

Table L-11 Economic Cost and Benefit Stream, MP Study (1/7)

I. USP

EIRR :	9.97%
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Net Present Value (Riel Million)	Benefit	Cost
(6.50 % discount rate)	59,380	40,780

(Unit : Riel Million)

Year in Order	Year	Economic Cost				Economic Benefit			Net Cash Flow
		Project Investment	O&M	Replacement	Total	Irri. & Drainage	Production Foregone	Total	
1	2002	734.0			734.0			0.0	-734.0
2	2003	1,634.2			1,634.2			0.0	-1,634.2
3	2004	11,704.1	11.8		11,715.9	192.1	-0.2	191.9	-11,524.0
4	2005	4,576.0	32.5		4,608.5	608.4	-0.6	607.8	-4,000.7
5	2006	24,008.3	70.9		24,079.2	1,420.9	-1.3	1,419.6	-22,659.6
6	2007	6,790.1	206.8		6,996.9	3,974.6	-3.8	3,970.8	-3,026.1
7	2008	406.6	206.8		613.4	5,051.3	-3.8	5,047.5	4,434.1
8	2009	193.2	206.8	7.3	407.3	5,603.7	-3.8	5,599.9	5,192.6
9	2010	185.6	206.8	6.7	399.1	5,603.7	-3.8	5,599.9	5,200.8
10	2011		206.8	35.8	242.6	5,603.7	-3.8	5,599.9	5,357.3
11	2012		206.8	32.2	239.0	5,603.7	-3.8	5,599.9	5,360.9
12	2013		206.8		206.8	5,603.7	-3.8	5,599.9	5,393.1
13	2014		206.8	234.3	441.1	5,603.7	-3.8	5,599.9	5,158.8
14	2015		206.8	6.7	213.5	5,603.7	-3.8	5,599.9	5,386.4
15	2016		206.8	35.8	242.6	5,603.7	-3.8	5,599.9	5,357.3
16	2017		206.8	32.2	239.0	5,603.7	-3.8	5,599.9	5,360.9
17	2018		206.8		206.8	5,603.7	-3.8	5,599.9	5,393.1
18	2019		206.8	7.3	214.1	5,603.7	-3.8	5,599.9	5,385.8
19	2020		206.8	6.7	213.5	5,603.7	-3.8	5,599.9	5,386.4
20	2021		206.8	35.8	242.6	5,603.7	-3.8	5,599.9	5,357.3
21	2022		206.8	32.2	239.0	5,603.7	-3.8	5,599.9	5,360.9
22	2023		206.8		206.8	5,603.7	-3.8	5,599.9	5,393.1
23	2024		206.8	234.3	441.1	5,603.7	-3.8	5,599.9	5,158.8
24	2025		206.8	6.7	213.5	5,603.7	-3.8	5,599.9	5,386.4
25	2026		206.8	35.8	242.6	5,603.7	-3.8	5,599.9	5,357.3
26	2027		206.8	32.2	239.0	5,603.7	-3.8	5,599.9	5,360.9
27	2028		206.8		206.8	5,603.7	-3.8	5,599.9	5,393.1
28	2029		206.8	110.8	317.6	5,603.7	-3.8	5,599.9	5,282.3
29	2030		206.8	69.9	276.7	5,603.7	-3.8	5,599.9	5,323.2
30	2031		206.8	387.0	593.8	5,603.7	-3.8	5,599.9	5,006.1
31	2032		206.8	337.7	544.5	5,603.7	-3.8	5,599.9	5,055.4
32	2033		206.8		206.8	5,603.7	-3.8	5,599.9	5,393.1
33	2034		206.8	234.3	441.1	5,603.7	-3.8	5,599.9	5,158.8
34	2035		206.8	6.7	213.5	5,603.7	-3.8	5,599.9	5,386.4
35	2036		206.8	35.8	242.6	5,603.7	-3.8	5,599.9	5,357.3
36	2037		206.8	32.2	239.0	5,603.7	-3.8	5,599.9	5,360.9
37	2038		206.8		206.8	5,603.7	-3.8	5,599.9	5,393.1
38	2039		206.8	7.3	214.1	5,603.7	-3.8	5,599.9	5,385.8
39	2040		206.8	6.7	213.5	5,603.7	-3.8	5,599.9	5,386.4
40	2041		206.8	35.8	242.6	5,603.7	-3.8	5,599.9	5,357.3
41	2042		206.8	32.2	239.0	5,603.7	-3.8	5,599.9	5,360.9
42	2043		206.8		206.8	5,603.7	-3.8	5,599.9	5,393.1
43	2044		206.8	234.3	441.1	5,603.7	-3.8	5,599.9	5,158.8
44	2045		206.8	6.7	213.5	5,603.7	-3.8	5,599.9	5,386.4
45	2046		206.8	35.8	242.6	5,603.7	-3.8	5,599.9	5,357.3
46	2047		206.8	32.2	239.0	5,603.7	-3.8	5,599.9	5,360.9
47	2048		206.8		206.8	5,603.7	-3.8	5,599.9	5,393.1
48	2049		206.8	7.3	214.1	5,603.7	-3.8	5,599.9	5,385.8
49	2050		206.8	6.7	213.5	5,603.7	-3.8	5,599.9	5,386.4
50	2051		206.8	35.8	242.6	5,603.7	-3.8	5,599.9	5,357.3

Table L-11 Economic Cost and Benefit Stream, MP Study (2/7)

II. SRP, Kim Sei System

(II-1) Kim Sei System

EIRR : 9.44%		Net Present Value (Riel Million)				Benefit	Cost		
		(6.50 % discount rate)				416,985	301,830		
(Unit : Riel '000)									
Year in Order	Year	Economic Cost				Economic Benefit			Net Cash Flow
		Project Investment	O&M	Replacement	Total	Irri. & Drainage	Production Foregone	Total	
1	2002	9,990			9,990			0	(9,990)
2	2003	281,310			281,310		(130)	(130)	(281,440)
3	2004	16,040	1,490		17,530	20,170	-130	20,040	2,510
4	2005	6,260	1,490		7,750	28,580	-130	28,450	20,700
5	2006	3,820	1,490		5,310	33,620	-130	33,490	28,180
6	2007		1,490		1,490	33,620	-130	33,490	32,000
7	2008		1,490		1,490	33,620	-130	33,490	32,000
8	2009		1,490	550	2,040	33,620	-130	33,490	31,450
9	2010		1,490		1,490	33,620	-130	33,490	32,000
10	2011		1,490		1,490	33,620	-130	33,490	32,000
11	2012		1,490		1,490	33,620	-130	33,490	32,000
12	2013		1,490		1,490	33,620	-130	33,490	32,000
13	2014		1,490	2,580	4,070	33,620	-130	33,490	29,420
14	2015		1,490		1,490	33,620	-130	33,490	32,000
15	2016		1,490		1,490	33,620	-130	33,490	32,000
16	2017		1,490		1,490	33,620	-130	33,490	32,000
17	2018		1,490		1,490	33,620	-130	33,490	32,000
18	2019		1,490	550	2,040	33,620	-130	33,490	31,450
19	2020		1,490		1,490	33,620	-130	33,490	32,000
20	2021		1,490		1,490	33,620	-130	33,490	32,000
21	2022		1,490		1,490	33,620	-130	33,490	32,000
22	2023		1,490		1,490	33,620	-130	33,490	32,000
23	2024		1,490	2,580	4,070	33,620	-130	33,490	29,420
24	2025		1,490		1,490	33,620	-130	33,490	32,000
25	2026		1,490		1,490	33,620	-130	33,490	32,000
26	2027		1,490		1,490	33,620	-130	33,490	32,000
27	2028		1,490		1,490	33,620	-130	33,490	32,000
28	2029		1,490	8,430	9,920	33,620	-130	33,490	23,570
29	2030		1,490		1,490	33,620	-130	33,490	32,000
30	2031		1,490		1,490	33,620	-130	33,490	32,000
31	2032		1,490		1,490	33,620	-130	33,490	32,000
32	2033		1,490		1,490	33,620	-130	33,490	32,000
33	2034		1,490	2,580	4,070	33,620	-130	33,490	29,420
34	2035		1,490		1,490	33,620	-130	33,490	32,000
35	2036		1,490		1,490	33,620	-130	33,490	32,000
36	2037		1,490		1,490	33,620	-130	33,490	32,000
37	2038		1,490		1,490	33,620	-130	33,490	32,000
38	2039		1,490	550	2,040	33,620	-130	33,490	31,450
39	2040		1,490		1,490	33,620	-130	33,490	32,000
40	2041		1,490		1,490	33,620	-130	33,490	32,000
41	2042		1,490		1,490	33,620	-130	33,490	32,000
42	2043		1,490		1,490	33,620	-130	33,490	32,000
43	2044		1,490	2,580	4,070	33,620	-130	33,490	29,420
44	2045		1,490		1,490	33,620	-130	33,490	32,000
45	2046		1,490		1,490	33,620	-130	33,490	32,000
46	2047		1,490		1,490	33,620	-130	33,490	32,000
47	2048		1,490		1,490	33,620	-130	33,490	32,000
48	2049		1,490	550	2,040	33,620	-130	33,490	31,450
49	2050		1,490		1,490	33,620	-130	33,490	32,000
50	2051		1,490		1,490	33,620	-130	33,490	32,000

