
to <With Project> Agroforestry 1 with Bench Terrace

Table 1: Parameter Table

Item	Annual Benefit and Cost <With Project> Agroforestry 1 with Bench Terrace			<Without Project> Dry Farming without Terrace		
	Base Year	Increase in Total Value/Year	Price	Base Year	Increase in Total Value/Year	Price
Quantity (Kg. M3)	Quantity (Kg. M3)	Quantity (Kg. M3)	Quantity (Kg. M3)	Quantity (Kg. M3)	Quantity (Kg. M3)	Quantity (Kg. M3)
Benefit	Benefit	Benefit	Benefit	Benefit	Benefit	Benefit
Upland Paddy	300	15.0%	448,500	300	2,210	0.0%
Red Beans	300	15.0%	327,750	300	1,450	0.0%
Maize	300	15.0%	1,000,500	50	6,350	0.0%
Ground Nuts	800	15.0%	598,000	0	0	0.0%
Albizia tree	3,200	80,000	Albizia tree	25,000	0.00	0
Albizia fire	5,000	32,000	Albizia fire	5,000	0.00	0
Jack Fruit	500	1,500	Jack Fruit	500	0	0
Avocado	500	2,500	1,250,000	0	0	0
Financing	Total Benefits	4,486,750	(note**)	Total Benefits	1,415,500	0.0%
Interest Rate	Increase caused by Agricultural Input =	5.0%	Increase caused by Agricultural Input =	Increase caused by Agricultural Input =	10.0%	Increase caused by Soil Conservation =
	Increase caused by Soil Conservation =	10.0%	Increase caused by Soil Conservation =			
Discount Rate	(Cost)		(Cost)			
Total Investment	[Seeds]		[Seeds]			
Farmers' View Point	Upland Paddy	650	Upland Paddy	650	40	26,000
	Red Beans	1,750	Red Beans	30	52,500	70,000
	Maize	3,500	Maize	30	105,000	10,500
	Ground Nuts	1,500	Ground Nuts	30	45,000	0
	Albizia tree	1,000	Albizia tree	200	20,000	0
	Jack Fruit	1,000	Jack Fruit	100	100,000	0
	Avocado	1,750	Avocado	100	175,000	0
	No. of tree types =	3 types	No. of tree types =	No. of tree types =	0 types	
Investment Cost	[Fertilizers]		[Fertilizers]			
Bench Terrace (1st year)	Manure	50	Manure	50	5,000	250,000
Maintenance Cost (2nd yr)	Chemical	300	Chemical	300	500	150,000
Maintenance of Existing Terrace	Lime	250	Lime	250	0	0
	[Pesticide]		[Pesticide]			
Working Capital	Cafran	20,000	Cafran	20,000	2	40,000
With Project	Butiran	3,000	Butiran	3,000	10	30,000
Without Project	[Labor]		[Labor]			
In-use Value of Land	Labor Cost	3,000	Labor Cost	3,000	200	600,000
	Crop and	3,000	Crop and	3,000	0	0
	Vegetable	3,000	Vegetable	3,000	40.0%	of costs
	Tree	15	Tree	15	0	0
	Maintenance and	40.0%	Maintenance and	40.0%	0	0
	Harvesting		Harvesting			
	[Others]		[Others]			
	Agricultural Equipment	50,000	Agricultural Equipment	50,000		
	Total Expenditure	2,711,500	Total Expenditure	1,225,500		

Cropping Pattern J

Financial Analysis 1

Change from <Without Project> Dry Farming without Terrace
to <With Project> Dry Farming with Bench Terrace

Table 1: Parameter Table

Item	Annual Benefit and Cost <With Project> Dry Farming with Bench Terrace		Annual Benefit and Cost <Without Project> Dry Farming without Terrace		(per Ha)
	Base Year Price	Quantity	Base Year Price	Quantity	
Domestic Inflation Rate	2.0%	5.156	15.0%	1,778,667	0.0%
Foreign Inflation Rate	5.0%	1.615	15.0%	557,175	0.0%
Interest Rate (Lending)		1.450	15.0%	500,250	0.0%
Interest Rate (Savings)		0.000	15.0%	0	0.0%
Exchange Rate per US\$ (Base Year 1992)	2.950	0.000	0	0	0
Albizia, tree		0.000	0	0	0
Albizia, fire		0.000	0	0	0
Jack Fruit		0.000	0	0	0
Avocado		0.000	0	0	0
Tomato		300	300	300	2,210
Red Beans		300	300	300	1,450
Maize		300	300	300	6,350
Albizia, tree		0	0	0	0
Albizia, fire		0	0	0	0
Jack Fruit		0	0	0	0
Avocado		0	0	0	0
Total Benefits		2,836,092		1,415,500	
Increase caused by Agricultural Input		5.0%		5.0%	
Increase caused by Soil Conservation		10.0%		10.0%	
Discount Rate	10.0%				
Total Investment	920,000				
Farmers' View Point	9.0%				
Investment Cost					
Bench Terrace (1st year)	920,000				
Maintenance Cost (2nd yr) (after 2nd yr)	20,000				
Maintenance of Existing Terrace	10,000				
Working Capital					
With Project	35.0%				
Without Project	70.0%				
In-Use Value of Land	0				
(Cost)					
(Seeds)					
Upland Paddy	7,500	10	75,000	40	26,000
Maize	1,750	30	52,500	20	70,000
Albizia, tree	3,500	15	52,500	3	10,500
Jack Fruit	0	0	0	0	0
Avocado	1,000	0	0	0	0
Albizia, tree	1,000	0	0	0	0
Jack Fruit	1,750	0	0	0	0
(Fertilizers)					
Manure	50	10,000	500,000	50	250,000
Chemical	300	600	180,000	300	150,000
Lime	250	0	0	250	0
(Pesticide)					
Calran	20,000	4	80,000	2	40,000
Butiran	3,000	12	36,000	10	30,000
(Labor)					
Labor Cost	3,000	325	975,000	200	600,000
Crop and Vegetable	3,000	0	0	0	0
Tree Maintenance and Harvesting	3,000	40.0%	of costs	40.0%	of costs
(Others)					
Agricultural Equipment		50,000			50,000
Total Expenditure		2,001,000			1,226,500

Cropping Pattern K

Financial Analysis 1

Change from <Without Project> Dry Farming without Terrace
to <With Project> Dry Farming without Terrace

Table 1: Parameter Table

Item	Annual Benefit and Cost <With Project> Dry Farming without Terrace		Annual Benefit and Cost <Without Project> Dry Farming without Terrace	
	Price ===== (Rp) =====	Quantity ===== (Kg, M3) =====	Price ===== (Rp) =====	Quantity ===== (Kg, M3) =====
Economic Indicator				
Domestic Inflation Rate	8.0%			
Foreign Inflation Rate	5.0%			
Interest Rate (Lending)				
Interest Rate (Savings)				
Exchange Rate per US\$ (Base Year 1992)	2,050			
Financing				
Interest Rate	12.0%			
Discount Rate				
Total Investment	10.0%			
Farmers' View Point	9.0%			
Investment Cost				
Terrace (1st year)	0			
Maintenance Cost (2nd yr) (after 2nd yr)	20.0%			
Maintenance of Existing Terrace	10.0%			
Working Capital	0.0%			
With Project	35.0%			
Without Project	70.0%			
In-Use Value of Land	0			
Annual Benefit and Cost <With Project> Dry Farming without Terrace				
Item	Price ===== (Rp) =====	Quantity ===== (Kg, M3) =====	Price ===== (Rp) =====	Quantity ===== (Kg, M3) =====
(Benefit)			(Benefit)	
Tomato	300	5,156	5.0%	1,624,000
Red Beans	300	1,615	5.0%	508,725
Maize	300	1,450	5.0%	455,750
Albizia tree	800	0	5.0%	0
Albizia tree	25,000	0.00		0
Albizia tree	5,000	0.00		0
Jack Fruit	500	0		0
Avocado	500	0		0
Total Benefits				
(note*)				
Increase caused by Agricultural Input =			2,589,475 (note**)	
Increase caused by Soil Conservation =			5.0%	
			0.0%	
				1,415,500
				0.0%
				0.0%
Annual Benefit and Cost <Without Project> Dry Farming without Terrace				
Item	Price ===== (Rp) =====	Quantity ===== (Kg, M3) =====	Price ===== (Rp) =====	Quantity ===== (Kg, M3) =====
(Benefit)			(Benefit)	
Upland Paddy	300	2,210		0
Maize	300	1,450		0
Cassava	50	6,350		0
Albizia tree	25,000	0.00		0
Albizia tree	5,000	0.00		0
Jack Fruit	500	0		0
Avocado	500	0		0
Total Benefits				
(note*)				
Increase caused by Agricultural Input =			5.0%	
Increase caused by Soil Conservation =			0.0%	
				1,415,500
				0.0%
				0.0%
(Cost)				
[Seeds]				
Tomato	7,500	10	75,000	
Red Beans	1,750	30	52,500	
Maize	3,500	15	52,500	
Albizia tree	0	0	0	
Jack Fruit	1,000	0	0	
Avocado	1,750	0	0	
No. of tree types =	0 types		0 types	
[Fertilizers]				
Manure	50	10,000	500,000	
Chemical	300	600	180,000	
Lime	250	0	0	
[Pesticide]				
Calran	20,000	4	80,000	
Butiran	3,000	12	36,000	
[Labor]				
Labor Cost	3,000	325	975,000	
Crop and				
Vegetable	3,000	0	0	
Tree	3,000	0	0	
Maintenance and				
Harvesting				
[Others]				
Agricultural Equipment			50,000	
Total Expenditure			2,001,000	
				1,226,500

Cropping Pattern L

Economic Analysis 1

Change from <Without Project> Shrub, Grass Land, Quarry
to <With Project> Forest 1

Table 1: Parameter Table

Item	Annual Benefit and Cost <With Project> Forest 1		Annual Benefit and Cost <Without Project> Shrub, Grass Land, Quarry	
	Base Price	Quantity (kg, M3)	Base Price	Quantity (kg, M3)
Domestic Inflation Rate	8.0%			
Foreign Inflation Rate	5.0%			
Interest Rate (Lending)				
Interest Rate (Saving)				
Exchange Rate per US\$ (Base Year 1982)	2.050			
Financing				
Interest Rate	12.0%			
Investment Cost				
Terrace (1st year)	0			
Subsidy	0			
Maintenance Cost (2nd yr) (after 2nd yr)	20.0%			
Maintenance of Existing Terrace	10.0%			
Working Capital				
With Project	35.0%			
Without Project	0.0%			
In-Use Value of Land	0			
Annual Benefit and Cost (Benefit)				
Upland Paddy	300	1,300	300	500
Red Beans	300	950	300	300
Maize	300	2,900	300	300
Ground Nuts	800	650	50	50
Albizia tree	25,000	8.00	200,000	0.00
Albizia fire	5,000	16.00	80,000	0.00
Jack Fruit	0	0	0	0
Avocado	500	0	0	500
Annual Benefit and Cost (Cost)				
Upland Paddy	650	40	26,000	0
Red Beans	1,750	30	52,500	0
Maize	3,500	30	105,000	0
Ground Nuts	1,500	30	45,000	0
Albizia tree	100	1,000	100,000	0
Jack Fruit	1,000	0	0	0
Avocado	1,750	0	0	0
Investment Cost				
Terrace (1st year)	50	10,000	500,000	0
Subsidy	0	300	180,000	0
Maintenance Cost (2nd yr) (after 2nd yr)	20.0%	1,000	250,000	0
Maintenance of Existing Terrace	10.0%	20,000	80,000	0
Working Capital				
With Project	3.000	341	1,023,000	0
Without Project	0.0%	35	105,000	0
In-Use Value of Land	0	40.0%	of costs	40.0%
Total Expenditure				
With Project			2,576,500	
Without Project			0	

Cropping Pattern M

Financial Analysis 1

Change from <Without Project> Grass Land
to <With Project> Agroforestry 1 without Terrace

Table 1: Parameter Table

Item	Annual Benefit and Cost			Agroforestry 1 without Terrace			Agroforestry 1 without Terrace			(per Ha)		
	Without Project	With Project	Total	Without Project	With Project	Total	Without Project	With Project	Total	Without Project	With Project	Total
Item	Base Year	Base Year	Base Year	Base Year	Base Year	Base Year	Base Year	Base Year	Base Year	Base Year	Base Year	Base Year
Economic Indicator	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity
Discount Rate	Price	Price	Price	Price	Price	Price	Price	Price	Price	Price	Price	Price
Total Investment	Benefit	Benefit	Benefit	Benefit	Benefit	Benefit	Benefit	Benefit	Benefit	Benefit	Benefit	Benefit
Farmers' View Point	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity
Investment Cost	Value/Year	Value/Year	Value/Year	Value/Year	Value/Year	Value/Year	Value/Year	Value/Year	Value/Year	Value/Year	Value/Year	Value/Year
Terrace (1st year)	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum
Maintenance Cost (2nd yr)	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum
Maintenance of Existing Terrace	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)
Working Capital	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)
With Project	(Kg/M3)	(Kg/M3)	(Kg/M3)	(Kg/M3)	(Kg/M3)	(Kg/M3)	(Kg/M3)	(Kg/M3)	(Kg/M3)	(Kg/M3)	(Kg/M3)	(Kg/M3)
Without Project	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)
In-Use Value of Land	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)
Financing	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)	(Rp)
Interest Rate	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Domestic Inflation Rate	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Foreign Inflation Rate	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Interest Rate (Lending)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Interest Rate (Saving)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Exchange Rate per US\$ (Base Year 1982)												
	300	1,300	1,600	489,500	489,500	979,000	300	300	300	0	0	0
	300	300	600	289,250	289,250	578,500	300	300	300	0	0	0
	300	300	600	313,500	313,500	627,000	50	50	50	0	0	0
	800	800	1,600	546,000	546,000	1,092,000	0	0	0	0	0	0
	25,000	3,200	28,200	80,000	80,000	160,000	25,000	0.00	0.00	0	0	0
	3,000	5,400	8,400	32,000	32,000	64,000	5,000	0.00	0.00	0	0	0
	500	1,500	2,000	750,000	750,000	1,500,000	500	0	0	0	0	0
	500	2,500	3,000	1,250,000	1,250,000	2,500,000	500	0	0	0	0	0
Total Benefits	4,240,250 (note**)			4,240,250			4,240,250			0		
Increase caused by Agricultural Input =	5.0%			5.0%			5.0%			0.0%		
Increase caused by Soil Conservation =	0.0%			0.0%			0.0%			0.0%		
Total Expenditure	2,711,500			2,711,500			2,711,500			0		
	650	650	1,300	Up and Paddy	650	650	1,300	Up and Paddy	650	650	1,300	Up and Paddy
	1,750	1,750	3,500	Rod Beans	1,750	1,750	3,500	Rod Beans	1,750	1,750	3,500	Rod Beans
	3,500	3,500	7,000	Maize	3,500	3,500	7,000	Maize	3,500	3,500	7,000	Maize
	1,500	1,500	3,000	Ground Nuts	1,500	1,500	3,000	Ground Nuts	1,500	1,500	3,000	Ground Nuts
	100	100	200	Albizia tree	100	100	200	Albizia tree	100	100	200	Albizia tree
	1,000	1,000	2,000	Jack Fruit	1,000	1,000	2,000	Jack Fruit	1,000	1,000	2,000	Jack Fruit
	1,750	1,750	3,500	Avocado	1,750	1,750	3,500	Avocado	1,750	1,750	3,500	Avocado
No. of tree types =	3 types			3 types			3 types			0 types		
(Fertilizers)	50			50			50			50		
Manure	300			300			300			300		
Chemical	250			250			250			250		
Lime												
[Pesticide]	20,000			20,000			20,000			20,000		
Calran	3,000			3,000			3,000			3,000		
Butiran												
(Labor)	3,000			3,000			3,000			3,000		
Labor Cost	3,000			3,000			3,000			3,000		
Crop and												
Vegetable	1,023,000			1,023,000			1,023,000			1,023,000		
Tree	45,000			45,000			45,000			45,000		
Maintenance and	40.0% of costs			40.0% of costs			40.0% of costs			40.0% of costs		
Harvesting												
(Others)	50,000			50,000			50,000			50,000		
Agricultural Equipment	50,000			50,000			50,000			50,000		
Total Expenditure	2,711,500			2,711,500			2,711,500			0		

(2) 作付転換パターンの予想増分純現在価値の算出例 — 畑地(テラスなし)からアグロ1(ベンチテラス)へ —

Cropping Pattern I

Change from <Without Project> Dry Farming without Terrace
to <With Project> Agroforestry I with Bench Terrace

Table 1: Parameter Table

Item	Annual Benefit and Cost		Agroforestry I with Bench Terrace		Dry Farming without Terrace	
	Base Year Price	Quantity (Kg./M3)	Base Year Price	Quantity (Kg./M3)	Base Year Price	Quantity (Kg./M3)
Economic Indicator						
Domestic Inflation Rate	8.0%		15.0%		15.0%	
Foreign Inflation Rate	5.0%		15.0%		15.0%	
Exchange Rate per US\$ (Base Year 1992)	2.050		1.300		1.450	
Financing						
Interest Rate	12.0%		4.866,750 (note**)		1,415,500	
			Increase caused by Agricultural Input = 5.0%		Increase caused by Agricultural Input = 0.0%	
			Increase caused by Soil Conservation = 10.0%		Increase caused by Soil Conservation = 0.0%	
Discount Rate	10.0%					
Total Investment						
Farmers' View Point	9.0%					
Investment Cost						
Bench Terrace (1st year)	520,000					
Maintenance Cost (2nd yr (after 2nd yr))	20.0%					
Maintenance of Existing Terrace	10.0%					
Working Capital						
With Project	35.0%					
Without Project	70.0%					
In-Use Value of Land	0					
Annual Benefit and Cost						
		(Benefit)		(Benefit)		(Benefit)
Upland Paddy	300	1,300	300	448,500	300	2,210
Red Beans	300	950	300	327,750	300	1,450
Maize	300	2,900	300	1,000,500	50	6,350
Ground Nuts	800	650	800	588,000		
Albizia tree	25,000	3.20	89,000	Albizia tree	25,000	0.00
Albizia fire	5,000	6.40	32,000	Albizia fire	5,000	0.00
Jack Fruit	500	1,500	750,000	Jack Fruit	500	0
Avocado	500	2,500	1,250,000			
		Total Benefits		4,486,750 (note**)		1,415,500
		Increase caused by Agricultural Input = 5.0%		Increase caused by Agricultural Input = 5.0%		Increase caused by Agricultural Input = 0.0%
		Increase caused by Soil Conservation = 10.0%		Increase caused by Soil Conservation = 10.0%		Increase caused by Soil Conservation = 0.0%
(Cost)						
		(Seeds)		(Seeds)		(Seeds)
Upland Paddy	650	40	25,000	Upland Paddy	550	40
Red Beans	1,750	30	52,500	Maize	3,500	20
Maize	3,900	30	105,000	Cassava	3	3,500
Ground Nuts	1,500	30	45,000	Albizia tree		
Albizia tree	1,000	200	20,000	Jack Fruit	250	0
Jack Fruit	1,000	100	100,000			
Avocado	1,750	100	175,000			
		No. of tree types = 3 types		No. of tree types = 0 types		
		(Fertilizers)		(Fertilizers)		
Manure	50	10,000	500,000	Manure	50	5,000
Chemical	300	600	180,000	Chemical	300	500
Lime	250	1,000	250,000	Lime	250	0
		[Pesticide]		[Pesticide]		
Caïran	20,000	4	80,000	Caïran	20,000	2
Butiran	3,000	20	60,000	Butiran	3,000	10
		[Labor]		[Labor]		
Labor Cost	3,000	341	1,023,000	Labor Cost	3,000	220
Crop and Vegetable	3,000	15	45,000	Crop and Vegetable	3,000	0
Tree	3,000	40.0%	of costs	Tree	3,000	40.0%
Maintenance and Harvesting				Maintenance and Harvesting		
(Others)				(Others)		
Agricultural Equipment			50,000	Agricultural Equipment		50,000
		Total Expenditure		Total Expenditure		
		2,711,500		1,226,500		

