Table 4.3.3-A4 Crop Production Benefit of the Project

Crop		Unit Price (Lei/kg)	with Project				without Project			
			Production (ton)	Gross Income ('000 Lei)	Cost ('000 Lei)	Net Income ('000 Lei)	Production (ton)	Gross Income ('000 Lei)	Cost ('000 Lei)	Net Income ('000 Lei)
Wheat		220	8,080	1,777,600	992,160	785,440	6,656	1,464,320	700,181	764,139
Barley		170	2,154	366,180	215,563	150,617	1,886	320,620	162,995	157,625
Maize		140	40,329	5,646,060	3,451,888	2,194,172	34,825	4,875,500	1,918,554	2,956,946
Bush bean		820	10,897	8,935,540	2,057,972	6,877,568	0	0	0	0
Bean seeds		820	0	0	0	0	26	21,320	3,690	17,630
Sunflower		350	1,148	401,800	188,892	212,908	1,011	353,850	127,095	226,755
Sugar beet		55	3,021	166,155	52,242	113,913	1,911	105,105	31,394	73,711
Potato		356	4,225	1,504,100	660,033	844,067	3,087	1,098,972	392,621	706,351
Maize for silage		30	23,166	694,980	278,051	416,929	0	0	0	0
Cabbage:	Medium	225	12,777	2,874,825	1,067,477	1,807,348	2,482	558,450	156,510	401,940
	Late	325	51,480	16,731,000	3,806,827	12,924,173	0	0	0	0
Cauliflower:	Medium	500	5,052	2,526,000	930,857	1,595,143	0	0	0	0
	Late	1,003	18,216	18,270,648	3,921,271	14,349,377	0	0	0	0
Cucumber:	Medium	500	9,905	4,952,500	977,506	3,974,994	0	0	0	0
	Late	607	22,176	13,460,832	3,099,334	10,361,498	0	0	0	0
Onion		1,000	4,358	4,358,000	1,226,313	3,131,687	2,590	2,590,000	618,293	1,971,707
Garlic(H.quarity)		1,516	1,387	2,102,692	748,084	1,354,608	0	0	0	0
Green pepper		604	4,358	2,632,232	701,573	1,930,659	0	0	0	0
Egg plant		500	6,537	3,268,500	786,634	2,481,866	0	0	0	0
Carrot		650	10,526	6,841,900	1,797,148	5,044,752	0	0	0	0
Tomato	Medium	420	8,915	3,744,300	762,726	2,981,574	2,290	961,800	206,529	755,271
	Late	900	8,915	8,023,500	1,279,417	6,744,083	0	0	0	0
Others		711	0	0	0	0	5,353	3,805,983	777,660	3,028,323
Annual pasture		44	454	19,976	9,052	10,924	257	11,308	1,940	9,368
Perenial pasture		8	11,877	95,016	49,600	45,416	11,877	95,016	49,600	45,416
Grape		170	22,812	3,878,040	1,927,800	1,950,240	26,120	4,440,400	1,918,800	2,521,600
Total			292,765	113,272,376	30,988,420	82,283,956	100,371	20,702,644	7,065,862	13,636,782
Incremental %			292%	547%	439%	603%	100%	100%	100%	100%

Table 4.3.6-A1 Marketing Volume of Vegetables in the Project

Crops		Material			Collection (excluding holiday)			
		Harvest Area (ha)	Yield (kg/ha)	On-the-Field Production (ton)	Season	No. of Days	Average Volume Collected/day (ton/day)	Maximum Volume Collected/day (ton/day)
1. Potato		198	21,329	4,225	Late Aug. - Early Sept.	18	234.73	305
2. Cabbage	Medium	297	43,000	12,777	Late July - Early Sept.	45	283.94	370
	Late	792	65,000	51,480	Oct. - Early Nov.	34	1,514.12	1,970
3. Cauliflower	Medium	297	17,000	5,052	Late July - Early Sept.	45	112.27	150
	Late	792	23,000	18,216	Oct. - Early Sept.	34	535.77	700
4. Cucumber	Early	198	50,000	9,905	Late July - Mid Aug.	27	366.86	480
	Late	792	28,000	22,176	Sept - Early Oct.	34	652.24	850
5. Onion		198	22,000	4,358	Sept - Early Oct.	34	128.18	170
6. Garlic		198	7,000	1,387	Sept - Early Oct.	34	40.80	55
7. Green Pepper		198	22,000	4,358	Late July - Early Oct.	71	61.39	80
8. Eggplant		198	33,000	6,537	Late July - Early Oct.	71	92.68	120
9. Carrot		277	38,000	10,526	Late July - Mid Nov.	106	99.31	130
10. Tomato		297	60,000	17,829	Late July - Early Oct.	71	251.12	330
Total		4,732	-	168,826	-	624	-	-

Table 4.3.6-A2 Post Harvest Loss and Marketable Volume by Vegetable

Vegetable	(1) Harvest Area (ha)	(2) Yield (kg/ha)	(3) =(1)x(2) Production (ton)	Post-harvest and Marketing Loss (ton) (4) Harvest Loss	Volume to be collected	(5) Off-grade Loss	(6) Shrinkage	(7) (4)+(5)+(6) Total	(8) Farmers' Self-supply (ton)	(9) =(3)-[(7)+(8)] Net Marketable Volume (ton)
1. Potato	198	21,329	4,225	85	4,140	127	401	613	5,056	-1,444
2. Cabbage	1,089	-	64,257	9,000	55,257	-	9,902	18,902	985	44,370
Medium	297	43,000	12,777	1,278	11,499	-	1,150	2,428	280	10,069
Late	792	65,000	51,480	7,722	43,758	-	8,752	16,474	705	34,301
3. Cauliflower	1,089	-	23,268	3,490	19,778	-	3,956	7,446	526	15,296
Medium	297	17,000	5,052	758	4,294	-	859	1,617	116	3,319
Late	792	23,000	18,216	2,732	15,484	-	3,097	5,829	410	11,977
4. Cucumber	990	-	32,081	2,245	29,836	4,171	5,133	11,549	657	19,875
Early	198	50,000	9,905	693	9,212	1,288	1,585	3,566	205	6,134
Late	792	28,000	22,176	1,552	20,624	2,883	3,548	7,983	452	13,741
5. Onion	198	22,000	4,358	87	4,271	130	621	838	657	2,863
6. Garlic	198	7,000	1,387	28	1,359	42	198	268	130	989
7. Green Pepper	198	22,000	4,358	872	3,486	-	697	1,569	650	2,139
8. Eggplant	198	33,000	6,537	1,307	5,230	-	1,046	2,353	650	3,534
9. Carrot	277	38,000	10,526	316	10,210	737	947	2,000	657	7,869
10. Tomato	297	60,000	17,829	1,248	16,581	2,318	2,853	6,419	1,642	9,768
Total	4,732	-	168,826		150,148	7,525	25,754	51,957	11,610	105,259

Remarks : = Estimated population living on farming at the Project Area = 68,414 persons

*= Potato consumption per capita in Romania = 73.9 kg.

**= Vegetable consumption per capita in Romania = 112.7 kg (other vegetables except items written in the right are total 15%)

****		(4)/(3)	(5)/(3)	(6)/(3)	(7)/(3)	Consumption/Capita
Potato		2%	3%	9.5%	14.5%	73.9kg
Cabbage	Medium	10%	-	9.0%	19.0%	4.1kg
	Late	15%	-	17.0%	32.0%	10.3kg
Cauliflower	Medium	15%	-	17.0%	32.0%	1.7kg
	Late	15%	-	17.0%	32.0%	6.0kg
Cucumber	Early	7%	13%	16.0%	36.0%	3.0kg
	Late	7%	13%	16.0%	36.0%	6.6kg
Onion		2%	3%	14.0%	19.0%	9.6kg
Garlic		2%	3%	14.0%	19.0%	1.9kg
Green Pepper		20%	-	16.0%	36.0%	9.5kg
Eggplant		20%	-	16.0%	36.0%	9.5kg
Carrot		3%	7%	9.0%	19.0%	9.6kg
Tomato		7%	13%	16.0%	36.0%	24.0kg

Table 4.3.6-A3 Type of Packing House

Type	Crops to be processed	Facilities Required	Cold Storage
Type I	Potato	1. Pool + Showering facilities 2. Sizing + Packing line	Due to short harvest period, storing space is required available for keeping full volume of production, nominal 11,750 ton (25mx25mx4.7mx2)
	Carrot		2,208 ton (20mx12mx4.7mx2)
Type II	Onion	1. Sizing + Packing line	Nominal 5,560 ton (25mx24mx4.7mx2)
	Garlic		Nominal 1,950 ton (20mx10mx4.7mx2)
Type III	Cabbage Cauliflower Green Pepper Eggplant Tomato Cucumber	1. Sizing + Packing line (only for cucumber) 2. Pre-cooling facilities mid season : 4,050 ton/day = nominal 13,500 ton = nominal 1,350 ton x 10 houses	33,500 ton (36mx20mx4.7mx10)

Table 4.3.6-A4 Main Specifications of Cold Storage Room

Crops	(a) Average volume collected /day (ton/day)	(b) Maximum volume collected /day (ton/day)	(c) No. of Loading days (day)	(d) Maximum nominal storage capacity (ton)	(e) Maximum effective storage capacity (ton)	(f) Maximum storage period (day/month)	(g) Storage Temp. (C)	(h) Room dimensions (width Wm x Depth Dm x Heigth Hm x Number of Rooms)	(i) Storing form
(1) Potato	235	305	18	11,750	4,230	2-4 months	3.5-10.0	25Wm x 25Dm x 4.7 Hm x 2	Mesh net
(2) Carrot	100	130	106	2,208	795	4-5 months	0	20Wm x 12Dm x 4.7 Hm x 2	Carton box
Type I Total	335	435	-	13,958	5,025	-	-	=865m2 x 4.7 Hm x 2	-
(3) Onion	129	170	34	5,560	2,000	6-8 months	0	25Wmm x 24Dmm x 4.7 Hmm x 2	Carton box
(4) Garlic	41	55	34	1,950	700	6-8 months	0	20Wmm x 10Dmm x 4.7 Hmm x 2	Carton box
Type II Total	170	225	-	7,510	2,700	-	-	=800m2 x 4.7 Hm x 2	-
(5) Cabbage									
(5)-1 Medium	284	370	45	3,550	1,278	10-14 days	0	30Wmm x 26Dmm x 4.7Hmm	Carton box
(5)-2 Late	1,515	1,970	34	14,300	5,148	10-14 days	0	60Wmm x 50Dmm x 4.7Hmm	Carton box
(6) Cauliflower									
(6)-1 Medium	113	150	45	1,400	506	10-14 days	0	20Wmm x 15Dmm x 4.7Hmm	Carton box
(6)-2 Late	536	700	34	5,060	1,822	10-14 days	0	36Wmm x 30Dmm x 4.7Hmm	Carton box
(7) Cucumber									
(7)-1 Early	367	480	27	2,750	991	10-14 days	10	30Wmm x 20Dmm x 4.7Hmm	Carton box
(7)-2 Late	653	850	34	6,160	2,218	10-14 days	10	40Wmm x 33Dmm x 4.7Hmm	Carton box
(8) Bell Pepper	62	80	71	1,210	436	10-14 days	10	22Wmm x 12Dmm x 4.7Hmm	Carton box
(9) Eggplant	93	120	71	1,820	654	10-14 days	10	20Wmm x 20Dmm x 4.7Hmm	Carton box
(10) Tomato	252	330	71	4,950	1,783	10-14 days	10	40Wmm x 27Dmm x 4.7Hmm	Carton box
Gross Total	3,875	5,050	-	41,200	14,836	-	0-10	=877m2 x 4.7 Hm x 10	-
Maximum Total (5)-2 + (6)-2+ (7)-2 + (8) + (9) + (10)	3,111	4,050	-	33,500	12,061	-	0-10	=713m2 x 4.7 Hm x 11	-

Table 4.3.6 - A5 List of Facilities/Equipment required and Estimated Cost.

(US$ 1.00 = Lei 1,753 = ¥ 100)

Description	Standard	Quantity	Unit Price		Amount		Total
			in Lei	in US$	in '000 Lei	in US$	in US$
1. Potato and Carrot Packing Hou	2 places						
1. 1 Produce Handling Bldg.	2,488 sq. m x 4.79m x 2 places= m2	4,976					
1. 1. 1 Produce Receiving Bay	384 sq. m x 4.79m x 2 places= m2	768	100,000		76,800		39,324
1. 1. 2 Cold Storage Room	865 sq. m x 4.79m x 2 places= m2	1,730	150,000		259,500		132,875
1. 1. 3 Packing Room	577 sq. m x 4.79m x 2 places= m2	1,154	100,000		115,400		59,089
1. 1. 4 Machinery Room	78 sq. m x 4.79m x 2 places= m2	156	100,000		15,600		7,986
1. 1. 5 Delivery Bay	384 sq. m x 4.79m x 2 places= m2	768	100,000		76,800		39,324
1. 1. 6 Administration Office	200 sq. m x 4.79m x 2 places= m2	400	100,000		40,000		20,481
1. 2. Vehicle Shed	200 sq. m x 4.79m x 2 places= m2	400	50,000		20,000		10,241
1. 3. Internal Road	384 sq. m x 2 places=	768	50,000		38,400		19,662
1. 4. Electric Supply System		2	250,000,000		500,000		256,016
1. 5. Water Supply System		2	50,000,000		100,000		51,205
1. 6. Waste Water Treatment and Drainage System		2	83,400,000		166,800		85,407
							0
1. 7. Fencing and Guard House	220m x 2 places = 440m	440	10,000		4,400		2,253
1. 8. Equipment							0
1. 8. 1 Pool and Showering Line	Compact type	2		160,000		320,000	320,000
1. 8. 2 Sizing and Packing Line	Compact type	2		120,000		240,000	240,000
1. 8. 3 Cold Storage System		2		400,000		800,000	800,000
1. 8. 4 Forklift	Indoor use, Battery driven, 1.5 ton	4		16,000		64,000	64,000
1. 8. 5 Insulated Van, Model A	6 ton	8	43,500,000		348,000		178,187
1. 8. 6 Insulated Van, Model B	10 ton	8	55,500,000		444,000		227,343
1. 8. 7 Pickup Truck	1 ton	2	20,000,000		40,000		20,481
1. 8. 8 Weighing Scale, Model	1 ton	4	3,330,000		13,320		6,820
1. 8. 9 Weighing Scale, Model	Truck scale 10 ton	2	50,000,000		100,000		51,205
1. 8. 10 Top Ban Balance	30kg	4	830,000		3,320		1,700
1. 8. 11 Vernier Caliper	Digital	2	160,000		320		164
1. 8. 12 Calculator	12 digits	4	83,000		332		170
1. 8. 13 Typewriter	Manual type	2	500,000		1,000		512
1. 8. 14 Personal Computer Set		2		8,000		16,000	16,000
1. 8. 15 Table and Chair Set		2	7,000,000		14,000		7,168
1. 8. 16 Cabinet		2	1,500,000		3,000		1,536
1. 8. 17 Telephone		2	340,000		680		348
1. 8. 18 Fax		2	500,000		1,000		512
1. 8. 19 Information Board		2	84,000		168		86
1. 8. 20 Double faced Wooden Pallet	loading capacity : 1,500, loading efficiency : 65% not loading capacity : 975kg	6,000	33,000		198,000		101,382
							0
1. 8. 21 Screw Conveiser	1 ton	6,000	50,000		300,000		153,610
1. 8. 22 Emergency Generator	158KVA (potato) + 120KVA (carrot) + 22KVA (others) = 300KVA	2		20,000		40,000	40,000
Sub Total					2,880,840	1,480,000	2,955,084
2. Onion and Garlic Packing Hou	2 places						
2. 1 Produce Handling Bldg.	1962 sq. m x 4.79m x 2 places= m2	3,924					
2. 1. 1 Produce Receiving Bay	178 sq. m x 4.79m x 2 places= m2	356	100,000		35,600		18,228
2. 1. 2 Cold Storage Room	800 sq. m x 4.79m x 2 places= m2	1,600	150,000		240,000		122,888
2. 1. 3 Packing Room	534 sq. m x 4.79m x 2 places= m2	1,068	100,000		106,800		54,685
2. 1. 4 Machinery Room	72 sq. m x 4.79m x 2 places= m2	144	100,000		14,400		7,375
2. 1. 5 Delivery Bay	178 sq. m x 4.79m x 2 places= m2	356	100,000		35,600		18,228
2. 1. 6 Administration Office	200 sq. m x 4.79m x 2 places= m2	400	100,000		40,000		20,481
2. 2. Vehicle Shed	200 sq. m x 4.79m x 2 places= m2	400	50,000		20,000		10,241
2. 3. Internal Road	356 sq. m x 4.79m x 2 places= m2	712	50,000		35,600		18,228
2. 4. Electric Supply System		2	250,000,000		500,000		256,016
2. 5. Fencing and Guard House	180m x 2 places	360	10,000		3,600		1,843
2. 6 Equipment							
2. 6. 1 Sizing and Packing Line	Compact type	2		100,000		200,000	200,000
2. 6. 2 Cold Storage System		2		360,000		720,000	720,000
2. 6. 3 Forklift	Indoor use, Battery driven, 1.5 ton	4		16,000		64,000	64,000
2. 6. 4 Insulated Van, Model A	6 ton	6	43,500,000		261,000		133,643
2. 6. 5 Insulated Van, Model B	10 ton	4	55,500,000		222,000		113,671
2. 6. 6 Pickup Truck	1 ton	2	20,000,000		40,000		20,481
2. 6. 7 Weighing Scale, Model	1 ton	4	3,300,000		13,200		6,759
2. 6. 8 Weighing Scale, Model	Truck scale 10 ton	2	50,000,000		100,000		51,203
2. 6. 9 Top Ban Balance	30kg	4	830,000		3,320		1,700
2. 6. 10 Vernier Caliper	Digital	2	167,000		334		171
2. 6. 11 Calculator	12 digits	4	83,000		332		170
2. 6. 12 Typewriter	Manual type	2	500,000		1,000		512
2. 6. 13 Personal Computer Set		2		8,000		16,000	16,000
2. 6. 14 Table and Chair Set		2	7,000,000		14,000		7,168
2. 6. 15 Cabinet		2	1,500,000		3,000		1,536
2. 6. 16 Telephone		2	340,000		680		348
2. 6. 17 Fax		2	500,000		1,000		512
2. 6. 18 Information Board		2	84,000		168		86
2. 6. 19 Double faced Wooden Pallet	loading capacity : 1,500, loading efficiency : 65% not loading capacity : 975kg	3,000	33,000		99,000		50,691
2. 6. 20 Screw Conveiser	1 ton	3,000	50,000		150,000		76,805
2. 6. 21 Emergency Generator	158KVA (onion) + 79KVA (garlic) + 13KVA (o 250KVA	2		12,000		24,000	24,000
Sub Total					1,940,634	1,024,000	2,017,668
3. Green Vegetable Packing Hou	10 places						
3. 1 Produce Handling Bldg.	2481 sq. m x 4.79m x 2 places= m2	24,810					
3. 1. 1 Produce Receiving Area	158 sq. m x 4.79m x 10 places m2	1,580	100,000		158,000		80,901
3. 1. 2 Precooling Room	713 sq. m x 4.79m x 10 places m2	7,130	150,000		1,069,500		547,619
3. 1. 3 Cold Storage Room	713 sq. m x 4.79m x 10 places m2	7,130	150,000		1,069,500		547,619
3. 1. 4 Packing Room	475 sq. m x 4.79m x 10 places m2	4,750	100,000		475,000		243,216
3. 1. 5 Machinery Room	64 sq. m x 4.79m x 10 places m2	640	100,000		64,000		32,770
3. 1. 6 Delivery Bay	158 sq. m x 4.79m x 10 places m2	1,580	100,000		158,000		80,901
3. 1. 7 Administration Office	200 sq. m x 4.79m x 10 places m2	2,000	100,000		200,000		102,407
3. 2. Vehicle Shed	200 sq. m x 4.79m x 10 places m2	2,000	50,000		100,000		51,205
3. 3. Internal Road	316 sq. m x 4.79m x 10 places m2	3,160	50,000		158,000		80,901
3. 4. Electric Supply System		10	41,700,000		417,000		213,518
3. 5 Fencing and Guard House	206m x 10 places = 2,060m	2,060	10,000		20,600		10,550
3. 6 Equipment							
3. 6. 1 Sizing and Packing Line	Only for cucumber	10		100,000		1,000,000	1,000,000
3. 6. 2 Precooling Facilities		10		120,000		1,200,000	1,200,000
3. 6. 3 Cold Storage Facilities		10		200,000		2,000,000	2,000,000
3. 6. 4 Forklift	Indoor use, Battery driven, 1.5 ton	20		16,000		320,000	320,000
3. 6. 5 Insulated Van, Model A	6 ton	80	43,500,000		3,480,000		1,781,874
3. 6. 6 Insulated Van, Model B	10 ton	60	55,500,000		3,330,000		1,705,069
3. 6. 7 Pickup Truck	1 ton	10	20,000,000		200,000		102,407
3. 6. 8 Weighing Scale, Model	1 ton	20	3,300,000		66,000		33,794
3. 6. 9 Weighing Scale, Model	Truck scale 10 ton	10	50,000,000		500,000		256,016
3. 6. 10 Top Ban Balance	30kg	20	830,000		16,600		8,500
3. 6. 11 Vernier Caliper	Digital	10	167,000		1,670		855
3. 6. 12 Calculator	Digital, 12 digits	20	83,000		1,660		850
3. 6. 13 Typewriter	Manual type	10	500,000		5,000		2,560
3. 6. 14 Personal Computer Set		10		8,000		80,000	80,000
3. 6. 15 Table and Chair Set		10	7,000,000		70,000		35,842
3. 6. 16 Cabinet		10	1,500,000		15,000		7,680
3. 6. 17 Telephone		10	340,000		3,400		1,741
3. 6. 18 Fax		10	500,000		5,000		2,560
3. 6. 19 Information Board		10	84,000		840		430
3. 6. 20 Double faced Wooden Pallet	loading capacity : 1,500, loading efficiency : 65% not loading capacity : 975kg	13,000	33,000		429,000		219,662
3. 6. 21 Plastic Container	only for cucumber, 50kg	25,500	10,000		255,000		130,568
3. 6. 22 Emergency Generator	100KVA (precooling) + 56KVA (cold) + 44KVA (others) = 200KVA	10		10,000		100,000	100,000
Sub Total					12,266,970	4,700,000	10,982,115
Grand Total					17,090,444	7,204,000	15,954,867