Table L-11 Economic Cost and Benefit Stream, MP Study (3/7)

II. SRP

(II-2) Ang 160 System

EIRR : 9.82%		Net Present Value (Riel Million)				Benefit	Cost		
		(6.50 % discount rate)				416,985	290,651		
Year in Order	Year	Economic Cost				Economic Benefit			Net Cash Flow
		Project Investment	O&M	Replacement	Total	Irri. & Drainage	Production Foregone	Total	
1	2002	9,600			9,600			0	(9,600)
2	2003	270,680			270,680		(130)	(130)	(270,810)
3	2004	15,640	1,490		17,130	20,170	-130	20,040	2,910
4	2005	6,180	1,490		7,670	28,580	-130	28,450	20,780
5	2006	3,820	1,490		5,310	33,620	-130	33,490	28,180
6	2007		1,490		1,490	33,620	-130	33,490	32,000
7	2008		1,490		1,490	33,620	-130	33,490	32,000
8	2009		1,490	480	1,970	33,620	-130	33,490	31,520
9	2010		1,490		1,490	33,620	-130	33,490	32,000
10	2011		1,490		1,490	33,620	-130	33,490	32,000
11	2012		1,490		1,490	33,620	-130	33,490	32,000
12	2013		1,490		1,490	33,620	-130	33,490	32,000
13	2014		1,490	2,510	4,000	33,620	-130	33,490	29,490
14	2015		1,490		1,490	33,620	-130	33,490	32,000
15	2016		1,490		1,490	33,620	-130	33,490	32,000
16	2017		1,490		1,490	33,620	-130	33,490	32,000
17	2018		1,490		1,490	33,620	-130	33,490	32,000
18	2019		1,490	480	1,970	33,620	-130	33,490	31,520
19	2020		1,490		1,490	33,620	-130	33,490	32,000
20	2021		1,490		1,490	33,620	-130	33,490	32,000
21	2022		1,490		1,490	33,620	-130	33,490	32,000
22	2023		1,490		1,490	33,620	-130	33,490	32,000
23	2024		1,490	2,510	4,000	33,620	-130	33,490	29,490
24	2025		1,490		1,490	33,620	-130	33,490	32,000
25	2026		1,490		1,490	33,620	-130	33,490	32,000
26	2027		1,490		1,490	33,620	-130	33,490	32,000
27	2028		1,490		1,490	33,620	-130	33,490	32,000
28	2029		1,490	3,110	4,600	33,620	-130	33,490	28,890
29	2030		1,490		1,490	33,620	-130	33,490	32,000
30	2031		1,490		1,490	33,620	-130	33,490	32,000
31	2032		1,490		1,490	33,620	-130	33,490	32,000
32	2033		1,490		1,490	33,620	-130	33,490	32,000
33	2034		1,490	2,510	4,000	33,620	-130	33,490	29,490
34	2035		1,490		1,490	33,620	-130	33,490	32,000
35	2036		1,490		1,490	33,620	-130	33,490	32,000
36	2037		1,490		1,490	33,620	-130	33,490	32,000
37	2038		1,490		1,490	33,620	-130	33,490	32,000
38	2039		1,490	480	1,970	33,620	-130	33,490	31,520
39	2040		1,490		1,490	33,620	-130	33,490	32,000
40	2041		1,490		1,490	33,620	-130	33,490	32,000
41	2042		1,490		1,490	33,620	-130	33,490	32,000
42	2043		1,490		1,490	33,620	-130	33,490	32,000
43	2044		1,490	2,510	4,000	33,620	-130	33,490	29,490
44	2045		1,490		1,490	33,620	-130	33,490	32,000
45	2046		1,490		1,490	33,620	-130	33,490	32,000
46	2047		1,490		1,490	33,620	-130	33,490	32,000
47	2048		1,490		1,490	33,620	-130	33,490	32,000
48	2049		1,490	480	1,970	33,620	-130	33,490	31,520
49	2050		1,490		1,490	33,620	-130	33,490	32,000
50	2051		1,490		1,490	33,620	-130	33,490	32,000

(Unit : Riel '000)

Table L-11 Economic Cost and Benefit Stream, MP Study (4/7)

II. SRP

(II-3) Trapeang Lean System

EIRR : 6.58%		Net Present Value (Riel Million)				Benefit	Cost		
		(6.50 % discount rate)				198,600	196,544		
(Unit : Riel '000)									
Year in Order	Year	Economic Cost				Economic Benefit			Net Cash Flow
		Project Investment	O&M	Replacement	Total	Irri. & Drainage	Production Foregone	Total	
1	2002	6,550			6,550			0	(6,550)
2	2003	180,460			180,460		(60)	(60)	(180,520)
3	2004	11,960	740		12,700	9,610	-60	9,550	(3,150)
4	2005	6,510	740		7,250	13,610	-60	13,550	6,300
5	2006	3,280	740		4,020	16,010	-60	15,950	11,930
6	2007		740		740	16,010	-60	15,950	15,210
7	2008		740		740	16,010	-60	15,950	15,210
8	2009		740	390	1,130	16,010	-60	15,950	14,820
9	2010		740		740	16,010	-60	15,950	15,210
10	2011		740		740	16,010	-60	15,950	15,210
11	2012		740		740	16,010	-60	15,950	15,210
12	2013		740		740	16,010	-60	15,950	15,210
13	2014		740	2,420	3,160	16,010	-60	15,950	12,790
14	2015		740		740	16,010	-60	15,950	15,210
15	2016		740		740	16,010	-60	15,950	15,210
16	2017		740		740	16,010	-60	15,950	15,210
17	2018		740		740	16,010	-60	15,950	15,210
18	2019		740	390	1,130	16,010	-60	15,950	14,820
19	2020		740		740	16,010	-60	15,950	15,210
20	2021		740		740	16,010	-60	15,950	15,210
21	2022		740		740	16,010	-60	15,950	15,210
22	2023		740		740	16,010	-60	15,950	15,210
23	2024		740	2,420	3,160	16,010	-60	15,950	12,790
24	2025		740		740	16,010	-60	15,950	15,210
25	2026		740		740	16,010	-60	15,950	15,210
26	2027		740		740	16,010	-60	15,950	15,210
27	2028		740		740	16,010	-60	15,950	15,210
28	2029		740	10,900	11,640	16,010	-60	15,950	4,310
29	2030		740		740	16,010	-60	15,950	15,210
30	2031		740		740	16,010	-60	15,950	15,210
31	2032		740		740	16,010	-60	15,950	15,210
32	2033		740		740	16,010	-60	15,950	15,210
33	2034		740	2,420	3,160	16,010	-60	15,950	12,790
34	2035		740		740	16,010	-60	15,950	15,210
35	2036		740		740	16,010	-60	15,950	15,210
36	2037		740		740	16,010	-60	15,950	15,210
37	2038		740		740	16,010	-60	15,950	15,210
38	2039		740	390	1,130	16,010	-60	15,950	14,820
39	2040		740		740	16,010	-60	15,950	15,210
40	2041		740		740	16,010	-60	15,950	15,210
41	2042		740		740	16,010	-60	15,950	15,210
42	2043		740		740	16,010	-60	15,950	15,210
43	2044		740	2,420	3,160	16,010	-60	15,950	12,790
44	2045		740		740	16,010	-60	15,950	15,210
45	2046		740		740	16,010	-60	15,950	15,210
46	2047		740		740	16,010	-60	15,950	15,210
47	2048		740		740	16,010	-60	15,950	15,210
48	2049		740	390	1,130	16,010	-60	15,950	14,820
49	2050		740		740	16,010	-60	15,950	15,210
50	2051		740		740	16,010	-60	15,950	15,210