Table 2: Inflation Rates and Indexes, Exchange Rate, and Productivity Indexes

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	0	1	2	3	4	5	6	7	8	9	10	11
Domestic Inflation Rate	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Domestic Inflation Index change in Domestic Inflation	1.08	1.17	1.26	1.36	1.47	1.59	1.71	1.85	2.00	2.16	2.33	2.52
Foreign Inflation	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Foreign Inflation Index	1.05	1.10	1.16	1.22	1.28	1.34	1.41	1.48	1.55	1.63	1.71	1.80
Relative Inflation	1.03	1.06	1.09	1.12	1.15	1.18	1.22	1.25	1.29	1.33	1.36	1.40
Exchange Rate per US\$	2.050											
Expected Exchange Rate [Nominal]	2.109	2.169	2.231	2.295	2.360	2.428	2.497	2.568	2.642	2.717	2.795	2.875
Expected Exchange Rate [Real]	2.050	2.050	2.050	2.050	2.050	2.050	2.050	2.050	2.050	2.050	2.050	2.050
Expected Productivity Increase Crops and Vegetables (with Crops and Vegetables (without) Harvesting Volume against Maximum Harvesting Volume (With)	5.0%	5.0%	5.0%	5.0%	5.5%	6.0%	7.5%	10.0%	15.0%	15.0%	15.0%	15.0%
Albizia	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Jack Fruit	0.0%	0.0%	0.0%	0.0%	80.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Avocado	0.0%	0.0%	0.0%	40.0%	60.0%	80.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
(Without)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	60.0%	80.0%	100.0%	100.0%	100.0%
Albizia	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Jack Fruit	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Necessary Man-days required for tree planting With (if 1st year = Without (if 1st year =	300.0%	300.0%	300.0%	300.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2005	2005	2007	2008	2009	2010	2011	2012	2013	2014	2015	2017	2018
12	13	14	15	16	17	18	19	20	21	22	24	25
8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
2.72	2.94	3.17	3.43	3.70	4.00	4.32	4.66	5.03	5.44	5.87	6.34	6.85
0	0	0	0	0	0	0	0	0	0	0	0	0
5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
1.89	1.93	2.08	2.18	2.28	2.41	2.53	2.65	2.79	2.93	3.07	3.23	3.39
1.44	1.48	1.53	1.57	1.61	1.66	1.71	1.76	1.81	1.86	1.91	1.97	2.02
2.957	3.041	3.128	3.217	3.309	3.404	3.501	3.601	3.704	3.810	3.919	4.031	4.146
2.050	2.050	2.050	2.050	2.050	2.050	2.050	2.050	2.050	2.050	2.050	2.050	2.050
15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 3-1: Revenue and Expense (1/2) (With Project) Agroforestry 1 with Bench Terrace

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Inflation Index	1.08	1.12	1.28	1.36	1.47	1.59	1.71	1.85	2.00	2.16	2.32	2.52
Revenue												
(1) Upland Paddy	238,320	515,952	557,120	604,595	656,014	718,521	794,049	896,554	964,278	1,045,740	1,128,391	
Price	350	378	400	441	476	514	554	600	648	699	752	
Quantity	0	0	0	0	0	0	0	0	0	0	0	
(2) Red Beans	174,523	376,963	407,123	441,730	478,395	525,972	565,174	625,555	677,485	734,935	794,195	
Price	350	378	400	441	476	514	554	600	648	699	752	
Quantity	0	0	0	0	0	0	0	0	0	0	0	
(3) Maize	552,753	1,150,747	1,242,507	1,446,923	1,663,854	1,921,321	2,231,045	2,600,004	3,040,004	3,554,004	4,143,004	
Price	20	20	20	20	20	20	20	20	20	20	20	
Quantity	0	0	0	0	0	0	0	0	0	0	0	
(4) Ground Nuts	318,427	687,803	742,827	805,073	876,685	958,028	1,058,712	1,185,405	1,339,137	1,514,370	1,714,868	
Price	933	1,008	1,068	1,175	1,259	1,351	1,454	1,569	1,697	1,838	2,000	
Quantity	0	0	0	0	0	0	0	0	0	0	0	
(5) Albizia	29,160	31,483	34,912	38,733	42,840	46,273	49,975	53,973	58,311	63,000	68,034	
Price	0	0	0	0	0	0	0	0	0	0	0	
Quantity	0	0	0	0	0	0	0	0	0	0	0	
(6) Albizia	5,832	6,233	6,802	7,347	7,934	8,569	9,255	9,995	10,795	11,658	12,591	
Price	0	0	0	0	0	0	0	0	0	0	0	
Quantity	0	0	0	0	0	0	0	0	0	0	0	
(7) Jack	502	630	600	681	733	792	859	935	1,020	1,115	1,220	
Price	0	0	0	0	0	0	0	0	0	0	0	
Quantity	0	0	0	0	0	0	0	0	0	0	0	
(8) Avocado	523	630	600	681	733	792	859	935	1,020	1,115	1,220	
Price	0	0	0	0	0	0	0	0	0	0	0	
Quantity	0	0	0	0	0	0	0	0	0	0	0	
Total Revenue	1,284,523	2,731,371	3,358,027	3,842,239	4,314,233	4,946,355	5,690,723	6,544,558	7,444,558	8,444,558	9,514,558	10,658,558
Change in Price	0	0	0	0	0	0	0	0	0	0	0	0
Change in Quantity	0	0	0	0	0	0	0	0	0	0	0	0
(9) Upland Paddy	1,219,751	1,317,321	1,422,718	1,536,555	1,659,458	1,792,215	1,935,592	2,090,435	2,257,574	2,436,288	2,627,574	2,831,284
Price	818	861	902	952	1,000	1,048	1,096	1,144	1,192	1,240	1,288	1,336
Quantity	0	0	0	0	0	0	0	0	0	0	0	0
(10) Red Beans	1,457	1,483	1,480	1,483	1,483	1,483	1,483	1,483	1,483	1,483	1,483	1,483
Price	831,257	862,657	893,875	925,093	956,311	987,529	1,018,747	1,050,000	1,081,250	1,112,500	1,143,750	1,175,000
Quantity	0	0	0	0	0	0	0	0	0	0	0	0
(11) Maize	1,890	1,890	1,890	1,890	1,890	1,890	1,890	1,890	1,890	1,890	1,890	1,890
Price	2,780,384	2,935,662	3,174,755	3,427,658	3,701,668	4,000,018	4,323,592	4,682,288	5,076,351	5,496,259	5,942,561	6,416,661
Quantity	316	381	452	529	612	701	800	910	1,030	1,160	1,300	1,450
(12) Ground Nuts	3,335	3,335	3,335	3,335	3,335	3,335	3,335	3,335	3,335	3,335	3,335	3,335
Price	1,625,315	1,756,442	1,898,357	2,048,714	2,216,611	2,398,820	2,596,333	2,808,155	3,034,288	3,274,831	3,529,885	3,799,550
Quantity	2,175	2,359	2,518	2,741	2,960	3,197	3,453	3,729	4,027	4,349	4,697	5,074
(13) Albizia	748	748	748	748	748	748	748	748	748	748	748	748
Price	87,394	73,430	70,304	67,649	65,500	63,800	62,500	61,600	61,000	60,600	60,300	60,100
Quantity	0	0	0	0	0	0	0	0	0	0	0	0
(14) Albizia	13,538	14,866	15,861	17,130	18,500	19,980	21,579	23,295	25,133	27,093	29,175	31,381
Price	2,020,216	2,201,850	2,379,120	2,558,320	2,739,040	2,921,016	3,104,976	3,291,728	3,482,016	3,676,608	3,875,344	4,078,064
Quantity	1,330	1,483	1,586	1,710	1,830	1,950	2,070	2,190	2,310	2,430	2,550	2,670
(15) Upland Paddy	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Price	3,399,510	3,871,492	3,985,211	4,282,428	4,423,023	4,995,624	4,315,701	4,660,957	5,002,504	5,408,540	5,871,484	6,398,475
Quantity	1,300	1,469	1,586	1,710	1,830	1,950	2,070	2,190	2,310	2,430	2,550	2,670
(16) Upland Paddy	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Price	11,897,374	12,845,388	13,857,447	14,938,170	16,085,529	17,294,480	18,562,520	19,896,520	21,292,520	22,748,520	24,262,520	25,832,520
Quantity	0	0	0	0	0	0	0	0	0	0	0	0

Table 3-2: Revenue and Expense (2/2) <With Project> Agroforestry 1 with Bench Terrace

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004		
Expense	0	1	2	3	4	5	6	7	8	9	10	11		
1) Seeds														
Upland Paddy	384,037	287,844	310,872	305,741	362,601	425,885	422,338	456,773	493,314	532,780	525,765			
change in price	15,163	32,753	35,375	38,203	41,258	44,559	48,124	51,974	56,132	60,623	65,472			
Red Beans														
change in price	30,618	66,135	71,426	77,140	82,311	89,876	97,174	104,948	113,344	122,411	132,204			
Maize														
change in price	61,236	132,270	142,851	154,279	166,822	179,352	194,348	209,895	226,567	244,822	264,408			
Ground Nuts														
change in price	26,244	56,567	61,222	66,120	71,408	77,122	83,292	89,935	97,152	104,924	113,318			
Albizia tree														
change in price	23,328	0	0	0	0	0	34,276	0	0	0	0	50,363		
Jack Fruit														
change in price	23,328													
Avocado														
change in price	204,120													
2) Fertilizers														
Manure	542,376	1,171,532	1,255,255	1,356,475	1,475,793	1,592,857	1,721,365	1,859,074	2,007,800	2,168,424	2,341,898			
Chemical	291,500	629,856	630,244	734,664	793,437	856,912	925,465	999,502	1,079,462	1,165,819	1,259,085			
Lime	104,976	226,748	244,828	284,479	285,637	308,488	332,167	359,821	388,506	418,695	452,271			
3) Pesticide	145,800	314,328	340,122	387,332	396,719	428,456	462,733	499,751	539,731	582,910	629,543			
Caltran	81,548	176,360	190,468	205,706	222,162	239,835	259,130	279,861	302,449	328,429	352,544			
Sulfuran	46,656	100,777	108,839	117,546	126,550	137,106	148,074	159,920	172,714	186,531	201,454			
4) Labor Cost	34,992	75,583	81,829	88,163	94,629	102,829	111,855	121,940	129,535	139,898	151,090			
5) Others	649,102	1,268,685	1,416,813	1,543,173	1,737,310	1,909,886	2,062,047	2,258,475	2,471,369	2,751,334	3,021,077			
Crop & Vegetable	596,614	1,268,685	1,431,780	1,503,126	1,621,312	1,751,242	1,891,502	2,044,982	2,208,580	2,385,287	2,576,088			
Tree	52,488		25,033	41,553	115,998	158,644	169,545	213,494	262,789	366,047	444,989			
Others	58,220	62,886	68,024	73,486	79,344	85,631	92,547	99,850	107,946	116,592	125,309			
Total Expense	1,715,483	3,887,407	4,251,433	4,525,065	4,877,210	5,255,254	5,659,026	6,094,133	6,563,278	7,065,549	7,600,172			
Net Income	-450,959	-256,036	106,594	337,174	1,437,073	1,631,502	2,421,757	3,291,261	4,061,478	5,610,506	4,549,172			
2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
621,434	671,149	724,841	782,828	849,454	913,090	985,138	1,065,029	1,150,231	1,350,980	1,341,029	1,448,960	1,564,877	1,690,067	
70,710	76,367	82,476	89,075	96,200	102,897	112,208	121,185	130,680	141,350	152,658	164,871	178,060	192,305	
142,780	154,203	166,539	179,882	194,251	209,791	226,574	244,700	264,276	285,418	308,252	332,912	359,545	388,309	
295,580	308,405	333,078	359,724	388,502	419,582	453,149	489,401	528,553	570,837	616,504	666,824	719,090	776,817	
122,383	132,174	142,748	154,167	166,501	179,821	194,207	209,743	226,523	244,644	264,216	285,353	308,181	332,836	
0	0	0	0	0	0	0	0	0	108,731	0	0	0	0	
2,529,250	2,721,590	2,950,117	3,186,127	3,441,017	3,716,298	4,013,602	4,334,690	4,681,455	5,055,983	5,460,451	5,897,295	6,369,082	6,878,608	
1,468,832	1,468,567	1,586,085	1,712,871	1,850,003	1,993,010	2,157,951	2,330,439	2,516,917	2,718,230	2,935,732	3,170,500	3,424,238	3,698,177	
486,532	528,485	570,890	616,870	665,003	716,284	770,926	828,972	890,600	958,577	1,035,683	1,114,413	1,202,736	1,301,244	
591,056	729,388	791,042	866,486	925,005	1,079,925	1,152,234	1,258,234	1,388,559	1,548,156	1,747,868	1,988,295	2,272,119	2,604,038	
269,727	411,207	479,632	518,003	569,403	604,138	652,534	704,137	761,138	822,095	887,765	957,731	1,035,493	1,124,938	
217,970	234,975	253,774	274,052	296,001	319,682	345,636	372,877	402,707	434,923	469,727	507,234	547,676	591,788	
163,170	176,232	186,330	205,357	222,001	239,781	258,942	279,557	302,030	326,182	352,288	380,571	410,509	443,781	
3,113,569	3,363,087	3,632,134	4,042,612	4,292,021	4,575,442	4,875,879	5,285,949	5,863,410	6,233,751	6,933,580	7,164,266	7,737,407	8,615,272	
2,782,175	3,004,749	3,245,129	3,509,739	3,785,118	4,087,928	4,414,962	4,788,159	5,149,612	5,581,581	6,005,507	6,497,028	7,005,390	7,566,489	
331,784	358,338	387,005	417,873	450,902	487,930	528,958	574,986	627,012	682,111	742,238	801,417	861,731	928,303	
135,981	146,860	158,608	171,257	185,001	199,801	215,755	233,048	251,692	271,827	293,573	317,059	342,424	369,818	
6,781,382	7,322,892	7,909,804	8,662,496	9,355,496	9,964,075	10,695,602	11,551,260	12,551,524	13,683,657	14,951,248	15,715,348	16,972,576	18,589,255	0
5,116,292	5,525,586	5,967,643	6,243,674	6,831,158	7,517,512	7,105,586	7,674,043	8,030,718	8,760,713	9,667,071	10,440,437	11,275,672	12,060,811	0

Table 4: Investment and Maintenance Schedule <With Project> Agroforestry 1 with Bench Terrace

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
Inflation Index	1.08	1.17	1.26	1.36	1.47	1.59	1.71	1.85	2.00	2.16	2.33	2.52	
Bench Terrace (1st Year) Investment	606,928												
Terrace Maintenance	131,010	131,010	70,745	70,745	76,405	82,517	89,119	86,248	103,948	112,264	121,245	130,945	
Total Annual Investment	606,928	131,010	70,745	70,745	76,405	82,517	89,119	86,248	103,948	112,264	121,245	130,945	
2005	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
12	13	14	15	16	17	18	19	20	21	22	23	24	25
2.72	2.94	3.17	3.43	3.70	4.00	4.32	4.66	5.03	5.44	5.87	6.34	6.85	7.40
141,420	152,734	164,953	178,149	192,401	207,793	224,416	242,370	261,759	282,700	305,316	329,741	356,121	384,610
141,420	152,734	164,953	178,149	192,401	207,793	224,416	242,370	261,759	282,700	305,316	329,741	356,121	384,610

Table 5: Working Capital <With Project> Agroforestry 1 with Bench Terrace

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
Inflation Index	1.08	1.17	1.26	1.36	1.47	1.59	1.71	1.85	2.00	2.16	2.33	2.52	
Operational Expenses excluding Labor Cost	0	1,008,051	1,635,736	1,766,595	1,507,923	2,060,556	2,259,677	2,403,433	2,595,708	2,803,364	3,027,633	3,320,207	
Working Capital required	0	352,821	572,508	618,308	667,773	721,195	780,887	841,202	908,438	981,177	1,059,672	1,162,073	
Change in Working Capital	0	352,821	219,686	45,801	49,465	53,422	69,632	50,314	67,236	72,660	78,494	102,401	
2005	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
12	13	14	15	16	17	18	19	20	21	22	23	24	25
2.72	2.94	3.17	3.43	3.70	4.00	4.32	4.66	5.03	5.44	5.87	6.34	6.85	7.40
3,531,431	3,813,946	4,119,062	4,448,587	4,878,474	5,188,831	5,603,308	6,032,253	6,536,433	7,105,079	7,624,036	8,234,023	8,892,745	9,604,165
1,236,001	1,334,881	1,441,672	1,557,005	1,707,466	1,816,091	1,961,378	2,118,288	2,287,752	2,508,827	2,668,433	2,881,908	3,112,461	3,361,458
73,928	98,080	106,790	115,334	150,461	108,625	145,287	156,910	168,463	221,076	159,606	213,475	230,553	248,997

Table 6: Financial Cash Flow Statement per Ha

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Inflation Index	1.00	1.17	1.26	1.36	1.47	1.59	1.71	1.85	2.00	2.16	2.33	2.52
Receipts	0	1	2	3	4	5	6	7	8	9	10	11
Gross Value of Agricultural Production	1,264,523	2,731,371	3,359,027	3,862,239	5,314,283	5,946,756	6,980,783	8,245,394	9,444,757	11,505,056	11,016,365	
In-Use Value												
Expenditure												
Investment	605,528											
Maintenance	0	131,010	70,745	76,405	82,517	89,119	96,248	103,948	112,264	121,245	130,945	
Operating Expense	0	1,715,483	2,987,407	3,251,433	3,525,065	3,877,210	4,255,254	4,599,025	4,954,133	5,363,279	5,835,549	6,367,193
Change in Working Capital	0	352,821	219,586	45,801	49,465	53,422	58,592	50,314	57,286	72,680	78,494	162,401
In-Use Value of Land	0											
Net Present Value	7,185,699											
Net Present Value	11,697,674	12,849,488	13,877,447	16,906,170	16,186,654	17,801,186	19,245,263	23,562,252	22,424,370	24,216,320	26,155,785	28,248,248
Net Present Value	0											
Net Present Value	141,420	152,734	164,953	178,149	192,401	207,753	224,415	242,370	251,759	282,700	305,316	329,741
Net Present Value	6,781,482	7,323,892	7,809,804	8,682,488	9,355,495	9,954,075	10,695,602	11,551,250	12,651,594	13,663,657	14,551,248	15,715,348
Net Present Value	73,328	88,880	105,790	115,334	150,461	103,625	145,287	166,910	189,463	221,876	159,606	213,475
Net Present Value	4,900,943	5,273,981	5,695,800	7,950,192	6,488,297	7,201,084	6,735,882	7,274,753	10,499,496	8,256,937	9,202,149	9,897,221
Net Present Value	1,802,067	1,795,585	1,795,585	1,795,585	1,802,067	1,802,067	1,802,067	1,802,067	1,802,067	1,802,067	1,802,067	1,802,067
Net Present Value	15,427,204	16,416,365	17,405,526	18,394,687	19,383,848	20,373,009	21,362,170	22,351,331	23,340,492	24,329,653	25,318,814	26,307,975
Net Present Value	3,361,458											

Table 7-1: Revenue and Expenses (1/2) <Without Project> Dry Farming without Terrace