Table 4.3.6 - A6 Estimated Annual Operation and Maintenance Cost

Description	(a) Ptato & Carrot Packing House			(b) Onion and Garlic Packing House			(c) Green Vegetable Packing House			(d) = (a)-3 + (b)-3+ (c)-3
	(a)-1 Unit	(a)-2 Plots No	(a)-3 Total	(b)-1 Unit	(b)-2 Plots No	(b)-3 Total	(c)-1 Unit	(c)-2 Plots No	(c)-3 Total	Total
1. Labor Cost										
Permanent Staffs	34,560	2	69,120	30,720 (16 persons)	2	61,440	59,520 (31 persons)	10	595,200	725,760
Temporary Workers	2,800	2	5,600	1,078 (7 perso x 1.1 months)	2	2,156	840 (3 persons x 2 months)	10	8,400	16,156
2. Electricity (lei 127/KWH)										
2. 1 for potato										
2. 1. 1 for showering, sizing and packing (7KVA x 18 days)	112	2	224	-	-	-	-	-		224
2. 1. 2 for storage (158 KVA x 62 days)	29,858	2	59,716	-	-	-	-	-		59,716
2 2 for carrot										
2. 2. 1 for showering, sizing and packing (7KVA x 106 days)	660	2	1,320	-	-	-	-	-		1,320
2. 2. 2 for storage (120 KVA x 94 days)	34,381	2	68,762	-	-	-	-	-		68,762
2. 3. for onion and garlic										
2. 3. 1 for sizing (13KVA x 34 days)	-	-		393	2	786	-	-		786
2. 3. 2 for storage (237KVA x 91 days)	-	-		65,736	2	131,472	-	-		131,472
2. 4 for green vegetable										
2. 4. 1 for sizing (13KVA x 61 days)	-	-		-	-	-	705	10	7,050	7,050
2. 4. 2 for precooling and storage (187KVA x 81 days)	-	-	-	-	-	-	46,168	10	461,680	461,680
3. Fuel and Motor Oil Cost (Lei 370/lit., daily 300 km/unit)	24,975	2	49,950	24,281	2	48,562	24,975	10	249,750	348,262
4. Mesh Net Cost (L 80/piece x 50kg/piece)	2,890	2	5,780	-	-	-	-	-		5,780
5. Carton Box Cost (L 350/piece x 50kg/piece-onion & garlic, 35kg/piece for others)	29,841	2	59,682	16,237	2	32,474	100,092	10	1,000,920	1,093,076
6 Reapair and Miscellaneous Cost	13,571	2	27,142	9,391	2	18,782	12,899	10	128,990	174,914
Total	173,648	2	347,296	147,836	2	295,672	0	10	2,451,990	3,094,958

Table 4.4.1-A1 Unit Monthly Irrigation Water Requirment

(80 % assurance) (Unit : m3/ha/month)

Crop	Cropping Area Ratio	April	May	June	July	August	Sept.	Total
Wheat/Barley	15.00%	354	1,233	815	0	0	0	2,402
Maize (silage)	3.00%	0	0	0	527	974	707	2,208
Maize (grain)	45.00%	0	168	499	1,460	465	0	2,592
Soy Bean	25.00%	0	79	407	1,487	489	0	2,462
Sugar Beet	0.50%	0	343	673	1,460	1,118	0	3,594
Sunflower	2.50%	0	333	701	1,514	0	0	2,548
Beans	0.00%	0	203	506	1,239	0	0	1,948
Potatoes	1.00%	0	372	628	1,363	477	0	2,840
Vegetables	22.90%	51	369	1,235	1,279	343	158	3,435
Lucerne	0.10%	184	543	708	1,363	962	605	4,365
Grape	0.00%	0	96	307	549	747	0	1,699
Weight Total*		57	335	611	1,244	446	49	2,742

(50 % assurance) (Unit : m3/ha/month)

Crop	Cropping Area Ratio	April	May	June	July	August	Sept.	Total
Wheat/Barley	15.00%	46	965	800	0	0	0	1,811
Maize (silage)	3.00%	0	0	0	401	715	631	1,747
Maize (grain)	45.00%	0	0	355	1,211	441	0	2,007
Soy Bean	25.00%	0	0	195	1,131	484	0	1,810
Sugar Beet	0.50%	0	0	508	1,105	1,017	0	2,630
Sunflower	2.50%	0	0	524	1,217	0	0	1,741
Beans	0.00%	0	0	254	1,051	0	0	1,305
Potatoes	1.00%	0	0	501	1,015	463	0	1,979
Vegetables	22.90%	0	280	1,024	1,059	300	131	2,794
Lucerne	0.10%	0	193	505	1,048	764	510	3,020
Grape	0.00%	0	0	0	327	548	0	875
Weight Total *		7	175	461	1,002	416	42	2,104

Source : ICITID calculation results, Sep. 1994

Note : * arithmetic estimate by the Project cropping area ratio without vineyard, with vineyard irrigation shall be estimated separately

Table 4.4.1-A2 Irrigation Blocks

Name of Tributaries	Total of Irriagtion Blocks			Direct Area			1st Stage			2nd Stage			3rd Stage		
	Block No.	Total Area (ha)	Average Area (ha)	Block No.	Total Area (ha)	Average Area (ha)	Block No.	Total Area (ha)	Average Area (ha)	Block No.	Total Area (ha)	Average Area (ha)	Block No.	Total Area (ha)	Average Area (ha)
Trotus	9	4,052	450	-	-	-	3	1,294	431	4	2,015	504	2	743	372
Calcuna	10	4,174	417	2	792	396	2	951	476	3	1,243	414	3	1,188	396
Zabraut	11	3,947	359	1	100	100	5	1,743	349	3	1,221	407	2	883	442
Susita	8	2,983	373	2	939	470	2	718	359	2	864	432	2	462	231
Putna	11	7,204	655	3	1,865	622	3	1,996	665	3	1,826	609	2	1,517	759
Milcov															
Total	49	22,360	456	8	3,696	462	15	6,702	447	15	7,169	478	11	4,793	436

Table 4.4.1 - A3 Land Ownership and Present Conditions of Each Irrigation Block.

No.	Block No.	Original Planning Stage (1987) Ownership	New work (ha)	Rehabilitation (ha)	Connections (ha)	Total Area (ha)	Estimated Ownership (ha) SCM & SCP	Others	Original Plan Total Area (ha)	Project Plan Total Area (ha)	Remarks
1	1	CAP Ruginesti	286	164		450	0	540	540	339	
2	2	CAP Paunesti	224								
		CAP Ruginesti	416			640	0	640	680	699	Connection with canals 170 ha
3	3	CAP Paunesti	492								
		CAP Ruginesti	60							245	Connection with canals 130 ha
		[illegible]	243			795	243	552	895	381	total 626 ha
4	3A	[illegible]	234	110							
		CAP Paunesti	32	106						683	Connection with canals 670 ha
		CAP Pufesti	331	236						193	
		CAP Ruginesti	83			1,132	344	788	1,187	419	total 1295 ha
5	4	[illegible]	223								
		CAP Pufesti	227			450	223	227	450	522	Connection with canals 160 ha
6	4A	CAP Paunesti	240								
		CAP Pufesti	340			580	0	580	530	572	
7	5	[illegible]	490			490	490	0	490	311	
8	6	[illegible]	470			470	470	0	470	483	Connection with canals 150 ha
9	7	CAP Pufesti	215								
		[illegible]	53								Connection with canals 50 ha
		CAP Marasesti	152			420	53	367	420	438	
10	8	CAP Movilita	400								
		[illegible]	130			530	130	400	530	418	
11	8A	CAP Movilita	368								
		CAP Straoane	82			450	0	450	300	282	
12	9	CAP Straoane	380			380	0	380	420	478	
13	9A	CAP Filiconesti	257								
		CAP Marasesti	273			530	0	530	530	513	
14	10	CAP Pufesti	388	45							
		CAP Marasesti	40	47							
		CP Marasesti	60			580	0	580	593	415	
15	11	CAP Marasesti	400	75							
		CP Marasesti	15			490	0	490	401	377	
16	12	CAP Movilita	550			550	0	550	684	459	
17	13	CAP Straoane	86								
		CAP Racoasa	18								
		CAP Soveja	99								
		CAP Panciu	42								
		[illegible]	15								
		AEIV Panciu	20			280	15	265	420	333	
18	14	[illegible]	530								
		CAP Panciu	100								Connection with canals 160 ha
		CAP Filiconesti	70								
		CP Movilita	20							117	
		CAP Marasesti	40							278	
						760	530	230	762	343	total 738 ha
19	14A	CAP Panciu	403								
		CAP Panciu	30								Connection with canals 140 ha
		CAP Soveja	122			555	0	555	736	595	
20	15	CAP Soveja	300								Connection with canals 60 ha
						300	0	300	350	316	
21	15A	[illegible]	615			615	615	0	570	569	
22	16	CAP Soveja	186								
		AEICVL Panciu	400			586	0	586	530	550	Connection with canals 160 ha
23	17	CAP Soveja	300			300	0	300	300	313	
24	17A	[illegible]	465								
						465	465	0	465	435	Connection with canals 150 ha
25	18	CAP Tifesti	397	120							
		AEIV Tifesti		50						324	Connection with canals 130 ha
		IAS Panciu	48			615	48	567	848	138	total 462 ha
26	18A	CAP Soveja	185								
		CAP Tifesti	263	72		520	0	520	550	535	Connection with canals 100 ha
27	19	IAS Panciu	84	36							
		CAP Tifesti	142	108	48	418	120	298	418	435	Connection with canals 110 ha
28	20	IAS Panciu		51	307						
		[illegible]			90	448	448	0	640	539	
29	20A	[illegible]	210			210	210	0	200	100	
30	21	[illegible]	51								
		CAP Panciu		55							
		CAP Garoafa	30	33							
		[illegible]	83								
		CAP Tifesti	48								
		(Individuals)	220			520	134	386	113	400	
31	22	CAP Tifesti	43	120							
		CP Tifesti	84	32							Conection with canals 112 ha
		(Individuals)	28			307	0	307	287	283	
32	22A	CAP Tifesti		236							
		AEIV Tifesti		94		330	0	330	367	329	Connection with canals 150 ha
33	23	CAP Bolotesti	359	105							
		AEIV Jaristea	59	12							Connection with canals 220 ha
		CP Bolotesti		25		560	0	560	489	419	
34	24	CAP Bolotesti	165	235							
		(Individuals)	268	12		680	0	680	412	266	Connection with canals 32 ha
35	25	CAP Bolotesti	273								
		[illegible]	29	133						273	Connection with canals 35 ha (25A)
		(Individuals)	445			880	162	718	512	444	
36	26	CAP Jaristea	284								
		(Individuals)	266			550	0	550	620	593	
37	27	[illegible]	171								
		CAP Brotenei		42							
		[illegible]	42								
		CAP Cimpineanca	325	20		600	213	387	600	659	
38	28	[illegible]	699	16							
		CAP Odobesti	287	150		1,152	715	437	1,255	1,268	Connection with canals 400 ha
39	28A	CAP Jaristea	250								
		Cattle complex Unirea	397			647	0	647	647	591	
40	29	CAP Iresti	116								
		CAP Bolotesti	184			300	0	300	608	609	
41	30	[illegible]	375	75							
		CAP Odobesti	24								
		CP Odobesti	23								
		AEN Jaristea	302	50							
		SEV Odobesti	16		74	939	450	489	939	1,003	
42	31	[illegible]	392								
		CAP Jaristea	68	16							
		AEIV Jaristea	50			526	392	134	880	994	
TOTAL			19,808	2,681	519	23,008	6,470	16,620	25,911	22,360	

Notes: IAS : State farm industry (has remained after Land reform)
CAP : Agricultural production cooperative (were abolished)
AEIV : Economic association for vineyard (similar with CAP were abolished)
IJEP : Districtal association for maintenance and operation of pasture
IJEP : Districtal association for maintenance and operation of pasture industry)

Cattle complex Unirea similar with CAP were abolished, they sold cattle, buildings and land divide to individual
CAP Soveja was abolished and arable land which belongs to individual, is on Gerosla village territory
New name for IAS:
IAS Marasesti SC. Agroindustriala SA Marasesti
IAS Odobesti SC. Rentvila SA Odobesti
IAS Panciu SC Vinitor SA Panciu;
IAS Paunesti SC Agrovinit SA Paunesti

Table 4.4.1.A4 (1of2)
Alternative Study for Siret-Baragan Irrigation Canal System

Canal Size

Alternative1 (Temporally Canal Construction from SRP-V to SPP-28)
Concrete Lining Canal t=7cm Side Slope 1:1 Longitudinal Slope S=0.00005

Irrigation Block	Area ha	Demand l/s	Discharge m3/s	Distance m	Bed Width m	Discharge Area m2	Velocity m/s	Depth m	Canal Depth m
SRP.V			3.286	9000	2.00	6.93	0.474	1.816	2.200
SPP.20A	100	81	3.205	3000	2.00	6.80	0.471	1.794	2.100
SPP.20	539	437	2.768	1000	2.00	6.10	0.454	1.665	2.000
SPP.21	400	324	2.444	5000	2.00	5.56	0.439	1.562	1.900
SPP.26	593	480	1.964	1500	2.00	4.73	0.415	1.394	1.700
SPP.28A	613	497	1.467	500	1.50	3.79	0.387	1.335	1.700
SRP.IX	1996	1088	0.379		0.50	1.37	0.276	0.948	
SPP.27	659	379	0		0	0	0	0	
Total	4900	3286		20000					

Alternative 2 (Sub-pump Station and Distribution Canal Network)
Concrete Lining Canal t=7cm Side Slope 1:1.5 Longitudinal Slope S=0.00005

Irrigation Block	Area ha	Demand l/s	Discharge m3/s	Distance m	Bed Width m	Discharge Area m2	Velocity m/s	Depth m	Canal Depth m
Sub-pump Station SRP.V									
SPP.22	283	181	1.266	5000	2.00	3.56	0.356	1.012	1.400
SPP.25A	444	284	1.085	1500	2.00	3.18	0.341	0.935	1.300
SPP.25,CD.11	1158	801	0.801						
SPP.20,21	1039	842	0.842	2000	2.00	2.65	0.318	0.819	1.200
SPP.26,27,28	1865	1356	1.356	3500	2.00	3.74	0.362	1.048	1.400
Total	4789	3464		12000					

Table 4.4.1.A4 (2of2)
Alternative Study for Siret-Baragan Irrigation Canal System

Construction Cost (Direct Cost of Earth Work and Concrete Work for Canal)

(Unit: Lei)