Table L-11 Economic Cost and Benefit Stream, MP Study (5/7)

III. PDP

(III-1) Pond (Group Managing)

EIRR :	10.53%	Net Present Value (Riel Million)	
		(6.50 % discount rate)
		Benefit	Cost
		102,127	71,542

(Unit : Riel '000)

Year in Order	Year	Economic Cost				Economic Benefit			Net Cash Flow
		Project Investment	O&M	Replacement	Total	Irri. & Drainage	Production Foregone	Total	
1	2002	4,200		-	4,200			0	(4,200)
2	2003	70,980		-	70,980		(370)	(370)	(71,350)
3	2004	360	420	-	780	5,930	-370	5,560	4,780
4	2005		420	-	420	8,400	-370	8,030	7,610
5	2006		420	-	420	9,880	-370	9,510	9,090
6	2007		420	-	420	9,880	-370	9,510	9,090
7	2008		420	-	420	9,880	-370	9,510	9,090
8	2009		420	-	420	9,880	-370	9,510	9,090
9	2010		420	-	420	9,880	-370	9,510	9,090
10	2011		420	-	420	9,880	-370	9,510	9,090
11	2012		420	-	420	9,880	-370	9,510	9,090
12	2013		420	-	420	9,880	-370	9,510	9,090
13	2014		420	-	420	9,880	-370	9,510	9,090
14	2015		420	-	420	9,880	-370	9,510	9,090
15	2016		420	-	420	9,880	-370	9,510	9,090
16	2017		420	-	420	9,880	-370	9,510	9,090
17	2018		420	-	420	9,880	-370	9,510	9,090
18	2019		420	-	420	9,880	-370	9,510	9,090
19	2020		420	-	420	9,880	-370	9,510	9,090
20	2021		420	-	420	9,880	-370	9,510	9,090
21	2022		420	-	420	9,880	-370	9,510	9,090
22	2023		420	-	420	9,880	-370	9,510	9,090
23	2024		420	-	420	9,880	-370	9,510	9,090
24	2025		420	-	420	9,880	-370	9,510	9,090
25	2026		420	-	420	9,880	-370	9,510	9,090
26	2027		420	-	420	9,880	-370	9,510	9,090
27	2028		420	-	420	9,880	-370	9,510	9,090
28	2029		420	-	420	9,880	-370	9,510	9,090
29	2030		420	-	420	9,880	-370	9,510	9,090
30	2031		420	-	420	9,880	-370	9,510	9,090

Table L-11 Economic Cost and Benefit Stream, MP Study (6/7)

III. PDP

(III-2) Canal Pond (Group Managing)

EIRR : 14.39%		Net Present Value (Riel Million)				<i>Benefit</i>	<i>Cost</i>
		(6.50 % discount rate)				106,611	58,700

Year in Order	Year	Economic Cost				Economic Benefit			Net Cash Flow
		Project Investment	O&M	Replacement	Total	Irri. & Drainage	Production Foregone	Total	
1	2002	3,320		-	3,320			0	-3,320
2	2003	53,410		-	53,410		0	0	-53,410
3	2004	350	730	-	1,080	5,930	0	5,930	4,850
4	2005		730	-	730	8,400	0	8,400	7,670
5	2006		730	-	730	9,880	0	9,880	9,150
6	2007		730	-	730	9,880	0	9,880	9,150
7	2008		730	-	730	9,880	0	9,880	9,150
8	2009		730	-	730	9,880	0	9,880	9,150
9	2010		730	-	730	9,880	0	9,880	9,150
10	2011		730	-	730	9,880	0	9,880	9,150
11	2012		730	-	730	9,880	0	9,880	9,150
12	2013		730	-	730	9,880	0	9,880	9,150
13	2014		730	-	730	9,880	0	9,880	9,150
14	2015		730	-	730	9,880	0	9,880	9,150
15	2016		730	-	730	9,880	0	9,880	9,150
16	2017		730	-	730	9,880	0	9,880	9,150
17	2018		730	-	730	9,880	0	9,880	9,150
18	2019		730	-	730	9,880	0	9,880	9,150
19	2020		730	-	730	9,880	0	9,880	9,150
20	2021		730	-	730	9,880	0	9,880	9,150
21	2022		730	-	730	9,880	0	9,880	9,150
22	2023		730	-	730	9,880	0	9,880	9,150
23	2024		730	-	730	9,880	0	9,880	9,150
24	2025		730	-	730	9,880	0	9,880	9,150
25	2026		730	-	730	9,880	0	9,880	9,150
26	2027		730	-	730	9,880	0	9,880	9,150
27	2028		730	-	730	9,880	0	9,880	9,150
28	2029		730	-	730	9,880	0	9,880	9,150
29	2030		730	-	730	9,880	0	9,880	9,150
30	2031		730	-	730	9,880	0	9,880	9,150

(Unit : Riel '000)

Table L-11 Economic Cost and Benefit Stream, MP Study (7/7)

III. PDP

(III-3) Pond (Individual Managing)

EIRR :	7.69%
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Net Present Value (Riel Million)	Benefit	Cost
(6.50 % discount rate)	98,128	87,846

(Unit : Riel '000)

Year in Order	Year	Economic Cost			Economic Benefit			Net Cash Flow	
		Project Investment	O&M	Replacement	Total	Irri. & Drainage	Production Foregone		Total
1	2002	4,900		-	4,900			0	-4,900
2	2003	85,040		-	85,040		-700	-700	-85,740
3	2004	350	710	-	1,060	5,930	-700	5,230	4,170
4	2005		710	-	710	8,400	-700	7,700	6,990
5	2006		710	-	710	9,880	-700	9,180	8,470
6	2007		710	-	710	9,880	-700	9,180	8,470
7	2008		710	-	710	9,880	-700	9,180	8,470
8	2009		710	-	710	9,880	-700	9,180	8,470
9	2010		710	-	710	9,880	-700	9,180	8,470
10	2011		710	-	710	9,880	-700	9,180	8,470
11	2012		710	-	710	9,880	-700	9,180	8,470
12	2013		710	-	710	9,880	-700	9,180	8,470
13	2014		710	-	710	9,880	-700	9,180	8,470
14	2015		710	-	710	9,880	-700	9,180	8,470
15	2016		710	-	710	9,880	-700	9,180	8,470
16	2017		710	-	710	9,880	-700	9,180	8,470
17	2018		710	-	710	9,880	-700	9,180	8,470
18	2019		710	-	710	9,880	-700	9,180	8,470
19	2020		710	-	710	9,880	-700	9,180	8,470
20	2021		710	-	710	9,880	-700	9,180	8,470
21	2022		710	-	710	9,880	-700	9,180	8,470
22	2023		710	-	710	9,880	-700	9,180	8,470
23	2024		710	-	710	9,880	-700	9,180	8,470
24	2025		710	-	710	9,880	-700	9,180	8,470
25	2026		710	-	710	9,880	-700	9,180	8,470
26	2027		710	-	710	9,880	-700	9,180	8,470
27	2028		710	-	710	9,880	-700	9,180	8,470
28	2029		710	-	710	9,880	-700	9,180	8,470
29	2030		710	-	710	9,880	-700	9,180	8,470
30	2031		710	-	710	9,880	-700	9,180	8,470

Table L-12 Farm Economy (Farm Budget) Assessment, Median Size Farmer. MP Study (0.8 ha)