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004		
Inflation Index	1.08	1.17	1.25	1.36	1.47	1.59	1.71	1.85	2.00	2.16	2.33	2.52		
Revenue														
1) Gross Value of Agricultural Production	386,662	385,189	902,004	974,165	1,052,098	1,138,265	1,227,167	1,335,340	1,431,367	1,545,877	1,669,547			
Price	350	378	408	441	478	514	555	600	648	700	755			
Change in Price	0	0	0	0	0	0	0	0	0	0	0			
Quantity	1,105	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,210			
(2) Maize	253,632	547,975	591,813	639,158	680,240	745,514	805,557	869,587	939,132	1,014,263	1,095,404			
Price	350	378	408	441	478	514	555	600	648	700	755			
Change in Price	0	0	0	0	0	0	0	0	0	0	0			
Quantity	725	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450			
(3) Cassava	185,166	399,939	431,955	466,512	503,833	544,138	587,870	634,684	685,459	740,285	799,519			
Price	58	82	88	73	79	86	93	100	108	117	125			
Change in Price	0	0	0	0	0	0	0	0	0	0	0			
Quantity	3,175	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350			
(4)	0	0	0	0	0	0	0	0	0	0	0			
Price	0	0	0	0	0	0	0	0	0	0	0			
Change in Price	0	0	0	0	0	0	0	0	0	0	0			
Quantity	0	0	0	0	0	0	0	0	0	0	0			
(5) Albizia, tree	0	0	0	0	0	0	0	0	0	0	0			
Price	0	0	0	0	0	0	0	0	0	0	0			
Change in Price	0	0	0	0	0	0	0	0	0	0	0			
Quantity	0	0	0	0	0	0	0	0	0	0	0			
(6) Albizia, fire	29,160	31,483	34,012	36,733	39,672	42,846	46,273	49,975	53,973	58,231	62,954			
Price	0	0	0	0	0	0	0	0	0	0	0			
Change in Price	0	0	0	0	0	0	0	0	0	0	0			
Quantity	5,832	6,298	6,802	7,347	7,934	8,569	9,255	9,985	10,795	11,658	12,591			
(7) Jack Fruit	0	0	0	0	0	0	0	0	0	0	0			
Price	0	0	0	0	0	0	0	0	0	0	0			
Change in Price	0	0	0	0	0	0	0	0	0	0	0			
Quantity	583	630	680	735	793	857	925	1,000	1,079	1,166	1,259			
Total Revenue	825,520	1,783,122	1,925,772	2,079,834	2,246,221	2,425,918	2,619,892	2,829,591	3,055,958	3,300,435	3,564,479			
2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
2.72	2.94	3.17	3.43	3.70	4.00	4.32	4.66	5.03	5.44	5.87	6.34	6.85	7.40	7.99
1,603,111	1,947,339	2,103,148	2,271,400	2,453,112	2,649,361	2,861,310	3,090,215	3,337,432	3,604,426	3,892,780	4,204,203	4,540,539	4,903,782	
816	881	952	1,028	1,110	1,195	1,285	1,398	1,510	1,631	1,761	1,902	2,055	2,219	
2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,210	2,210	
1,183,036	1,277,679	1,379,884	1,490,285	1,738,268	1,877,330	2,027,516	2,189,718	2,364,895	2,554,087	2,758,414	2,978,087	3,217,414		
816	881	952	1,028	1,110	1,195	1,285	1,398	1,510	1,631	1,761	1,902	2,055	2,219	
1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	
863,481	932,539	1,007,737	1,087,737	1,268,236	1,370,235	1,479,854	1,598,242	1,726,102	1,864,190	2,013,325	2,174,331	2,340,342		
136	147	159	171	185	200	216	233	252	272	294	317	342		
6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	
67,991	73,430	79,304	85,649	92,600	99,300	107,893	116,524	125,846	135,914	146,787	158,530	171,212	184,909	199,702
13,538	14,686	15,861	17,130	18,500	19,960	21,579	23,305	25,169	27,183	29,357	31,706	34,242	36,982	39,940
1,360	1,469	1,686	1,713	1,850	1,998	2,158	2,330	2,517	2,718	2,936	3,171	3,424	3,698	
3,849,627	4,157,598	4,490,205	4,849,422	5,237,376	5,658,366	6,108,895	6,597,585	7,125,332	7,695,423	8,311,057	8,975,941	9,694,017	10,469,538	

Table 7-2: Revenue and Expense (2/2) <Without Project> Dry Farming without Terrace

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	0	1	2	3	4	5	6	7	8	9	10	11
Expenses												
1)Seeds												
Upland Paddy			134,159	144,882	156,483	169,002	182,522	197,124	212,894	229,926	248,920	268,185
Change in price	15,163	32,763	38,203	41,259	44,553	48,124	51,974	56,132	60,823	65,472	70,185	75,012
Maize			60,824	88,180	102,853	111,081	119,958	129,565	139,930	151,125	163,215	176,272
Change in price			6,124	13,227	14,265	15,428	16,662	17,995	20,990	22,659	24,482	26,441
Cassava			0	0	0	0	0	0	0	0	0	0
Change in price			0	0	0	0	0	0	0	0	0	0
Change in price			0	0	0	0	0	0	0	0	0	0
Albizia tree			0	0	0	0	0	0	0	0	0	0
Change in price			0	0	0	0	0	0	0	0	0	0
Jack fruit			0	0	0	0	0	0	0	0	0	0
Change in price			0	0	0	0	0	0	0	0	0	0
change in price			0	0	0	0	0	0	0	0	0	0
2)Fertilizers			233,260	503,885	544,155	587,731	634,750	685,520	740,972	799,602	862,570	932,658
Manure	143,800	314,828	340,122	367,332	387,332	408,719	428,436	452,733	483,731	509,731	539,731	569,731
Chemical	87,460	189,057	204,033	220,399	235,051	256,031	277,074	297,640	319,871	339,871	363,839	393,927
Lime	0	0	0	0	0	0	0	0	0	0	0	0
Lime	0	0	0	0	0	0	0	0	0	0	0	0
3)Pesticide			40,824	88,180	95,234	102,853	111,081	119,958	129,565	139,930	151,125	163,215
Gairan	23,328	50,383	54,420	58,773	63,475	68,553	74,037	79,980	86,357	93,266	100,727	108,727
Batiran	17,496	37,797	40,815	44,080	47,606	51,415	55,528	59,970	64,768	69,949	75,545	81,545
4)Labor Cost	349,920	755,827	816,393	881,597	952,125	1,028,295	1,110,558	1,199,403	1,295,355	1,398,983	1,510,302	1,632,983
Crop and Vegetable	349,920	755,827	816,393	881,597	952,125	1,028,295	1,110,558	1,199,403	1,295,355	1,398,983	1,510,302	1,632,983
Tree	0	0	0	0	0	0	0	0	0	0	0	0
5)Others	58,320	52,985	68,924	73,466	79,344	85,631	92,547	99,950	107,948	116,582	125,909	135,909
Total Expense	744,455	1,545,037	1,668,640	1,802,131	1,946,301	2,102,095	2,270,186	2,451,779	2,647,922	2,859,755	3,088,335	3,335,335
Net Income	81,065	236,086	257,132	277,703	299,919	323,913	349,826	377,812	408,037	440,680	475,934	515,934
	12	13	14	15	16	17	18	19	20	21	22	23
2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
12	13	14	15	16	17	18	19	20	21	22	23	24
289,540	312,811	337,836	364,863	394,052	425,576	459,622	495,392	536,103	578,392	625,311	675,336	729,363
70,710	76,367	82,476	89,075	96,200	103,897	112,208	121,185	130,830	141,350	152,658	164,871	178,060
190,374	205,604	222,052	239,816	259,001	279,721	302,059	326,257	352,368	380,058	411,002	443,883	479,393
28,556	30,841	33,308	35,972	38,850	41,958	45,315	48,940	52,855	57,084	61,650	66,582	71,909
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
1,067,849	1,174,877	1,268,888	1,370,377	1,480,007	1,598,408	1,726,280	1,864,383	2,013,533	2,174,615	2,346,585	2,536,472	2,739,390
573,306	754,296	793,042	858,486	925,005	995,005	1,078,925	1,165,239	1,253,498	1,359,135	1,467,968	1,585,295	1,712,119
407,944	440,579	475,825	513,891	555,000	599,403	647,355	699,144	755,078	815,481	880,720	951,177	1,027,271
0	0	0	0	0	0	0	0	0	0	0	0	0
190,374	205,604	222,052	239,816	259,001	279,721	302,059	326,257	352,368	380,058	411,002	443,883	479,393
108,785	117,482	126,887	137,038	148,001	159,941	172,828	186,438	201,353	217,462	234,859	253,847	273,939
81,589	88,116	95,165	102,778	111,001	119,829	129,471	139,829	151,015	163,036	176,144	190,235	205,454
1,831,774	1,762,318	1,803,301	2,055,566	2,220,011	2,397,612	2,589,421	2,786,574	3,020,300	3,261,924	3,522,878	3,804,708	4,109,085
1,831,774	1,762,318	1,803,301	2,055,566	2,220,011	2,397,612	2,589,421	2,786,574	3,020,300	3,261,924	3,522,878	3,804,708	4,109,085
0	0	0	0	0	0	0	0	0	0	0	0	0
135,931	146,860	158,608	171,297	185,001	199,801	215,785	233,640	251,692	271,827	293,573	317,059	342,424
0,335,619	3,602,468	3,890,665	4,201,919	4,538,072	4,901,118	5,293,297	5,716,664	6,173,997	6,667,917	7,201,350	7,777,458	8,399,655
514,609	555,100	595,560	647,503	699,393	755,248	815,668	880,921	951,395	1,027,506	1,109,707	1,198,483	1,294,362

Table 8: Working Capital <Without Project> Dry Farming without Terrace

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Inflation Index	1.08	1.17	1.26	1.36	1.47	1.59	1.71	1.85	2.00	2.16	2.33	2.52
Operational Expenses excluding Labor & Others	0	336,215	726,224	784,322	847,958	914,333	988,020	1,067,861	1,152,426	1,244,820	1,344,190	1,451,725
Working Capital required	0	235,350	508,357	549,025	592,947	640,383	691,614	746,943	806,698	871,234	940,933	1,016,208
Change in Working Capital	0	235,350	273,006	40,669	43,322	47,436	51,231	55,329	59,755	64,536	69,699	75,275

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Inflation Index	1.08	1.17	1.26	1.36	1.47	1.59	1.71	1.85	2.00	2.16	2.33	2.52	2.72	2.94	3.17
Operational Expenses excluding Labor & Others	0	336,215	726,224	784,322	847,958	914,333	988,020	1,067,861	1,152,426	1,244,820	1,344,190	1,451,725	1,567,863	1,693,292	1,828,755
Working Capital required	0	235,350	508,357	549,025	592,947	640,383	691,614	746,943	806,698	871,234	940,933	1,016,208	1,097,504	1,185,304	1,280,128
Change in Working Capital	0	235,350	273,006	40,669	43,322	47,436	51,231	55,329	59,755	64,536	69,699	75,275	81,297	87,800	94,824

Table 9 : Financial Cash Flow Statement per Ha <Without Project> Dry Farming without Terrace

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Inflation Index	1.08	1.17	1.26	1.36	1.47	1.59	1.71	1.85	2.00	2.16	2.33	2.52
Receipt	0	825,520	1,783,122	1,926,772	2,079,834	2,246,221	2,425,918	2,619,992	2,829,591	3,055,958	3,300,435	3,564,470
Expenditure	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Expenses	0	0	0	0	0	0	0	0	0	0	0	0
Operating Expenses	744,455	1,545,037	1,668,640	1,802,131	1,946,301	2,102,005	2,270,165	2,451,779	2,647,922	2,859,755	3,088,536	3,335,619
Change in Working Capital	235,350	273,006	40,669	43,322	47,436	51,231	55,329	59,755	64,536	69,699	75,275	81,297
In-Use Value of Land	0	0	0	0	0	0	0	0	0	0	0	0
Net Present Value	960,254	960,254	960,254	960,254	960,254	960,254	960,254	960,254	960,254	960,254	960,254	960,254

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Inflation Index	1.08	1.17	1.26	1.36	1.47	1.59	1.71	1.85	2.00	2.16	2.33	2.52	2.72	2.94	3.17
Receipt	0	825,520	1,783,122	1,926,772	2,079,834	2,246,221	2,425,918	2,619,992	2,829,591	3,055,958	3,300,435	3,564,470	3,849,627	4,157,598	4,490,205
Expenditure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Expenses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operating Expenses	744,455	1,545,037	1,668,640	1,802,131	1,946,301	2,102,005	2,270,165	2,451,779	2,647,922	2,859,755	3,088,536	3,335,619	3,602,468	3,890,665	4,201,919
Change in Working Capital	235,350	273,006	40,669	43,322	47,436	51,231	55,329	59,755	64,536	69,699	75,275	81,297	87,800	94,824	
In-Use Value of Land	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Present Value	960,254	960,254	960,254	960,254	960,254	960,254	960,254	960,254	960,254	960,254	960,254	960,254	960,254	960,254	960,254

Table 10: Incremental Cash Flow Table

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	0	1	2	3	4	5	6	7	8	9	10	11
Inflation Index	1.08	1.17	1.26	1.36	1.47	1.59	1.71	1.85	2.00	2.15	2.33	2.52
Net Cash Flow(With Case)	0	-1,410,309	-606,733	-9,952	211,304	1,301,134	1,532,690	2,275,194	3,120,017	3,876,594	5,410,767	4,415,825
Net Cash Flow(Without Case)	0	-154,286	-34,921	216,464	233,731	252,463	272,632	294,497	318,056	343,501	370,881	400,560
Incremental Cash Flow(Nominal)	0	-1,256,023	-571,612	-225,416	-22,477	1,048,651	1,260,008	1,980,698	2,801,960	3,533,093	5,039,786	4,015,166
Incremental Cash Flow(Real)	0	-1,076,838	-453,923	-166,422	-15,257	660,828	735,203	1,070,109	1,401,678	1,648,478	2,161,478	1,594,978
Marginal Net Present Value	6,225,445											

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	2.72	2.94	3.17	3.43	3.70	4.00	4.32	4.66	5.03	5.44	5.87	6.34	6.85	7.40	7.99
	4,300,343	5,273,981	5,695,900	7,950,192	6,488,287	7,201,094	6,735,862	7,274,753	10,499,496	8,256,337	8,202,149	9,397,221	10,636,939	15,427,204	3,361,458
	432,712	457,329	504,716	545,033	588,700	635,796	686,680	741,593	800,920	864,894	934,192	1,008,929	1,089,643	1,176,615	2,984,799
	4,468,231	4,806,652	5,191,184	7,405,099	5,899,597	6,565,297	6,049,222	6,532,160	5,688,576	7,391,943	8,267,956	8,869,252	9,599,355	14,250,389	376,659
	1,642,859	1,636,478	1,636,478	2,161,478	1,594,478	1,942,959	1,401,678	1,401,678	1,926,678	1,559,678	1,468,159	1,401,678	1,401,678	1,926,678	47,153

2. チェックダムの予想増分純現在価値

Financial Analysis on Check Dam

Table 1-1 : Parameter Table (1/2)

Item	(per Ha)		
Annual Benefits and Cost	Base	Total	Total
Item	Year	Value	Value
Price	Quantity	(Fish farming)	(Paddy)
(Rp)	(kg)	(Rp)	(Rp)
Economic Indicator			
Domestic Inflation Rate			
Foreign Inflation Rate			
Interest Rate (Lending)			
Interest Rate (Saving)			
Exchange Rate per US\$ (Base Year 1992)			
Discount Rate			
Total Investment			
Working Capital			
With Project			
Annual Benefits and Cost			
Benefit			
Upland Paddy	300	10,800	3,240,000
Fish	2,800	2,000	4,000,000
(notice) Total Benefits			4,000,000
Fish will be fed from 2nd to 4th Year.			4,000,000
Upland paddy will be cultivated from 4 th year.			
(Cost)			
(Seeds)			
Upland Paddy	850	40	26,000
Fish	4,000	48	192,000
(cups)			
[Fertilizers]			
Chemical	300	720	216,000
[Fish Feeds]			
Dedak	3,000	150	450,000
Pellet	800	600	480,000
[Pesticide]			
Cairan	20,000	2	40,000
Butiran	3,000	0	0
[Labor]			
Labor Cost			
Crop	3,000	150	450,000
Fish Farmin	3,000	100	300,000
[Others]			
Agricultural Equipment			50,000
			1,422,000

Table 1-2 : Parameter Table (2/2) Construction Cost

CHECK DAM	Quantity	Unit Price	Total Cost
Land compensation	m ²	(Rp)	(Rp)
Land compensation	4,000	1,000	4,000,000
Stone	11,000	3,300,000	36,300,000
Sand	50	25,000	1,250,000
Cement	500	5,500	2,750,000
Terras (type of cement)	200	15,000	3,000,000
Lias	50	35,000	1,750,000
Timber	0	250,000	60,000
Board	200	2,000	400,000
Bamboo	30	1,500	45,000
Equipment			361,000
Others			1,600,000
Surveyor	2	43,000	86,000
Skilled laborer	180	5,000	900,000
Non-skilled laborer	4,700	3,000	14,100,000
Maintenance			250,000
Supervision			400,000
Social engineering			100,000
Check Dam Total			34,604,000

SMALL CHECK DAM	Quantity	Unit Price	Total Cost
Land compensation	m ²	(Rp)	(Rp)
Land compensation	375	1,000	375,000
Stone	115	11,000	1,265,000
Wire	480	3,000	1,440,000
Thin wire	10	3,500	35,000
Palm fiber	160	500	80,000
Bamboo	7	1,500	10,500
Plastic ropca	54	1,500	81,000
Equipment			55,000
Skilled laborer	103	5,000	515,000
Non-skilled laborer	256	3,000	768,000
Supervisor			100,000
Social engineering			75,000
Small Check Dam Total			4,865,500

Table 3 : Revenue and Expenses (per Ha)

Financial Analysis on Check Dam

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Infiltion Index	1.08	1.17	1.26	1.35	1.47	1.59	1.71	1.85	2.00	2.16	2.33	2.52	2.72	2.94	3.17
Revenue	0	0	0	5,441,956	7,464,187	5,141,473	5,552,791	5,997,014	3,476,775	6,394,917	7,354,510	8,356,871	8,811,581	9,516,507	10,277,822
Fish Farming	0	0	0	5,441,956	5,277,312	5,141,473	5,552,791	5,997,014	3,476,775	6,394,917	7,354,510	8,356,871	8,811,581	9,516,507	10,277,822
Paddy Cultivation	0	0	1,791,310	1,974,615	383,085	1,240,946	1,340,211	1,447,427	1,563,222	1,688,273	1,823,342	1,969,209	2,126,746	2,296,885	2,480,636
Expenses															
Fish Farming															
Seeds			241,865	281,214											
Fertilizer			1,171,532	1,285,265											
Seeds			377,914	408,147											
Labor Cost															
Paddy Cultivation															
Seeds			12,734	41,259	44,559	48,124	44,559	48,124	51,974	56,132	60,623	65,472	70,710	76,367	82,476
Chemical			185,782	342,765	370,186	399,801	431,785	466,328	503,674	543,925	587,439	634,434	684,434	738,434	795,169
Pesticide			19,591	63,475	83,553	74,037	78,860	86,357	95,466	105,516	116,622	127,737	138,851	150,965	163,079
Labor Cost			226,399	714,093	771,221	832,919	899,552	971,516	1,048,238	1,131,177	1,223,831	1,321,737	1,421,737	1,521,737	1,621,737
Equipment			24,489	79,344	85,691	92,547	99,950	107,848	116,282	125,309	134,822	144,822	155,311	166,280	177,737
Net Income per ha	0	0	-1,791,310	3,507,341	7,081,182	3,900,537	4,212,580	4,545,586	4,913,553	5,396,628	5,731,168	6,189,662	6,684,895	7,219,622	7,797,192
Net Income per 0.4 ha	0	0	-716,524	1,402,936	2,832,473	1,560,215	1,656,032	1,819,835	1,965,421	2,122,555	2,292,467	2,475,865	2,673,934	2,887,849	3,118,877
Net Income per 0.035 ha	0	0	-62,698	122,751	247,841	136,919	147,440	159,236	171,974	185,732	200,591	216,038	233,969	252,667	272,902
11,100,054	11,988,058	12,947,103	13,982,871	15,101,501	16,309,621	17,614,391	19,023,542	20,545,426	22,189,060	23,964,184	0	0	0	0	0
11,100,054	11,988,058	12,947,103	13,982,871	15,101,501	16,309,621	17,614,391	19,023,542	20,545,426	22,189,060	23,964,184	0	0	0	0	0
2,379,087	2,893,414	3,124,887	3,374,878	3,644,868	3,936,453	4,251,375	4,591,485	4,958,803	5,355,508	5,783,948	0	0	0	0	0
89,075	96,200	102,897	112,208	121,185	130,880	141,350	152,658	164,871	178,060	192,302					
740,004	799,204	863,140	932,191	1,006,767	1,087,308	1,174,293	1,266,236	1,363,695	1,479,271	1,597,612					
137,038	148,001	159,841	172,628	186,438	201,353	217,462	234,859	253,647	273,939	295,854					
1,541,674	1,665,008	1,798,209	1,942,065	2,097,431	2,265,225	2,446,443	2,641,159	2,853,531	3,081,814	3,328,359					
171,297	185,001	199,801	215,785	233,048	251,662	271,827	293,573	317,059	342,424	369,618					
8,420,967	9,094,644	9,822,216	10,607,993	11,456,633	12,373,163	13,363,016	14,422,058	15,566,622	16,833,552	18,180,236					
3,368,387	3,637,853	3,923,885	4,243,197	4,582,853	4,949,265	5,345,207	5,772,923	6,234,643	6,733,421	7,212,034					
294,734	318,313	343,778	371,280	400,682	433,061	467,706	505,122	545,532	589,174	636,308					