			Alternative 1		Alternative 2		Original Plan
Item	Unit	Unit Cost	Volume	Cost	Volume	Cost	
Excavation	m3	600	249,112	149,467,200	163,726	98,235,600	
Embankment	m3	600	616,000	369,600,000	624,000	374,400,000	
Soil Maretial	m3	2,000	366,888	733,776,000	460,274	920,548,000	
Concrete Works	m3	90,330	11,440	1,033,375,200	19,800	1,788,534,000	
Construction Road	m	6,160	22,000	135,520,000	24,000	147,840,000	
Siphon		613,330,114	2	1,226,660,228	2	1,226,660,228	
Sub-Pump SRP.V		5,914,193,895	0	0	1	5,914,193,895	
Pressuer Pump		1,971,397,965	1	1,971,397,965	1	1,971,397,965	
Others		`0.2%		561,979,659		1,244,180,969	
Sub-total				6,181,776,252		13,685,990,657	
Onfarm Works	unit	14,395,096,546	1	14,395,096,546	1	14,395,096,546	
TOTAL				20,576,872,798		28,081,087,203	16,366,494,511

Table 4.4.2-A1 Runoff Coefficient for the Field Darinage

Runoff coefficient (f) : the slope less than 1 %

	Heavy Soil Texture			Medium Soil Texture			Light Texture		
Slope	0.1 %	0.5 %	1 %	0.1 %	0.5 %	1 %	0.1 %	0.5 %	1 %
Jan.	0.33	0.44	0.50	0.23	0.39	0.44	0.23	0.30	0.34
Feb.	0.33	0.44	0.50	0.28	0.39	0.44	0.23	0.30	0.34
Mar.	0.39	0.50	0.56	0.34	0.45	0.51	0.28	0.36	0.41
Apr.	0.33	0.44	0.50	0.28	0.39	0.44	0.23	0.30	0.34
May	0.29	0.39	0.45	0.23	0.34	0.39	0.17	0.24	0.28
Jun.	0.18	0.26	0.31	0.12	0.19	0.23	0.12	0.16	0.19
Jul.	0.12	0.20	0.24	0.09	0.14	0.17	0.06	0.10	0.12
Aug.	0.10	0.16	0.19	0.06	0.11	0.12	0.03	0.05	0.07
Sep.	0.12	0.20	0.24	0.09	0.14	0.17	0.06	0.10	0.12
Oct.	0.18	0.26	0.31	0.12	0.19	0.23	0.09	0.14	0.17
Nov.	0.23	0.32	0.37	0.18	0.26	0.31	0.12	0.16	0.19
Dec.	0.33	0.44	0.50	0.28	0.39	0.44	0.23	0.30	0.34

Source :

Runoff coefficient (f) : the slope more than 1 %

Land Use	Slope (%)	Soil Texture		
		Heavy	Medium	Light
Forest	0 - 5	0.40	0.30	0.10
	5 - 10	0.50	0.35	0.25
	10 -30	0.60	0.50	0.30
Pasture	0 - 5	0.40	0.30	0.10
	5 - 10	0.55	0.36	0.16
	10 - 30	0.60	0.42	0.22
under Crop Cultivation	0 - 5	0.60	0.5	0.30
	5 - 10	0.70	0.6	0.40
	10 - 30	0.82	0.72	0.52

Table 4.5.2-A1 Soil Conservation Project Area (SCPA)

Sub-SCPA	Block No.	Area of Planning Net Arable Land (ha)	Area of Planning Net Vineyard (ha)	Other (ha)	Total (ha)
Odobesti	23	434	0	9	443
	31	343	736	22	1,101
	Sub-total	777	736	31	1,544
Tifesti	18	462	0	10	472
	Sub-total	462	0	10	472
Panciu	13	333	0	7	340
	14A	595	0	12	607
	15	313	0	7	320
	16	550	0	11	561
	17	313	0	6	319
	14	129	0	2	131
	Sub-total	2,233	0	45	2,278
Movilita	5	311	0	6	317
	6	483	0	9	492
	8	418	0	8	426
	8A	282	0	5	287
	9	478	0	9	487
	12	459	0	9	468
	Sub-total	2,431	0	46	2,477
Paunesti	1	421	0	9	430
	2	753	0	15	768
	3	743	0	15	758
	4	522	0	11	533
	4A	319	0	7	326
	Sub-total	2,758	0	57	2,815
Total		8,661	736	189	9,586

Table 4.5.3 - A1 Results of Soil Loss Analysis in SCPA without Soil Conservation.

Sub-SCPA	Block	Area (ha)	Slope Declination I (%)	Slope Length L (m)	Irrigation	Crop Management	Rainfall Erosivity Index (K)	Soil Erodibility Factor (S)	Crop Management Factor (C)	Conservation Practice Factor (Cs)	Length Factor (L^0.3)	Slope Factor (I^1.5)	Soil Loss (ton/ha/year) (E)	Gross Soil Loss (ton/year)
Odobesti	23	434	1.0	400	with	A	0.190	1.0	0.70	1.0	6.0	1.0	0.8	348
	31	1,079	1.5	400	with	B	0.190	1.0	0.65	1.0	6.0	1.8	1.4	1,477
	sub-total	**1,513**												**1,826**
Tifesti	18	**462**	1.0	400	with	A	0.190	1.0	0.70	1.0	6.0	1.0	0.8	**371**
Panciu	13	333	2.5	400	with	A	0.190	1.0	0.70	1.0	6.0	4.0	3.2	1,056
	14A	595	1.0	400	with	A	0.190	1.0	0.70	1.0	6.0	1.0	0.8	478
	15	313	1.2	400	with	A	0.190	1.0	0.70	1.0	6.0	1.3	1.1	330
	16	550	1.8	400	with	A	0.190	1.0	0.70	1.0	6.0	2.4	1.9	1,066
	17	313	1.5	400	with	A	0.190	1.0	0.70	1.0	6.0	1.8	1.5	461
	14	129	4.0	400	with	A	0.190	1.0	0.70	1.0	6.0	8.0	6.4	828
	sub-total	**2,233**												**4,220**
Movilita	5	311	2.6	400	with	A	0.190	1.0	0.70	1.0	6.0	4.2	3.4	1,046
	6	483	1.5	400	with	A	0.190	1.0	0.70	1.0	6.0	1.8	1.5	712
	8	418	2.5	400	with	A	0.190	1.0	0.70	1.0	6.0	4.0	3.2	1,326
	8A	282	1.7	400	with	A	0.190	1.0	0.70	1.0	6.0	2.2	1.8	502
	9	478	1.2	400	with	A	0.190	1.0	0.70	1.0	6.0	1.3	1.1	504
	12	459	2.0	400	with	A	0.190	1.0	0.70	1.0	6.0	2.8	2.3	1,042
	sub-total	**2,431**												**5,132**
Paunesti	1	421	2.0	400	with	A	0.190	1.0	0.70	1.0	6.0	2.8	2.3	956
	2	753	1.7	400	with	A	0.190	1.0	0.70	1.0	6.0	2.2	1.8	1,339
	3	743	3.2	400	with	A	0.190	1.0	0.70	1.0	6.0	5.7	4.6	3,413
	4	522	2.3	400	with	A	0.190	1.0	0.70	1.0	6.0	3.5	2.8	1,461
	4A	319	2.3	400	with	A	0.190	1.0	0.70	1.0	6.0	3.5	2.8	893
	sub-total	**2,758**												**8,063**
Total		**9,397**												**19,611**

Note: Crop Management A: 45% of Maize, 25% of Soy Bean, 15% of Wheat/Barley, and 15% of Vegetables
Crop Management B: 50% of Vineyard, 22.5% of Maize, 12.5% of Soy Bean, 7.5% of Wheat/barley, and 7.5% of Vegetables

Table 4.5.3 - A2 Results of Soil Loss Analysis in SCPA with Contouring.

Sub-SCPA	Block	Area (ha)	Slope Declination I (%)	Slope Length L (m)	Irrigation	Crop Management	Rainfall Erosivity Index (K)	Soil Erodibility Factor (S)	Crop Management Factor (C)	Conservation Practice Factor (Cs)	Length Factor (L^0.3)	Slope Factor (I^1.5)	Soil Loss (ton/ha/year) (E)	Gross Soil Loss (ton/year)
Odobesti	23	434	1.0	400	with	A	0.190	1.0	0.70	0.5	6.0	1.0	0.4	174
	31	1,079	1.5	400	with	B	0.190	1.0	0.65	0.5	6.0	1.8	0.7	739
	sub-total	**1,513**												**913**
Tifesti	18	**462**	1.0	400	with	A	0.190	1.0	0.70	0.5	6.0	1.0	0.4	**185**
Panciu	13	333	2.5	400	with	A	0.190	1.0	0.70	0.5	6.0	4.0	1.6	528
	14A	595	1.0	400	with	A	0.190	1.0	0.70	0.5	6.0	1.0	0.4	239
	15	313	1.2	400	with	A	0.190	1.0	0.70	0.5	6.0	1.3	0.5	165
	16	550	1.8	400	with	A	0.190	1.0	0.70	0.5	6.0	2.4	1.0	533
	17	313	1.5	400	with	A	0.190	1.0	0.70	0.5	6.0	1.8	0.7	231
	14	129	4.0	400	with	A	0.190	1.0	0.70	0.5	6.0	8.0	3.2	414
	sub-total	**2,233**												**2,110**
Movilita	5	311	2.6	400	with	A	0.190	1.0	0.70	0.5	6.0	4.2	1.7	523
	6	483	1.5	400	with	A	0.190	1.0	0.70	0.5	6.0	1.8	0.7	356
	8	418	2.5	400	with	A	0.190	1.0	0.70	0.5	6.0	4.0	1.6	663
	8A	282	1.7	400	with	A	0.190	1.0	0.70	0.5	6.0	2.2	0.9	251
	9	478	1.2	400	with	A	0.190	1.0	0.70	0.5	6.0	1.3	0.5	252
	12	459	2.0	400	with	A	0.190	1.0	0.70	0.5	6.0	2.8	1.1	521
	sub-total	**2,431**												**2,566**
Paunesti	1	421	2.0	400	with	A	0.190	1.0	0.70	0.5	6.0	2.8	1.1	478
	2	753	1.7	400	with	A	0.190	1.0	0.70	0.5	6.0	2.2	0.9	670
	3	743	3.2	400	with	A	0.190	1.0	0.70	0.5	6.0	5.7	2.3	1,707
	4	522	2.3	400	with	A	0.190	1.0	0.70	0.5	6.0	3.5	1.4	731
	4A	319	2.3	400	with	A	0.190	1.0	0.70	0.5	6.0	3.5	1.4	447
	sub-total	**2,758**												**4,031**
Total		**9,397**												**9,806**

Note: Crop Management A: 45% of Maize, 25% of Soy Bean, 15% of Wheat/Barley, and 15% of Vegetables
Crop Management B: 50%Vineyard, 22.5%Maize, 12.5%Soy Bean, 7.5%Wheat/Barley, 7.5%Vegetables

Table 4.5.3 - A3 Results of Soil Loss Analysis in SCPA with Level Terrace.

Sub-SCPA	Block	Area (ha)	Slope Declination I (%)	Slope Length L (m)	Irrigation	Crop Management	Rainfall Erosivity Index (K)	Soil Erodibility Factor (S)	Crop Management Factor (C)	Conservation Practice Factor (Cs)	Length Factor (L^0.3)	Slope Factor (I^1.5)	Soil Loss (ton/ha/year) (E)	Gross Soil Loss (ton/year)
Odobesti	23	434	1.0	400	with	A	0.190	1.0	0.70	0.15	6.0	1.0	0.1	52
	31	1,079	1.5	400	with	B	0.190	1.0	0.65	0.15	6.0	1.8	0.2	222
	sub-total	**1,513**												**274**
Tifesti	18	**462**	1.0	400	with	A	0.190	1.0	0.70	0.15	6.0	1.0	0.1	**56**
Panciu	13	333	2.5	400	with	A	0.190	1.0	0.70	0.15	6.0	4.0	0.5	158
	14A	595	1.0	400	with	A	0.190	1.0	0.70	0.15	6.0	1.0	0.1	72
	15	313	1.2	400	with	A	0.190	1.0	0.70	0.15	6.0	1.3	0.2	50
	16	550	1.8	400	with	A	0.190	1.0	0.70	0.15	6.0	2.4	0.3	160
	17	313	1.5	400	with	A	0.190	1.0	0.70	0.15	6.0	1.8	0.2	69
	14	129	4.0	400	with	A	0.190	1.0	0.70	0.15	6.0	8.0	1.0	124
	sub-total	**2,233**												**633**
Movilita	5	311	2.6	400	with	A	0.190	1.0	0.70	0.15	6.0	4.2	0.5	157
	6	483	1.5	400	with	A	0.190	1.0	0.70	0.15	6.0	1.8	0.2	107
	8	418	2.5	400	with	A	0.190	1.0	0.70	0.15	6.0	4.0	0.5	199
	8A	282	1.7	400	with	A	0.190	1.0	0.70	0.15	6.0	2.2	0.3	75
	9	478	1.2	400	with	A	0.190	1.0	0.70	0.15	6.0	1.3	0.2	76
	12	459	2.0	400	with	A	0.190	1.0	0.70	0.15	6.0	2.8	0.3	156
	sub-total	**2,431**												**770**
Paunesti	1	421	2.0	400	with	A	0.190	1.0	0.70	0.15	6.0	2.8	0.3	143
	2	753	1.7	400	with	A	0.190	1.0	0.70	0.15	6.0	2.2	0.3	201
	3	743	3.2	400	with	A	0.190	1.0	0.70	0.15	6.0	5.7	0.7	512
	4	522	2.3	400	with	A	0.190	1.0	0.70	0.15	6.0	3.5	0.4	219
	4A	319	2.3	400	with	A	0.190	1.0	0.70	0.15	6.0	3.5	0.4	134
	sub-total	**2,758**												**1,209**
Total		**9,397**												**2,942**

Note: Crop Management A: 45% of Maize, 25% of Soy Bean, 15% of Wheat/Barley, and 15% of Vegetables
Crop Management B: 50% of Vineyard, 22.5% of Maize, 12.5% of Soy Bean, 7.5% of Wheat/Barley, and 7.5% of Vegetables

Table 4.5.5-A1 Construction Cost of Alternative-A

Item	Name	Quantities	Unit	Foreign Currency (Lei)	Local Currency (Lei)	Total (Lei)
1.1 Odobesti SCPA						
I. Level Terrace		777	ha	0	178,800,000	178,800,000
II. Soimului Canal		8,000	m	0	835,765,000	835,765,000
Sub-total				**0**	**1,014,565,000**	**1,014,565,000**
1.2 Tifesti SCPA						
I. Level Terrace		462	ha	0	106,320,000	106,320,000
II. Boundary Drainage Canal	TIF-BD1	3,500	m	0	300,005,000	300,005,000
Sub-total				**0**	**406,325,000**	**406,325,000**
1.3 Panciu SCPA						
I. Level Terrace		2,233	ha	0	539,280,000	539,280,000
II. Grassed Waterway	PAN-GW1	5,500	m	0	56,516,000	56,516,000
	PAN-GW2	5,500	m	0	56,516,000	56,516,000
Sub-total				**0**	**652,312,000**	**652,312,000**
1.4 Movilita SCPA						
I. Level Terrace		2,431	ha	0	587,160,000	587,160,000
II. Grassed Waterway	MOV-GW1	7,000	m	0	70,810,000	70,810,000
	MOV-GW2	6,500	m	0	65,998,000	65,998,000
	MOV-GW3	4,000	m	0	35,868,000	35,868,000
III. Boundary Drainage Cana	MOV-BD1	3,300	m	0	326,800,000	326,800,000
	MOV-BD2	3,500	m	0	301,850,000	301,850,000
IV. Sabo Dam	MOV-D1	1	nos.	0	23,339,500	23,339,500
Sub-total				**0**	**1,411,825,500**	**1,411,825,500**
1.5 Paunesti SCPA						
I. Level Terrace		2,758	ha	0	666,036,000	666,036,000
II. Grassed Waterway	PAU-GW1	2,500	m	0	23,874,000	23,874,000
	PAU-GW2	2,000	m	0	22,020,000	22,020,000
III. Boundary Drainage Cana	PAU-BD1	2,850	m	0	316,900,000	316,900,000
	PAU-BD2	3,200	m	0	324,120,000	324,120,000
IV. Sabo Dam	PAU-D1	1	nos.	0	23,339,500	23,339,500
	PAU-D2	1	nos.	0	23,339,500	23,339,500
	PAU-D3	1	nos.	0	23,339,500	23,339,500
	PAU-D4	1	nos.	0	46,086,000	46,086,000
	PAU-D5	1	nos.	0	46,086,000	46,086,000
Sub-total				**0**	**1,515,140,500**	**1,515,140,500**
TOTAL				**0**	**5,000,168,000**	**5,000,168,000**

Table 4.5.5-A2 Construction Cost of Alternative-B

Item	Name	Quantities	Unit	Foreign Currency (Lei)	Local Currency (Lei)	Total (Lei)
1.1 Odobesti SCPA						
I. Level Terrace		0	ha	0	0	0
II. Soimului Canal		8,000	m	0	835,765,000	835,765,000
Sub-total				**0**	**835,765,000**	**835,765,000**
1.2 Tifesti SCPA						
I. Level Terrace		0	ha	0	0	0
II. Boundary Drainage Canal	TIF-BD1	3,500	m	0	300,005,000	300,005,000
Sub-total				**0**	**300,005,000**	**300,005,000**
1.3 Panciu SCPA						
I. Level Terrace		129	ha	0	31,248,000	31,248,000
II. Grassed Waterway	PAN-GW1	5,500	m	0	56,516,000	56,516,000
	PAN-GW2	5,500	m	0	56,516,000	56,516,000
Sub-total				**0**	**144,280,000**	**144,280,000**
1.4 Movilita SCPA						
I. Level Terrace		703	ha	0	169,848,000	169,848,000
II. Grassed Waterway	MOV-GW1	7,000	m	0	70,810,000	70,810,000
	MOV-GW2	6,500	m	0	65,998,000	65,998,000
	MOV-GW3	4,000	m	0	35,868,000	35,868,000
III. Boundary Drainage Canal	MOV-BD1	3,300	m	0	326,800,000	326,800,000
	MOV-BD2	3,500	m	0	301,850,000	301,850,000
IV. Sabo Dam	MOV-D1	1	nos.	0	23,339,500	23,339,500
Sub-total				**0**	**994,513,500**	**994,513,500**
1.5 Paunesti SCPA						
I. Level Terrace		1,007	ha	0	243,180,000	243,180,000
II. Grassed Waterway	PAU-GW1	2,500	m	0	23,874,000	23,874,000
	PAU-GW2	2,000	m	0	22,020,000	22,020,000
III. Boundary Drainage Canal	PAU-BD1	2,850	m	0	316,900,000	316,900,000
	PAU-BD2	3,200	m	0	324,120,000	324,120,000
IV. Sabo Dam	PAU-D1	1	nos.	0	23,339,500	23,339,500
	PAU-D2	1	nos.	0	23,339,500	23,339,500
	PAU-D3	1	nos.	0	23,339,500	23,339,500
	PAU-D4	1	nos.	0	46,086,000	46,086,000
	PAU-D5	1	nos.	0	46,086,000	46,086,000
Sub-total				**0**	**1,092,284,500**	**1,092,284,500**
TOTAL				**0**	**3,366,848,000**	**3,366,848,000**