Item	Present Condition				Future/With Project Condition							
	Area (ha)	Yield (kg/ha)	Price (Riel/kg)	Amount (Riel'000)	USP and SRP Areas				PDP Area			
					Area (ha)	Yield (kg/ha)	Price (Riel/kg)	Amount (Riel'000)	Area (ha)	Yield (kg/ha)	Price (Riel/kg)	Amount (Riel'000)
1. Total Income				<u>789.2</u>				<u>2,011.6</u>				<u>923.1</u>
1.1 Farm Income				<u>631.7</u>				<u>1,854.1</u>				<u>765.6</u>
- Impro.Local Paddy	0.64	1,300	370	307.8	0.55	2,800	370	569.8	0.64	1,300	370	307.8
- H.Y.V Paddy	0.08	1,300	330	34.3	0.25	3,300	330	272.3	0.08	1,300	330	34.3
- Maize	0.01	900	600	5.4	0.02	2,000	600	24.0	0.01	900	600	5.4
- Soybean	0.002	500	1,200	1.2	0.04	1,000	1,200	48.0	0.02	800	1,200	19.2
- Groundnut	0.002	450	1,300	1.2	0.08	850	1,300	88.4	0.01	680	1,300	8.8
- Sesame	0	300	1,800	0	0.04	800	1,800	57.6	0.01	640	1,800	11.5
- Vegetables	0.01	3,330	580	19.3	0.11	8,330	580	531.5	0.03	6,670	580	116.1
- Livestock				250.4				250.4				250.4
- Fruits				12.1				12.1				12.1
1.2 Non-farm Income				<u>157.5</u>				<u>157.5</u>				<u>157.5</u>
2. Total Expenditure				<u>784.6</u>				<u>1,081.6</u>				<u>804.4</u>
				Production Cost (Riel'000/ha)				Production Cost (Riel'000/ha)				Production Cost (Riel'000/ha)
2.1 Production Cost				<u>259.8</u>				<u>556.8</u>				<u>279.6</u>
- Impro.Local Paddy	0.64		201	128.6	0.55		416	228.8	0.64		201	128.6
- H.Y.V Paddy	0.08		193	15.4	0.25		410	102.5	0.08		193	15.4
- Maize	0.01		114	1.1	0.02		300	6.0	0.01		114	1.1
- Soybean	0.002		233	0.5	0.04		364	14.6	0.02		308	6.2
- Groundnut	0.002		222	0.4	0.08		353	28.2	0.01		297	3.0
- Sesame	0		77	0	0.04		211	8.4	0.01		156	1.6
- Vegetables	0.01		264	2.6	0.11		519	57.1	0.03		415	12.5
- Others				111.2				111.2				111.2
2.2 Living Expenditure				<u>524.8</u>				<u>524.8</u>				<u>524.8</u>
- Rice												
Home consumption				205.3 /1				271.9				205.3
Purchase				66.6				0				66.6
- Other foods				30.0				30.0				30.0
- Others				222.9				222.9				222.9
3. Net Reserve				4.6				930.0				118.7

Note : 60% of paddy products consumed at home

Table L-13 Economic Price Estimate for Traded Goods, Feasibility Study (1/3)

Item	Import Parity Price			Export Parity Price		
	Operation	Unit	Price	Operation	Unit	Price
I. Rice/Paddy						
1. Projected 2005 World Price (in 1990 price) /a		US\$/ton	263.6		US\$/ton	263.6
2. Projected 2005 World Price (in 2001 price) /a		US\$/ton	286.8		US\$/ton	286.8
3. Quality Adjustment	x	%	90	x	%	90
4. CIF/FOB Price at Kompong Som Port /b	=	US\$/ton	258.1	=	US\$/ton	258.1
5. Port Charge, Handling and Warehousing	+	US\$/ton	12.4	-	US\$/ton	12.4
6. Price at Kompong Som Port	=	US\$/ton	270.5	=	Riel/kg	245.7
Equivalent in Riel / kg /c	=	Riel/kg	1,088	=	Riel/kg	988
7. Transportation Cost /d	+	Riel/kg	22			
(Kampong Som-Phnom Penh)						
(Takeo-Kampong Som)				-	Riel/kg	16
(Takeo-Phnom Penh)	-	Riel/kg	7			
8. Ex-Mill /Wholesale Price in Takeo	=	Riel/kg	1,103	=	Riel/kg	972
9. Milling Cost and Margin /d	-	Riel/kg	22	-	Riel/kg	22
10. Processing Ratio	x	%	66	x	%	66
11. By-Products through Processing /e	+	Riel/kg	51	+	Riel/kg	51
12. Millgate Paddy Price	=	Riel/kg	764	=	Riel/kg	678
13. Transport/Handling from Farmgate /d	-	Riel/kg	14	-	Riel/kg	14
14. Farmgate Price	=	Riel/kg	750	=	Riel/kg	664
		50%			50%	
17. Weighted average economic farm gate price		Riel/kg	707			
II. Maize						
1. Projected 2005 World Price (in 1990 price) /a		US\$/ton	104.6		US\$/ton	104.6
2. Projected 2005 World Price (in 2001 price) /a		US\$/ton	113.8		US\$/ton	113.8
3. International Shipping and Handling	+	US\$/ton	40.0			
4. CIF/FOB Price at Kompong Som Port	=	US\$/ton	153.8	=	US\$/ton	113.8
5. Port Charge, Handling and Warehousing	+	US\$/ton	12.4	-	US\$/ton	12.4
6. Price at Kompong Som Port	=	US\$/ton	166.2	=	Riel/kg	101.4
Equivalent in Riel / kg /c	=	Riel/kg	668	=	Riel/kg	408
7. Transportation Cost /d	+	Riel/kg	22			
(Kampong Som-Phnom Penh)						
(Takeo-Kampong Som)				-	Riel/kg	16
(Takeo-Phnom Penh)	-	Riel/kg	7			
8. Price in Takeo	=	Riel/kg	683	=	Riel/kg	392
9. Transport/Handling from Farmgate /d	-	Riel/kg	14	-	Riel/kg	14
10. Farmgate Price	=	Riel/kg	669	=	Riel/kg	378
		50%			50%	
17. Weighted average economic farm gate price		Riel/kg	520			

Note : /a ; Based on the World Bank, Global Commodity Markets, May 2000

The projected prices in 1990 constant US\$ were adjusted by the factor of 1.088 (MUV) to allow for price escalation between 1990 and 2001.

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

Maize : US No.2, Yellow, FOB Gulf Ports

/b ; Assumed at the same price at Bangkok port in Thailand

/c ; Exchange rate : US\$ = Riel 4,022

/d ; Adjusted with SCF of 0.94

/e ; Rice bran : Riel 300 /kg of rice bran, 18% of paddy weight

Table L-13 Economic Price Estimate for Traded Goods, Feasibility Study (2/3)

Item	Import Parity Price			Export Parity Price		
	Operation	Unit	Price	Operation	Unit	Price
III. Soybean						
1. Projected 2005 World Price (in 1990 price) /a		US\$/ton	209.2		US\$/ton	209.2
2. Projected 2005 World Price (in 2001 price) /a		US\$/ton	227.6		US\$/ton	227.6
3. International Shipping and Handling	+	US\$/ton	35.0			
4. CIF/FOB Price at Kompong Som Port	=	US\$/ton	262.6	=	US\$/ton	227.6
5. Port Charge, Handling and Warehousing	+	US\$/ton	12.4	-	US\$/ton	12.4
6. Price at Kompong Som Port	=	US\$/ton	275.0	=	Riel/kg	215.2
Equivalent in Riel / kg /b	=	Riel/kg	1,106	=	Riel/kg	866
7. Transportation Cost /c (Kampong Som-Phnom Penh)	+	Riel/kg	22			
(Takeo-Kampong Som)				-	Riel/kg	16
(Takeo-Phnom Penh)	-	Riel/kg	7			
8. Trade Price in Takeo	=	Riel/kg	1,121	=	Riel/kg	850
9. Transport/Handling from Farmgate /c	-	Riel/kg	14	-	Riel/kg	14
10. Farmgate Price	=	Riel/kg	1,107	=	Riel/kg	836
			50%			50%
11. Weighted average economic farm gate price		Riel/kg	972			
IV. Groundnut						
1. Projected 2005 World Price (in 1990 price) /a		US\$/ton	686.1		US\$/ton	686.1
2. Projected 2005 World Price (in 2001 price) /a		US\$/ton	746.5		US\$/ton	746.5
3. Conversion to Shelled Groundnuts (50%)		US\$/ton	373.3		US\$/ton	373.3
4. International Shipping and Handling	+	US\$/ton	35.0			
5. CIF/FOB Price at Kompong Som Port	=	US\$/ton	408.3	=	US\$/ton	373.3
6. Port Charge, Handling and Warehousing	+	US\$/ton	12.4	-	US\$/ton	12.4
7. Price at Kompong Som Port	=	US\$/ton	420.7	=	Riel/kg	360.9
Equivalent in Riel / kg /b	=	Riel/kg	1,692	=	Riel/kg	1,452
8. Transportation Cost /c (Kampong Som-Phnom Penh)	+	Riel/kg	22			
(Takeo-Kampong Som)				-	Riel/kg	16
(Takeo-Phnom Penh)	-	Riel/kg	7			
9. Trade Price in Takeo	=	Riel/kg	1,707	=	Riel/kg	1,436
10. Transport/Handling from Farmgate /c	-	Riel/kg	14	-	Riel/kg	14
11. Farmgate Price - Without Shell	=	Riel/kg	1,693	=	Riel/kg	1,422
- With Shell (80%)	=	Riel/kg	1,354	=	Riel/kg	1,138
			50%			50%
12. Weighted average economic farm gate price		Riel/kg	1,246			

Note : /a ; Based on the World Bank, Global Commodity Markets, May 2000

* The projected prices in 1990 constant US\$ were adjusted by the factor of 1.088 (MUV) to allow for price escalation between 1990 and 2001.