Table 4 : Working Capital

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	
Working Capital required per Ha	0	0	1,791,310	1,934,615	162,906	526,842	568,990	614,509	653,670	716,763	774,104	836,032	902,915	975,148	1,052,150	
Change in Working Capital per Ha	0	0	696,959	677,115	58,312	184,355	199,146	215,078	232,284	250,867	270,936	292,611	316,020	341,302	368,605	
Change in Working Capital per 0.4 Ha	0	0	278,783	270,846	23,325	73,742	79,658	86,031	92,914	100,347	108,374	116,844	126,408	136,521	147,442	
Change in Working Capital per 0.033 Ha	0	0	21,944	1,758	-21,707	4,562	516	6,558	6,802	7,433	8,024	8,670	9,354	10,113	10,922	
Inflation Index	1.08	1.17	1.28	1.38	1.47	1.59	1.71	1.85	2.00	2.18	2.33	2.52	2.72	2.84	3.17	
Operating Expenses per Ha excluding Labor Cost	0	0	1,791,310	1,934,615	162,906	526,842	568,990	614,509	653,670	716,763	774,104	836,032	902,915	975,148	1,052,150	
Working Capital required per Ha	0	0	696,959	677,115	58,312	184,355	199,146	215,078	232,284	250,867	270,936	292,611	316,020	341,302	368,605	
Change in Working Capital per Ha	0	0	696,959	50,157	-629,203	127,483	14,752	15,932	17,206	18,583	20,059	21,675	22,409	25,282	27,304	
Change in Working Capital per 0.4 Ha	0	0	278,783	20,052	-249,891	50,992	5,901	6,373	6,882	7,433	8,024	8,670	9,354	10,113	10,922	
Change in Working Capital per 0.033 Ha	0	0	21,944	1,758	-21,707	4,562	516	6,558	6,802	7,433	8,024	8,670	9,354	10,113	10,922	
2003	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019					
15	16	17	18	19	20	21	22	23	24	25	26					
3.43	3.70	4.00	4.32	4.66	5.03	5.44	5.87	6.34	6.85	7.40	7.99					
1,137,413	1,228,406	1,326,678	1,432,813	1,547,438	1,671,233	1,804,931	1,949,326	2,105,272	2,272,604	2,455,599	0					
398,055	429,942	464,337	501,484	541,603	584,931	631,726	682,264	736,845	795,793	859,456	0					
29,488	31,848	34,395	37,147	40,119	43,328	46,795	50,538	54,581	58,948	63,663	-859,456					
11,782	12,738	13,758	14,859	16,048	17,327	18,718	20,215	21,822	23,549	25,485	-243,782					
1,032	1,115	1,204	1,300	1,404	1,516	1,638	1,769	1,910	2,063	2,228	-30,081					

Table 5-2 : Net Cash Flow Table for Small Check Dam

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Inflation Index	1.08	1.17	1.25	1.35	1.47	1.59	1.71	1.85	2.00	2.18	2.33	2.52	2.72	2.94	3.17
Receipt															
Revenue from 0.045 ha of land		0	0	130,468	261,247	179,952	194,348	209,895	226,687	244,822	254,408	285,560	308,405	333,072	359,724
In-Use Value of Land															
Expenditure															
Investment															
Expense for 0.035 ha of land		4,865,500		82,586	67,712	43,433	46,907	50,360	54,713	59,080	63,817	68,922	74,436	80,331	86,822
Change in Working Capital		0		21,344	-21,707	4,462	516	558	602	650	702	759	819	885	955
In-Use Value of Land															
Net Present Value per 0.05 ha (nominal)	0	-4,865,500	-84,539	121,001	269,548	132,057	146,924	158,578	171,372	185,082	199,888	215,880	233,150	251,802	271,945
Net Present Value per 0.05 ha (real)	0	-4,171,382	-67,190	88,940	183,450	81,218	85,729	85,729	85,729	85,729	85,729	85,729	85,729	85,729	85,729
Net Present Value per 0.05 ha															

-2,164,623

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Year	15	16	17	18	19	20	21	22	23	24	25	26
Inflation Index	3.43	3.70	4.00	4.32	4.66	5.03	5.44	5.87	6.34	6.85	7.40	7.99
Receipt												
Revenue from 0.045 ha of land		388,502	419,582	453,149	489,401	528,553	570,837	616,504	665,824	719,090	775,617	838,746
In-Use Value of Land												
Expenditure												
Investment												
Expense for 0.035 ha of land		93,788	101,269	109,371	118,121	127,570	137,775	148,788	160,702	173,558	187,443	202,438
Change in Working Capital		1,032	1,115	1,204	1,300	1,404	1,516	1,638	1,769	1,910	2,063	2,228
In-Use Value of Land												
Net Present Value per 0.05 ha (nominal)	293,702	317,158	342,574	369,980	399,576	431,544	466,068	503,159	543,621	587,111	634,040	681,081
Net Present Value per 0.05 ha (real)	85,729	85,729	85,729	85,729	85,729	85,729	85,729	85,729	85,729	85,729	85,729	85,729
Net Present Value per 0.05 ha												

3. デモプロの予想増分純現在価値

Financial Analysis 1 for Demonstration Plot

Change from <Without Project> Dry Farming without Terrace
to <With Project> Demonstration Plot with Bench Terrace

Table 1: Parameter Table

Item	Annual Benefits & Costs from Cropping		With Project		Demonstration Plot with Bench Terrace		Without Project		Dry Farming without Terrace		
	Price	Base Year	Quantity	Base	Quantity	Base	Quantity	Base	Quantity	Base	
Economic Indicator	(Rp)	(Rp)	(kg)	(kg)	(Rp)	(Rp)	(kg)	(kg)	(Rp)	(Rp)	
Domestic Inflation Rate	8.0%		300	1,300	15.0%	448,800	Upland Paddy	300	2,210	0.0%	663,000
Foreign Inflation Rate	9.0%		300	2,385	15.0%	884,825	Maize	300	1,450	0.0%	435,000
Interest Rate (Lending)			1,000	1,450	15.0%	500,250	Cassava	50	6,350	0.0%	317,500
Interest Rate (Saving)			25,000	8,000	15.0%	747,500	Albizia, tree	200,000	0.00	0.0%	0
Exchange Rate per US\$ (Base Year 1982)	2.050		5,000	16,000		80,000	Albizia, fire	5,000	0.00	0.0%	0
			500	0		0	Jack Fruit	500	0	0.0%	0
			500	2,500		1,350,000	Jack Fruit	0	0	0.0%	0
Discount Rate	10.0%										
Total Investment	9.0%										
Farmers' View Point											
Investment Cost											
Terrace and Others (1st Year)											
Maintenance Cost (2nd Yr) (after 2nd yr)											
Maintenance of Existing Terrace											
Working Capital											
With Project											
Without Project											
In-Use Value of Land											
Benefits and Costs from Animal Husbandry											
Unit Price											
No. of Sheep/Head											
Sales of Sheep	150,000	3.8	570,000	3,000	90	270,000	[Labor] Labor Cost	3,000	200	600,000	
Purchase of Sheep	70,000	3.8	266,000	3,000	5	15,000	Crop and Vegetable	3,000	0	0	
Labor Cost	3,000	1.19	3,570	3,000	40.0%	of costs	Tree Maintenance and Harvesting	3,000	40.0%	of costs	
Gross	20	3,420	68,400	3,420		of costs	[Others] Agricultural Equipment			50,000	
Total Expenditure											
Total Expenditure											

Table 3-1: Revenue and Expense (1/2) (With Project) Demonstration Plot with Bench Terrace

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Inflation Index	1.08	1.17	1.26	1.36	1.47	1.59	1.71	1.85	2.00	2.19	2.33	2.52	2.72	2.94	3.17	3.43	3.70
Revenue																	
1) Gross Value of Production	238,820	515,852	557,120	604,555	656,014	718,521	794,048	896,554	982,278	1,045,740	1,129,391	1,219,751	1,317,331	1,422,718	1,536,535	1,659,458	
Price	350	378	408	441	476	514	555	600	648	699	753	811	871	932	1,000	1,110	
Quantity	683	1,365	1,365	1,372	1,378	1,383	1,430	1,495	1,495	1,495	1,495	1,495	1,495	1,495	1,495	1,495	
(2) Red Beans	471,211	1,017,816	1,095,241	1,192,534	1,294,366	1,417,697	1,568,720	1,765,958	1,910,457	2,063,336	2,225,372	2,406,593	2,599,338	2,807,132	3,031,702	3,274,238	
Price	350	378	408	441	476	514	555	600	648	699	753	811	871	932	1,000	1,110	
Quantity	1,347	2,693	2,693	2,706	2,719	2,757	2,822	2,950	2,950	2,950	2,950	2,950	2,950	2,950	2,950	2,950	
(3) Maise	266,377	575,373	621,403	674,311	731,708	801,427	885,670	1,000,802	1,080,002	1,166,402	1,259,715	1,360,432	1,469,331	1,586,379	1,712,528	1,850,594	
Price	350	378	408	441	476	514	555	600	648	699	753	811	871	932	1,000	1,110	
Quantity	761	1,523	1,523	1,530	1,537	1,559	1,595	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	
(4) Soy Beans	392,034	859,753	924,534	1,007,592	1,092,385	1,197,535	1,323,415	1,494,256	1,613,716	1,742,900	1,882,312	2,032,919	2,193,552	2,371,196	2,560,882	2,765,753	
Price	1,196	1,280	1,360	1,469	1,567	1,714	1,851	1,999	2,159	2,332	2,518	2,720	2,937	3,172	3,425	3,700	
Quantity	341	683	683	683	683	689	715	748	748	748	748	748	748	748	748	748	
(5) Albizia tree	29,160	31,493	34,012	38,731	42,846	48,273	49,975	49,975	52,973	58,231	62,954	67,954	73,430	79,304	85,649	92,500	
Price	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Quantity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
(6) Albizia fire	5,832	6,230	6,802	7,347	7,934	8,589	9,255	9,995	10,795	11,658	12,551	13,538	14,608	15,851	17,130	18,500	
Price	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Quantity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
(7) Jack Fruit	583	630	680	735	793	857	925	1,000	1,079	1,165	1,259	1,360	1,469	1,586	1,713	1,850	
Price	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Quantity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
(8) Avocado	583	630	680	735	793	857	925	1,000	1,079	1,165	1,259	1,360	1,469	1,586	1,713	1,850	
Price	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Quantity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Revenue	1,374,442	2,968,795	3,206,288	3,479,242	3,997,068	4,392,032	5,958,052	7,158,785	8,271,219	12,197,212	12,972,212	14,647,550	16,419,354	18,257,803	20,153,133	22,100,173	

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
17	1,792,215	1,995,592	2,090,439	2,257,874	2,438,288	2,633,351	2,844,620	3,071,541	3,317,264	
18	1,190	1,425	1,398	1,570	1,691	1,761	1,902	2,055	2,219	
19	1,495	1,495	1,495	1,495	1,495	1,495	1,495	1,495	1,495	
20	3,336,178	3,819,072	4,124,528	4,454,565	4,810,831	5,193,805	5,611,469	6,060,337	6,545,218	
21	1,198	1,295	1,398	1,510	1,631	1,761	1,902	2,055	2,219	
22	2,950	2,950	2,950	2,950	2,950	2,950	2,950	2,950	2,950	
23	1,499,009	2,158,979	2,341,644	2,518,175	2,710,639	2,907,700	3,172,175	3,423,590	3,708,028	
24	1,199	1,328	1,510	1,631	1,761	1,902	2,055	2,219		
25	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	1,668	
26	2,957,925	3,225,987	3,484,055	3,762,791	4,063,814	4,398,917	4,740,033	5,119,235	5,528,718	
27	1,395	1,461	1,534	1,611	1,691	1,776	1,866	1,960	2,059	
28	743	748	748	748	748	748	748	748	748	
29	99,900	107,833	116,524	125,846	135,914	146,767	158,530	171,212	184,909	
30	0	0	0	0	0	0	0	0	0	
31	0	0	0	0	0	0	0	0	0	
32	19,386	21,979	23,305	25,169	27,183	29,357	31,705	34,242	36,982	
33	0	0	0	0	0	0	0	0	0	
34	1,998	2,158	2,330	2,517	2,718	2,938	3,171	3,424	3,698	
35	0	0	0	0	0	0	0	0	0	
36	4,995,024	4,315,701	4,660,957	5,030,834	5,436,540	5,871,464	6,341,181	6,848,475	7,396,353	
37	1,598	2,158	2,330	2,517	2,718	2,938	3,171	3,424	3,698	
38	2,500	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	
39	15,309,450	15,455,281	16,691,703	18,074,407	19,469,203	21,026,739	22,708,878	24,525,558	26,482,530	

Table 3-2: Revenue and Expense(2/2) <With Projects> Demonstration Plot with Bench Terrace

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Expense	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1)Seeds																	
Upland Paddy		371,207	385,713	382,570	391,576	422,902	473,872	493,273	532,735	575,354	641,362	646,274	724,780	762,762	845,383	913,014	1,023,055
change in price		15,163	32,753	35,373	38,203	41,259	44,559	48,124	51,874	56,132	60,623	65,472	70,710	76,367	82,476	89,915	98,200
Red Beans in price		81,649	176,369	190,468	205,705	222,162	239,955	259,130	279,861	302,249	326,423	352,544	380,747	411,207	444,104	479,632	518,003
change in price		30,818	66,135	71,426	77,140	83,311	89,976	97,174	104,848	113,344	122,411	132,204	142,760	154,203	166,539	178,852	194,251
Soybeans in price		27,994	60,466	65,303	70,528	76,170	82,264	88,845	95,952	103,628	111,919	120,872	130,542	140,985	152,254	164,445	177,601
change in price		11,884	0	0	0	0	0	0	0	0	0	25,162	0	0	0	0	37,000
Jack Peas in price		204,120															
change in price																	
2)Fertilizers		395,576	858,804	925,132	999,143	1,073,075	1,155,401	1,258,623	1,359,123	1,458,059	1,585,515	1,712,358	1,849,344	1,997,282	2,157,075	2,325,541	2,516,012
Manure		281,600	526,886	630,244	734,652	813,407	888,912	973,062	1,038,002	1,103,452	1,195,855	1,253,095	1,339,812	1,468,387	1,586,065	1,712,971	1,850,009
Chemical		134,976	246,748	244,688	264,479	259,677	308,489	333,193	359,820	388,600	435,855	459,271	489,532	528,895	570,990	616,570	666,003
Lime		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3)Pesticide		81,648	176,369	190,468	205,705	222,162	239,955	259,130	279,861	302,249	326,423	352,544	380,747	411,207	444,104	479,632	518,003
Cairan		45,658	100,777	109,639	117,546	125,950	137,106	148,074	159,320	172,714	186,331	201,454	217,470	234,375	253,724	274,076	294,900
Butiran		34,992	75,593	81,829	88,160	95,212	102,829	111,058	119,940	129,535	139,838	151,090	163,177	176,232	190,330	205,547	222,301
4)Labor Cost		174,960	340,122	368,965	399,363	460,033	510,771	566,975	622,470	736,888	847,543	959,173	1,071,590	1,186,289	1,307,521	1,435,339	1,569,556
Crop & Vegetable		157,484	340,122	367,332	396,719	428,458	462,733	499,751	539,731	562,910	591,543	679,906	734,298	793,642	856,486	925,005	1,000,005
Tree		17,476	0	1,633	2,645	31,579	68,039	86,224	122,739	164,078	216,003	210,267	206,691	223,247	241,035	320,336	308,552
5)Others		58,320	62,986	68,024	73,466	79,344	85,591	92,547	99,350	107,846	116,582	125,909	135,881	146,860	158,608	171,237	185,001
Total Expense		1,082,711	1,771,785	1,915,160	2,069,255	2,261,518	2,495,871	2,689,357	2,934,339	3,200,606	3,487,458	3,777,255	4,031,642	4,354,390	4,702,741	5,126,314	5,550,027
Net Income		291,731	1,197,010	1,431,138	1,410,037	3,733,350	2,496,421	3,286,095	4,224,447	5,070,613	8,699,753	5,870,295	6,387,512	6,888,513	7,450,394	12,722,792	2,825,390
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	20	21	22	23	24	25	26	
1,084,993	1,150,134	1,242,145	1,341,517	1,503,203	1,554,745	1,688,925	1,895,119	1,971,128									
101,897	112,208	121,185	130,860	141,360	152,658	164,971	178,060	192,305									
569,443	604,198	652,534	704,747	761,116	822,005	887,765	966,787	1,035,489									
209,791	226,574	244,700	264,276	285,418	308,252	332,912	359,545	388,309									
191,809	207,154	223,726	241,624	260,954	281,810	304,377	328,727	355,025									
0	0	0	0	0	0	0	0	0									
54,365																	
2,717,293	2,934,877	3,169,451	3,483,007	3,686,847	3,932,935	4,312,003	4,656,983	5,029,520									
1,388,010	2,157,851	2,330,479	2,516,917	2,718,270	2,835,732	3,170,590	3,424,238	3,698,177									
719,284	776,828	836,972	906,090	978,577	1,056,663	1,141,413	1,232,728	1,331,344									
558,443	604,198	652,534	704,747	761,116	822,005	887,765	966,787	1,035,489									
319,582	345,235	372,677	402,707	434,923	469,717	507,294	547,876	591,708									
239,761	258,942	279,657	302,080	326,192	352,268	380,471	410,589	443,781									
1,382,662	1,480,223	1,594,641	1,736,305	1,902,444	1,845,603	2,101,467	2,289,585	2,500,588									
1,076,367	1,164,239	1,232,458	1,339,138	1,467,366	1,526,235	1,712,119	1,949,088	1,937,015									
104,295	124,984	136,193	147,169	158,079	169,368	181,348	194,037	207,572									
193,801	215,785	233,016	251,652	271,827	293,573	317,059	342,454	369,818									
5,924,999	6,335,018	6,841,819	7,477,257	8,075,437	8,618,721	9,308,219	10,062,877	10,966,343									
9,005,351	9,120,263	9,849,684	10,597,150	11,303,765	12,408,017	13,400,659	14,472,711	25,855,987									

Table 4: Investment and Maintenance Schedule <With Project> Demonstration Plot with Bench Terrace