Table 4.7.1-A1 Pump Dimensions of SRP

No.	Name of pump station	Service area (ha)	Design discharge (l/s)	Total head (m)	Pump				
					Type	Number	Discharge (l/S)	Diameter	Moter
1	SRP-I	2,758	1,763	44.0	MV	5	353	403C	6kv/315kw
2	SRP-IA	1,294	827	7.5	BRATES	2	298	350-410	37kw
					BRATES	3	80	250-292	11kw
3	SRP-II	743	475	45.0	NDS	2	184	400-350-500	160kw
					LOTRU	3	36	125	37kw
4	SRP-III	1,188	759	54.0	NDS	2	294	350-300-430	250kw
					NC	3	57	125-100-250	55kw
5	SRP-IV	2,431	1,554	41.0	NDS	4	389	500-450-610	6kv/400kw
6	SRP-V	6,140	3,924	41.0	NDS	3	1,308	800-600-950	6kv/800kw
		9,234	5,334	37.5	NDS	4	1,334	800-600-910	6kv/800kw
7	SRP-VI	883	564	36.0	NDS	2	218	400-350-500	110kw
					LOTRU	3	43	125	30kw
8	SRP-VII	6,773	3,761	25.0	MV	4	941	602C	6kv/400kw
9	SRP-VIII	1,797	1,002	18.0	BRATES	2	387	440-445	110kw
					BRATES	3	76	250-292	37kw
10	SRP-IX	1,996	1,088	31.0	NDS	2	427	500-450-640	200kw
					NC	3	78	200-150-315	37kw

Note: BRATES: horizontal-axial single-stage volute type mixed flow pump
NDS, NC, LOTRU: horizontal-axial single-stage volute type centrifugal flow pump
MV: vertical-axial milti-stage mixed flow pump

Table 4.7.1 - A2 Pump Dimensions of Already Installed SRP

SRP	Original Design						New Design					
	Q_T	q	H_T	Pump	Motor	Qty	Q_T	q	H_T	Pump	Motor	Qty
	(ℓ/s)	(ℓ/s)	(m)		(kw)		(ℓ/s)	(ℓ/s)	(m)		(kw)	
I	1,940	388	45	MV 403 C	315	5	1,763	402	44	MV 403 C	315	5
IV	2,000	500	44	NDS 500-450-610	400	4	1,554	583	41	NDS 500-450-610	400	4
Vn	3,770	1,500	40.6	NDS 800-600-950	800	3	3,924	1,450	41	NDS 800-600-950	800	3
Vs	4,900	1,380	36.6	NDS 800-600-910	800	4	5,334	1,340	37.5	NDS 800-600-910	800	4
VII	3,500	980	25	MV 602 C	400	4	3,761	980	25	MV 602 C	400	4

Table 4.7.1 - A3 Distribution Canal (CD) Flow Capacity.

Name of CD	Race No.	Design Discharge (m3/s)	Ranges from	Ranges to	No. of Water Table Regulators	Spillway Control Gates	No. of Drops	Remarks
	I	0.827	SRP-IA	SPP.3A-1				
CD.1	II	0.391	SPP.3A-1	SPP.3A-3	2	1		
	I	1.763	SP-I	SRP-II				
CD.2	II	0.750	SRP-II	SPP.2				
	III	0.269	SPP.2	SPP.1	3	1	1	
CD.3	I	0.475	SP-II	SPP.3	-	1		
	I	3.924	SP-Vn	SRP-IV				
CD.4	II	2.043	SRP-IV	SRP-I				
	III	0.500	SRP-I	Carecna R.	2	1		Spillway
	I	1.554	SP-IV	SRP-III				
CD.5	II	0.309	SRP-III	SPP.6	1	1		Spillway tro Carecna R.
	I	0.466	SP-III	SPP.8				
CD.6	II	0.300	SPP.8	Carecna R.	1	1		
CD.6A	I	0.123	SP-III	SPP.12	-	1		
	I	5.334	SP-Vn	SRP-VII				
	II	0.737	SRP-VII	SPP.17A				
CD.7	III	0.459	SPP.17A	SPP.19				
	IV	0.300	SPP.19	Putna R.	4	1	3	Spillway
CD.8	I	1.145	SP-VII	SRP-VI	-	1		SPP.14A
	I	2.616	SP-VII	SRP-VIII				SPP.18A
CD.8A	II	1.072	SRP-VIII	SPP.24				
	II	0.692	SPP.24	SPP.29				
	IV	0.281	SPP.29	SPP.30	5	1	4	drain to drainage canal
CD.9	-	0.564	SP-IX	SPP.16	-	1		
	I	1.002	SP-VII	SPP.18-2				
CD.10	II	0.707	SPP.18-2	SPP.23				
	III	0.429	SPP.23	SPP.31	2	1	2	
	I	1.088	SP-IX	SPP.28				
CD.11	II	0.512	SPP.28	SPP.25				
	III	0.300	SPP.25	Putna R.	2	1		Spillway
Total					22	13	10	

Table 4.7.1 - A4 Distribution Canal Related Structures

Road Crossing Structures

No. of Culvert	Name of CD	Flow Capacity (m3/s)	Culvert Diameter Dia. (m) X No.	Velocity (m/s)	Name of Road
1	CD.1	0.268	1.00 X 1	0.341	Dj 206H
2		0.269	1.00 X 1	0.343	No.1
3	CD.2	0.269	1.00 X 1	0.343	26
4		0.750	1.00 X 1	0.789	Dj 206H
5	CD.4	0.500	1.00 X 1	0.637	37
6		0.300	1.00 X 1	0.382	37
7	CD.5	0.309	1.00 X 1	0.393	PR.7
8	CD.8	0.199	1.00 X 1	0.253	Dj204E
9		0.737	1.00 X 1	0.776	No.3
10		0.459	1.00 X 1	0.584	Dj 205F
11	CD.7	0.181	1.00 X 1	0.230	Dj 205E
12		0.181	1.00 X 1	0.230	Village road
13		2.616	1.40 X 2	0.850	No.3
14		2.416	1.40 X 2	0.784	Dj 205F
15	CD.8A	1.072	1.30 X 1	0.808	Dj 205E
16		0.862	1.20 X 1	0.727	No.4
17		0.281	1.00 X 1	0.358	DN 2D
18		0.795	1.10 X 1	0.837	Dj 205E
19	CD.10	0.707	1.10 X 1	0.744	No.4

River/Drain Crossing Structures (Siphon)

No. of Siphon	Name of CD	Crossing Length (m)	Flow Capacity (m3/s)	Siphon Demention Dia.(m) X No.	Name of River/Drain
1	CD.2	195	0.75	1.10 X 1	Domosita Secata R.
2		95	0.75	1.10 X 1	Boulai R.
3	CD.4	148	3.924	1.50 X 3	
4		175	2.043	1.30 X 2	Zapodia Mica R.
5		109	1.763	1.20 X 2	
6	CD.6	40	0.466	1.00 X 1	Zapodia Mica R.
7		100	5.334	1.70 X 3	
8	CD.7	30	0.737	1.1- X 1	
9		175	0.459	1.00 X 1	Susita R.
10	CD.8	30	0.945	1.20 X 1	
11		30	2.616	1.50 X 2	
12	CD.8A	475	2.416	1.40 X 2	Susita R.
13		545	0.862	1.2 X 1	Putna R.
14		200	0.795	1.10 X 1	
15	CD.10	1365	0.707	1.10 X 1	Putna R.

Table 4.7.1 - A5 Pump Dimensions of SPP (1/2)

No.	STA	A (ha)	Q (l/s)	SWL (m)	DWL (m)	H T (m)	Pump	Motor (kw)	Qty	REMARKS
1	1	192	156	137.3	218.5	84.0	NC 200-150-350	132	1	
							NC 125-100-250	55	1	
		229	185	137.3	195.5	61.0	RDN 200-150-250	75	1	
							NC 125-100-250	45	2	
2	2	129	104	137.9	222.0	87.0	NC 200-150-350	110	1	
							NC 125-100-250	45	1	
		624	506	137.9	190.0	55.0	RDN 200-150-250	110	4	
							NC 125-80-250	37	2	
3	3-1	362	293	179.4	219.4	43.0	NC 200-150-400	75	2	
							LOTRU 125	37	2	
4	3-2	381	309	179.0	219.6	41.0	NC 200-150-400	75	2	
							LOTRU 125	37	2	
5	3A1	682	552	84.2	162.0	81.0	NC 200-150-350	132	4	
							NC 125-100-250	45	3	
6	3A2	193	156	79.95	148.0	71.0	NC 200-150-350	132	1	
							NC 125-100-250	45	1	
7	3A3	419	339	74.0	159.0	83.0	NC 200-150-350	160	2	
							NC 125-100-250	75	2	
8	4	522	423	140.1	181.0	44.0	NC 200-150-400	75	2	
							NC 125-100-250	55	3	
9	4A	319	258	138.9	197.5	62.0	RDN 200-150-250	90	2	
							NC 125-100-250	45	2	
10	5	311	252	183.4	226.8	46.0	NC 200-150-400	75	2	
							LOTRU 125	37	2	
11	6*	483	391	139.7	196.0	59.0	MA 200 x 5	55	8	
12	7*	438	355	103.5	161.0	61.0	MA 200 x 5	55	7	
13	8	418	339	184.3	228.0	47.0	NC 200-150-400	55	3	
							NC 125-100-250	45	2	
14	8A	282	228	140.0	201.0	64.0	RDN 200-150-250	90	2	
							NC 125-100-250	45	2	
15	9	478	387	140.0	201.0	64.0	RDN 200-150-250	110	3	
							NC 125-100-250	75	2	
16	9A*	513	416	104.5	169.0	68.0	RDN 200-150-250	75	6	
17	10*	415	336	737	177.0	106.0	NC 200-150-350	200	2	
							NC 125-100-315	90	3	
18	11*	377	305	71.0	147.0	79.0	NC 200-150-350	132	2	
							NC 125-100-250	75	2	
19	12	459	372	184.1	236.0	55.0	RDN 200-150-250	90	3	
							NC 125-100-250	55	2	
20	13	333	270	139.3	201.0	65.0	RDN 200-150-250	110	2	
							NC 125-100-250	45	2	
21	14-1	117	95	96.7	154.7	61.0	RDN 200-150-250	75	1	
							NC 125-80-250	37	1	
22	14-2*	278	225	101.9	151.0	52.0	MA 200 x 4	45	6	
23	14-3*	343	278	100.0	158.0	61.0	MA 200 x 5	55	6	
24	14A	474	384	114.5	199.6	88.0	NC 200-150-350	132	2	
							NC 125-100-315	90	3	
		121	98	114.5	161.0	50.0	NC 200-150-400	55	1	
							NC 125-80-200	30	1	
25	15	313	254	114.9	172.0	60.0	RDN 200-150-250	90	2	
							NC 125-80-250	37	2	
26	15A*	570	462	99.8	165.8	69.0	MV 253x2	132	4	
							MA 200x5	55	5	
27	16	550	446	138.7	203.0	67.0	NC 200-150-350	132	2	
							RDN 200-150-250	75	3	
28	17	313	254	117.0	174.0	60.0	RDN 200-150-250	90	2	
							NC 125-80-250	37	2	

Table 4.7.1 - A5 Pump Dimensions of SPP (2/2)

No.	STA	A (ha)	Q (l/s)	SWL (m)	DWL (m)	H T (m)	Pump	Motor (kw)	Qty	REMARKS
29	17A*	435	352	98.5	162.0	67.0	MA 200x6	55	7	
30	18-1	324	262	128.7	198.0	72.0	RDN 200-150-250	110	2	
							NC 125-100-250	55	2	
31	18-2	138	112	128.1	193.0	68.0	RDN 200-150-250	90	1	
							NC 125-80-250	45	1	
32	18A	535	433	115.7	177.0	64.0	RDN 200-150-250	90	4	
							NC 125-80-250	45	2	
33	19*	435	352	97.5	159.0	65.0	MA 200 x 5	55	8	
34	20	539	437	73.4	161.0	91.0	NC 200-150-350	132	4	
							NC 125-100-315	55	2	
35	20A	100	81	73.8	138.5	68.0	RDN 200-150-250	75	1	
							NC 125-80-250	37	1	
36	21	400	324	73.5	143.0	73.0	NC 200-150-350	132	2	
							NC 125-100-250	55	2	
37	22*	283	229	96.6	154.0	60.0	MA 200 x 5	55	5	
38	22A	329	266	113.8	175.0	64.0	RDN 200-150-250	110	2	
							NC 125-80-250	45	2	
39	23	434	352	123.3	182.0	62.0	RDN 200-150-250	90	3	
							NC 125-100-250	55	2	
40	24	266	215	111.3	186.0	78.0	NC 200-150-350	110	1	
							NC 125-100-250	75	2	
41	25*	357	289	88.8	166.0	80.0	MA 200 x 6	55	8	
42	25A	444	360	88.3	156.0	71.0	RDN 200-150-250	110	3	
							NC 125-100-250	75	2	
43	26	593	480	72.7	144.0	74.0	NC 200-150-350	110	4	
							NC 125-100-250	55	2	
44	27	659	379	72.4	175.0	106.0	NC 200-150-350	200	3	
							NC 125-100-315	75	2	
45	28*	1,195	638	83.3	183.3	103.0	ÇÍÇu253Çò4	200	5	
							MA 200 x 7	75	4	
46	28A	613	497	72.4	166.4	97.0	NC 200-150-350	160	4	
							NC 125-100-315	75	2	
47	29	643	521	108.8	174.0	68.0	NC 200-150-350	132	4	
							NC 125-80-250	37	3	
48	30	917	312	107.2	195.0	91.0	NC 200-150-350	200	2	
							NC 125-100-315	75	2	
49	31	1,083	506	120.7	217.0	99.0	NC 200-150-350	160	4	
							NC 125-100-315	75	2	

Table 4.7.1 - A6 Pump Dimensions of Already Installed SPP

SPP	Original Design						New Design					
	Q_T	q	H_T	Pump	Motor	Qty	Q_T	q	H_T	Pump	Motor	Qty
	(ℓ/s)	(ℓ/s)	(m)		(kw)		(ℓ/s)	(ℓ/s)	(m)		(kw)	
6	304	65	49	MA 200×5	55	5	391	52	59	MA 200×5	55	8
7	156 170	65 69	49 19	MA 200×5 MA 200×2	55 22	3 2	355	51	61	MA 200×5	55	7
9A	180 200	75 67	56 28	RDN 200-150-220 AN 200-150-315	75 30	3 3	416	76	68	RDN 200-150-235	75	6
10	380	125 50	95 95	NC 200-150-350 NC 125-100-315	200 90	2 3	336	113 42	100 100	NC 200-150-350 NC 125-100-315	200 90	2 3
11	370	80	67	RDN 200-150-235	75	5	305	107 46	79 79	NC 200-150-280 NC 125-100-261	132 75	2 2
14-2	126 40	63 72	40 17	MA 200×4 MA 200×2	45 22	2 1	225	44	52	MA 200×4	45	6
14-3	130 72	65 72	49 17	MA 200×5 MA 200×2	55 22	2 1	278	51	61	MA 200×5	55	6
15A	400	130 55	57.5 57.5	MV 253×2 MA 200×5	132 55	2 3	462	76 38	69 69	MV 253×2 MA 200×5	132 55	4 5
17A	325	65	55	MA 200×6	55	5	352	58	65	MA 200×6	55	7
19	290	60	53	MA 200×5	55	5	352	44	65	MA 200×5	55	8
22	213	65	49	MA 200×5	55	4	229	52	60	MA 200×5	55	5
25	250	55	69	MA 200×6	55	5	289	38	80	MA 200×6	55	8
28	800	150 30	86 86	MV 253×4 MA 200×7	200 75	5 2	638	107 27	103 103	MV 253×4 MA 200×7	200 75	5 4

Table 4.7.2-A1 Field Drainage Canal

	Sr. No.	Drain Length (m) Type I	Drain Length (m) Type II	Bottom Slope	Name of River to be discharged
1	DC- 1	-	3,000	1/ 2,000	Calimanesti Dam drain
2	DC- 2	-	900	1/ 1,000	Calimanesti Dam drain
3	DC- 3	-	5,200	1/ 2,000	Calimanesti Dam drain
4	DC- 4	-	2,000	1/ 1,500	Trotus R.
5	DC- 5	-	4,000	1/ 2,000	Boului R.
6	DC- 6	-	1,500	1/ 2,000	Boului R.
7	DC- 7	-	1,900	1/ 2,000	Domosita R.
8	DC- 8	1,600	-	1/ 2,000	Boului R.
9	DC- 9	1,700	-	1/ 2,000	Boului R.
10	DC- 10	-	1,500	1/ 1,000	Boului R.
11	DC- 11	-	1,600	1/ 1,500	Calcuna R.
12	DC- 12	1,600	-	1/ 2,000	Boului R.
13	DC- 13	2,800	-	1/ 2,000	Calcuna R.
14	DC- 14	-	2,800	1/ 2,000	Siret R.
15	DC- 15	-	4,800	1/ 2,000	Calimanesti Dam drain
16	DC- 16	-	1,300	1/ 2,000	Calimanesti
17	DC- 17	-	1,300	1/ 2,000	Zabraut R.
18	DC- 18	2,100	-	1/ 2,000	Calcuna R.
19	DC- 19	2,000	-	1/ 2,000	Calimanesti
20	DC- 20	1,100	-	1/ 1,500	Calimanesti
21	DC- 21	1,000	-	1/ 1,500	Zabraut R.
22	DC- 22	1,300	-	1/ 1,500	Calcuna R.
23	DC- 23	1,300	-	1/ 2,000	Calimanesti
24	DC- 24	700	-	1/ 1,500	Calimanesti
25	DC- 25	1,200	-	1/ 2,000	Calimanesti
26	DC- 26	-	1,400	1/ 1,500	Calimanesti
27	DC- 27	-	1,300	1/ 2,000	Zabraut R.
28	DC- 28	-	2,000	1/ 2,000	Marasesti
29	DC- 29	-	2,000	1/ 1,500	Marasesti
30	DC- 30	-	800	1/ 2,000	Marasesti
31	DC- 31	-	900	1/ 2,000	Marasesti
32	DC- 32	-	1,900	1/ 2,000	Marasesti
33	DC- 33	-	2,000	1/ 1,500	Susita R.
34	DC- 34	-	1,000	1/ 1,500	Susita R.
Subtotal		18,400	45,100		
Total					