Soybeans, Groundnut oil : CIF Rotterdam

/b ; Exchange rate : US\$ = Riel 4,022

/c ; Adjusted with SCF of 0.94

Table L-13 Economic Price Estimate for Traded Goods, Feasibility Study (3/3)

Item	Import Parity Price		
	Operation	Unit	Price
V. Fertilizer			
(1) Urea			
1. Projected 2005 World Price (in 1990 price) /a		US\$/ton	100.4
2. Projected 2005 World Price (in 2001 price) /a		US\$/ton	109.2
3. International Shipping and Handling	+	US\$/ton	40.0
4. CIF Price at Kompong Som Port	=	US\$/ton	149.2
5. Port Charge, Handling and Warehousing	+	US\$/ton	17.4
6. Price at Kompong Som Port	=	US\$/ton	166.6
Equivalent in Riel / kg /b	=	Riel/kg	670
7. Transportation Cost /c (Kampong Som-Takeo)	+	Riel/kg	16
8. Trade Price in Takeo	=	Riel/kg	686
9. Transport/Handling to Farmgate /c	+	Riel/kg	14
10. Farmgate Price	=	Riel/kg	700
		Price of Nutrient (N) /e	Riel/kg
			1,522
(2) DAP (Diammonium Phosphate)			
1. Projected 2005 World Price (in 1990 price) /a		US\$/ton	163.2
2. Projected 2005 World Price (in 2001 price) /a		US\$/ton	177.6
3. International Shipping and Handling	+	US\$/ton	45.0
4. CIF Price at Kompong Som Port	=	US\$/ton	222.6
5. Port Charge, Handling, Warehousing and Bagging	+	US\$/ton	17.4
6. Price at Kompong Som Port	=	US\$/ton	240.0
Equivalent in Riel / kg /b	=	Riel/kg	965
7. Transportation Cost /c (Kampong Som-Takeo)	+	Riel/kg	16
8. Trade Price in Takeo	=	Riel/kg	981
9. Transport/Handling to Farmgate /c	+	Riel/kg	14
10. Farmgate Price	=	Riel/kg	995
		Price of Nutrient (P) /e	Riel/kg
		Price of Nutrient (N) /e	Riel/kg
			2,163
			5,528
(3) Potassium Chloride (KCL) /d			
1. Projected 2005 World Price (in 1990 price) /a		US\$/ton	104.6
2. Projected 2005 World Price (in 2001 price) /a		US\$/ton	113.8
3. International Shipping and Handling	+	US\$/ton	40.0
4. CIF Price at Kompong Som Port	=	US\$/ton	153.8
5. Port Charge, Handling, Warehousing and Bagging	+	US\$/ton	17.4
6. Price at Kompong Som Port	=	US\$/ton	171.2
Equivalent in Riel / kg /b	=	Riel/kg	689
7. Transportation Cost /c (Kampong Som-Takeo)	+	Riel/kg	16
8. Trade Price in Takeo	=	Riel/kg	705
9. Transport/Handling to Farmgate /c	+	Riel/kg	14
10. Farmgate Price	=	Riel/kg	719
		Price of Nutrient (K) /e	Riel/kg
			1,198

Note : /a ; Based on the World Bank, Global Commodity Markets, May 2000

* The projected prices in 1990 constant US\$ were adjusted by the factor of 1.088 (MUV) to allow for price escalation between 1990 and 2001.

Urea : Bagged, FOB Black Sea

DAP : Bulk, FOB US Gulf

KCL : Bulk, FOB Black Sea

/b ; Exchange rate : US\$ = Riel 4,022

/c ; Adjusted with SCF of 0.94

/d ; Potassium Chloride (Muriate of Potash)

/e ; Nutrient content is 46%, 46%(18-46-0), and 60%, respectively for Urea, DAP and KCL.

Table L-14 Summary of Financial and Economic Prices for Feasibility Study

Particulars	Unit	Financial Price Applied /a	Conversion	Economic Price Applied
1. Farm Products				
Dry Paddy	(Riel/kg)			
- High yielding varieties (Oct. 2001)		300	b	707
- Improved local varieties		370	b	872
Maize/Corn	(Riel/kg)	600	b	520
Soybean	(Riel/kg)	1,200	b	972
Mungbean*	(Riel/kg)	1,400	c	1,316
Groundnut	(Riel/kg)	1,300	b	1,246
Sesame	(Riel/kg)	1,800	c	1,692
Vegetable average*	(Riel/kg)	690	c	649
2. By-Products				
Rice bran	(Riel/kg)	300	c	282
Broken rice	(Riel/kg)	350	c	329
Rice straw	(Riel/kg)	16	c	15
Corn stalk	(Riel/kg)	16	c	15
3. Seeds				
Paddy	(Riel/kg)	400	c	376
Maize	(Riel/kg)	2,000	c	1,880
Soybean	(Riel/kg)	1,800	c	1,692
Mungbean*	(Riel/kg)	2,200	c	2,068
Groundnut	(Riel/kg)	4,000	c	3,760
Sesame	(Riel/kg)	2,500	c	2,350
Vegetable average*	(Riel/kg)	8,800	c	8,272
4. Fertilizer				
Urea	(Riel/kg)	800	b	700
DAP	(Riel/kg)	1,000	b	995
KCL	(Riel/kg)	800	b	719
Farm manure	(Riel/ton)	25,000	d	12,000
5. Chemical				
6. Tool and Equipment				
10% of the cost for inputs and draft animals				
7. Labor, Animal Power and Machinery				
Labor	(Riel/Person-day)	3,000	d	1,440
Animal	(Riel/Animal-day)	7,000	d	3,360
8. Transportation				
Farmgate to Takeo	(Riel/kg)	5	c	5

Remarks:

/a ; As of May 2001 prices for the Mater Plan and Oct. 2001 for the Feasibility Study

/b ; Economic price estimate based on the WB Commodity Markets (Ref. Table L-13)

/c ; Financial prices are converted to economic value multiplying by SCF of

0.94

/d ; Multiplied by shadow wage rate of

0.48Based on the shadow wage rate factor (0.51) multiplied by SCF0.94

/e ; Reflected the financial price difference between HYV and local improved.

* ; Applied for the Feasibility Study

Table L-15 Economic Crop Budget, Present/Without Project Condition, Feasibility Study

Name of crops	Unit	Paddy (Impr. Local V.)			Paddy (H.Y.V)			Maize		
		Q'ty	Price (Riel)	Value (1000Riel)	Q'ty	Price (Riel)	Value (1000Riel)	Q'ty	Price (Riel)	Value (1000Riel)
1. Gross Income	Riel			1,171			953			484
Main products	kg	1,320	872	1,151	1,320	707	933	900	520	468
By-product	kg	1,320 (straw)	15	20	1,320 (straw)	15	20	1,080 (corn stalk)	15	16
2. Production Cost	Riel			239			233			219
2.1 Inputs	Riel			85			79			87
Seed	kg	65	376	24	50	376	19	20	1,880	38
Farm manure (wet)	ton	1	12,000	12	1	12,000	12	0	12,000	0
Fertilizer	kg	30	700	21	30	700	21	30	700	21
	Urea									
	DAP	20	995	20	20	995	20	20	995	20
	KCL	0	719	0	0	719	0	0	719	0
Agro-chemicals	liter	0		0	0		0	0		0
Others		(10% of above)		8	(10% of above)		7	(10% of above)		8
2.2 Labor	P-d	80		116	80		116	70		101
Hired labor	P-d	8	1,440	12	8	1,440	12	0	1,440	0
Family labor	P-d	72	1,440	104	72	1,440	104	70	1,440	101
2.3 Draft animal	Riel			27			27			20
Land preparation	Ani-d	6		20	6		20	4		13
Plowing	Ani-d	5	3,360	17	5	3,360	17	4	3,360	13
Paddling	Ani-d	1	3,360	3	1	3,360	3	0	3,360	0
Transportation	Ani-d	2	3,360	7	2	3,360	7	2	3,360	7
2.4 Tool/Equipment	Riel			11			11			11
3. Net Return	Riel			932			720			265
(N.Return/P. Cost Ratio)				3.90			3.09			1.21