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Inflation Index	1.08	1.17	1.25	1.35	1.47	1.59	1.71	1.85	2.00	2.16	2.33	2.52	2.72
Terrace and Others (1st Year) Investment	0	1	2	3	4	5	6	7	8	9	10	11	12
Terrace and Others (1st Year) Investment	606,528	606,528	606,528	606,528	606,528	606,528	606,528	606,528	606,528	606,528	606,528	606,528	606,528
Total Annual Investment	131,010	131,010	131,010	131,010	131,010	131,010	131,010	131,010	131,010	131,010	131,010	131,010	131,010
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019				
17	18	19	20	21	22	23	24	25	26				
4.00	4.32	4.66	5.00	5.44	5.87	6.34	6.85	7.40	7.99				
207,793	224,416	242,370	261,759	282,700	305,316	329,741	355,121	384,610	0				
207,793	224,416	242,370	261,759	282,700	305,316	329,741	355,121	384,610	0				

Table 5: Working Capital <With Project> Demonstration Plot with Bench Terrace

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Inflation Index	1.08	1.17	1.25	1.35	1.47	1.59	1.71	1.85	2.00	2.16	2.33	2.52	2.72
Operations Expenditure excluding Labour Cost	0	849,431	1,398,677	1,478,171	1,556,425	1,724,139	1,879,268	2,011,036	2,171,919	2,345,672	2,533,325	2,751,174	2,954,871
Working Capital required	0	297,301	479,037	517,360	558,749	603,449	657,723	703,662	760,171	820,485	886,664	956,411	1,034,205
Change in Working Capital	0	297,301	181,736	38,323	41,388	44,700	54,274	46,140	56,309	60,814	65,679	79,747	67,784
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019				
17	18	19	20	21	22	23	24	25	26				
4.00	4.32	4.66	5.00	5.44	5.87	6.34	6.85	7.40	7.99				
4,341,675	4,689,009	5,064,130	5,469,260	5,961,167	6,379,345	6,839,693	7,440,868	8,036,138	0				
1,519,386	1,641,153	1,772,445	1,914,241	2,068,408	2,232,771	2,411,393	2,604,304	2,812,548	0				
99,612	121,567	131,292	141,796	172,187	145,363	178,622	192,911	208,344	-2,812,648				

Table 6: Financial Cash Flow Statement per Ha (With Project) Demonstration Plot with Bench Terrace

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Inflation Index	1.08	1.17	1.26	1.36	1.47	1.59	1.71	1.85	2.00	2.16	2.33	2.52	2.72	2.94	3.17	3.43	3.70
Receipt	0	1,374,442	2,958,795	3,206,298	3,479,292	5,997,068	4,992,082	5,958,052	7,158,785	8,271,219	12,197,212	9,647,550	10,419,354	11,252,903	12,153,135	17,971,706	14,175,417
Gross Value of Agricultural Production	0	1,374,442	2,958,795	3,206,298	3,479,292	5,997,068	4,992,082	5,958,052	7,158,785	8,271,219	12,197,212	9,647,550	10,419,354	11,252,903	12,153,135	17,971,706	14,175,417
In-Use Value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Expenditure	0	606,528	131,010	70,745	75,405	82,517	89,119	96,248	103,948	112,264	121,245	130,945	141,420	152,734	164,953	178,149	192,401
Investment	0	1,082,711	1,771,765	1,915,160	2,097,225	2,203,518	2,493,671	2,693,957	2,934,339	3,200,868	3,497,458	3,777,255	4,071,842	4,384,380	4,702,741	5,132,914	5,550,097
Maintenance	0	297,301	151,736	38,323	41,393	44,789	59,274	46,140	55,309	60,814	65,879	79,747	67,794	82,736	89,355	95,504	117,174
Operating Expense	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Change in Working Capital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
In-Use Value of Land	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Present Value	13,465,502	13,465,502	13,465,502	13,465,502	13,465,502	13,465,502	13,465,502	13,465,502	13,465,502	13,465,502	13,465,502	13,465,502	13,465,502	13,465,502	13,465,502	13,465,502	13,465,502

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Net Present Value	15,309,450	15,455,281	16,891,703	25,074,407	19,469,203	21,026,739	22,703,878	24,525,568	36,842,530	0

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Net Present Value	297,793	224,415	242,370	261,759	282,700	305,316	329,741	356,121	384,510	0

Table 7-1: Revenue and Expense (1/2) <Without Projects> Dry Farming without Terrace

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Inflation Index	1.08	1.17	1.26	1.36	1.47	1.59	1.71	1.85	2.00	2.16	2.33	2.52	2.72	2.94	3.17	3.43	3.70
Revenue	386,562	386,562	395,139	902,004	974,155	1,052,098	1,136,285	1,227,167	1,325,340	1,431,357	1,545,877	1,669,547	1,803,111	1,947,359	2,103,148	2,271,480	2,453,112
(1) Upland Paddy	350	350	378	408	441	478	514	555	600	648	699	755	816	881	952	1,028	1,110
Price	1.103	1.103	2.210	2.210	2.210	2.210	2.210	2.210	2.210	2.210	2.210	2.210	2.210	2.210	2.210	2.210	2.210
Quantity	253,832	253,832	547,875	931,813	639,158	890,290	745,514	805,135	869,567	939,132	1,014,253	1,095,404	1,163,036	1,277,679	1,379,834	1,490,285	1,608,508
Change in Price	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Change in Quantity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(2) Cassava	185,196	185,196	399,339	411,935	486,512	503,833	544,139	587,670	634,684	685,459	740,295	799,519	863,481	932,159	1,007,164	1,087,777	1,174,756
Price	53	53	88	88	73	79	86	93	100	108	117	126	136	147	159	171	185
Quantity	3,173	3,173	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350
Change in Price	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Change in Quantity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(3) Albizia tree	29,160	29,160	31,493	34,012	36,733	39,872	42,846	46,273	49,975	53,972	58,291	62,954	67,991	73,430	79,204	85,649	92,589
Price	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quantity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Change in Price	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Change in Quantity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(4) Albizia fruit	5,832	5,832	6,299	6,802	7,347	7,934	8,569	9,255	9,995	10,795	11,658	12,591	13,586	14,626	15,861	17,130	18,500
Price	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quantity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Change in Price	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Change in Quantity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(5) Jack Fruit	584	584	630	680	735	793	857	925	1,000	1,079	1,166	1,259	1,350	1,469	1,586	1,713	1,839
Price	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quantity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Change in Price	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Change in Quantity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Revenue	825,520	1,783,122	1,925,772	2,079,834	2,246,221	2,425,918	2,618,992	2,829,591	3,055,958	3,300,435	3,564,470	3,849,627	4,157,598	4,489,422	4,849,422	5,231,376	
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
4.00	4.32	4.66	5.03	5.44	5.87	6.34	6.85	7.40	7.98	8.58	9.20	9.85	10.53	11.24	11.98	12.75	13.55
2,549,361	2,861,310	3,090,215	3,337,432	3,604,425	3,892,780	4,204,203	4,540,579	4,903,782	5,294,811	5,714,664	6,164,351	6,644,884	7,156,274	7,699,529	8,274,660	8,881,687	9,520,620
1,199	1,295	1,398	1,510	1,631	1,761	1,902	2,055	2,218	2,391	2,574	2,768	2,971	3,184	3,407	3,640	3,883	4,136
1,736,288	1,977,330	2,027,516	2,169,718	2,364,895	2,554,087	2,768,414	2,979,087	3,217,414	3,484,214	3,780,687	4,107,934	4,467,067	4,859,100	5,284,133	5,743,166	6,236,200	6,764,233
1,199	1,295	1,398	1,510	1,631	1,761	1,902	2,055	2,218	2,391	2,574	2,768	2,971	3,184	3,407	3,640	3,883	4,136
1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450
1,268,736	1,370,235	1,479,834	1,598,242	1,726,102	1,864,130	2,013,325	2,174,391	2,348,342	2,536,342	2,738,542	2,954,942	3,185,542	3,431,342	3,692,542	3,969,342	4,261,742	4,569,742
200	216	233	252	272	294	317	342	368	394	421	449	478	508	538	568	599	630
6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350
99,990	107,893	116,524	125,845	135,914	146,787	158,530	171,212	184,909	199,702	215,599	232,602	250,719	269,960	290,337	311,860	334,537	358,370
19,980	21,379	22,305	23,169	24,183	25,357	26,600	27,923	29,336	30,839	32,432	34,115	35,888	37,751	39,704	41,747	43,880	46,093
1,998	2,158	2,330	2,517	2,718	2,936	3,171	3,424	3,698	3,988	4,293	4,614	4,951	5,304	5,673	6,058	6,459	6,876
5,656,366	6,108,875	6,597,585	7,125,392	7,695,420	8,311,057	8,975,941	9,690,017	10,461,538	11,291,615	12,182,252	13,135,551	14,153,702	15,239,805	16,396,960	17,628,267	18,936,836	20,324,669

Table 7-2: Revenue and Expense(2/2) <Without Project> Dry Farming without Terrace

Year	Expenses																	
	1993 0	1994 1	1995 2	1996 3	1997 4	1998 5	1999 6	2000 7	2001 8	2002 9	2003 10	2004 11	2005 12	2005 13	2007 14	2008 15	2009 16	
1) Seeds																		
Upland Paddy		62,111	134,159	144,862	156,483	168,002	182,522	197,124	212,654	229,966	248,320	268,185	289,640	312,811	337,836	364,863	394,052	
change in price		15,163	32,752	35,373	38,203	41,259	44,559	48,124	51,974	56,132	60,623	65,472	70,710	75,357	82,476	89,075	96,200	
Maize																		
change in price		40,824	88,180	95,234	102,953	111,081	119,868	129,565	139,930	151,155	163,215	176,272	190,374	205,604	222,052	238,816	259,001	
Cassava		6,124	13,227	14,285	15,428	16,662	17,995	19,495	20,990	22,669	24,462	26,441	28,556	30,841	33,502	35,972	38,850	
change in price																		
change in price																		
Albizia tree																		
change in price																		
Jackfruit																		
change in price																		
change in price																		
change in price																		
2) Fertilizers																		
Sub-total		233,280	503,885	544,196	587,731	634,750	685,530	740,332	798,602	853,570	912,655	1,007,268	1,087,848	1,174,877	1,268,888	1,370,377	1,480,007	
Manure		145,800	314,826	340,122	387,332	396,719	425,759	462,743	499,351	530,771	570,830	627,538	693,816	748,248	812,082	883,588	943,005	
Chemical		87,480	189,059	204,074	220,399	238,031	257,074	277,640	299,851	323,879	349,746	377,736	407,960	440,579	478,580	518,831	558,003	
Lime																		
3) Pesticide																		
Sub-total		49,824	88,180	95,234	102,953	111,081	119,868	129,565	139,930	151,155	163,215	176,272	190,374	205,604	222,052	238,816	259,001	
Cairan		21,328	50,588	54,420	58,773	63,675	68,553	74,037	79,560	86,357	93,266	100,777	108,785	117,488	126,887	137,038	148,001	
Sutiran		17,496	37,711	40,815	44,080	47,606	51,415	55,528	59,970	64,788	69,949	75,545	81,569	88,116	95,155	102,778	111,001	
4) Labor Cost		345,920	755,827	816,293	881,597	952,125	1,028,295	1,110,558	1,199,403	1,295,355	1,398,933	1,510,902	1,631,774	1,762,316	1,903,301	2,055,568	2,220,011	
Crop and Vegetable		343,920	755,827	816,293	881,597	952,125	1,028,295	1,110,558	1,199,403	1,295,355	1,398,933	1,510,902	1,631,774	1,762,316	1,903,301	2,055,568	2,220,011	
Tree																		
5) Others		58,320	62,985	66,024	73,465	79,344	85,691	92,547	99,850	107,946	116,582	125,809	135,881	146,860	158,608	171,297	185,001	
Total Expense		744,455	1,545,037	1,668,440	1,802,131	1,946,301	2,102,005	2,270,166	2,451,779	2,647,932	2,859,755	3,088,536	3,335,615	3,602,468	3,890,585	4,201,919	4,538,072	
Net Income		81,065	238,086	257,132	277,703	295,919	323,913	349,826	377,812	408,637	440,680	475,934	514,009	555,130	599,540	647,503	699,303	

Expenses											
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	20	2019
17	18	19	20	21	22	23	24	25	26		26
425,576	459,622	496,392	536,103	576,992	625,211	675,336	729,363	787,712	845,541	905,390	965,291
103,897	112,208	121,185	130,860	141,350	152,658	164,871	178,060	192,305	207,608	223,971	241,391
279,721	302,099	326,267	352,368	380,598	411,002	443,883	479,393	517,745	558,933	601,419	646,902
41,858	45,315	48,940	52,855	57,084	61,650	66,582	71,909	77,662	83,847	90,471	97,644
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
1,598,408	1,726,390	1,884,383	2,013,533	2,174,816	2,348,585	2,536,472	2,739,390	2,958,561	3,194,088	3,447,071	3,718,614
999,006	1,078,922	1,185,239	1,256,456	1,353,135	1,467,696	1,586,285	1,712,119	1,849,088	2,000,201	2,166,544	2,349,101
598,403	647,355	693,144	755,075	813,481	880,720	951,177	1,027,271	1,109,483	1,200,608	1,302,751	1,418,001
229,721	302,099	326,267	352,368	380,598	411,002	443,883	479,393	517,745	558,933	601,419	646,902
159,841	172,528	186,438	201,523	217,968	235,836	255,211	276,185	298,764	323,933	351,791	382,434
119,881	126,471	133,829	141,516	150,566	160,024	170,937	183,279	197,101	212,464	229,397	247,961
2,397,612	2,589,421	2,736,574	3,020,300	3,263,924	3,569,174	3,948,008	4,393,088	4,917,812	5,529,344	6,241,808	7,069,904
0	0	0	0	0	0	0	0	0	0	0	0
199,801	215,785	233,048	251,692	271,897	293,570	317,059	342,492	369,819	400,044	433,171	469,301
4,901,118	5,299,207	5,716,664	6,173,997	6,667,917	7,201,350	7,777,458	8,399,555	9,071,627	9,799,681	10,581,824	11,422,161
755,248	815,668	880,921	951,395	1,027,506	1,108,483	1,198,483	1,294,362	1,397,911	1,511,244	1,634,571	1,768,991

Table 8: Working Capital <Without Project> Dry Farming without Terrace

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Inflation Index	1.08	1.17	1.26	1.36	1.47	1.59	1.71	1.85	2.00	2.15	2.33	2.52	2.72	2.94	3.17	3.43	3.70
Operational Expenses excluding Labor & Others	0	336,215	726,224	764,322	847,058	914,833	988,020	1,067,061	1,152,426	1,244,620	1,344,180	1,451,725	1,567,863	1,693,282	1,828,755	1,975,056	2,133,060
Working Capital required	0	235,350	508,357	549,025	592,947	640,383	691,614	746,843	806,598	871,234	940,933	1,016,208	1,097,504	1,185,304	1,288,129	1,392,539	1,493,142
Change in Working Capital	0	235,350	273,008	40,669	43,822	47,435	51,231	55,329	59,755	64,536	69,699	75,275	81,297	87,800	94,824	102,410	110,603

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Inflation Index	4.00	4.32	4.66	5.03	5.44	5.87	6.34	6.85	7.40	7.99
Operational Expenses excluding Labor & Others	2,303,705	2,488,002	2,687,042	2,902,005	3,134,168	3,384,899	3,655,881	3,948,146	4,263,998	0
Working Capital required	1,612,584	1,741,501	1,880,329	2,031,404	2,194,915	2,369,429	2,558,983	2,763,702	2,984,798	0
Change in Working Capital	119,451	125,007	139,328	150,474	162,512	175,510	189,554	204,719	221,095	-2,984,798

Table 9: Financial Cash Flow Statement per Ha <Without Project> Dry Farming without Terrace

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Receipt	1.08	1.17	1.26	1.36	1.47	1.59	1.71	1.85	2.00	2.15	2.33	2.52	2.72	2.94	3.17	3.43	3.70
Net Present Value	0	825,520	1,783,122	1,925,772	2,079,834	2,246,221	2,425,918	2,618,992	2,829,591	3,055,958	3,300,435	3,564,470	3,849,627	4,157,588	4,490,205	4,849,422	5,237,376
Expenditure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Expenses	246,455	1,545,037	1,668,840	1,802,131	1,948,301	2,102,005	2,270,166	2,451,779	2,647,922	2,859,735	3,082,536	3,328,468	3,590,585	3,880,865	4,201,919	4,558,072	4,943,603
Operating Expenses	235,350	273,008	40,669	43,822	47,435	51,231	55,329	59,755	64,536	69,699	75,275	81,297	87,800	94,824	102,410	110,603	0
Change in Working Capital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Present Value	950,254	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Receipt	4.00	4.32	4.66	5.03	5.44	5.87	6.34	6.85	7.40	7.99
Net Present Value	5,556,366	6,106,875	6,597,585	7,125,332	7,695,423	8,311,657	8,975,941	9,684,017	10,439,538	0

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Receipt	4,901,118	5,293,207	5,716,664	6,173,997	6,667,917	7,201,350	7,777,458	8,399,655	9,071,827	0
Net Present Value	119,451	125,007	139,328	150,474	162,512	175,513	189,554	204,719	221,095	-2,984,798

Table 10: Incremental Cash Flow Table

10-1 : Incremental Cash Flow from Demonstration Plot plus Net Cash Flow from Animal Husbandry

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Inflation Index	1.08	1.17	1.26	1.35	1.47	1.59	1.71	1.85	2.00	2.16	2.33	2.52	2.72	2.94	3.17	3.43	3.70
Net Cash Flow (With Case)	0	-812,098	884,264	1,182,070	1,292,243	3,606,033	2,353,028	3,125,707	4,064,189	4,897,595	8,512,828	5,658,604	6,178,288	6,663,043	7,195,088	12,508,130	8,215,845
Net Cash Flow (Without Case)	0	-456,529	224,985	282,416	283,416	306,089	330,576	357,022	385,584	416,431	448,745	485,725	524,533	565,448	611,373	670,237	740,000
Incremental Cash Flow (Nominal)	0	-155,426	159,648	209,654	209,654	236,944	243,502	261,565	278,605	298,911	322,283	340,863	362,758	388,115	417,715	451,957	528,700
Incremental Cash Flow (Real)	0	-314,341	1,154,189	1,208,589	1,320,864	3,637,265	2,386,434	3,161,766	4,103,155	4,939,618	8,556,279	5,708,889	6,231,310	6,720,295	7,257,320	12,574,519	8,337,938
Incremental Net Present Value (13.500,374)	0	-783,900	908,278	888,949	898,972	2,292,054	1,382,462	1,708,215	2,052,589	2,287,989	3,670,439	2,486,999	2,291,240	2,287,989	2,287,989	3,670,439	2,287,989

10-2 : (Benefits from Animal Husbandry (per Ha))

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Inflation Index	1.08	1.17	1.26	1.36	1.47	1.59	1.71	1.85	2.00	2.16	2.33	2.52	2.72	2.94	3.17	3.43	3.70
Receipt	0	718,036	775,479	837,517	904,518	976,980	1,055,030	1,139,493	1,230,587	1,324,034	1,435,357	1,550,166	1,674,200	1,808,136	1,952,787	2,103,010	
Expenditure	310,232	305,083	361,860	390,841	422,109	455,877	492,947	531,775	574,274	620,216	669,833	723,420	781,234	843,797	911,401	984,205	
Net Present Value	1,025,026	1,025,026	1,025,026	1,025,026	1,025,026	1,025,026	1,025,026	1,025,026	1,025,026	1,025,026	1,025,026	1,025,026	1,025,026	1,025,026	1,025,026	1,025,026	1,025,026

Net Present Value (13.500,374)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	17	18	19	20	21	22	23	24	25	26
Net Present Value	4.00	4.32	4.65	5.03	5.44	5.87	6.34	6.85	7.40	7.99
2,277,731	2,459,850	2,656,746	2,869,285	3,098,822	3,346,734	3,614,473	3,903,631	4,215,921		
1,052,941	1,147,876	1,259,815	1,395,000	1,446,120	1,561,809	1,686,754	1,821,684			
227,773	245,995	265,675	286,929	309,623	334,673	361,447	390,363	421,592		
273,328	295,194	318,869	344,314	371,859	401,608	433,737	468,436	505,911		
713,689	770,784	832,447	899,043	970,966	1,048,643	1,132,535	1,223,138	3,282,419		
178,600	178,600	178,600	178,600	178,600	178,600	178,600	178,600	444,800		