	Sr. No.	Drain Length (m) Type I	Drain Length (m) Type II	Bottom Slope	Name of River to be discharged
35	DC- 35	1,600	-	1/ 1,500	Zabraut R.
36	DC- 36	2,200	-	1/ 2,000	Marasesti
37	DC- 37	1,500	-	1/ 2,000	Marasesti
38	DC- 38	1,600	-	1/ 2,000	Trotus R.
39	DC- 39	2,000	-	1/ 2,000	Susita R.
40	DC- 40	1,300	-	1/ 2,000	Zabraut R.
41	DC- 41	1,200	-	1/ 2,000	Marasesti
42	DC- 42	1,500	-	1/ 2,000	Marasesti
43	DC- 43	1,500	-	1/ 1,500	Marasesti
44	DC- 44	1,700	-	1/ 1,000	Susita R.
45	DC- 45	-	2,300	1/ 2,000	Susita R.
46	DC- 46	-	3,300	1/ 2,000	Putna R.
47	DC- 47	-	2,400	1/ 1,500	Susita R.
48	DC- 48	-	2,900	1/ 1,500	Putna R.
49	DC- 49	2,200	-	1/ 1,500	Susita R.
50	DC- 50	2,300	-	1/ 1,500	Putna R.
51	DC- 51	1,600	-	1/ 2,000	Susita R.
52	DC- 52	2,200	-	1/ 2,000	Putna R.
53	DC- 53	-	500	1/ 1,000	Putna R.
54	DC- 54	-	2,400	1/ 1,500	Soimu D.
55	DC- 55	-	3,000	1/ 1,500	Soimu D.
56	DC- 56	-	2,000	1/ 1,500	Cocaina Noua C.
57	DC- 57	-	2,700	1/ 1,500	Cocaina Noua C.
58	DC- 58	-	1,900	1/ 1,500	Putna R.
59	DC- 59	-	1,400	1/ 1,500	Soimu D.
60	DC- 60	-	2,700	1/ 2,000	Soimu D.
61	DC- 61	-	1,800	1/ 1,500	Putna R.
62	DC- 62	700	1,600	1/ 1,500	Soimu D.
63	DC- 63	600	500	1/ 2,000	Soimu D.
64	DC- 64	-	1,700	1/ 2,000	Soimu D.
65	DC- 65	-	1,800	1/ 2,000	Soimu D.
66	DC- 66	1,300	-	1/ 1,500	Putna R.
67	DC- 67	2,500	-	1/ 2,000	Soimu D.
68	DC- 68	-	3,200	1/ 2,000	Soimu D.
Subtotal		29,500	38,100		
		47,900	83,200		

Table 4.7.3-A1 Hydraulic Calculation for Grassed Waterway

Canal Type	B x H (mm)	Width of Canal Bed b (m)	Slope of Sidewall 1 : a	Water Depth d (m)	Flow Area (m2)	Wetted Perimeter p (m)	Hydraulic Radius R(m)	R^(2/3)	Coefficient of Roughness n	Channel Slope I=1/N	I^(1/2)	Velocity V (m/s)	Discharge Q (m3/s)	Froude Number F=v/(gd)^0.5
A	2000x2000	2.000	4.0	1.600	13.440	15.578	0.863	0.906	0.035	100	0.100	2.589	34.80	0.65
		2.000	4.0	1.600	13.440	15.578	0.863	0.906	0.035	50	0.141	3.662	49.22	0.92
		2.000	4.0	1.600	13.440	15.578	0.863	0.906	0.035	40	0.158	4.094	55.03	1.03
		2.000	4.0	1.600	13.440	15.578	0.863	0.906	0.035	30	0.183	4.728	63.54	1.19
B	1000x1500	1.000	4.0	1.200	6.960	11.183	0.622	0.729	0.035	100	0.100	2.083	14.50	0.61
		1.000	4.0	1.200	6.960	11.183	0.622	0.729	0.035	50	0.141	2.945	20.50	0.86
		1.000	4.0	1.200	6.960	11.183	0.622	0.729	0.035	40	0.158	3.293	22.92	0.96
		1.000	4.0	1.200	6.960	11.183	0.622	0.729	0.035	30	0.183	3.802	26.47	1.11
C	500x1000	0.500	4.0	0.800	2.960	7.289	0.406	0.548	0.035	100	0.100	1.567	4.64	0.56
		0.500	4.0	0.800	2.960	7.289	0.406	0.548	0.035	50	0.141	2.216	6.56	0.79
		0.500	4.0	0.800	2.960	7.289	0.406	0.548	0.035	40	0.158	2.477	7.33	0.88
		0.500	4.0	0.800	2.960	7.289	0.406	0.548	0.035	30	0.183	2.861	8.47	1.02

Table 4.7.3-A2 Time of Flood Concentration of BDC

Canal Name	lv (m)	pv	tv (min)	ld (m)	pd	td (min)	T (min)
TIF-BD1	1000	0.018	43.3	1950	0.005	22.1	65.3
MOV-BD1	1500	0.031	46.1	2000	0.005	22.6	68.7
MOV-BD2	1750	0.033	49.1	1500	0.005	17.0	66.1
PAU-BD1	1500	0.040	43.4	1000	0.025	5.1	48.4
PAU-BD2	1900	0.037	49.8	2500	0.006	25.8	75.7

Note: tv = 0.0167*K*(lv/(pv^0.5))0.5, K=30

Table 4.7.3 - A3 Hydraulic Calculation at Boundary Drainage Canal.

Canal Type	B x H	Width of Canal Bed b (m)	Slope of Sidewall 1 : a	Water Depth d (m)	Flow Area (m2)	Wetted perimeter p (m)	Hydraulic Radius R(m)	R^(2/3)	Coefficient of Roughness n	Channel Slope I=1/N	I^(1/2)	Velocity V (m/s)	Discharge Q (m3/s)	Froude Number F=v/(gd)^0.5
A	500x500	0.500	1.0	0.500	0.500	1.914	0.261	0.409	0.015	300	0.058	1.573	0.79	0.71
		0.500	1.0	0.500	0.500	1.914	0.261	0.409	0.015	200	0.071	1.926	0.96	0.87
		0.500	1.0	0.500	0.500	1.914	0.261	0.409	0.015	150	0.082	2.224	1.11	1.00
		0.500	1.0	0.500	0.500	1.914	0.261	0.409	0.015	100	0.100	2.724	1.36	1.23
B	1000x1000	1.000	1.0	1.000	2.000	3.828	0.522	0.649	0.015	300	0.058	2.497	4.99	0.80
		1.000	1.0	1.000	2.000	3.828	0.522	0.649	0.015	200	0.071	3.058	6.12	0.98
		1.000	1.0	1.000	2.000	3.828	0.522	0.649	0.015	190	0.073	3.137	6.27	1.00
		1.000	1.0	1.000	2.000	3.828	0.522	0.649	0.015	100	0.100	4.325	8.65	1.38
C	1500x1000	1.500	1.0	1.000	2.500	4.328	0.578	0.694	0.015	300	0.058	2.670	6.67	0.85
		1.500	1.0	1.000	2.500	4.328	0.578	0.694	0.015	220	0.067	3.117	7.79	1.00
		1.500	1.0	1.000	2.500	4.328	0.578	0.694	0.015	200	0.071	3.270	8.17	1.04
		1.500	1.0	1.000	2.500	4.328	0.578	0.694	0.015	100	0.100	4.624	11.56	1.48
D	1700x1000	1.700	1.0	1.000	2.700	4.528	0.596	0.708	0.015	300	0.058	2.727	7.36	0.87
		1.700	1.0	1.000	2.700	4.528	0.596	0.708	0.015	228	0.066	3.128	8.45	1.00
		1.700	1.0	1.000	2.700	4.528	0.596	0.708	0.015	200	0.071	3.340	9.02	1.07
		1.700	1.0	1.000	2.700	4.528	0.596	0.708	0.015	100	0.100	4.723	12.75	1.51
E	2000x1000	2.000	1.0	1.000	3.000	4.828	0.621	0.728	0.015	300	0.058	2.803	8.41	0.90
		2.000	1.0	1.000	3.000	4.828	0.621	0.728	0.015	240	0.065	3.134	9.40	1.00
		2.000	1.0	1.000	3.000	4.828	0.621	0.728	0.015	200	0.071	3.433	10.30	1.10
		2.000	1.0	1.000	3.000	4.828	0.621	0.728	0.015	100	0.100	4.855	14.56	1.55
F	2200x1000	2.200	1.0	1.000	3.200	5.028	0.636	0.740	0.015	300	0.058	2.848	9.11	0.91
		2.200	1.0	1.000	3.200	5.028	0.636	0.740	0.015	250	0.063	3.120	9.98	1.00
		2.200	1.0	1.000	3.200	5.028	0.636	0.740	0.015	200	0.071	3.488	11.16	1.11
		2.200	1.0	1.000	3.200	5.028	0.636	0.740	0.015	100	0.100	4.933	15.78	1.58
G	2200x1200	2.200	1.0	1.200	4.080	5.594	0.729	0.810	0.015	300	0.058	3.119	12.72	0.91
		2.200	1.0	1.200	4.080	5.594	0.729	0.810	0.015	250	0.063	3.417	13.94	1.00
		2.200	1.0	1.200	4.080	5.594	0.729	0.810	0.015	200	0.071	3.820	15.58	1.11
		2.200	1.0	1.200	4.080	5.594	0.729	0.810	0.015	100	0.100	5.402	22.04	1.58
H	2500x1250	2.500	1.0	1.250	4.688	6.035	0.777	0.845	0.015	300	0.058	3.252	15.25	0.93
		2.500	1.0	1.250	4.688	6.035	0.777	0.845	0.015	260	0.062	3.494	16.38	1.00
		2.500	1.0	1.250	4.688	6.035	0.777	0.845	0.015	200	0.071	3.983	18.67	1.14
		2.500	1.0	1.250	4.688	6.035	0.777	0.845	0.015	100	0.100	5.633	26.41	1.61

Table 4.7.3 - A4 Hydraulic Calculation for Jet Flow (MOV-BD1)

Q= 8.24 m3. B= 3.000 m n= 0.013 I= ((nv)^2)/(R^1.333)

NO.	Distance	Depth	Area	Velocity	Velocity Head	Wetted Perimeter	Hydraulic Radius	Hydraulic Gradient	Mean I	Loss	Elevation of Canal Bed	A	B	A1-B2
	l (m)	d (m)	A (m2)	V (m/s)	hv (m)	p (m)	R (m)	I		hf (m)	EL (m)	El+d+hv (m)	El+d+hv+hf (m)	(m)
No.0+300	0	0.916	2.748	2.828	0.408	4.832	0.5687	0.003			184.000	185.324		
No.0+260	40	0.287	0.861	9.024	4.155	3.574	0.2409	0.092	0.047	1.893	179.000	183.442	185.335	-0.011
No.0+220	40	0.263	0.789	9.848	4.948	3.526	0.2238	0.121	0.106	4.247	174.000	179.211	183.458	-0.016
N0.0+180	40	0.260	0.780	9.962	5.063	3.520	0.2216	0.125	0.123	4.912	169.000	174.323	179.235	-0.024
No.0+140	40	0.260	0.780	9.962	5.063	3.520	0.2216	0.125	0.125	5.000	164.000	169.323	174.323	0.000
No.0+100	40	0.260	0.780	9.962	5.063	3.520	0.2216	0.125	0.125	5.000	159.000	164.323	169.323	0.000
No.0+ 84	16	0.260	0.780	9.962	5.063	3.520	0.2216	0.125	0.125	2.000	157.000	162.323	164.323	0.000

Table 4.7.3 - A5 Hydraulic Calculation for Jet Flow (MOV-BD2)

Q= 7.77 m3. B= 3.000 m n= 0.013 I= ((nv)^2)/(R^1.333)

No.	Distance	Depth	Area	Velocity	Velocity Head	Wetted Perimeter	Hydraulic Radius	Hydraulic Gradient	Mean I	Loss	Elevation of Canal Bed	A	B	A1-B2
	l (m)	d (m)	A (m2)	V (m/s)	hv (m)	p (m)	R (m)	I		hf (m)	EL (m)	EL+d+hv (m)	EL+d+hv+hf (m)	(m)
No.0+380	0	0.881	2.643	2.940	0.441	4.762	0.5550	0.003			183.400	184.722		
No.0+368	12	0.447	1.341	5.794	1.713	3.894	0.3444	0.023	0.013	0.160	182.400	184.560	184.720	0.002
No.0+356	12	0.377	1.131	6.870	2.408	3.754	0.3013	0.039	0.031	0.378	181.400	184.185	184.563	-0.003
N0.0+344	12	0.344	1.032	7.529	2.892	3.688	0.2798	0.052	0.046	0.551	180.400	183.636	184.187	-0.002
No.0+332	12	0.326	0.978	7.945	3.220	3.652	0.2678	0.062	0.057	0.685	179.400	182.946	183.631	0.005
No.0+320	12	0.315	0.945	8.222	3.449	3.630	0.2603	0.069	0.065	0.783	178.400	182.164	182.947	-0.001
No.0+306	14	0.226	0.678	11.460	6.701	3.452	0.1964	0.194	0.132	1.841	173.400	180.327	182.168	-0.004
No.0+292	14	0.202	0.606	12.822	8.388	3.404	0.1780	0.277	0.236	3.301	168.400	176.990	180.291	0.036
No.0+278	14	0.193	0.579	13.420	9.188	3.386	0.1710	0.320	0.299	4.184	163.400	172.781	176.965	0.024
No.0+264	14	0.189	0.567	13.704	9.581	3.378	0.1679	0.343	0.332	4.641	158.400	168.170	172.811	-0.030
No.0+250	14	0.187	0.561	13.850	9.787	3.374	0.1663	0.354	0.348	4.879	153.400	163.374	168.253	-0.083

Table 4.7.3-A6 Canal Length of BDC

(unit: m)

Canal Type	A	B	C	D	E	F	G	H	Chute Works	Earth Canal	Total
TIF-BD1	650	850	0	650	0	850	0	0	0	500	3,500
MOV-BD1	500	500	1,000	1,000	0	0	0	0	222	78	3,300
MOV-BD2	1,000	1,000	1,120	0	0	0	0	0	136	244	3,500
PAU-BD1	350	500	0	0	1,000	0	500	500	0	0	2,850
PAU-BD2	500	700	1,000	0	0	1,000	0	0	0	0	3,200
Total	3,000	3,550	3,120	1,650	1,000	1,850	500	500	358	822	16,350

Table 4.7.3-A7 Drops and Box Culverts in BDC

Related Facilities	Canal Name	A	B	C	D	E	F	G	H	Total
Drop (h=0.5m)	TIF-BD1	0	1	0	0	0	0	0	0	1
	MOV-BD1	0	1	0	0	0	0	0	0	1
	MOV-BD2	0	1	0	0	0	0	0	0	1
	PAU-BD1	0	1	0	0	0	0	0	0	1
	PAU-BD2	0	1	0	0	0	0	0	0	1
	sub-total	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**5**
Drop (h=1.0m)	TIF-BD1	0	0	0	0	0	0	4	0	4
	PAU-BD1	0	0	0	0	0	0	6	0	6
	PAU-BD2	0	0	0	0	0	2	0	0	2
	sub-total	**0**	**0**	**0**	**0**	**0**	**2**	**10**	**0**	**12**
Drop (h=2.0m)	PAU-BD1	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**3**
Drop (h=4.0m)	PAU-BD1	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
Box Culvert B=6.0m	TIF-BD1	0	0	0	0	0	0	0	0	0
	MOV-BD1	0	0	0	1	0	0	0	0	1
	MOV-BD2	0	0	0	0	0	0	0	0	0
	PAU-BD1	0	0	0	0	1	0	0	0	1
	PAU-BD2	0	0	0	0	0	0	0	0	0
	sub-total	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**2**
Box Culvert B=4.0m	TIF-BD1	1	0	0	0	2	0	0	0	3
	MOV-BD1	0	1	3	0	0	0	0	0	4
	MOV-BD2	3	1	0	0	0	0	0	0	4
	PAU-BD1	0	0	0	0	1	0	0	0	1
	PAU-BD2	0	2	2	0	0	1	0	0	5
	sub-total	**4**	**4**	**5**	**0**	**3**	**1**	**0**	**0**	**17**

Table 4.7.4 - A1 Rural Road and Operation & Maintenance Road in the Project.