Name of crops	Unit	Mungbean			Groundnut			Vegetables		
		Q'ty	Price (Riel)	Value (1000Riel)	Q'ty	Price (Riel)	Value (1000Riel)	Q'ty	Price (Riel)	Value (1000Riel)
1. Gross Income	Riel			599			568			2,602
Main products	kg	450	1,316	592	450	1,246	561	4,000	649	2,596
By-product	kg	450 (stem and waste bean)	15	7	450 (stem and waste nuts)	15	7	400 (waste fruit)	15	6
2. Production Cost	Riel			241			313			363
2.1 Inputs	Riel			136			188			192
Seed	kg	50	2,068	103	40	3,760	150	6.8	8,272	56
Farm manure (wet)	ton	0	12,000	0	0	12,000	0	2	12,000	24
Fertilizer	kg	15	700	11	15	700	11	50	700	35
	Urea									
	DAP	10	995	10	10	995	10	45	995	45
	KCL	0	719	0	0	719	0	10	719	7
Agro-chemicals	liter	0		0	0		0	0		0
Others		(10% of above)		12	(10% of above)		17	(15% of above)		25
2.2 Labor	P-d	50		72	60		86	45		130
Hired labor	P-d	0	1,440	0	0	1,440	0	0	1,440	0
Family labor	P-d	50	1,440	72	60	1,440	86	90	1,440	130
2.3 Draft animal	Riel			18			18			20
Land preparation	Ani-d	4.0		13	4.0		13	4		13
Plowing	Ani-d	4.0	3,360	13	4.0	3,360	13	4	3,360	13
Paddling	Ani-d	0	3,360	0	0	3,360	0	0	3,360	0
Transportation	Ani-d	1.5	3,360	5	1.5	3,360	5	2	3,360	7
2.4 Tool/Equipment	Riel			15			21			21
3. Net Return	Riel			358			255			2,239
(N.Return/P. Cost Ratio)				1.49			0.81			6.17

Table L-16 Economic Crop Budget, With Project Condition, Feasibility Study (1/2)

I. USP and SRP Area

Name of crops	Unit	Paddy (Impr. Local V.)			Paddy (H.Y.V)			Maize		
		Q'ty	Price (Riel)	Value (1000Riel)	Q'ty	Price (Riel)	Value (1000Riel)	Q'ty	Price (Riel)	Value (1000Riel)
1. Gross Income	Riel			2,484			2,375			1,076
Main products	kg	2,800	872	2,442	3,300	707	2,333	2,000	520	1,040
By-product	kg	2,800	15	42	2,800	15	42	2,400	15	36
		(straw)			(straw)			(corn stalk)		
2. Production Cost	Riel			376			387			326
2.1 Inputs	Riel			197			207			172
Seed	kg	65	376	24	50	376	19	20	1,880	38
Farm manure (wet)	ton	3	12,000	36	3	12,000	36	0	12,000	0
Fertilizer	Urea	kg	80	700	56	100	700	80	700	56
	DAP	kg	45	995	45	45	995	40	995	40
	KCL	kg	25	719	18	25	719	30	719	22
Agro-chemicals	liter	0		0	0		0	0		0
Others		(10% of above)		18	(10% of above)		19	(10% of above)		16
2.2 Labor	P-d			90			90			80
Hired labor	P-d	9	1,440	13	9	1,440	13	0	1,440	0
Family labor	P-d	81	1,440	117	81	1,440	117	80	1,440	115
2.3 Draft animal	Riel			27			27			20
Land preparation	Ani-d	6		20	6		20	4		13
Plowing	Ani-d	5	3,360	17	5	3,360	17	4	3,360	13
Paddling	Ani-d	1	3,360	3	1	3,360	3	0	3,360	0
Transportation	Ani-d	2	3,360	7	2	3,360	7	2	3,360	7
2.4 Tool/Equipment	Riel			22			23			19
3. Net Return (N.Return/P. Cost Ratio)	Riel			2,108			1,988			750
				5.61			5.14			2.30

Name of crops	Unit	Soybean			Mungbean			Groundnut		
		Q'ty	Price (Riel)	Value (1000Riel)	Q'ty	Price (Riel)	Value (1000Riel)	Q'ty	Price (Riel)	Value (1000Riel)
1. Gross Income	Riel			987			1,331			1,072
Main products	kg	1,000	972	972	1,000	1,316	1,316	850	1,246	1,059
By-product	kg	1,000	15	15	1,000	15	15	850	15	13
		(stem and waste bean)			(stem and waste bean)			(stem and waste nuts)		
2. Production Cost	Riel			369			360			425
2.1 Inputs	Riel			239			231			283
Seed	kg	65	1,692	110	50	2,068	103	40	3,760	150
Farm manure (wet)	ton	0	12,000	0	0	12,000	0	0	12,000	0
Fertilizer	Urea	kg	55	700	39	55	700	39	700	39
	DAP	kg	50	995	50	50	995	50	995	50
	KCL	kg	25	719	18	25	719	25	719	18
Agro-chemicals	liter	0		0	0		0	0		0
Others		(10% of above)		22	(10% of above)		21	(10% of above)		26
2.2 Labor	P-d			60			60			65
Hired labor	P-d	0	1,440	0	0	1,440	0	0	1,440	0
Family labor	P-d	60	1,440	86	60	1,440	86	65	1,440	94
2.3 Draft animal	Riel			18			18			18
Land preparation	Ani-d	4.0		13	4.0		13	4.0		13
Plowing	Ani-d	4.0	3,360	13	4.0	3,360	13	4.0	3,360	13
Paddling	Ani-d	0	3,360	0	0	3,360	0	0	3,360	0
Transportation	Ani-d	1.5	3,360	5	1.5	3,360	5	1.5	3,360	5
2.4 Tool/Equipment	Riel			26			25			30
3. Net Return (N.Return/P. Cost Ratio)	Riel			618			971			647
				1.67			2.70			1.52

Name of crops	Unit	Sesame			Vegetables			
		Q'ty	Price (Riel)	Value (1000Riel)	Q'ty	Price (Riel)	Value (1000Riel)	
1. Gross Income	Riel			1,366			4,814	
Main products	kg	800	1,692	1,354	7,400	649	4,803	
By-product	kg	800	15	12	740	15	11	
		stems			waste fruits			
2. Production Cost	Riel			244			595	
2.1 Inputs	Riel			138			377	
Seed	kg	8	2,350	19	6.8	8,272	56	
Farm manure (wet)	ton	0	12,000	0	4	12,000	48	
Fertilizer	Urea	kg	40	700	28	105	700	74
	DAP	kg	60	995	60	100	995	100
	KCL	kg	25	719	18	70	719	50
Agro-chemicals	liter	0		0	0		0	
Others		(10% of above)		13	(15% of above)		49	
2.2 Labor	P-d			50			110	
Hired labor	P-d	0	1,440	0	0	1,440	0	
Family labor	P-d	50	1,440	72	110	1,440	158	
2.3 Draft animal	Riel			18			20	
Land preparation	Ani-d	4.0		13	4.0		13	
Plowing	Ani-d	4.0	3,360	13	4.0	3,360	13	
Paddling	Ani-d	0	3,360	0	0	3,360	0	
Transportation	Ani-d	1.5	3,360	5	2.0	3,360	7	
2.4 Tool/Equipment	Riel			16			40	
3. Net Return (N.Return/P. Cost Ratio)	Riel			1,122			4,219	
				4.60			7.09	

Table L-16 Economic Crop Budget, With Project Condition, Feasibility Study (2/2)