4. 全体的投資分析における増分のネット・キャッシュ・フロー及び増分純現在価値

Financial Analysis		Incremental Net Cash Flow combined with each project component							
Net Present Value		1993	1994	1995	1996	1997	1998	1999	
Value		0	1	2	3	4	5	6	

Fara/Forest Land Conservation Plan									
Forest Development									
Forest 1	-2,767,761,526	0	-181,304,792	-472,679,214	-772,783,853	-860,019,741	-444,073,839	11,551,317	
Forest 2	-21,708,459	0	-521,400	-2,052,900	-4,038,026	-4,163,141	-1,918,604	-606,544	
Forest 3	-63,039,589	0	-3,093,000	-9,901,778	-18,231,685	-17,472,833	-5,312,333	2,398,630	
Introduction of Agroforestry									
Agroforestry 1	15,197,596,765	0	-231,536,025	-576,184,399	-828,484,174	-888,966,201	-548,657,798	431,543,204	
Agroforestry 2	-8,472,064	0	-7,715,633	-17,968,679	-29,092,473	-38,612,533	-40,885,094	-28,064,976	
Improvement of Dry Farming									
Dry Farming 1	16,972,269,898	0	-1,546,667	218,439,785	703,580,465	1,323,439,950	1,993,969,515	2,549,560,268	
Dry Farming 2	4,333,907,509	0	39,221,125	152,239,518	314,540,242	489,109,306	641,629,960	698,304,936	
Conservation of Settlement Env									
Absorbing Well	-507,262,973		-65,120,000	-130,240,000	-162,800,000	-162,800,000	-130,240,000		
Trees (Jack Fruit)	-437,467,086		-5,241,600	-10,483,200	-13,104,000	-13,104,000	-10,483,200		
Trees (Gliricidia)	-35,212,339		-5,148,000	-10,296,000	-12,870,000	-12,870,000	-10,296,000		
	-34,583,547								
Torrent Conservation Plan									
Check Dam	-946,055,469	0	-207,671,468	-242,713,980	-325,368,745	-311,979,918	-300,176,525	-286,077,440	
Small Check Dam	-302,157,196	0	-62,570,730	-80,264,101	-87,541,528	-84,568,396	-82,408,442	-60,422,738	
Gully Plug	-506,245,057		-104,000,000	-145,600,000	-166,400,000	-166,400,000	-166,400,000		
Revetment Work	-505,183,124		-75,200,000	-150,400,000	-188,000,000	-188,000,000	-150,400,000		
Riverside Line Planting	-137,504,935		-22,200,000	-39,960,000	-51,060,000	-51,060,000	-39,960,000		
Riverside Revegetation	-151,420,580		-22,540,000	-45,080,000	-56,350,000	-56,350,000	-45,080,000		
Extension Plan									
Demonstration Plot	3,631,801,689	0	-78,390,000	12,437,824	101,272,731	269,559,889	407,941,472	458,352,722	
Training Center	-730,297,521		-883,660,000						
Education and Training	-1,829,359,457		-403,996,750	-407,290,338	-410,748,604	-414,379,785	-418,192,524	-422,195,900	
Extension/Guidance	-550,838,017		-666,272,000						
Infrastructure Plan									
Access Road	-2,828,596,418								
New Road Construction	-1,498,865,035		-388,944,480	-395,238,080	-423,559,280	-392,091,280	-392,091,280	-129,018,800	
Improvement of Road									
Gravel-Gravel	-1,129,674,535		-327,805,826	-327,805,826	-327,805,826	-327,805,826	-327,805,826	0	
Gravel-Asphalt	-29,342,843		-8,514,625	-8,514,625	-8,514,625	-8,514,625	-8,514,625	0	
Slope Protection									
Regreening of Slope	-35,151,749		-10,200,237	-10,200,237	-10,200,237	-10,200,237	-10,200,237	0	
Drain	-108,780,521		-31,565,630	-31,565,630	-31,565,630	-31,565,630	-31,565,630	0	
Drop Structure	-14,239,746		-4,132,050	-4,132,050	-4,132,050	-4,132,050	-4,132,050	0	
Roadside Planting	-12,541,990		-3,639,400	-3,639,400	-3,639,400	-3,639,400	-3,639,400	0	
Nursery	-17,682,511		-17,592,000	-1,200,000	-1,200,000	-1,200,000	-1,200,000	0	
Environmental Assessment	-745,281,014		-775,800,501	-28,210,300	-28,210,300	-30,586,300	-28,210,300	-28,210,300	
Management Plan									
1) Personnel at Project Office	-5,779,589,089								
2) Consultant	-455,311,805		-110,590,278	-107,518,326	-104,531,705	-101,628,047	-98,805,046	-96,060,461	
a. Foreign Consultant	-3,139,710,936		-1,062,185,941	-931,070,079	-583,805,287	-563,433,607	-544,032,006	-525,554,292	
b. Local Consultant	-1,727,408,203		-494,000,000	-416,000,000	-416,000,000	-364,000,000	-338,000,000	-312,000,000	
3) Office Construction	-409,289,256		-495,240,000	0	0	0	0	0	
4) Office Running Cost	-47,868,890		-19,329,856	-9,820,290	-9,808,438	-9,796,916	-9,785,713	-9,774,822	

			-6,738,047,764	-4,232,912,393	-3,960,452,428	-3,037,231,320	-1,148,725,526	2,233,724,804	

Financial Analysis

	Net Present Value	2000 7	2001 8	2002 9	2003 10	2004 11	2005 12	2006 13
Farm/Forest Land Conservation Plan								
Forest Development								
Forest 1	-2,767,761,526	39,386,087	-136,488,996	-502,588,786	-640,936,240	51,449,129	39,386,087	-136,488,996
Forest 2	-21,708,459	-1,397,104	-2,823,007	-6,015,252	-4,538,881	-169,044	-1,397,104	-2,823,007
Forest 3	-63,039,589	2,213,611	-5,123,778	-18,479,278	-15,972,889	4,343,074	2,213,611	-5,123,778
Introduction of Agroforestry								
Agroforestry 1	15,197,596,765	1,336,868,429	2,223,184,785	3,121,815,113	3,881,795,925	4,583,881,672	4,987,799,017	5,121,592,972
Agroforestry 2	-8,472,064	-19,894,921	-8,271,752	5,102,753	17,694,473	31,182,748	39,440,279	42,273,048
Improvement of Dry Farming								
Dry Farming 1	16,972,269,898	2,601,130,300	2,710,837,724	2,860,182,612	3,018,263,895	3,150,419,601	3,225,945,956	3,225,945,956
Dry Farming 2	4,333,907,509	688,524,867	688,524,867	688,524,867	688,524,867	688,524,867	688,524,867	688,524,867
Conservation of Settlement Env								
Absorbing Well	-507,262,973							
Trees (Jack Fruit)	-437,467,088							
Trees (Gliricidia)	-35,212,339							
Trees (Gliricidia)	-34,583,547							
Torrent Conservation Plan								
Check Dam	-946,055,469	-275,385,187	61,732,019	80,956,026	80,552,367	68,267,388	68,582,993	68,582,993
Small Check Dam	-302,157,196	-78,627,455	10,771,871	13,983,154	13,915,725	11,863,575	11,916,295	11,916,295
Gully Plug	-506,245,057							
Revetment Work	-505,183,124							
Riverside Line Planting	-137,504,935							
Riverside Revegetation	-151,420,580							
Extension Plan								
Demonstration Plot	3,631,801,689	539,277,046	515,327,546	604,881,296	801,109,722	822,549,722	822,873,796	684,623,796
Training Center	-730,297,521							
Education and Training	-1,829,359,457	-426,399,445						
Extension/Guidance	-550,638,017							
Infrastructure Plan								
Access Road	-2,828,596,418							
New Road Construction	-1,498,865,035	-129,018,800						
Improvement of Road								
Gravel-Gravel	-1,129,674,535	0						
Gravel-Asphalt	-29,342,843	0						
Slope Protection								
Regreening of Slope	-35,151,749	0						
Drain	-108,780,521	0						
Drop Structure	-14,239,746	0						
Roadside Planting	-12,541,990	0						
Nursery	-17,682,511	0						
Environmental Assessment	-745,281,014	-30,586,300						
Management Plan	-5,779,569,089							
1) Personnel at Project Office	-455,311,805	-93,392,115	0					
2) Consultant								
a. Foreign Consultant	-3,139,710,936	-507,956,468	0					
b. Local Consultant	-1,727,408,203	-312,000,000	0					
3) Office Construction	-409,289,256	0	0					
4) Office Running Cost	-47,868,890	-9,764,233	7,926,552					
		3,322,977,312	6,065,597,830	6,848,362,505	7,840,408,964	9,412,312,732	9,885,285,797	9,699,024,145

Financial Analysis

	Net Present Value	2007 14	2008 15	2009 16	2010 17	2011 18	2012 19	2013 20
Farm/Forest Land Conservation Plan								
Forest Development								
Forest 1	-2,767,761,526	-502,588,786	-640,936,240	51,449,129	39,386,087	-136,488,996	-502,588,786	-640,936,240
Forest 2	-21,708,459	-6,015,252	-4,538,881	-169,044	-1,397,104	-2,823,007	-6,015,252	-4,538,881
Forest 3	-63,039,589	-18,479,278	-15,972,889	4,343,074	2,213,611	-5,123,778	-18,479,278	-15,972,889
Introduction of Agroforestry								
Agroforestry 1	15,197,596,765	5,045,370,750	4,897,194,750	5,062,939,972	5,125,861,417	5,052,561,722	4,838,277,150	4,517,523,150
Agroforestry 2	-8,472,064	40,374,233	37,143,233	40,522,548	42,297,159	40,734,728	35,979,033	29,121,993
Improvement of Dry Farming								
Dry Farming 1	16,972,269,898	3,225,945,956	3,225,945,956	3,225,945,956	3,225,945,956	3,225,945,956	3,225,945,956	3,225,945,956
Dry Farming 2	4,333,907,509	688,524,867	688,524,867	688,524,867	688,524,867	688,524,867	688,524,867	688,524,867
Conservation of Settlement Env	-507,262,973							
Absorbing Well	-437,467,085							
Trees (Jack fruit)	-35,212,339							
Trees (Gliricidia)	-34,583,547							
Torrent Conservation Plan								
Check Dam	-946,055,469	68,582,993	68,582,993	68,582,993	68,582,993	68,582,993	68,582,993	68,582,993
Small Check Dam	-302,157,196	11,916,295	11,916,295	11,916,295	11,916,295	11,916,295	11,916,295	11,916,295
Gully Plug	-506,245,057							
Revetment Work	-505,183,124							
Riverside Line Planting	-137,504,935							
Riverside Revegetation	-151,420,580							
Extension Plan								
Demonstration Plot	3,631,801,689	686,723,796	824,649,722	822,549,722	822,873,796	661,083,796	639,643,796	754,029,722
Training Center	-730,297,521							
Education and Training	-1,829,359,457							
Extension/Guidance	-550,638,017							
Infrastructure Plan								
Access Road	-2,828,596,418							
New Road Construction	-1,498,865,035							
Improvement of Road								
Gravel-Gravel	-1,129,674,535							
Gravel-Asphalt	-29,342,843							
Slope Protection								
Regreening of Slope	-35,151,749							
Drain	-108,780,521							
Drop Structure	-14,239,746							
Roadside Planting	-12,541,990							
Nursery	-17,682,511							
Environmental Assessment	-745,281,014							
Management Plan	-5,779,589,089							
1) Personnel at Project Office	-455,311,805							
2) Consultant								
a. Foreign Consultant	-3,139,710,936							
b. Local Consultant	-1,727,408,203							
3) Office Construction	-409,289,256							
4) Office Running Cost	-47,868,890							

	9,240,355,574	9,092,509,805	9,976,605,511	10,026,205,077	9,604,914,625	8,981,786,774	8,634,196,965	

Financial Analysis

	Net Present Value	2014 21	2015 22	2016 23	2017 24	2018 25	2019 26
=====							
Farm/Forest Land Conservation Plan							
Forest Development							
Forest 1	-2,767,761,526	51,449,129	69,194,087	-66,017,986	-400,904,045	-541,184,795	145,223,804
Forest 2	-21,708,459	-169,044	-1,352,604	-2,729,170	-5,886,163	-4,407,548	86,204
Forest 3	-63,039,589	4,343,074	2,661,611	-4,133,407	-17,123,352	-14,667,000	-19,444
Introduction of Agroforestry							
Agroforestry 1	15,197,596,765	4,510,690,372	4,440,488,617	4,442,866,750	4,371,675,194	4,220,657,467	414,029,583
Agroforestry 2	-8,472,064	28,875,268	27,839,799	27,870,836	26,005,496	22,762,107	21,405,741
Improvement of Dry Farming							
Dry Farming 1	16,972,269,898	3,225,945,956	3,225,945,956	3,225,945,956	3,225,945,956	3,215,065,956	-334,071,111
Dry Farming 2	4,333,907,509	688,524,867	688,524,867	688,524,867	688,524,867	688,524,867	-97,743,333
Conservation of Settlement Env							
Absorbing Well	-507,262,973						
Trees (Jack Fruit)	-437,467,088						
Trees (Gliricidia)	-35,212,339						
Trees (Gliricidia)	-34,583,547						
Torrent Conservation Plan							
Check Dam	-946,055,469	68,582,993	68,582,993	68,582,993	68,582,993	68,582,993	3,012,593
Small Check Dam	-362,157,196	11,916,295	11,916,295	11,916,295	11,916,295	11,916,295	523,438
Gully Plug	-506,245,057						
Revetment Work	-505,183,124						
Riverside Line Planting	-137,504,935						
Riverside Revegetation	-151,420,580						
Extension Plan							
Demonstration Plot	3,631,801,689	751,929,722	752,673,796	614,778,981	615,974,167	780,629,722	-6,465,278
Training Center	-730,297,521						
Education and Training	-1,829,359,457						
Extension/Guidance	-550,638,017						
Infrastructure Plan							
Access Road	-2,828,596,418						
New Road Construction	-1,498,865,035						
Improvement of Road							
Gravel-Gravel	-1,129,674,535						
Gravel-Asphalt	-29,342,843						
Slope Protection							
Regreening of Slope	-35,151,749						
Drain	-108,789,521						
Drop Structure	-14,239,746						
Roadside Planting	-12,541,990						
Nursery	-17,682,511						
Environmental Assessment	-745,281,014						
Management Plan	-5,779,589,089						
1) Personnel at Project Office	-455,311,805						
2) Consultant							
a. Foreign Consultant	-3,139,710,936						
b. Local Consultant	-1,727,408,203						
3) Office Construction	-469,289,256						
4) Office Running Cost	-47,868,890						
=====							
		9,342,088,631	9,286,475,417	9,007,606,104	8,584,711,407	8,447,880,062	145,982,196

D 3 経済分析に係る資料

1. 経済価格の調整
 - (1) 価格調整
 - (2) 経済機会費用
 - (3) 経済価格及び為替プレミアム
2. 経済分析における増分のネット・キャッシュ・フロー及び増分純現在価値

1. 経済価格の調整

(1) 価格調整

分析にあたっては市場価格を調整した経済価格を用い、税金や補助金については国内2者間での移転項目として扱った。事業で使用される資機材は貿易財と非貿易財に分類し、貿易財については為替レートの調整を行った。

① 基本的条件

分析の基本条件（事業実施期間、プロジェクト・ライフ、基準年価格、インフレ率、為替交換レート、生産性の向上効果、土地の使用価格・運転資金の考え方）は、財務分析と同様である。営農による経常便益と経常支出、投資コストについては、数量は財務分析と同様であるが、価格は、財務価格（市場価格）から経済価格に以下の自動車（CKD）の例に示すとおり調整を行った。

	財務 価格	C F 1	経済 価格 1	貿易財 比率	為替 プレミアム	経済 価格 2
C I F（輸入品）	2,335	1.0	2,335	100 %	1.15	2,685
国内生産品	3,502	0.8	2,802	80 %	1.15	3,222
内陸輸送	350	0.7	245	50 %	1.15	271
工場マージン	1,138	0.7	797	0 %	1.15	797
流通マージン	379	0.7	266	0 %	1.15	266
嗜好税	2,660	0.0	0	0 %	1.15	0
付加価値税	1,209	0.0	0	0 %	1.15	0
登録料	1,209	0.1	121	0 %	1.15	121
自動車税	633	0.0	0	0 %	1.15	0
財務価格	13,300				経済価格 2	7,362

変換係数 2 (C F 2) $7,309/13,300=0.55$

表中変換係数1 (CF1) は、過剰利益、補助金、税金を調整するために使用したもので、調整の結果経済価格1を得る。更に貿易財部分については為替プレミアムを考慮に入れたうえで、経済価格2を算出している。経済価格2と財務価格の比率が変換係数(CF2)として算出されている。その他の項目についての変換係数1と2については主報告書表6-2を参照。

② 為替レートと為替プレミアム

1992年末現在の対ドル為替交換レートは、2,050Rpであった。為替の経済費用を計算するにあたり、本事業が追加的な外貨需要を創出し、このためルピアの対ドル為替レートを切り下げる方向に働くことを仮定した。したがって、為替の経済費用は、追加的に増加する輸出と、輸入需要の減退による消費者便益の減少を組み合わせることにより算出される。更に税金・補助金を調整した結果、為替プレミアムは0.15と算出された。

なお、算出に用いた計算式は以下のとおりである。

$$P = \frac{E_i (1 - T_x) - N_i (1 + T) (Q_i / Q_x)}{E_i - N_i (Q_i / Q_x)} - 1$$

P : 為替プレミアム

E_i : 輸出の供給弾力性 (ここでは、0.5と仮定)

N_i : 輸入の需要弾力性 (ここでは、-1.5と仮定)

T_x : 輸出税率

T : 輸入税率

Q_i : 輸入量 (ここでは輸入額で代用)

Q_x : 輸出量 (ここでは輸出額で代用)

③ 労働の経済的機会費用

a. 非熟練労働者の賃金

農民とのインタビューによると、事業地域における日雇い労賃は、男性で1日2,500Rpから4,000Rp、女性で1,000Rpから2,000Rpといわれる。労賃は、昼食が出されるか否かによって違いがみられ、また労賃のほかに収穫物が労働者に配布されることもある。労賃はまた季節変動することも聞かれた。例えば、雨期においては労賃は1日2,500Rpから3,000Rpであるのに対し、2月から8月の乾期にあたっては、2,000Rpから2,500Rpとの説明がインタビュー時あった。

乾期において、農民の中には農作業をやめて、バンドンに臨時雇の仕事、例えば建

設現場での日雇い人夫を行うものもいる。バンドン市内の調査では、建設現場での日雇い労賃が1日 6,000Rpから10,000Rpということが判明した。しかしながら、彼らの必ずしも全員が毎日仕事に従事できるとは限らない。(インタビューでは平均3日に1日という回答を得た。)一方、バンドン市内での繊維工場の従業員へのインタビューによれば、1日の労賃は 2,900Rp (昼食を含まない) から 3,400Rpであった。

以上のように、事業地域内外のインタビューにより、非熟練労働者の機会費用は1日当たり 3,000Rp程度と推定され、これは、財務価格で用いた価格と同じである。経済分析にあたっては、非熟練労働者の経済的機会費用として、財務価格と同じくこの金額を使用することとする。

b. 熟練労働者

熟練労働者は、二つのグループに分かれる。

一つは測量技師といった高度の技術を有する人たちであり、もう一つのグループは熟練でも非熟練でもない準熟練と呼べる人たちにより構成されている。経済分析では熟練労働者については、希少性ということから財務分析時使用した日当 (43,000Rp) を使用する。準熟練労働者については、以下のとおり調整を行う。外国・内国コンサルタントについても、同様に財務分析時使用した価格を使用する (ただし、外国コンサルタントについては、その報酬部分について為替プレミアムにより調整した)。