Category	Road No.	Length		Effective Width (m)	Type of Pavement	No. of Structures Required				Remarks
		Improvement (m)	New (m)			CD-C	DC-C	BD-C	GW-C	
Artery Road	DJ206H	2,000	-	5.50	Asphalt	1	-	1	-	DN2 - Domnesti
	37	9,400	-	5.50	Asphalt	2	-	1	-	Ciorani -DN2 - Movilita
	DJ204E	9,500	-	5.50	Asphalt	-	-	1	-	DN2 - Panciu
	DJ205E	10,400	-	5.50	Asphalt	2	-	1	-	Tifesti - DN2 - Main Canal
Secondary Roads	29	2,000	-	5.50	Gravel	-	-	-	-	DN2 - R. Domosita
	No.1	7,000	-	5.50	Gravel	1	-	1	-	DN2 - Paunesti
	26	4,800	-	5.50	Gravel	1	-	1	-	DJ206H - Ruginesti
	35	10,000	-	5.50	Gravel	1	-	1	-	Domnesti - Main Canal
	No.2	10,300	-	5.50	Gravel	-	-	1	-	Padureni - DN2 - Movilita
	No.3	6,500	-	5.50	Gravel	2	-	-	-	DN2 - DJ205F
	No.4	10,200	-	5.50	Gravel	1	-	1	-	Bolotesti - Main feed canal
	No.5	3,000	-	5.50	Gravel	-	-	-	-	Odobesti - DN2D
Operation & Maintenance Road	PR 1	-	8,000	5.50	Gravel	-	-	-	1	R. Domosita - No.1 - DJ206H - R. Carecna
	PR 2	-	9,600	5.50	Gravel	-	-	-	2	R. Domosita - No.1 - DJ206H - R. Carecna
	PR 3	-	4,500	5.50	Gravel	-	-	-	1	- Domnesti
	PR 4	-	6,700	5.50	Gravel	-	-	-	1	R. Carecna - 37 - No.2
	PR 5	-	7,300	5.50	Gravel	-	-	-	1	R. Carecna - 37 - No.2
	PR 6	-	6,700	5.50	Gravel	-	-	-	3	37 - No.2
	PR 7	-	2,000	5.50	Gravel	1	1	-	-	PR 5 - PR 6
	PR 8	-	6,500	5.50	Gravel	-	-	-	-	R. Zabraut - DJ204E - DJ205F
	PR 9	-	6,300	5.50	Gravel	-	-	-	2	DJ204E - No.3 - DJ205F
	PR 10	-	8,600	5.50	Gravel	-	-	-	2	R. Zabraut - DJ204E - No.3 - DJ205F
	PR 11	-	3,900	5.50	Gravel	-	-	-	-	R.Susira - DJ205E - R. Putna
	PR 12	-	4,000	5.50	Gravel	-	-	-	-	R.Susira - DJ205E - R. Putna
	PR 13	-	4,400	5.50	Gravel	-	-	-	-	R.Susira - DJ205E - R. Putna
	PR 14	-	2,200	5.50	Gravel	-	-	-	-	R. Putna - No.4 - DN2D
	PR 15	-	3,600	5.50	Gravel	-	-	-	-	R. Putna - No.4 - DN2D
	PR 16	-	6,600	5.50	Gravel	-	-	-	-	R. Putna - No.4 - DN2D
	PR 17	-	6,200	5.50	Gravel	-	1	-	-	DN2D - DJ205A
Total		85,100	97,100			7	2	5	13	

Notes : CD-C : Distribution Canal Crossing
DC-C : Drainage Canal Crossing
BD-C : Boundary Canal Crossing
GW-C : Grassed Waterway Crossing

DN2 : National Motor Highway No. 2
DN2D : National Road No. 2D
R Putna : the Putna River

Table 5.1.2-A1 Consulting Service Implementation Schedule

Work Item \ Project Year	1st year				2nd Year				3rd Year				4th Year				5th Year				6th Year				Total
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	M/M
Loan Agreement																									
Detailed Design Phase																									
Formalities in Romanian Government																									
Procurement of Consultants																									
Detailed Design																									
Construction Phase																									
Tendering for Construction																									
Construction Phase I																									
Land Acquisition																									
Lot A: SRP-V, CD-4 & CD-7 System (5,543 ha)																									
Lot B: SRP-IA, SPP-10 & SPP-11 (2,087 ha) includes Project Office																									
Lot C: SRP-II & SRP-IV Systems (1,814 ha)																									
Construction Phase II																									
Land Acquisition																									
Lot D: SRP-IX, SPP-20A and Others (4,951 ha)																									
Construction Supervision																									
Expatriate																									
Team Leader/ Irrigation/Drainage Engineer									==	==	==	==	==	==	==	==	==	==	==	==	==	==	==	==	48
Civil Engineer									==	==	==														9
Mechanic Engineer										==	==														6
O&M Specialist																		==	==						6
Romanian																									
Co-team Leader									==	==	==	==	==	==	==	==	==	==	==	==	==	==	==	==	48
Irrigation/Drainage Engineer									==	==	==														9
Structure Engineer										==	==	==													9
Civil Engineer										==	==	==													9
Mechanic Engineer										==	==	==										==			9
Electric Engineer											==											==			6
Document Specialist												==													6
Construction Engineer (1)												==	==	==	==	==	==	==	==	==	==	==	==	==	39
Construction Engineer (2)												==	==	==	==	==	==	==	==	==	==	==	==		36
Construction Engineer (3)												==	==	==	==	==	==	==	==	==	==	==	==	==	33
Assistant Construction Engineer (1)												==	==	==	==	==	==	==	==	==					27
Assistant Construction Engineer (2)													==	==	==	==	==	==	==	==	==	==	==		30
Assistant Construction Engineer (3)														==	==	==	==	==	==	==	==	==	==		30
Assistant Construction Engineer (4)															==	==	==	==	==	==	==	==	==	==	27
Supporting Staff																									
Secretary									==	==	==	==	==	==	==	==	==	==	==	==	==	==	==	==	48
Administrator									==	==	==	==	==	==	==	==	==	==	==	==	==	==	==	==	48
Draftsman (1)									==	==	==	==	==	==	==	==	==	==	==	==	==	==	==	==	48
Draftsman (2)									==	==	==	==	==	==	==	==	==	==	==	==	==	==	==	==	48
System Engineer									==	==	==	==	==	==	==	==	==	==	==	==	==	==	==	==	48
5 Drivers									==	==	==	==	==	==	==	==	==	==	==	==	==	==	==	==	240

Table 5.3.1-A1 Format for Unit Cost Analysis (Sample)

Reinforced Concrete (S=235 kgf/cm2)

Item	Material	Labour Force	Equipment	Total	Reamarks	Coefficient	
a. Direct Cost	(A) 37,574	(B) 1,514	(C) 2,591	(T1) 41,679	Total weight (W) ton	100.00%	-
b. Transportation Cost X = (128.5 * 74.55) X W				(X) 0	0		
c. Workers Salaries Y = B * 0.043		(Y) 65		(Y) 65			
d. Social Insurance Fund Z=0.25*(B+(0.36C+0.38X+(T1+Y)*0.04))		(Z) 1,029		(Z) 1,029			
e. Sub-total - (direct cost)	(A) 37,574	2,608	(C) 2,591	(T2) 42,773		102.63%	100.00%
Indirect Cost							
f. Contructor Administration N=0.091*T2				(N) 3,892			
g. Unemplyment Fund Q=0.06*Z				(Q) 62			
h. Benefit of Contractor Bf= 0.05*(T2+N+Q)				(Bf) 2,336			
i. Sub-total - (Indirect Cost)				(T3) 49,064		117.72%	114.71%
j. Fund for Research & Development Tr=0.01*T3				(Tr) 491			
k. Fund for Agriculture Ta=0.005*T3				(Ta) 245			
l. Total T4=T3+Ta+T4				(T4) 49,800		119.48%	116.43%
m. Value Added Tax Tv=0.18*T4				(Tv) 8,964			
n. Grand Total				(Tg) 58,764		140.99%	137.38%

Table 5.3.2 - A1 Summary of Project Cost

	Description	Amount				Remarks
		F/C (US$)	L/C (Lei)	Total (Lei)	Total (US$)	
I.	Construction Cost					
I.1	Lot - A	2,961,929	29,422,813,481	34,615,074,684	19,746,192	Detail estimate sheet A - 0
I.2	Lot - B	2,876,035	28,569,573,255	33,611,262,653	19,173,567	Detail estimate sheet B - 0
I.3	Lot - C	3,336,439	33,143,068,551	38,991,845,355	22,242,924	Detail estimate sheet C - 0
I.4	Lot - D	1,644,409	16,335,008,021	19,217,656,496	10,962,725	Detail estimate sheet D - 0
	Sub-total	10,818,811	107,470,463,309	126,435,839,187	72,125,407	
II.	Land Acquisition Cost	0	10,818,000,000	10,818,000,000	6,171,135	Detail estimate sheet 2
III.	O/M Equipment Procurement Cost	494,200	43,317,000	909,650,000	518,910	Detail estimate sheet 3
IV.	Administration Cost	0	2,641,800,000	2,641,800,000	1,507,017	Detail estimate sheet 4
V.	Consultant Service	2,327,750	3,132,158,000	7,212,704,000	4,114,492	Detail estimate sheet 5
	Sub-total (I. to V.)	13,640,761	124,105,738,309	148,017,993,187	84,436,961	
VI.	Physical Contingency	1,364,076	12,410,573,831	14,801,799,319	8,443,696	Detail estimate sheet 6
VII.	TOTAL (Project cost)	**15,004,837**	**136,516,312,140**	**162,819,792,506**	**92,880,657**	

Note : US$ 1.00 = Lei 1,753

Table 5.3.2 - A2 Summary of Construction Cost

	Description	Construction Cost				Remarks
		F/C (US$)	L/C (Lei)	Total (Lei)	Total (US$)	
I.	Preparatory Works	515,181	5,117,641,110	6,020,754,247	3,434,543	
II.	Pumping Station	947,640	9,413,543,261	11,074,756,778	6,317,602	
III.	Irrigation Canal Works	3,205,631	31,843,669,850	37,463,141,000	21,370,873	
IV.	Booster Pumping Station	1,139,933	11,323,715,438	13,322,018,162	7,599,554	
V.	Farm Land Irrigation Fac.	3,815,103	37,897,964,000	44,585,840,000	25,434,022	
VI.	Reclamation Works	74,622	741,266,300	872,078,000	497,477	
VII.	Drainage Canal Works	174,212	1,730,562,600	2,035,956,000	1,161,412	
VIII.	Soil Conservation Works	291,964	2,900,273,950	3,412,087,000	1,946,427	
IX.	Farm Road Works	594,627	5,906,826,800	6,949,208,000	3,964,180	
X.	Project Office	59,897	595,000,000	700,000,000	399,315	
XI.	Total	**10,818,811**	**107,470,463,309**	**126,435,839,187**	**72,125,407**	

Note : US$ 1.00 = Lei 1,753

Table 5.3.2-A3 Procurement Cost of O&M Equipment

Name	Requirement	Quantity	Unit Cost (1000US$)	Cost (1000US$)
Bulldozer	11 ton level	1	100	100
Back Hoe	0.6 m3 level	1	120	120
Dump Truck	6 ton level	1	50	50
Motor Grader	3.1 m level	1	95	95
Pick-up Truck	2 ton level	5	12	60
Motorcycle	125 cc level	10	1	10
Concrete Mixer	0.35 m3 level	1	55	55
Communication Equip.		5	0.8	4
Total				494

Table 5.3.2-A4 Project Office Running Cost (Full Stage)

Category	Q'ty	Monthly Rate (10^3 Lei)	Annual Cost (10^3 Lei)
I. Staff Salary			
Project Manager	1	550	6,600
Assistant P. Manager	2	500	12,000
Civil Engineer	3	450	16,200
Mechanic Engineer	2	450	10,800
Electric Engineer	1	450	5,400
Assist. Civil Eng.	3	350	12,600
Assist. Mechanic Eng.	3	350	12,600
Assist. Electric Eng.	2	350	8,400
Secretary	1	250	3,000
Administrator	4	250	12,000
Driver	5	200	12,000
Others	3	200	7,200
sub-total	30		118,800
II. Office Running Cost		53,000	636,000
III. Annual Cost Total			**754,800**
Equivalent to			**$430.58**

Table 5.3.2 - A5 Cost Estimate for the Consulting Service (1/2)

Item		Unit Rate		3rd Year			4th Year			5th Year			6th Year			Total		
					Amount			Amount			Amount			Amount			Amount	
		in US$	in '000 Lei	Q'ty	in US$	in Lei	Q'ty	in US$	in Lei	Q'ty	in US$	in Lei	Q'ty	in US$	in Lei	Q'ty	in US$	in Lei
I. Foreign Currency Portion																		
1 Remuneration																		
Team Leader	M/M	$30,000		12	$360,000	0	12	$360,000	0	12	$360,000	0	12	$360,000	0	48	$1,440,000	0
Civil Engineer	M/M	$25,000		9	$225,000	0		$0	0		$0	0		$0	0	9	$225,000	0
Mechanic Engineer	M/M	$25,000		6	$150,000	0		$0	0		$0	0		$0	0	6	$150,000	0
O&M Expert	M/M	$25,000			$0	0		$0	0	6	$150,000	0		$0	0	6	$150,000	0
2 International Air Fare																		
Bucharest - Tokyo	R/T	$7,450		6	$44,700	0	4	$29,800	0	5	$37,250	0	4	$29,800	0	19	$141,550	0
Excess Baggage ($85 X 20 kg)	R/T	$1,700		4	$6,800	0	2	$3,400	0	3	$5,100	0	2	$3,400	0	11	$18,700	0
Reallocation Allowance	M.	$10,000		1	$10,000	0		$0	0		$0	0		$0	0	1	$10,000	0
Other Cost for Mobilization & Demobilizati	Trip	$500		6	$3,000	0	2	$1,000	0	5	$2,500	0	2	$1,000	0	15	$7,500	0
3 Equipment & refference books																		
Computer	Set	$6,000		1	$6,000	0		$0	0		$0	0		$0	0	1	$6,000	0
Soft Ware and Reference Bookks	Set	$2,000		1	$2,000	0		$0	0		$0	0		$0	0	1	$2,000	0
Photo Copy Machine	Set	$5,000		1	$5,000	0		$0	0		$0	0		$0	0	1	$5,000	0
Office Equipment	Set	$10,000		1	$10,000	0		$0	0		$0	0		$0	0	1	$10,000	0
Survey Equipment																		
Auto-level	Set	$3,000		2	$6,000	0		$0	0		$0	0		$0	0	2	$6,000	0
Distance meter	Set	$18,000		2	$36,000	0		$0	0		$0	0		$0	0	2	$36,000	0
4 Vehicles, Station Wagon 4WD	Unit	$20,000		4	$80,000	0	1	$20,000	0		$0	0		$0	0	5	$100,000	0
5 Others	L.S.	$5,000		1	$5,000	0	1	$5,000	0	1	$5,000	0	1	$5,000	0	4	$20,000	0
Total					$949,500	0		$419,200	0		$559,850	0		$399,200	0	0	$2,327,750	0
II Romanian Lei Portion in thousand		'000 Lei																
1 Remuniration																		
Experts																		
Co-team Leader	M/M		1,500	12	$0	18,000	12	$0	18,000	12	$0	18,000	12	$0	18,000	48	$0	72,000
Irrigation/Drainage Engineer	M/M		1,200	9	$0	10,800		$0	0		$0	0		$0	0	9	$0	10,800
Structure Engineer	M/M		1,000	9	$0	9,000		$0	0		$0	0		$0	0	9	$0	9,000
Civil Engineer	M/M		1,000	9	$0	9,000		$0	0		$0	0		$0	0	9	$0	9,000
Mechanic Engineer	M/M		1,200	6	$0	7,200		$0	0		$0	0	3	$0	3,600	9	$0	10,800
Electric Engineer	M/M		1,200	3	$0	3,600		$0	0		$0	0	3	$0	3,600	6	$0	7,200
Document Specialist	M/M		1,400	3	$0	4,200	3	$0	4,200		$0	0		$0	0	6	$0	8,400
Construction Engineer (1)	M/M		1,200	3	$0	3,600	12	$0	14,400	12	$0	14,400	12	$0	14,400	39	$0	46,800
Construction Engineer (2)	M/M		1,000	3	$0	3,000	12	$0	12,000	12	$0	12,000	9	$0	9,000	36	$0	36,000
Construction Engineer (3)	M/M		1,000		$0	0	9	$0	9,000	12	$0	12,000	12	$0	12,000	33	$0	33,000
Assistant Construction Engineer (1)	M/M		800	3	$0	2,400	12	$0	9,600	12	$0	9,600		$0	0	27	$0	21,600
Assistant Construction Engineer (2)	M/M		800		$0	0	12	$0	9,600	12	$0	9,600	6	$0	4,800	30	$0	24,000
Assistant Construction Engineer (3)	M/M		800		$0	0	9	$0	7,200	12	$0	9,600	9	$0	7,200	30	$0	24,000
Assistant Construction Engineer (4)	M/M		800		$0	0	3	$0	2,400	12	$0	9,600	12	$0	9,600	27	$0	21,600
Supporting Staff																		
Secretary	M/M		700	12	$0	8,400	12	$0	8,400	12	$0	8,400	12	$0	8,400	48	$0	33,600

Table 5.3.2 - A5 Cost Estimate for the Consulting Service (2/2)

Item		Unit Rate		3rd Year			4th Year			5th Year			6th Year			Total		
					Amount			Amount			Amount			Amount			Amount	
		in US$	in '000 Lei	Q'ty	in US$	in Lei	Q'ty	in US$	in Lei	Q'ty	in US$	in Lei	Q'ty	in US$	in Lei	Q'ty	in US$	in Lei
Administrator	M/M		800	12	$0	9,600	12	$0	9,600	12	$0	9,600	12	$0	9,600	48	$0	38,400
Draftsman (1)	M/M		700	12	$0	8,400	12	$0	8,400	12	$0	8,400	12	$0	8,400	48	$0	33,600
Draftsman (2)	M/M		700	12	$0	8,400	12	$0	8,400	12	$0	8,400	12	$0	8,400	48	$0	33,600
System Engineer	M/M		800	12	$0	9,600	12	$0	9,600	12	$0	9,600	12	$0	9,600	48	$0	38,400
Driver (5 drivers)	M/M		700	48	$0	33,600	60	$0	42,000	60	$0	42,000	60	$0	42,000	228	$0	159,600
2 Domestic Travel and Allowance																		
Focsani - Bucharest	M/day		100	20	$0	2,000	20	$0	2,000	20	$0	2,000	20	$0	2,000	80	$0	8,000
3 Domestic Communication	Month		1,000	12	$0	12,000	12	$0	12,000	12	$0	12,000	12	$0	12,000	48	$0	48,000
4 Office Supplies and consumables	Month		2,000	12	$0	24,000	12	$0	24,000	12	$0	24,000	12	$0	24,000	48	$0	96,000
5 Operation and Maintenance of Vehicles	Month		1,000	48	$0	48,000	60	$0	60,000	60	$0	60,000	60	$0	60,000	228	$0	228,000
6 Office Running Costs (Rental)	Month		7,000	12	$0	84,000	12	$0	84,000	12	$0	84,000	12	$0	84,000	48	$0	336,000
7 Accommodation for Consultants																		
Expatriate - Long Term	M/M		3,600	12	$0	43,200	12	$0	43,200	12	$0	43,200	12	$0	43,200	48	$0	172,800
Expatriate - Short Term	M/M		5,400	15	$0	81,000		$0	0	6	$0	32,400		$0	0	21	$0	113,400
Romanian - Long Term	M/M		2,160	12	$0	25,920	81	$0	174,960	91	$0	196,560	72	$0	155,520	256	$0	552,960
Romanian - Short Term	M/M		2,700	39	$0	105,300	3	$0	8,100		$0	0	6	$0	16,200	48	$0	129,600
8 Reports	Set		500	25	$0	12,500	20	$0	10,000	15	$0	7,500	15	$0	7,500	75	$0	37,500
9 Others	L.S.		1,000	1	$0	1,000	1	$0	1,000	1	$0	1,000	1	$0	1,000	4	$0	4,000
Total					$0	587,720		$0	592,060		$0	643,860		$0	574,020		$0	2,397,660
Grand Total in US$ and '000 Lei					**$949,500**	**587,720**		**$419,200**	**592,060**		**$559,850**	**643,860**		**$399,200**	**574,020**		**$2,327,750**	**2,397,660**
Grand Total in US$					**$1,284,765**			**$756,941**			**$927,140**			**$726,650**			**$3,695,497**	
VAT for Lei & US$ portion						**299,605**			**132,274**			**176,655**			**125,964**			**734,498**
Grand Total with VAT in US$ and '000 Lei					**$949,500**	**887,325**		**$419,200**	**724,334**		**$559,850**	**820,515**		**$399,200**	**699,984**		**$2,327,750**	**3,132,158**
Grand Total with VAT in US$					**$1,455,675**	**$506,175**		**$832,397**	**$413,197**		**$1,827,913**	**$468,063**		**$798,506**	**$399,306**		**$4,114,492**	**$1,786,742**