II. PDP Area (Yield Rate : 100 %) (Fertilizer Rate : 100 %) (Family Labor Rate : 120 %)

Name of crops	Unit	Soybean			Mungbean			Groundnut		
		Q'ty	Price (Riel)	Value (1000Riel)	Q'ty	Price (Riel)	Value (1000Riel)	Q'ty	Price (Riel)	Value (1000Riel)
1. Gross Income	Riel			987			1,331			1,072
Main products	kg	1,000	972	972	1,000	1,316	1,316	850	1,246	1,059
By-product	kg	1,000	15	15	1,000	15	15	850	15	13
		(stem and waste bean)			(stem and waste bean)			(stem and waste nuts)		
2. Production Cost	Riel			387			378			443
2.1 Inputs	Riel			239			231			283
Seed	kg	65	1,692	110	50	2,068	103	40	3,760	150
Farm manure (wet)	ton	0	12,000	0	0	12,000	0	0	12,000	0
Fertilizer	kg	55	700	39	55	700	39	55	700	39
Urea	kg	50	995	50	50	995	50	50	995	50
DAP	kg	25	719	18	25	719	18	25	719	18
KCL	kg	0		0	0		0	0		0
Agro-chemicals	liter	0		0	0		0	0		0
Others		(10% of above)		22	(10% of above)		21	(10% of above)		26
2.2 Labor	P-d	72		104	72		104	78		112
Hired labor	P-d	0	1,440	0	0	1,440	0	0	1,440	0
Family labor	P-d	72	1,440	104	72	1,440	104	78	1,440	112
2.3 Draft animal	Riel			18			18			18
Land preparation	Ani-d	4.0		13	4.0		13	4.0		13
Plowing	Ani-d	4.0	3,360	13	4.0	3,360	13	4.0	3,360	13
Paddling	Ani-d	0	3,360	0	0	3,360	0	0	3,360	0
Transportation	Ani-d	1.5	3,360	5	1.5	3,360	5	1.5	3,360	5
2.4 Tool/Equipment	Riel			26			25			30
3. Net Return	Riel			600			953			629
(N.Return/P. Cost Ratio)				1.55			2.52			1.42

Name of crops	Unit	Sesame			Vegetables		
		Q'ty	Price (Riel)	Value (1000Riel)	Q'ty	Price (Riel)	Value (1000Riel)
1. Gross Income	Riel			1,366			4,814
Main products	kg	800	1,692	1,354	7,400	649	4,803
By-product	kg	800	15	12	740	15	11
		stems			stems, waste beans		
2. Production Cost	Riel			258			627
2.1 Inputs	Riel			138			377
Seed	kg	8	2,350	19	6.8	8,272	56
Farm manure (wet)	ton	0	12,000	0	4	12,000	48
Fertilizer	kg	40	700	28	105	700	74
Urea	kg	60	995	60	100	995	100
DAP	kg	25	719	18	70	719	50
KCL	kg	0		0	0		0
Agro-chemicals	liter	0		0	0		0
Others		(10% of above)		13	(15% of above)		49
2.2 Labor	P-d	60		86	110		190
Hired labor	P-d	0	1,440	0	0	1,440	0
Family labor	P-d	60	1,440	86	132	1,440	190
2.3 Draft animal	Riel			18			20
Land preparation	Ani-d	4.0		13	4.0		13
Plowing	Ani-d	4.0	3,360	13	4.0	3,360	13
Paddling	Ani-d	0	3,360	0	0	3,360	0
Transportation	Ani-d	1.5	3,360	5	2.0	3,360	7
2.4 Tool/Equipment	Riel			16			40
3. Net Return	Riel			1,108			4,187
(N.Return/P. Cost Ratio)				4.29			6.68

Table L-17 Economic Irrigation and Drainage Benefit,
Feasibility Study (1/4)

I. USP Area

(1) Present/Without Project Condition

Crops	Planted Area (ha)	Net Production Value	
		Per ha (Riel '000)	Total (Riel 'Million)
<u>Paddy</u>	3,260		2,940.8
Impro.Local V.	2,800	932	2,609.6
H.Y.V	460	720	331.2
<u>Diversified Crops</u>	100		128.0
Maize	10	265	2.7
Mungbean	30	358	10.7
Groundnut	10	255	2.6
Vegetables	50	2,239	112.0
<u>Total</u>	3,360		3,068.8
Total Physical Area	3,500	C. Intensity	96%
	NPV per ha	Riel '000	US\$
		876.8	218.0
Note :	Riel	4,022	/US\$

(2) With Project Condition

Crops	Planted Area (ha)	Net Production Value	
		Per ha (Riel '000)	Total (Riel 'Million)
<u>Paddy</u>	3,500		7,246.0
Impro.Local V.	2,400	2,108	5,059.2
H.Y.V	1,100	1,988	2,186.8
<u>Diversified Crops</u>	1,050		2,731.3
Maize	100	750	75.0
Soybean	100	618	61.8
Mungbean	100	971	97.1
Groundnut	100	647	64.7
Sesame	100	1,122	112.2
Vegetables	550	4,219	2,320.5
<u>Total</u>	4,550		9,977.3
Total Physical Area	3,500	C. Intensity	130%
	NPV per ha	Riel '000	US\$
		2,850.7	708.7

(3) Increment (With - Without)

Crops	Planted Area (ha)	Net Production Value	
		Per ha (Riel '000)	Total (Riel 'Million)
<u>Paddy</u>	240		4,305.2
Impro.Local V.	(400)	1,176	2,449.6
H.Y.V	640	1,268	1,855.6
<u>Diversified Crops</u>	950		2,603.3
Maize	90	485	72.3
Soybean	100	618	61.8
Mungbean	70	613	86.4
Groundnut	90	392	62.1
Sesame	100	1,122	112.2
Vegetables	500	1,980	2,208.5
<u>Total</u>	1,190		6,908.5
Total Physical Area	3,500	C. Intensity	34%
	NPV per ha	Riel '000	US\$
		1,973.9	490.7

Table L-17 Economic Irrigation and Drainage Benefit,
Feasibility Study (2/4)

II. Kim Sei SRP Area

(1) Present/Without Project Condition

Crops	Planted Area (ha)	Net Production Value	
		Per ha (Riel '000)	Total (Riel 'Million)
<u>Paddy</u>	26		22.9
Impro.Local V.	20	932	18.6
H.Y.V	6	720	4.3
<u>Diversified Crops</u>	1		0.3
Maize	1	265	0.3
Vegetables	0	2,239	0
<u>Total</u>	27		23.2
Total Physical Area	27	C. Intensity	100%
	NPV per ha	Riel '000	US\$
		859.3	213.6
Note :	Riel	4,022	/US\$

(2) With Project Condition

Crops	Planted Area (ha)	Net Production Value	
		Per ha (Riel '000)	Total (Riel 'Million)
<u>Paddy</u>	24		49.6
Impro.Local V.	16	2,108	33.7
H.Y.V	8	1,988	15.9
<u>Diversified Crops</u>	3		6.0
Maize	1	750	0.8
Mungbean	1	971	1.0
Vegetables	1	4,219	4.2
<u>Total</u>	27		55.6
Total Physical Area	27	C. Intensity	100%
	NPV per ha	Riel '000	US\$
		2,059.3	512.0

(3) Increment (With - Without)

Crops	Planted Area (ha)	Net Production Value	
		Per ha (Riel '000)	Total (Riel 'Million)
<u>Paddy</u>	(2)		26.7
Impro.Local V.	(4)	1,176	15.1
H.Y.V	2	1,268	11.6
<u>Diversified Crops</u>	2		5.7
Maize	0	485	0.5
Mungbean	1	971	1.0
Vegetables	1	1,980	4.2
<u>Total</u>	0		32.4
Total Physical Area	27	C. Intensity	0%
	NPV per ha	Riel '000	US\$
		1,200.0	298.4

Table L-17 Economic Irrigation and Drainage Benefit,
Feasibility Study (3/4)

III. Ang 160 SRP Area

(1) Present/Without Project Condition

Crops	Planted Area (ha)	Net Production Value	
		Per ha (Riel '000)	Total (Riel 'Million)
<u>Paddy</u>	<u>28</u>		<u>24.6</u>
Impro.Local V.	21	932	19.6
H.Y.V	7	720	5.0
<u>Diversified Crops</u>	<u>2</u>		<u>2.5</u>
Maize	1	265	0.3
Mungbean	0	358	0
Vegetables	1	2,239	2.2
<u>Total</u>	<u>30</u>		<u>27.1</u>
Total Physical Area	25	C. Intensity	120%
	NPV per ha	Riel '000	US\$
		1,084.0	269.5
Note : Riel 4,022 /US\$			