バンドンの建設現場での賃金調査によれば、ここでいう準熟練労働者の日当は1993年の乾期において 7,500Rpであった。仮に事業の実施によって不足すると予想される準熟練労働者をバンドンから雇用するとすれば、バンドンから事業地までの往復の交通費を上記の価格に上乗せして支払う必要もでてこよう。

ここでは、本事業のように長期に及ぶ事業の場合、事業地域内で継続的に雇用することが比較的容易になってくると考えられることから、上記 7,500Rpを準熟練労働者の1日の経済的機会費用として考える。準熟練労働者用に用いた財務価格は1992年価格で 4,000Rpから 5,000Rpであることから、経済分析においては、同財務価格を平均的な係数として 1.4を乗じて調整した。

④ 経済的公的資本の機会費用

経済的公的資本の機会費用は、資金供給すなわち消費の時間選好率 (預金金利) と資金需要、すなわち民間投資の予想利益率の加重平均を考慮に入れ算出した。本事業実施に伴う資金需要による民間投資資金需要の減退分と追加的貯蓄による消費の延期に伴うコストの組み合わせが、経済的公的資本の機会費用、経済的割引率となる。

算出にあたっては以下の計算式を用い、計算の結果、経済的公的資本の機会費用13%を求めた。

$$I e = \frac{\sum_{i=1}^m E_i^s (S_i / S_t) r_i - \sum_{j=1}^n N_j^i (I_j / S_t) \pi_j}{\sum_{i=1}^m E_i^s (S_i / S_t) - \sum_{j=1}^n N_j^i (I_j / S_t)}$$

E_i^s : 民間セクターにおける資金供給の各セクター別弾力性

N_j^i : 民間セクターにおける資金需要の各セクター別弾力性

S_i : セクター別貯蓄量

S_t : 全貯蓄量

I_j : セクター別投資資金需要

r_i : セクター別実質預金金利

π_j : セクター別予想収益率 (実質)

民間投資の予想収益率、セクター別資金需要・供給の弾力性については、資料の不足により数値を求めることには限界があったため他国の例などを参考に試算した。

(2) 経済機会費用

Calculation of Economic Opportunity Cost of Foreign Exchange

Year	1988/89	1989/90	1990/91	1991/92
Import Duty	5,141	7,075	9,241	
Import (cif) (\$)	14,311	17,374	23,028	
Export Tax (Rp)	24,124	30,754	42,436	
Export Tax (\$)	155	171	44	
Export (fob) (\$)	19,824	23,830	28,143	
(Rp)	33,417	42,181	51,862	
Tariff Rate (%)	21.3%	23.0%	21.2%	
Export Tax (tx)	0.5%	0.4%	0.1%	
Exchange Rate (Rp/\$)	1685.7	1770.1	1842.8	
Elasticity of supply of export (Es)			0.5	
Elasticity of demand of import (Mi)			-1.5	
ECOFX	1.14	1.16	1.15	
Average Conversion Factor			1.152	

(3) 経済価格及び為替プレミアム

Calculation of Economic Costs

Foreign Exchange Premium = 1.15
 2050 Rp/US\$
 Foreign Exchange Rate = 125 Rp/US\$

Urea	Financial Value	Conversion Factor 1	Economic Value Unadjusted	% of Tradable Exchgr Pre. Value	Foreign Exchgr Pre. Value	Economic Value
FOB price	329,895	1	329,895	100.0%	1.15	379,379
Economic Subsidy*	-147,013	0	0		1.15	0
Distribution Cost	-43,159	0.7	-30,211	50.0%	1.15	-33,468
Distribution Cost	86,317	0.7	60,422	50.0%	1.15	56,896
Subsidy to firm	18,406	0	0		1.15	0
Subsidy to farmer	-34,447	0	0		1.15	0
Farm Gate Price	210,000					412,827
Conversion Factor 2 =	1.956					

(note)* it is assumed that economic subsidies are given to farmers in a form of export quota to fertilizer companies.

TSP

Financial Value	Conversion Factor 1	Economic Value Unadjusted	% of Tradable Exchgr Pre. Value	Foreign Exchgr Pre. Value	Economic Value
FOB price	1	447,024	100.0%	1.15	514,078
Economic Subsidy*	0	0		1.15	0
Distribution Cost	0.7	-23,552	50.0%	1.15	-26,088
Distribution Cost	0.7	47,126	50.0%	1.15	52,175
Subsidy to firm	0	0		1.15	0
Subsidy to farmer	0	0		1.15	0
Farm Gate Price		260,000			540,165
Conversion Factor 2 =	2.078				

(note)* it is assumed that economic subsidies are given to farmers in a form of export quota to fertilizer companies.

ZA

Financial Value	Conversion Factor 1	Economic Value Unadjusted	% of Tradable Exchgr Pre. Value	Foreign Exchgr Pre. Value	Economic Value
FOB price	1	228,994	100.0%	1.15	263,343
Economic Subsidy*	0	0		1.15	0
Distribution Cost	0.7	-20,208	50.0%	1.15	-22,373
Distribution Cost	0.7	40,415	50.0%	1.15	44,745
Subsidy to firm	0	0		1.15	0
Subsidy to farmer	0	0		1.15	0
Farm Gate Price		210,000			285,715
Conversion Factor 2 =	1.351				

(note)* it is assumed that economic subsidies are given to farmers in a form of export quota to fertilizer companies.

List of Conversion Factor 2 used for Economic Analysis

(Item)	(CF 2)
Urea	1.97
TSP	2.08
ZA	1.36
KCL	1.41
Com'd(Urea, TSP, KCL)	1.39
Lime	1.87
Pesticide (Liquid)	0.81
Pesticide (Granule)	0.89
Computer	0.80
Paddy	1.14
Maize	0.91
Soybeans	0.78
Cement	0.98
Asphalt	0.87
Fuel Oil	0.97
Vehicle	0.64
Motorcycle	0.78
Telephone	0.48
Office Equipment	0.91
Construct. Materials	0.84

List of Conversion Factor 1 used for calculation of CF 2

(Item)	(CF 1)
FOB & CIF Price	1.00
Freight & Insurance	1.00
Distribution Cost	0.70
Handling Charge	0.70
Inland Transport	0.70
Trade Margin	0.20
Registration Fee	0.20
Subsidy	0.00
Tax	0.00

2. 経済分析における増分のネット・キャッシュ・フロー及び増分純現在価値

Economic Analysis Incremental Net Cash Flow combined with each project component		1994	1995	1996	1997	1998	1999	
Net Present Value		1993 0	1994 1	1995 2	1996 3	1997 4	1998 5	1999 6
Farm/Forest Land Conservation Plan								
Forest Development								
Forest 1	-2,276,991,667	0	-193,526,568	-528,855,891	-905,501,206	-952,429,353	-389,705,117	149,898,673
Forest 2	-23,666,608	0	-806,150	-3,225,710	-6,396,984	-6,560,430	-2,989,613	-615,300
Forest 3	-79,521,492	0	-4,508,250	-15,023,194	-28,102,977	-26,743,935	-9,609,240	1,868,367
Introduction of Agroforestry								
Agroforestry 1	6,050,181,156	0	-275,998,895	-748,361,385	-1,183,731,504	-1,441,031,800	-1,272,513,478	-355,860,916
Agroforestry 2	-146,602,961	0	-9,713,767	-24,915,813	-42,289,017	-58,026,188	-64,936,817	-52,824,856
Improvement of Dry Farming								
Dry Farming 1	15,394,700,969	0	45,878,613	399,191,782	1,060,054,391	1,857,382,559	2,670,284,785	3,233,310,029
Dry Farming 2	4,496,691,183	0	59,645,435	226,264,762	457,802,914	700,600,517	907,496,485	971,261,927
Conservation of Settlement Env								
Absorbing Well	-455,996,842		-65,356,368	-130,712,736	-163,390,920	-163,390,920	-130,712,736	
Trees (Jack Fruit)	-393,450,611		-5,241,600	-10,483,200	-13,104,000	-13,104,000	-10,483,200	
Trees (Gliricidia)	-31,554,855		-5,146,000	-10,296,000	-12,870,000	-12,870,000	-10,296,000	
Torrent Conservation Plan								
Check Dam	-910,666,031	0	-215,357,545	-251,498,068	-337,446,865	-323,871,911	-311,426,598	-296,430,612
Small Check Dam	-280,141,628	0	-64,018,519	-82,097,966	-89,568,431	-86,560,400	-84,275,766	-82,117,911
Gully Plug	-470,757,019		-107,684,000	-150,757,600	-172,294,400	-172,294,400	-172,294,400	
Revetment Work	-449,765,625		-74,710,896	-149,421,792	-186,777,240	-186,777,240	-149,421,792	
Riverside Line Planting	-125,213,688		-22,544,000	-40,579,200	-51,851,200	-51,851,200	-40,579,200	
Riverside Revegetation	-135,531,450		-22,513,228	-45,026,456	-56,283,070	-56,283,070	-45,026,456	
Extension Plan								
Demonstration Plot	3,194,651,590	0	-65,361,636	50,410,228	162,396,152	342,329,901	481,966,336	539,997,273
Training Center	-640,158,536		-817,418,435					
Education and Training	-1,616,208,741		-403,996,750	-407,290,338	-410,748,604	-414,379,785	-418,192,524	-422,195,900
Extension/Guidance	-399,926,683		-510,666,381					
Infrastructure Plan								
Access Road	-2,332,410,239							
New Road Construction	-1,220,084,539		-353,397,120	-359,115,520	-384,848,320	-356,256,320	-356,256,320	-117,227,200
Improvement of Road								
Gravel-Gravel	-929,984,300		-298,774,684	-298,774,684	-298,774,684	-298,774,684	-298,774,684	0
Gravel-Asphalt	-25,012,697		-8,035,965	-8,035,965	-8,035,965	-8,035,965	-8,035,965	0
Slope Protection								
Regreening of Slope	-33,728,783		-10,836,223	-10,836,223	-10,836,223	-10,836,223	-10,836,223	0
Drain	-98,212,925		-31,553,400	-31,553,400	-31,553,400	-31,553,400	-31,553,400	0
Drop Structure	-14,079,041		-4,523,250	-4,523,250	-4,523,250	-4,523,250	-4,523,250	0
Roadside Planting	-11,327,975		-3,639,400	-3,639,400	-3,639,400	-3,639,400	-3,639,400	0
Nursery	-16,482,235		-17,476,800	-1,200,000	-1,200,000	-1,200,000	-1,200,000	0
Environmental Assessment	-479,442,256		-503,815,911	-26,477,943	-26,477,943	-26,640,103	-26,477,943	-26,477,943
Management Plan								
1) Personnel at Project Office	-5,536,808,938							
2) Consultant	-524,092,561		-119,016,204	-124,526,213	-130,291,316	-136,323,321	-142,634,566	-149,238,039
a. Foreign Consultant	-3,141,799,138		-1,184,745,857	-1,038,501,242	-651,167,435	-628,445,177	-606,804,930	-586,195,171
b. Local Consultant	-1,540,216,996		-494,000,000	-416,000,000	-416,000,000	-364,000,000	-338,000,000	-312,000,000
3) Office Construction	-286,338,476		-365,625,600	0	0	0	0	0
4) Office Running Cost	-44,381,767		-19,869,777	-10,436,781	-10,492,051	-10,549,880	-10,610,366	-10,673,693
			-6,174,357,130	-4,256,299,198	-3,957,943,009	-2,948,659,477	-892,062,417	2,484,478,726

Economic Analysis

	Net Present Value	2000 7	2001 8	2002 9	2003 10	2004 11	2005 12	2006 13
Farm/Forest Land Conservation Plan								
Forest Development								
Forest 1	-2,276,991,667	185,285,069	-72,437,437	-624,214,431	-717,242,737	175,893,800	185,285,069	-72,437,437
Forest 2	-23,666,608	-1,351,199	-3,489,455	-8,602,005	-6,382,351	93,612	-1,351,199	-3,489,455
Forest 3	-79,521,492	2,609,082	-8,278,328	-28,580,437	-23,296,458	4,891,978	2,609,082	-8,278,328
Introduction of Agroforestry								
Agroforestry 1	6,050,181,156	560,512,765	1,446,271,697	2,344,170,406	3,103,393,470	3,804,869,535	4,208,438,489	4,342,232,445
Agroforestry 2	-146,602,961	-43,243,458	-31,620,289	-18,245,784	-5,654,064	7,834,211	16,091,742	18,924,511
Improvement of Dry Farming								
Dry Farming 1	15,394,700,969	3,235,080,530	3,344,787,954	3,494,132,842	3,652,214,125	3,784,369,831	3,859,896,186	3,859,896,186
Dry Farming 2	4,496,691,183	946,874,744	946,874,744	-946,874,744	946,874,744	946,874,744	946,874,744	946,874,744
Conservation of Settlement Env	-455,996,842							
Absorbing Well	-393,450,611							
Trees (Jack Fruit)	-31,554,855							
Trees (Gliricidia)	-30,991,376							
Torrent Conservation Plan								
Check Dam	-910,666,031	-284,642,242	65,700,014	86,069,952	86,812,223	75,360,686	75,875,275	75,875,275
Small Check Dam	-280,141,628	-80,134,054	11,483,588	14,886,303	15,010,296	13,100,711	13,183,329	13,183,329
Gully Plug	-470,757,019							
Revetment Work	-449,765,625							
Riverside Line Planting	-125,213,688							
Riverside Revegetation	-135,531,450							
Extension Plan								
Demonstration Plot	3,194,651,590	634,637,035	638,118,410	750,531,222	961,999,023	983,439,023	983,763,097	845,513,097
Training Center	-640,158,536							
Education and Training	-1,616,208,741	-426,399,445						
Extension/Guidance	-399,926,683							
Infrastructure Plan								
Access Road	-2,332,410,239							
New Road Construction	-1,220,084,539	-117,227,260						
Improvement of Road								
Gravel-Gravel	-929,964,300	0						
Gravel-Asphalt	-25,012,697	0						
Slope Protection								
Regreening of Slope	-33,728,763	0						
Drain	-98,212,925	0						
Drop Structure	-14,079,041	0						
Roadside Planting	-11,327,975	0						
Nursery	-16,482,235	0						
Environmental Assessment	-479,442,256	-28,840,103						
Management Plan	-5,536,808,938							
1) Personnel at Project Office	-524,092,561	-156,147,297	0					
2) Consultant								
a. Foreign Consultant	-3,141,779,138	-566,566,830	0					
b. Local Consultant	-1,540,216,996	-312,000,000	0					
3) Office Construction	-286,338,476	0	0					
4) Office Running Cost	-44,381,767	-10,739,932	12,757,210					
		3,537,907,555	8,350,168,118	6,957,022,812	8,013,728,271	9,796,748,132	10,290,665,814	10,018,294,366

Economic Analysis

	Net Present Value	2007 14	2008 15	2009 16	2010 17	2011 18	2012 19	2013 20
Farm/Forest Land Conservation Plan								
Forest Development								
Forest 1	-2,276,991,667	-624,214,431	-717,242,737	175,893,800	185,285,069	-72,437,437	-624,214,431	-717,242,737
Forest 2	-23,866,608	-8,602,005	-6,382,351	93,612	-1,351,199	-3,489,455	-8,602,005	-6,382,351
Forest 3	-73,521,492	-28,580,437	-23,296,458	4,891,978	2,509,062	-6,278,328	-28,580,437	-23,296,458
Introduction of Agroforestry								
Agroforestry 1	6,050,181,156	4,266,010,222	4,117,834,222	4,283,579,445	4,346,500,889	4,273,201,245	4,058,916,622	3,738,162,622
Agroforestry 2	-146,602,961	17,025,696	13,794,696	17,174,011	18,948,622	17,386,191	12,620,496	5,773,456
Improvement of Dry Farming								
Dry Farming 1	15,394,700,969	3,859,896,186	3,859,896,186	3,859,896,186	3,859,896,186	3,859,896,186	3,859,896,186	3,859,896,186
Dry Farming 2	4,496,691,183	946,874,744	946,874,744	946,874,744	946,874,744	946,874,744	946,874,744	946,874,744
Conservation of Settlement Env								
Absorbing Well	-455,996,642							
Trees (Jack Fruit)	-393,450,611							
Trees (Gliricidia)	-31,554,855							
	-30,991,376							
Torrent Conservation Plan								
Check Dam	-910,666,031	75,875,275	75,875,275	75,875,275	75,875,275	75,875,275	75,875,275	75,875,275
Small Check Dam	-280,141,628	13,183,329	13,183,329	13,183,329	13,183,329	13,183,329	13,183,329	13,183,329
Gully Plug	-470,757,019							
Revetment Work	-449,765,625							
Riverside Line Planting	-125,213,688							
Riverside Revegetation	-135,531,450							
Extension Plan								
Demonstration Plot	3,194,651,590	847,613,097	985,539,023	983,439,023	983,763,097	821,973,097	800,533,097	914,519,023
Training Center	-640,158,536							
Education and Training	-1,616,208,741							
Extension/Guidance	-399,626,683							
Infrastructure Plan								
Access Road	-2,332,470,239							
New Road Construction	-1,220,084,539							
Improvement of Road								
Gravel-Gravel	-929,964,300							
Gravel-Asphalt	-15,012,697							
Slope Protection								
Regreening of Slope	-33,728,763							
Drain	-98,212,925							
Drop Structure	-14,079,041							
Roadside Planting	-11,327,975							
Nursery	-16,482,235							
Environmental Assessment	-479,442,256							
Management Plan	-5,536,808,938							
1) Personnel at Project Office	-524,092,561							
2) Consultant								
a. Foreign Consultant	-3,141,779,138							
b. Local Consultant	-1,540,216,996							
3) Office Construction	-286,338,476							
4) Office Running Cost	-44,381,767							

	9,365,081,677	9,266,075,929	10,360,901,402	10,431,585,094	9,924,184,846	9,106,512,877	8,807,763,089	

Economic Analysis

	Net Present Value	2014 21	2015 22	2016 23	2017 24	2018 25	2019 26

Farm/Forest Land Conservation Plan							
Forest Development							
Forest 1	-2,276,991,667	175,893,800	215,093,069	-1,966,437	-522,529,690	-617,500,862	-68,199,318
Forest 2	-23,666,608	93,612	-1,306,699	-3,395,618	-8,472,916	-6,251,018	1,442,865
Forest 3	-79,521,492	4,891,978	3,057,082	-7,287,957	-27,224,511	-21,990,569	5,735,560
Introduction of Agroforestry							
Agroforestry 1	6,050,181,156	3,731,329,845	3,661,128,089	3,663,506,222	3,592,314,667	3,441,290,133	530,077,917
Agroforestry 2	-146,602,961	5,526,731	4,491,262	4,522,299	2,656,958	-586,431	35,803,704
Improvement of Dry Farming							
Dry Farming 1	15,394,700,969	3,859,896,186	3,859,896,186	3,859,896,185	3,859,896,186	3,848,992,480	-809,924,267
Dry Farming 2	4,496,691,183	946,874,744	946,874,744	946,874,744	946,874,744	946,874,744	-243,728,800
Conservation of Settlement Env	-455,986,842						
Absorbing Well	-393,450,611						
Trees (Jack Fruit)	-31,554,855						
Trees (Gliricidia)	-30,991,376						
Torrent Conservation Plan							
Check Dam	-910,666,031	75,875,275	75,875,275	75,875,275	75,875,275	75,875,275	3,304,741
Small Check Dam	-280,141,628	13,183,329	13,183,329	13,183,329	13,183,329	13,183,329	619,639
Gully Plug	-470,757,019						
Revetment Work	-449,765,625						
Riverside Line Planting	-125,213,688						
Riverside Revegetation	-135,531,450						
Extension Plan							
Demonstration Plot	3,194,651,590	912,819,023	913,563,097	775,668,283	776,863,468	941,519,023	-17,463,542
Training Center	-640,158,536						
Education and Training	-1,616,208,741						
Extension/Guidance	-399,926,683						
Infrastructure Plan							
Access Road	-2,332,410,239						
New Road Construction	-1,220,084,539						
Improvement of Road							
Gravel-Gravel	-929,964,300						
Gravel-Asphalt	-25,012,697						
Slope Protection							
Regreening of Slope	-33,728,763						
Drain	-98,212,925						
Drop Structure	-14,079,041						
Roadside Planting	-11,327,975						
Nursery	-16,482,235						
Environmental Assessment	-479,442,256						
Management Plan	-5,536,808,938						
1) Personnel at Project Office	-524,092,561						
2) Consultant							
a. Foreign Consultant	-3,141,779,138						
b. Local Consultant	-1,540,216,996						
3) Office Construction	-286,338,476						
4) Office Running Cost	-44,381,767						