Table 5.3.2-A6 Annual Disbursement of the Project Cost

(Unit : US$)

Work Item \ Project Year		2nd Year	3rd Year	4th Year	5th Year	6th Year	Total	Total L/C & F/C
I Construction Phase I								
Land Acquisition	F/C	0	0	0	0	0	0	
	L/C		1,311,000	3,934,000	0	0	5,245,000	5,245,000
Lot A	F/C	0	0	1,693,000	1,269,000	0	2,962,000	
	L/C	0	0	9,591,000	7,193,000	0	16,784,000	19,746,000
Lot B	F/C	0	0	1,079,000	1,438,000	360,000	2,877,000	
	L/C	0	0	6,112,000	8,149,000	2,037,000	16,298,000	19,175,000
Lot C	F/C	0	0	834,000	1,668,000	834,000	3,336,000	
	L/C	0	0	4,727,000	9,453,000	4,727,000	18,907,000	22,243,000
Sub-total	F/C	0	0	3,606,000	4,375,000	1,194,000	9,175,000	
	L/C	0	1,311,000	24,364,000	24,795,000	6,764,000	57,234,000	66,409,000
							0	
II. Construction Phase II							0	
Land Acquisition	F/C	0	0	0	0	0	0	
	L/C	0	0	926,000	0	0	926,000	926,000
Lot D	F/C	0	0	206,000	822,000	617,000	1,645,000	
	L/C	0	0	1,165,000	4,659,000	3,494,000	9,318,000	10,963,000
Sub-total	F/C	0	0	206,000	822,000	617,000	1,645,000	
	L/C	0	0	2,091,000	4,659,000	3,494,000	10,244,000	11,889,000
							0	
III. O/M Equipment Procurement	F/C	0	0	0	494,200	0	494,200	
	L/C	0	0	0	24,710	0	24,710	518,910
							0	
IV. Administration	F/C	0	0	0	0	0	0	
	L/C	108,000	323,000	431,000	431,000	215,000	1,508,000	1,508,000
							0	
V. Consultant Service	F/C	0	949,500	419,288	559,850	399,200	2,327,838	
	L/C	0	506,175	413,109	468,063	399,306	1,786,653	4,114,491
							0	
Sub-total (I -V)	F/C	0	949,500	4,231,288	6,251,050	2,210,200	13,642,038	
	L/C	108,000	2,140,175	27,299,109	30,377,773	10,872,306	70,797,363	84,439,401
							0	
VI. Physical Contengency	F/C	0	94,950	423,129	625,105	221,020	1,364,204	
	L/C	10,800	214,018	2,729,911	3,037,777	1,087,231	7,079,736	8,443,940
							0	
VII. Sub-total	F/C	0	1,044,450	4,654,417	6,876,155	2,431,220	15,006,242	
	L/C	118,800	2,354,193	30,029,020	33,415,550	11,959,537	77,877,099	92,883,341
							0	
VIII. Price Escalation (3% per annual)	F/C	0	96,849	584,170	1,095,193	471,784	2,247,996	
	L/C	7,235	218,297	3,768,907	5,322,231	2,320,776	11,637,445	13,885,441
IX. Total	F/C	0	1,141,299	5,238,587	7,971,348	2,903,004	17,254,238	
	L/C	126,035	2,572,490	33,797,926	38,737,781	14,280,312	89,514,544	
	Total	$126,035	$3,713,788	$39,036,514	$46,709,129	$17,183,316	106,768,782	

Table 5.4.3-A1 O&M Office Annual Running Cost

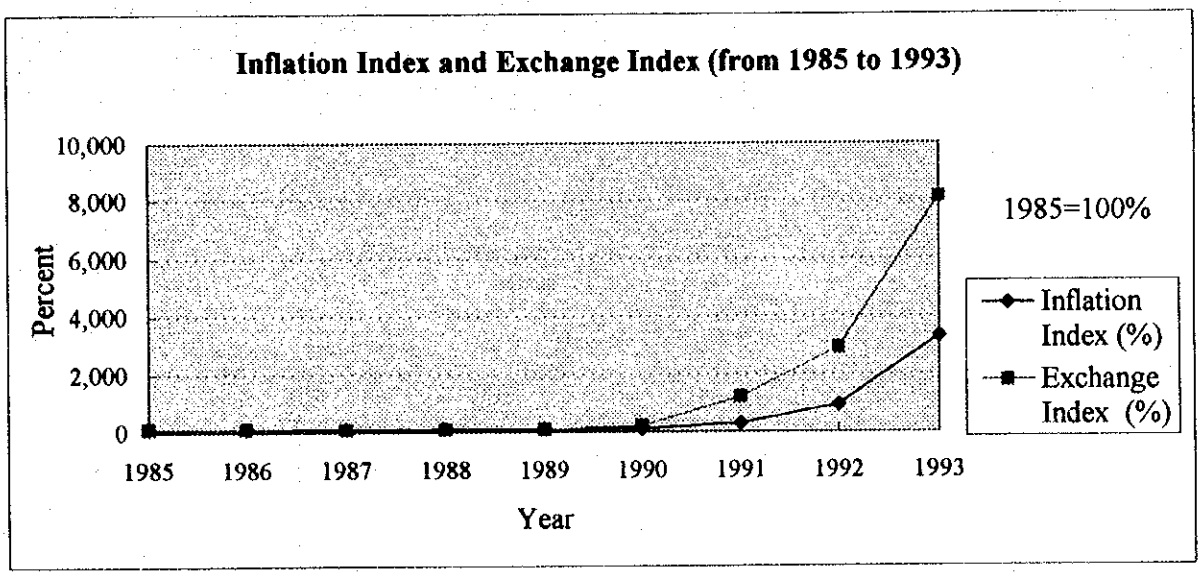
Category	Q'ty	Monthly Rate (10^3 Lei)	Annual Cost (10^3 Lei)
I. Staff Salary			
Project Manager	1	550	6,600
Assistant P. Manager	1	500	6,000
Chief Irrigation Engineer	1	450	5,400
Chief Mechanic Engineer	1	450	5,400
Chief Electric Engineer	1	450	5,400
Agronomist	1	450	5,400
Assist. Irrigation Eng.	3	350	12,600
Assist. Mechanic Eng.	2	350	8,400
Assist. Electric Eng.	1	350	4,200
Heavy Equip. Operator	4	350	16,800
Assist. Equip. Operator	4	250	12,000
Mechanic	1	350	4,200
Chief Pump Operator	1	350	4,200
Assist. Chief Pump Operator	2	250	6,000
Pump Operator	156	200	374,400
Monitor	10	200	24,000
Secretary	1	250	3,000
Accountant	2	250	6,000
Administrator	2	250	6,000
Driver	8	200	19,200
Others	3	200	7,200
sub-total	206		542,400
II. Office Running Cost		80,000	960,000
III. Annual Cost Total			**1,502,400**
Equivalent to			**$857.05**

Table 6.1.2-A1 Inflation Rate and Exchange Rate (from 1985 to Nov 1994)

Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	Sep-93	Oct-93	Nov-93
Annual Inflation Rate (%)	0.4	0.3	0.4	1.7	0.9	5.1	174.5	210.4	256.1			
Monthly Inflation Rate (%)										10.9	16.3	14.2
Exchange Rate (Lei/US$)												
Annual Average	17.14	16.15	14.56	14.28	14.92	24.43	76.39	308.0	760.05			
Monthly Average										870	985	1068
End of Period	15.73	15.28	13.74	14.37	14.44	34.71	189	460	1276	910	1036	1074

Year	Dec-93	Jan-94	Feb-94	Mar-94	Apr-94	May-94	Jun-94	Jul-94	Aug-94	Sep-94	Oct-94	Nov-94
Annual Inflation Rate (%)												
Monthly Inflation Rate (%)	7.4	4.9	5.9	8.3	6.1	5.0	2.6	1.6	1.8	3.9	4.4	2.8
Exchange Rate (Lei/US$)												
Annual Average												
Monthly Average	1141	1387	1494	1601	1671	1657	1667	1686	1688	1727	1753	1756
End of Period	1276	1450	1570	1650	1659	1659	1677	1690	1701	1756	1752	1770

Souse: Raport Anual 1993, Banca Nationala a Romaniei
Buletin Lunar 11/1994, Banca Nationala a Romaniei
Buletin Statistic de Preturi, Anul V.nr.9 (47), Sep. 1994, Comisia Nationala pentru Statistica



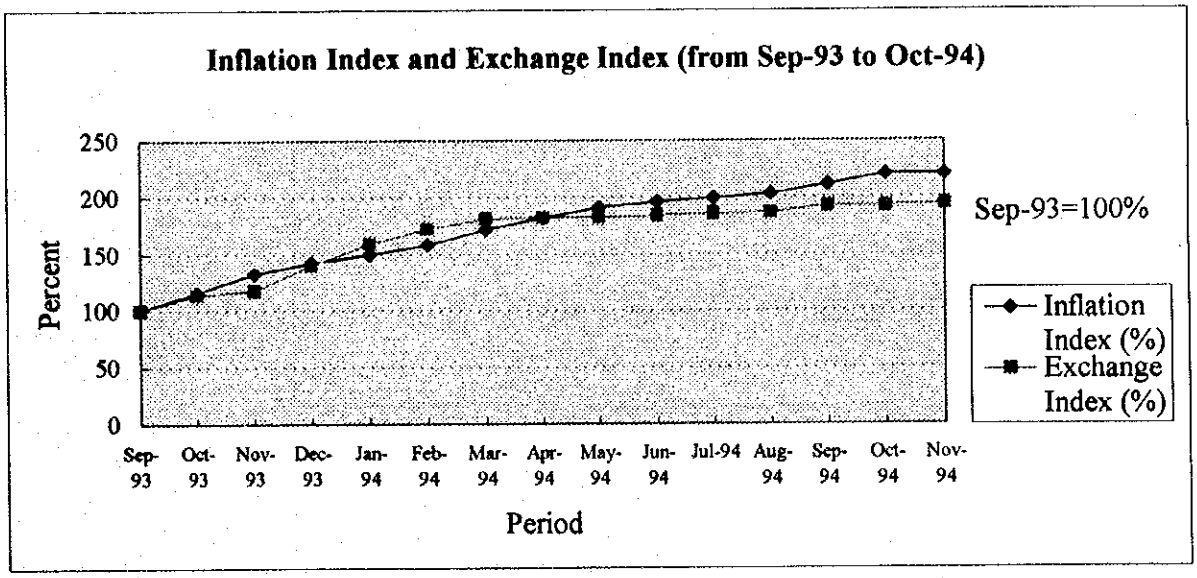


Table 6.2.2-A1 Proportion of Benefit Attainment in Gestation Period (Irrigation Project)

Year order		1	2	3	4	5	6	7	8	9	10	11	12
Completed area (ha)													
Lot A	4,204					2,402	1,802						
Lot B	6,483					2,431	3,242	810					
Lot C	6,722					1,680	3,362	1,680					
Lot D	4,951					619	2,475	1,857					
Total	22,360					7,132	10,881	4,347					
Percentage (%)	100.0					31.9	48.7	19.4					
Yield (%)													
5th year's part	31.9					60	80	100	100	100	100	100	100
6th year's part	48.7						60	80	100	100	100	100	100
7th year's part	19.4							60	80	100	100	100	100
Combined Attainment (%)													
5th year's part						19.1	25.5	31.9	31.9	31.9	31.9	31.9	31.9
6th year's part							29.2	38.9	48.7	48.7	48.7	48.7	48.7
7th year's part								11.7	15.6	19.4	19.4	19.4	19.4
Total Attainment		0.0	0.0	0.0	0.0	19.1	54.7	82.5	96.1	100.0	100.0	100.0	100.0
With Project		100	100	100	100	196	374	513	581	601	601	601	601
Without Project		100	100	100	100	100	100	100	100	100	100	100	100

Fig 6.2.2-A1 Concept Figure of Increased Project Benefit (Irrigation Project)

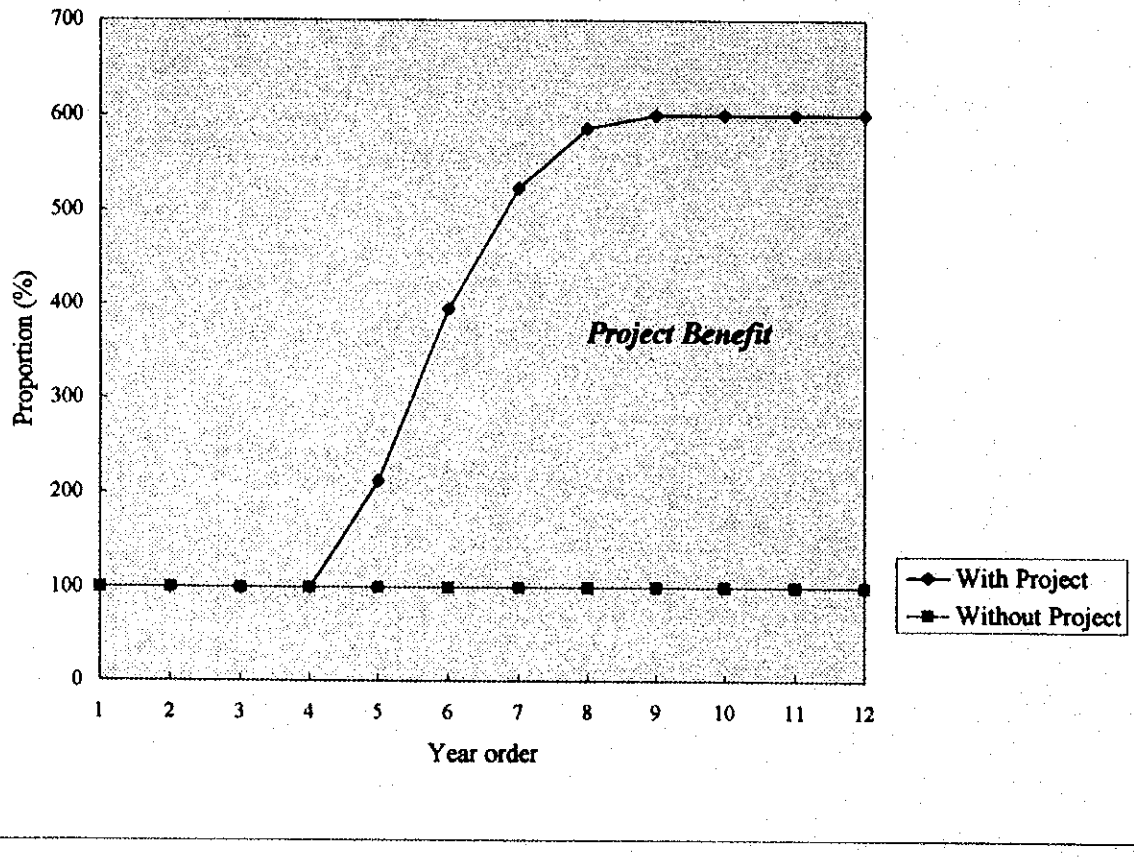


Table 6.2.2-A2 Land Use of the Irrigation Study Area

(Unit: ha)

Classification	Without Project		With Project		With-Without	
	Gross	Net	Gross	Net	Gross	Net
Agricultural Land						
Arable Land	18780	18590	20220	19810	1440	1220
(without irrigation)	18780	18590	0	0	-18780	-18590
(with irrigation)	0	0	20220	19810	20220	19810
Pasture	500	500	500	500	0	0
Vineyard	4040	4000	2600	2550	-1440	-1450
(without irrigation)	4040	4000	0	0	-4040	-4000
(with irrigation)	0	0	2600	2550	23320	2550
Sub-total	23320	23090	23320	22860	0	-230
(with irrigation)	0	0	22820	22360	22820	22360

Cropping Proportion of the Arable Land

(Unit: ha)

Crop	Without Project (without irrigation)		With Project (with irrigation)		Proportion	
	Gross	Net	Gross	Net	Present (%)	Planning (%)
Wheat	2967.2	2937.2	2426.4	2377.2	15.8	12.0
Barley	788.8	780.8	606.6	594.3	4.2	3.0
Maize	13221.1	13087.4	9099.0	8914.5	70.4	45.0
Bean seeds	18.8	18.6			0.1	0.0
Sunflower	638.5	632.1	505.5	495.3	3.4	2.5
Sugar beet	112.7	111.5	101.1	99.1	0.6	0.5
Beans			5055.0	4952.5	0.0	25.0
Potato	244.1	241.7	202.2	198.1	1.3	1.0
Maize for silo			606.6	594.3	0.0	3.0
Vegetables	770.0	762.2	4630.4	4536.5	4.1	22.9
Annual pasture	18.8	18.6	20.2	19.8	0.1	0.1
Total	18780	18590	23253	22782	100.0	115.0

Cropping Proportion of the Vegetables

(Unit: ha)

Vegetable	Without Project (without irrigation)		With Project (with irrigation)		Proportion	
	Gross	Net	Gross	Net	Present (%)	Planning (%)
Cabbage						
Medium	93.9	93.0	303.3	297.2	12.20	6.55
Late			808.8	792.4		17.47
Cauliflower						0.00
Medium			303.3	297.2		6.55
Late			808.8	792.4		17.47
Cucumber						0.00
Early			202.2	198.1		4.37
Late			808.8	792.4		17.47
Onion	131.5	130.1	202.2	198.1	17.07	4.37
Garlic			202.2	198.1		4.37
Green pepper			202.2	198.1		4.37
Egg plant			202.2	198.1		4.37
Carrot			283.1	277.3		6.11
Tomato					19.51	0.00
Medium	150.2	148.7	151.7	148.6		3.28
Late			151.7	148.6		3.28
Others	394.4	390.4			51.22	0.00
Total	770.0	762.2	4630.4	4536.5	100.00	100.00

Table 6.2.2-A3 Yield and Production of the Irrigation Study Area

(Unit: kg / ha, ton)

Classification	Without Project (without irrigation)		With Project (with irrigation)		With-Without
	Yield	Production	Yield	Production	Production
Agricultural Land					
Arable Land		61383		254547	193164
(without irrigation)	Table (2)	61383			-61383
(with irrigation)			Table (2)	254547	254547
Pasture	23753	11877	23753	11877	0
Vineyard		26120		22812	-3308
(without irrigation)	6530	26120			-26120
(with irrigation)			8946	22812	22812
Total		99380		289236	189856

Yield and Production of the Arable Land

(Unit: kg / ha, ton)

Crop	Without Project (without irrigation)		With Project (with irrigation)		With-Without
	Yield	Production	Yield	Production	Production
Wheat	2266	6557	3399	7968	1411
Barley	2416	1858	3624	2124	265
Maize	2661	34309	4524	39768	5459
Bean seeds	1391	25			-25
Sunflower	1599	996	2319	1132	137
Sugar beet	17136	1883	30502	2979	1096
Beans			2200	10744	10744
Potato	12772	3041	21329	4166	1126
Maize for silo			39000	22855	22855
Vegetables	Table (3)	12467	Table (3)	162368	149901
Annual pasture	13520	248	22714	444	196
Total		61383		254547	193164

Note: Yields on the moderately eroded area (1,839 ha) are 85% of normal area.