(2) With Project Condition

Crops	Planted Area (ha)	Net Production Value	
		Per ha (Riel '000)	Total (Riel 'Million)
<u>Paddy</u>	<u>25</u>		<u>51.7</u>
Impro.Local V.	17	2,108	35.8
H.Y.V	8	1,988	15.9
<u>Diversified Crops</u>	<u>5</u>		<u>7.2</u>
Maize	1	750	0.8
Soybean	1	618	0.6
Mungbean	1	971	1.0
Groundnut	1	647	0.6
Vegetables	1	4,219	4.2
<u>Total</u>	<u>30</u>		<u>58.9</u>
Total Physical Area	25	C. Intensity	120%
	NPV per ha	Riel '000	US\$
		2,356.0	585.7

(3) Increment (With - Without)

Crops	Planted Area (ha)	Net Production Value	
		Per ha (Riel '000)	Total (Riel 'Million)
<u>Paddy</u>	<u>(3)</u>		<u>27.1</u>
Impro.Local V.	(4)	1,176	16.2
H.Y.V	1	1,268	10.9
<u>Diversified Crops</u>	<u>3</u>		<u>4.7</u>
Maize	0	485	0.5
Soybean	1	618	0.6
Mungbean	1	613	1.0
Groundnut	1	647	0.6
Vegetables	0	1,980	2.0
<u>Total</u>	<u>0</u>		<u>31.8</u>
Total Physical Area	25	C. Intensity	0%
	NPV per ha	Riel '000	US\$
		1,272.0	316.2

Table L-17 Economic Irrigation and Drainage Benefit,
Feasibility Study (4/4)

IV. PDP Area

(1) Present/Without Project Condition

Crops	Planted Area (ha)	Net Production Value	
		Per ha (Riel '000)	Total (Riel 'Million)
<u>Paddy</u>	5.53		5.0
Impro.Local V.	4.95	932	4.6
H.Y.V	0.58	720	0.4
<u>Diversified Crops</u>	0.10		0.1
Mungbean	0.05	358	0.0
Vegetables	0.05	2,239	0.1
<u>Total</u>	5.63		5.1
Total Physical Area	5.82	C. Intensity	97% /1
	NPV per ha	Riel '000	US\$
		876.3	217.9

Note: Riel 4,022 /US\$

/1 : Excluded 0.42 ha for pond excavated area

(2) With Project Condition

Crops	Planted Area (ha)	Net Production Value	
		Per ha (Riel '000)	Total (Riel 'Million)
<u>Paddy</u>	0		0
Impro.Local V.	0	2,108	0
H.Y.V	0	1,988	0
<u>Diversified Crops</u>	7.46		18.8
Soybean	0.93	600	0.6
Mungbean	0.93	953	0.9
Groundnut	0.93	629	0.6
Sesame	0.93	1,108	1.0
Vegetables	3.74	4,187	15.7
<u>Total</u>	7.46		18.8
Total Physical Area	5.82	C. Intensity	128%
	NPV per ha	Riel '000	US\$
		3,230.2	803.1

(3) Increment (With - Without)

Crops	Planted Area (ha)	Net Production Value	
		Per ha (Riel '000)	Total (Riel 'Million)
<u>Paddy</u>	(5.53)		-5.0
Impro.Local V.	(4.95)	1,176	-4.6
H.Y.V	(0.58)	1,268	-0.4
<u>Diversified Crops</u>	7.36		18.7
Soybean	0.93	600	0.6
Mungbean	0.88	595	0.9
Groundnut	0.93	629	0.6
Sesame	0.93	1,108	1.0
Vegetables	3.69	1,948	15.6
<u>Total</u>	1.83		13.7
Total Physical Area	5.82	C. Intensity	31%
	NPV per ha	Riel '000	US\$
		2,353.9	585.2

Table L-18 Economic Rural Road Improvement Benefit

I. Estimation of Future Transportation Volume

Area/ Village	No. of Household	Population	Influential Agricultural Area (ha)	Crop Production (ton)	Transportation Volume(ton)						Passenger Volume/5 (times)		
					Crops/1	Farm Inputs /2	Liveli- hood Goods/3	Others /4	3 & 4	Total	W/O USP	W USP	
1.USP Area													
2001/ Present	2,373	11,776	1,477	3,241	1,620	1,120	220	270	490	3,230	82,580	-	
2010/With Project	2,860	14,210	1,477	6,421	4,800	9,860	1,970	2,370	4,340	19,000	99,650	151,010	
2. Outside of USP Area													
2001/ Present	2,049	10,294	4,004	9,862	4,930	4,020	800	960	1,760	10,710	46,720	-	
2010/With Project	2,470	12,420	4,004	9,862	4,930	4,020	970	1,160	2,130	11,080	56,380	85,960	
Total 2001	4,422	22,070	5,481	13,103	6,550	5,140	1,020	1,230	2,250	13,940	129,300	-	
2010	5,330	26,630	5,481	16,283	9,730	13,880	2,940	3,530	6,470	30,080	156,030	236,970	

/1 ; Assumed at 50% of Products /2 ; Based on the crop budgets (present condition)
 /3 ; Estimated at 20% of farm inputs in 2001 /4 ; Estimated at 20% of /2 and /3 in 2001
 /5 ; Times/month/house USP Area Outside
 Without USP : 2.9 1.9
 With USP : 4.4 2.9

Area/ Village	Future Total Transportation Volume /6											
	Without USP						With USP					
	2005	2010	2020	2030	2040	2050	2005	2010	2020	2030	2040	2050
1.USP Area												
Goods (ton)	3,270	3,330	3,470	3,640	3,850	4,100	3,270	19,000	21,110	22,610	24,460	26,730
Passenger (times)	89,770	99,650	122,790	151,310	186,440	229,730	89,770	151,010	186,080	229,290	282,530	348,130
2. Outside of USP Area												
Goods (ton)	10,860	11,080	11,570	12,170	12,920	13,850	10,860	11,080	11,570	12,170	12,920	13,850
Passenger(times)	50,790	56,380	69,470	85,600	105,480	129,970	50,790	85,960	105,920	130,520	160,830	198,180
Total												
Goods (ton)	14,130	14,410	15,040	15,810	16,770	17,950	14,130	30,080	32,680	34,780	37,380	40,580
Passenger(times)	140,560	156,030	192,260	236,910	291,920	359,700	140,560	236,970	292,000	359,810	443,360	546,310

/6 ; Without USP, increase in livelihood and other goods at 2.11%/year (population growth) was applied for the USP and the outside areas.
 With USP ;
 For USP area Future production excluding home consumption was applied.
 Farm inputs was increased at the requirement
 Livelihood and other goods were increased based on the farm input requirement in 2010 and increased at 2.11%/year onward.
 For outside USP Crops and farm inputs was assumed at the present volume.
 Increase in livelihood and other goods at 2.11%/year (population growth) was applied.
 Passenger was increased at 2.11%/year with and without USP.

II. Estimation of Unit Transportation Cost

Area	Unit Transportation Cost					
	Goods (Riel/ton)			Passenger (Riel/time)		
	Present	With RIP	Savings	Present	With RIP	Savings
USP Area	36,890	14,440	-22,450	1260	840	-420
Outside	50,780	14,440	-36,340	3060	840	-2,220

III. Estimation of Transportation Cost Savings

Area/ Village	Future Total Transportation Cost Savings (Riel '000)											
	Without USP						With USP					
	2005	2010	2020	2030	2040	2050	2005	2010	2020	2030	2040	2050
1.USP Area												
Goods	73,410	74,760	77,900	81,720	86,430	92,050	73,410	426,550	473,920	507,590	549,130	600,090
Passenger	37,700	41,850	51,570	63,550	78,300	96,490	37,700	63,420	78,150	96,300	118,660	146,210
2. Outside of USP Area												
Goods	394,650	402,650	420,450	442,260	469,510	503,310	394,650	402,650	420,450	442,260	469,510	503,310
Passenger	112,750	125,160	154,220	190,030	234,170	288,530	112,750	190,830	235,140	289,750	357,040	439,960
Total												
Goods	468,060	477,410	498,350	523,980	555,940	595,360	468,060	829,200	894,370	949,850	1,018,640	1,103,400
Passenger	150,450	167,010	205,790	253,580	312,470	385,020	150,450	254,250	313,290	386,050	475,700	586,170
Economic Value/7	618,510	644,420	704,140	777,560	868,410	980,380	618,510	1,083,450	1,207,660	1,335,900	1,494,340	1,689,570
Total	439,140	457,540	499,940	552,070	616,570	696,070	439,140	769,250	857,440	948,490	1,060,980	1,199,590

Note : /a ; Ajusted with CF of 0.71