	9,726,384,522	9,691,855,434	9,326,876,325	8,709,437,509	8,621,406,105	-562,331,500	

E 1 水文調査

(1) 水系

調査対象地域内の水系は、図E 1-1のとおり、バンドン盆地底部から北、東及び南東へと放射状に伸びている。

水系は、山間部（計画対象地域）において地図上で明瞭である。水田部（計画対象地域外）においては、チサランテン川、チタリック川、チクルー川、チパレマハン川の水系は明瞭であるが、その他の河川の水系は自然地形による河川と灌漑用水路が交錯し、水系は必ずしも明瞭でない。また、チサランテン川の場合は、水田部においてチパモコラン川と合流した後、人工水路に流入している。

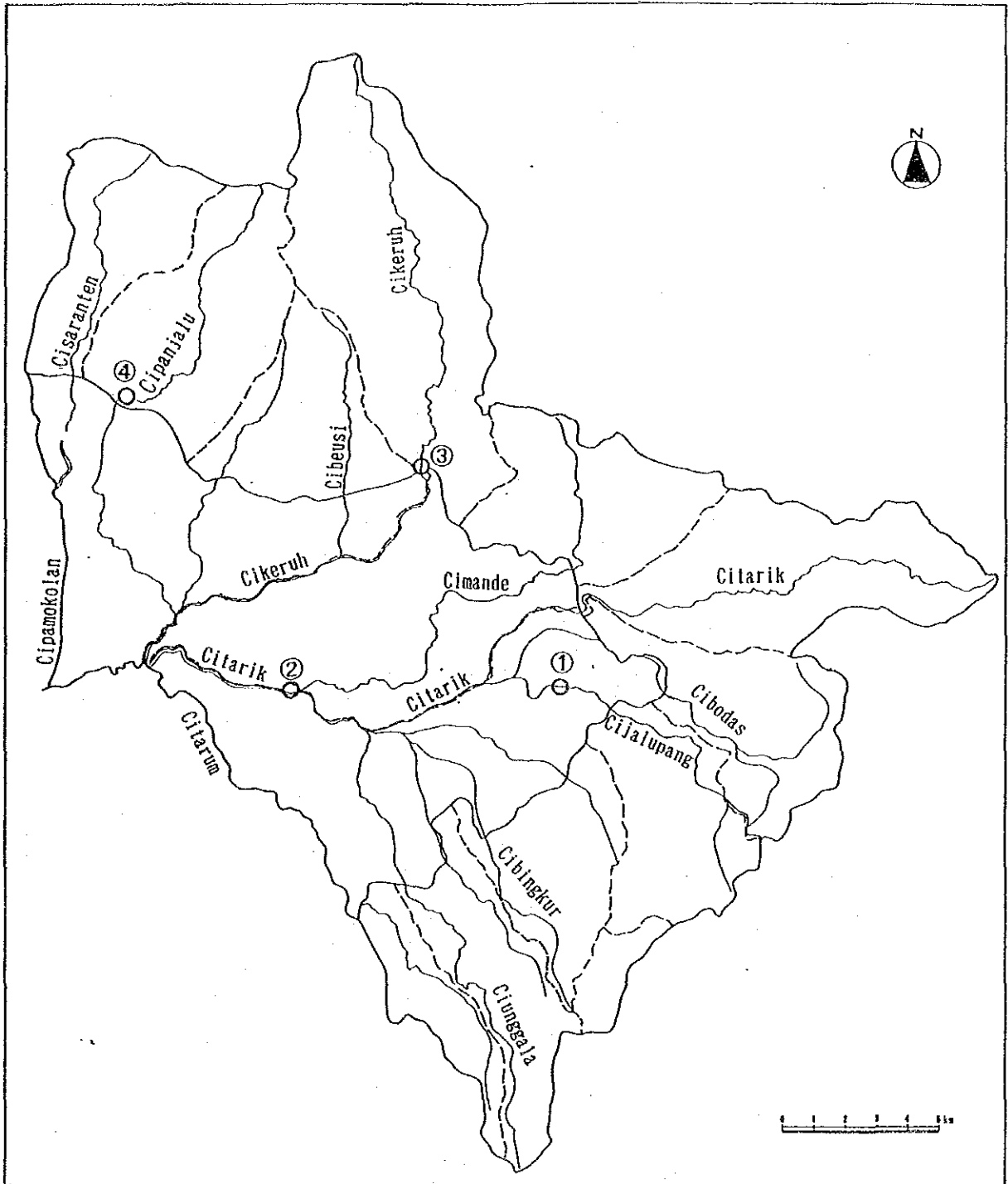
このうち第1流域のチサランテン川と第11流域のチパレマハン川は、チクルー川とチタリック川に合流することなく直接チタロン川に流入している。

(2) 流況の観測

チタリック支流内の河川の流況については、水資源開発研究所（DPMA/PUSAT PENELITIAN DAN PENGEMBANGAN PENGAIRAN）により、図E 1-1の流量観測所で1986年前後から計測が進められている。

(3) 観測河川の流況特性

各観測所の河川の流況を比較的欠測値の少ない1987年のデータで見ると、表E 1-1のとおりである。



INDEX

~~~~~ : MAIN DRAINAGE SYSTEM

SYMBOL HYDROLOGIC STATION

- ① CIJALUPANG-PBUNDEUY
- ② CITARIK-RANCAKEMIT
- ③ CIKERUH-CIKUDA
- ④ CIPANJALU-KEPUH

図E 1 - 1 水系と流量観測所

表E 1 - 1 観測河川の流況特性

| 番号 | 観測所名                | 河川名        | 集水面積 (km <sup>2</sup> ) |
|----|---------------------|------------|-------------------------|
| ①  | CIJALUPANG-PEUNDEUY | CIJALUPANG | 20.7                    |
| ②  | CITARIK-RANCAKEMIT  | CITARIK    | 447.1                   |
| ③  | CIKERUH-CIKUDA      | CIKERUH    | 54.2                    |
| ④  | CIPANJALU-KEPUH     | CIPANJALU  | 15.3                    |

| 番号 | 比流量<br>(ℓ/sec/km <sup>2</sup> ) | Qmax.<br>(m <sup>3</sup> /sec) | Qmin.<br>(m <sup>3</sup> /sec) | Qmean<br>(m <sup>3</sup> /sec) | 河況係数 | 年間流出量<br>(×10 <sup>6</sup> m <sup>3</sup> ) |
|----|---------------------------------|--------------------------------|--------------------------------|--------------------------------|------|---------------------------------------------|
| ①  | 28.3                            | 11.50                          | 0.13                           | 0.59                           | 88   | 18.4                                        |
| ②  | 12.8                            | 35.00                          | 0.72                           | 5.74                           | 49   | 181.0                                       |
| ③  | 14.9                            | 19.70                          | 0.05                           | 0.80                           | 394  | 25.4                                        |
| ④  | 28.6                            | 4.22                           | 0.03                           | 0.44                           | 141  | 13.8                                        |

出典：DPMAの観測データ（1987年）から調整

観測所①と④の比流量は、観測所②と③の数値の約2倍となっている。

観測所①及び④は、集水域が小さく、いわば局所的な状況を観測しているものと考えられ、地被状態などの相違にもよるが、一般的に山間部での降雨量が多いことを示しているものと言える。

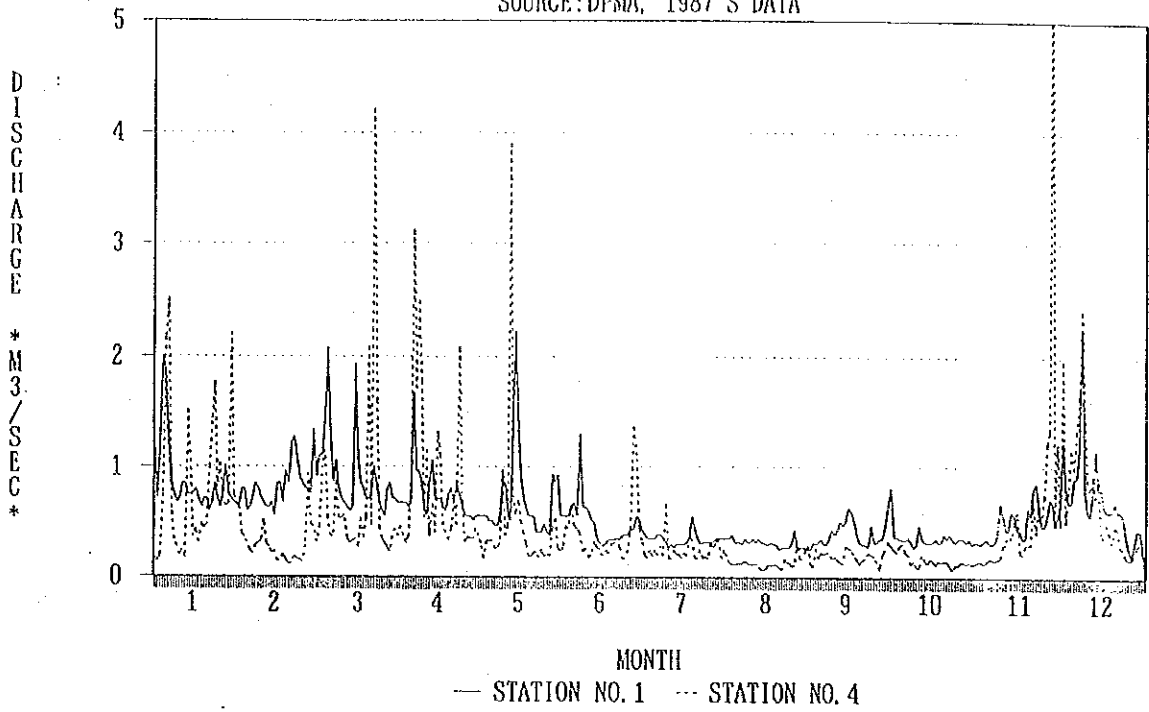
流量についてみると、平均流量において観測所②が最も大きく、年間の最大流量と最小流量の比である河況係数は最も小さい。観測所②は、集水域も広く、かつ上流部の個々の小流域における変動が平均化された数値を観測しているものと考えられる。

河況係数は、観測所③において最も大きい。現地での聞き取りによれば、チクルー川の上流部で山崩れによる崩落土砂が、河川をせき止めてしまうことがあるという。このような現象が河況係数を大きくした原因の一つと考えられる。

各観測所の1987年のハイドログラフは図E 1 - 2のとおりである。月別流量で見ると、総体的に言って3～4月に最も大きく、8～9月に最も小さい。

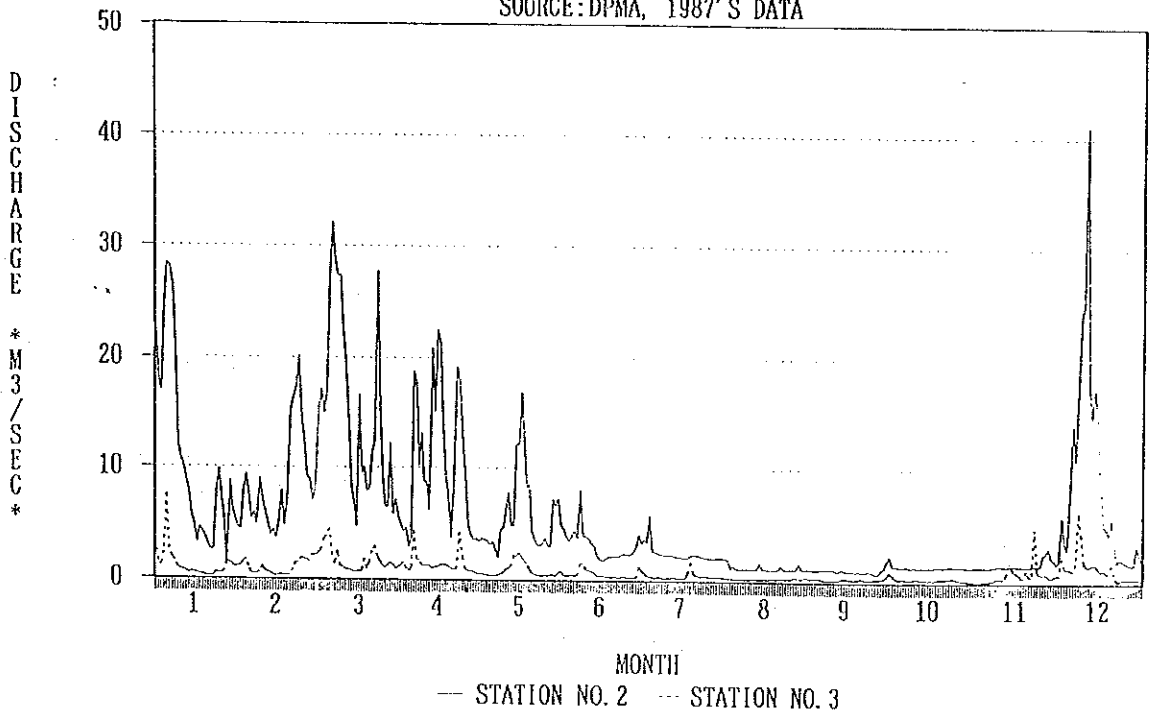
HYDROGRAPH : STATION No. 1 & No. 4

SOURCE: DPMA, 1987'S DATA



HYDROGRAPH : STATION No. 2 & No. 3

SOURCE: DPMA, 1987'S DATA



出典：DPMA：1987年のデータより

図E 1 - 2 調査対象地域内の流量観測所のハイドログラフ

E 2 調査対象地域の河川の水質

| RIVER<br>SAMPLE No.          | CITARIK   |                   | CIKERUH           |                   | CIPAMOKOLAN       |                   |                   |
|------------------------------|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                              | 1         | 2                 | 3                 | 4                 | 5                 | 6                 |                   |
| SUBSTANCES                   | UNIT      |                   |                   |                   |                   |                   |                   |
| TURBIDITY                    | NTU       | 70                | 365               | 215               | 180               | 120               | 106               |
| TEMPERATURE                  | °C        | 22                | 24                | 25                | 24                | 26                | 25                |
| pH                           |           | 7.2               | 7.2               | 7.2               | 7.4               | 8.3               | 7.7               |
| BOD                          | mg/ℓ      | 1.4               | 3.3               | 3.1               | 7.2               | 23                | 12                |
| COD                          | "         | 6.9               | 23                | 36                | 17                | 34                | 23                |
| Fecal Coliform               | MPN/100ml | $4.6 \times 10^5$ | $1.2 \times 10^5$ | $9.5 \times 10^4$ | $1.1 \times 10^5$ | $1.7 \times 10^5$ | $6.1 \times 10^5$ |
| Ammonia (NH <sub>4</sub> -N) | mg/ℓ      | 0.36              | 0.96              | 0.45              | 1.8               | 8.6               | 4.3               |
| Nitrate (NO <sub>3</sub> -N) | "         | 0.33              | 0.66              | 0.46              | 0.42              | 0.21              | 0.34              |
| Nitrite (NO <sub>2</sub> -N) | "         | 0.02              | 0.16              | 0.012             | 0.224             | 0.012             | 0.119             |
| SAMPLING DATE                |           | 20-1-92           | 20-1-92           | 3-12-91           | 21-1-92           | 22-1-92           | 22-1-92           |

NOTE: SAMPLE No. 1 CITARIK-CICALENGKA      SAMPLE No. 4 CIKERUH-SAPAN  
 " No. 2 CITARIK-SAPAN                      " No. 5 CIPAMOKOLAN-JI. SOBKARNO HATTA  
 " No. 3 CIKERUH-CIKERUH                  " No. 6 " -CIWA STRA

SOURCE: DPMA



E 3 Kab. Bandungにおける PT. Pertaniの農薬供給概要

Pesticide types and quantities used in Kabupaten Bandung,  
supplied by PT. Pertani in 1989 (kg or l)

| Brand name                                  | Group    | Quantity  | Active Ingr   | Chem Content | Persist | Toxicity |
|---------------------------------------------|----------|-----------|---------------|--------------|---------|----------|
| Insecticides used in rice                   |          |           |               |              |         |          |
| Indobas 500ec                               | I, R, PL | 51,735.0  | BPMC          | CB 500 g/l   |         |          |
| Dharmabas 500ec                             | I, R, PL | 1,746.5   | BPMC          | CB 500 g/l   |         |          |
| Hassa 50ec                                  | I, R, PL | 1,112.0   | BPMC          | CB 500 g/l   |         |          |
| Hopcin 50ec                                 | I, R, PL | 1,024.0   | BPMC          | CB 460 g/l   |         |          |
| Mipcin 50wp                                 | I, R, PL | 522.0     | MIPC          | CB 50 %      |         |          |
| Applaud 100ec                               | I, R, PL | 90.0      | Buprofezin    | ? 100 g/l    |         |          |
| Dharmacin 50wp                              | I, R, PL | 40.0      | MIPC          | CB 50 %      |         |          |
| Subtot liq. & powd. form                    |          | 56,269.5  |               |              |         |          |
| Dharmafur 3g                                | I, R, G  | 47,914.0  | Carbofuran    | CB 3 %       |         |          |
| Furadan 3g                                  | I, R, G  | 24,116.0  | Carbofuran    | CB 3 %       |         |          |
| Curaterr 3g                                 | I, R, G  | 17,733.0  | Carbofuran    | CB 3 %       |         |          |
| Indofuran 3g                                | I, R, G  | 3,898.0   | Carbofuran    | CB 3 %       |         |          |
| Subtot granular form                        |          | 93,661.0  |               |              |         |          |
| Insecticides used in palawija(=second crop) |          |           |               |              |         |          |
| Thiodan 35ec                                | I, P, PL | 9,949.5 f | Endosulfan    | OCL 350 g/l  |         | high     |
| Dursban 20ec                                | I, P, PL | 9,573.0 f | Chlorpyrifos  | OP 200 g/l   |         |          |
| Gusadrin 150wsc                             | I, P, PL | 1,175.0 f | Monocrotophos | OP 151 g/l   |         |          |
| Petroban 200ec                              | I, P, PL | 883.0 f   | Chlorpyrifos  | OP 200 g/l   |         |          |
| Basmiban 200ec                              | I, P, PL | 842.0 f   | Chlorpyrifos  | OP 200 g/l   |         |          |
| Mikarb 50wp                                 | I, P, PL | 50.5      | MIPC          | CB 51.3 %    |         |          |
| Basudin 60ec                                | I, P, PL | 47.5 f    | Diazinon      | OP 600 g/l   |         |          |
| Sevin 85s                                   | I, P, PL | 2.0 f     | Carbaryl      | CB 85 %      |         |          |
| Subtot liq. & powd. form                    |          | 22,522.5  |               |              |         |          |
| Other Pesticides                            |          |           |               |              |         |          |
| Klerat                                      | Rod      | 4,609.0   | Brodifacoum   | 0.003 %      |         |          |
| Racumin                                     | Rod      | 100.0     | Coumatetratyl | 0.04-2%      |         |          |
| Benlate                                     | Fung     | 2.0       | Benomyl       | 50 %         |         | low      |
| Grandtotal                                  |          | 177,164.0 |               |              |         |          |

Notes: f=forbidden on sawah rice (Inpress 1986)

注) 表中のGroup I: Insecticide R: Rice PL: Liq. & Powd. G: Granular





JICA