Yield and Production of the Vegetables

(Unit: kg / ha, ton)

Vegetable	Without Project (without irrigation)		With Project (with irrigation)		With-Without
	Yield	Production	Yield	Production	Production
Cabbage				63388	60943
Medium	26700	2445	43000	12600	10155
Late			65000	50789	50789
Cauliflower				22953	22953
Medium			17000	4981	4981
Late			23000	17971	17971
Cucumber				31645	31645
Early			50000	9767	9767
Late			28000	21878	21878
Onion	19900	2551	22000	4298	1746
Garlic			7000	1367	1367
Green pepper			22000	4298	4298
Egg plant			33000	6446	6446
Carrot			38000	10392	10392
Tomato				17581	15324
Medium	15400	2256	60000	8790	6534
Late			60000	8790	8790
Others	13558	5214			-5214
Total		12467		162368	149901

Note: Yields on the moderately eroded area (1,839 ha) are 85% of normal area.

Table 6.2.2-A4 Farm Gate Price of the Irrigation Study Area (Financial Price)

(Unit: Lei / kg)

Classification	Without and With Project		
	Aug-94	Oct-94	Oct-94
(Lei / US$)	1688	1753	US$ / ton
Agricultural Land			
Arable Land		Table (2)	Table (2)
(without irrigation)			
(with irrigation)			
Pasture		8	4.56
Vineyard			
(without irrigation)		170	96.98
(with irrigation)		170	96.98

Farm Gate Price of the Arable Land (Financial Price)

(Unit: Lei / kg)

Classification	Without and With Project		
	Aug-94	Oct-94	Oct-94
(Lei / US$)	1688	1753	US$ / ton
Wheat		220	125.50
Barley		170	96.98
Maize		140	79.86
Bean seeds		820	467.77
Sunflower		350	199.66
Sugar beet		55	31.37
Beans		820	467.77
Potato		356	203.08
Maize for silo		30	17.11
Vegetables		Table (3)	Table (3)
Annual pasture		44	25.10

Farm Gate Price of the Vegetables (Financial Price)

(Unit: Lei / kg)

Classification	Without and With Project		
	Aug-94	Oct-94	Oct-94
(Lei / US$)	1688	1753	US$ / ton
Cabbage			
Medium	225		133.29
Late		325	185.40
Cauliflower			
Medium	500		296.21
Late		1003	572.16
Cucumber			
Early	500		296.21
Late		607	346.26
Onion		1000	570.45
Garlic		1516	864.80
Green pepper		604	344.55
Egg plant		500	285.23
Carrot		650	370.79
Tomato			
Medium	420		248.82
Late		900	513.41
Others	711		421.21

Table 6.2.2 - A5 Production Cost of Products in the Irrigation Study Area (Financial Price)

(Unit: 10^3 Lei/ha)

Classification	Without Project			With Project		
	Aug-94	Oct-94	Oct-94	Aug-94	Oct-94	Oct-94
(Lei / US$)	1688	1753	US$ / ha	1688	1753	US$ / ha
Agricultural Land						
Arable Land		Table (2)	Table (2)		Table (2)	Table (2)
(without irrigation)						
(with irrigation)						
Pasture		99.2	56.59		99.2	56.59
Vineyard			273.66			431.23
(without irrigation)		479.7	273.66			
(with irrigation)					756.0	431.23

Production Cost of Products in the Arable Land (Financial Price)

(Unit: 10^3 Lei/ha)

Crop	Without Project			With Project		
	Aug-94	Oct-94	Oct-94	Aug-94	Oct-94	Oct-94
(Lei / US$)	1688	1753	US$ / ha	1688	1753	US$ / ha
Wheat		238.4	135.97		417.4	238.13
Barley		208.7	119.04		362.9	206.99
Maize		146.6	83.64		387.2	220.88
Bean seeds		194.2	110.79			
Sunflower		201.1	114.74		381.6	217.66
Sugar beet		280.3	159.87		527.7	301.03
Beans					415.5	237.02
Potato		1622.4	925.51		3333.5	1901.61
Maize for silo					468.1	267.04
Vegetables		Table (3)	Table (3)		Table (3)	Table (3)
Annual pasture		102.1	58.27		452.6	258.16

Production Cost of Vegetable Products (Financial Price)

(Unit: 10^3 Lei/ha)

Vegetable	Without Project			With Project		
	Aug-94	Oct-94	Oct-94	Aug-94	Oct-94	Oct-94
(Lei / US$)	1688	1753	US$ / ha	1688	1753	US$ / ha
Cabbage						
Medium	1682.9		997.00	3594.2		2129.27
Late					4806.6	2741.91
Cauliflower						
Medium				3134.2		1856.78
Late					4951.1	2824.38
Cucumber						
Early				4936.9		2924.73
Late					3913.3	2232.32
Onion		4756.1	2713.12		6193.5	3533.11
Garlic					3778.2	2155.29
Green pepper					3543.3	2021.26
Egg plant					3972.9	2266.37
Carrot					6487.9	3701.04
Tomato						
Medium	1386.1		821.14	5136.2		3042.77
Late					8615.6	4914.78
Others	1994.0		1181.29			

Table 6.2.2-A6 Production Cost on Without Project (Financial Price)

(Unit: 10^3 Lei/ha)

Farm type	Crop	Seed		Fertilizer		Chemicals		Hired labor		Machinery		Manure		Water fee		Sprinkler	Marketing	Agri. tax	Others	Sub-total	Sales tax	Total cost	
		kg/ha	cost	kg/ha	cost	kg/ha	cost	man-day	cost	hours	cost	ton/ha	cost	cubic m	cost	cost	cost	cost	cost		cost		**
	VAT		incl.		incl.		incl.		no incl.		incl.		no incl.		incl.	incl.	no incl.	no incl.	incl.		no incl.		(Average)
Indiv	Wheat	175.0	56.3 *	50	14.0 *	0.03	16.1	0.7	3.7	1.8	80.0	12.0	24.0	0	0.0	0.0	0.0	17.1	6.2	217.4	0.0	217.4	238.4
Assoc.	Wheat	175.0	56.3 *	50	14.0 *	0.06	32.2	6.3	33.4	6.7	143.6	12.0	24.0	0	0.0	0.0	0.0	17.1	1.0	321.6	0.0	321.6	
All	Barley	36.0	14.1	20	5.7	0.00	0.0	0.6	3.2	6.7	143.6	12.0	24.0	0	0.0	0.0	0.0	17.1	1.0	208.7	0.0	208.7	
Indiv.	Maize	20.0	20.9	110	30.7	0.01	5.5	6.2	32.9	0.0	0.0	12.0	24.0	0	0.0	0.0	0.0	17.1	13.4	144.5	0.0	144.5	146.6
Assoc.	Maize	25.0	19.7	90	23.7	0.01	5.5	0.8	4.2	4.3	63.6	10.0	20.0	0	0.0	0.0	0.0	17.1	1.4	155.2	0.0	155.2	
Indiv.	Bean seeds	90.0	90.0	60	27.3	0.00	0.0	1.1	5.8	2.0	12.0	20.0	40.0	0	0.0	0.0	0.0	17.1	0.0	192.2	0.0	192.2	194.2
Assoc.	Bean seeds	80.0	80.0	60	27.2	0.00	0.0	1.1	5.8	4.0	24.0	24.0	48.0	0	0.0	0.0	0.0	17.1	0.0	202.1	0.0	202.1	
Indiv.	Sunflower	5.0	10.4	130	47.6	0.01	1.8	1.4	7.4	5.7	60.7	12.0	24.0	0	0.0	0.0	0.0	17.1	0.0	169.0	0.0	169.0	201.1
Assoc.	Sunflower	6.0	12.4	140	51.3	0.01	1.8	1.4	7.4	10.1	205.8	16.0	32.0	0	0.0	0.0	0.0	17.1	1.0	328.8	0.0	328.8	
All	Sugar beet	5.0	7.0 *	20	5.4	0.01	2.1	0.2	1.1	29.2	210.6	18.0	36.0	0	0.0	0.0	0.0	17.1	1.0	280.3	0.0	280.3	
All	Potato	2400.0	345.9	80	23.0	0.32	48.2	4.0	21.2	4.6	38.0	18.0	36.0	0	0.0	0.0	166.0	142.0	6.6	826.9	925.0	1751.9	1622.4
All	Cabbage (M)	0.6	48.8	135	49.5	0.12	45.5	24.1	127.7	4.0	43.0	16.0	32.0	0	0.0	0.0	166.0	142.0	6.6	661.1	1261.5	1922.6	1682.9
All	Onion	60.0	300.0	120	44.0	0.24	55.0	40.9	216.8	6.6	101.8	18.0	36.0	0	0.0	0.0	166.0	142.0	47.0	1108.6	4503.1	5611.7	4756.1
All	Tomato (M)	0.2	42.1	150	55.0	0.15	48.2	22.0	116.6	5.8	93.9	18.0	36.0	0	0.0	0.0	166.0	142.0	32.0	731.8	1022.3	1754.1	1386.1
All	Others	0.5	49.1	125	44.1	0.12	27.4	27.4	145.2	12.4	181.7	15.2	30.4	0	0.0	0.0	166.0	142.0	39.2	825.1	1719.0	2544.1	1994.0
Indiv.	Annual pasture	10.0	43.5	0	0.0	0.00	0.0	0.0	0.0	0.0	0.0	10.0	20.0	0	0.0	0.0	0.0	17.1	12.0	92.6	0.0	92.6	102.1
Assoc.	Annual pasture	25.0	75.0	0	0.0	0.00	0.0	0.0	0.0	0.0	0.0	12.0	24.0	0	0.0	0.0	0.0	17.1	24.0	140.1	0.0	140.1	
All	Pasture	3.0	8.7	0	0.0	0.00	0.0	0.0	0.0	4.2	25.4	24.0	48.0	0	0.0	0.0	0.0	17.1	0.0	99.2	0.0	99.2	
Indiv.	Vineyard	1250.0	56.3	50	14.0	2.80	85.7	3.1	16.4	0.6	20.6	12.0	24.0	0	0.0	0.0	0.0	135.0	91.3	443.3	0.0	443.3	479.7
Assoc.	Vineyard	1250.0	56.3	90	25.2	4.20	185.0	25.4	134.6	1.2	41.0	10.0	20.0	0	0.0	0.0	0.0	135.0	27.3	624.4	0.0	624.4	

Note: *; Seed cost is subsidized (reduced by 30%) or supplied and fertilizer is supplied 70 kg of total quantity required as subside. **; Average of vegetables means the weighted average of salling portion and loss portion. Proportion of cropping area; Individual : Association is 79.9 : 20.1.

Table 6.2.2-A7 Production Cost on With Project (Financial Price)

(Unit: 10^3 Lei/ha)

Farm type	Crop	Seed		Fertilizer		Chemicals		Hired labor		Machinery		Manure		Water fee		Sprinkler	Marketing	Agri. tax	Others	Sub-total	Sales tax	Total cost	
		kg/ha	cost	kg/ha	cost	kg/ha	cost	man-day	cost	hours	cost	ton/ha	cost	cubic m	cost	cost	cost	cost	cost		cost		**
	VAT		incl.		incl.		incl.		no incl.		incl.		no incl.		incl.	incl.	no incl.	no incl.	incl.		no incl.		(Average)
Indiv	Wheat	147.0	47.3 *	60	16.8 *	0.03	16.1	0.9	4.8	2.6	41.0	12.0	24.0	2354	160.1	55.5	0.0	17.1	6.3	388.9	0.0	388.9	417.4
Assoc.	Wheat	147.0	47.3 *	60	16.8 *	0.06	32.2	6.3	33.4	2.0	37.8	12.0	24.0	2354	160.1	55.5	0.0	17.1	1.0	425.2	0.0	425.2	
All	Barley	220.0	86.2	20	5.7	0.00	0.0	0.6	3.2	2.0	37.8	12.0	24.0	2354	160.1	27.8	0.0	17.1	1.0	362.9	0.0	362.9	
Indiv.	Maize	20.0	20.9	110	30.7	0.24	5.5	8.1	42.9	2.8	41.0	12.0	24.0	2609	177.4	55.5	0.0	17.1	4.9	419.9	0.0	419.9	387.2
Assoc.	Maize	25.0	26.1	90	23.7	0.24	5.5	0.8	4.2	2.6	47.8	10.0	20.0	2609	177.4	55.5	0.0	17.1	1.0	378.4	0.0	378.4	
Indiv.	Sunflower	6.0	3.8	120	44.0	0.10	28.1	1.7	9.0	1.7	38.2	12.0	24.0	2263	153.9	55.5	0.0	17.1	0.8	374.4	0.0	374.4	383.6
Assoc.	Sunflower	6.0	12.4	140	51.3	0.01	1.8	1.4	7.4	2.5	51.5	16.0	32.0	2263	153.9	55.5	0.0	17.1	0.6	383.5	0.0	383.5	
All	Sugar beet	5.0	20.0 *	20	5.4	0.01	2.1	0.2	1.1	29.2	210.7	18.0	36.0	2630	178.8	55.5	0.0	17.1	1.0	527.7	0.0	527.7	
Indiv.	Bushbean	90.0	90.0	60	27.3	0.00	0.0	1.3	6.9	2.6	41.0	6.0	12.0	2353	160.0	55.5	0.0	17.1	0.0	409.8	0.0	409.8	415.5
Assoc.	Bushbean	80.0	80.0	60	27.3	0.00	0.0	1.1	5.8	2.0	39.3	16.0	32.0	2353	160.0	55.5	0.0	17.1	0.0	417.0	0.0	417.0	
All	Soybean	110.0	92.7	100	45.4	0.25	85.5	1.1	5.8	2.0	39.3	16.0	32.0	2353	160.0	55.5	0.0	17.1	0.0	533.3	0.0	533.3	
All	Potato	2400.0	345.9	80	23.0	0.32	48.2	6.6	35.0	10.4	151.6	10.0	20.0	2573	175.0	55.5	1219.3	142.0	6.6	2222.0	1292.4	3514.5	3333.5
All	Maize for silo	30.0	24.0	90	8.5	0.00	0.0	0.0	0.0	18.4	184.6	12.0	24.0	2271	154.4	27.8	0.0	17.1	27.7	468.1	0.0	468.1	
All	Cabbage (M)	0.6	48.8	135	49.5	0.12	45.5	25.9	137.3	16.9	211.0	16.0	32.0	3632	247.0	55.5	1219.3	142.0	44.5	2232.3	1681.3	3913.7	3594.2
All	Cabbage (L)	0.6	48.8	150	55.0	0.12	45.5	30.9	163.8	22.3	276.4	16.0	32.0	3995	271.7	55.5	1219.3	142.0	47.0	2356.9	3602.4	5959.4	4806.6
All	Cauliflower (M)	0.7	54.6	120	44.0	0.10	37.9	17.7	93.8	10.0	151.6	16.0	32.0	3632	247.0	55.5	1219.3	142.0	32.0	2109.7	1330.6	3440.3	3134.2
All	Cauliflower (L)	0.7	54.6	135	49.5	0.12	45.5	23.3	123.5	11.3	161.7	16.0	32.0	3995	271.7	55.5	1219.3	142.0	44.5	2199.8	4046.2	6245.9	4951.1
All	Cucumber (E)	1.2	119.9	120	44.0	0.08	67.3	21.1	111.8	18.0	229.8	16.0	32.0	3632	247.0	55.5	1219.3	142.0	38.5	2308.1	4107.6	6415.7	4936.9
All	Cucumber (L)	1.2	111.2	135	49.5	0.15	70.7	17.5	92.8	12.3	176.8	16.0	32.0	3995	271.7	55.5	1219.3	142.0	37.0	2238.4	2585.7	4844.1	3913.3
All	Onion	60.0	300.0	120	44.0	0.24	55.0	45.0	238.5	6.6	101.8	18.0	36.0	3269	222.3	55.5	1219.3	142.0	47.0	2461.4	4607.6	7069.0	6193.5
All	Garlic	22.5	180.0	120	44.0	0.24	55.0	29.0	153.7	5.6	92.0	18.0	36.0	3269	222.3	55.5	1219.3	142.0	32.0	2231.8	1909.2	4141.0	3778.2
All	Green pepper	0.4	40.1	135	49.5	0.15	48.2	57.4	304.2	12.5	182.1	16.0	32.0	3632	247.0	55.5	1219.3	142.0	44.5	2364.4	1842.0	4206.4	3543.3
All	Egg plant	0.4	53.7	135	49.5	0.15	48.2	57.4	304.2	15.5	211.8	16.0	32.0	3632	247.0	55.5	1219.3	142.0	44.5	2407.7	2445.7	4853.4	3972.9
All	Carrot	0.8	42.6	100	28.0	0.10	35.6	27.5	145.8	15.9	201.2	12.0	24.0	3269	222.3	55.5	1219.3	142.0	32.0	2148.2	5357.6	7505.9	6487.9
All	Tomato (M)	0.4	42.1	150	55.0	0.15	48.2	57.4	304.2	22.4	297.6	18.0	36.0	3995	271.7	55.5	1219.3	142.0	52.7	2524.3	4081.1	6605.4	5136.2
All	Tomato (L)	0.4	42.1	150	55.0	0.15	48.2	43.5	230.6	22.4	297.6	18.0	36.0	3995	271.7	55.5	1219.3	142.0	52.7	2450.6	9632.8	12083.4	8615.6
Indiv.	Annual pasture	10.0	43.5	0	0.0	0.00	0.0	0.0	0.0	4.2	25.4	10.0	20.0	3926	267.0	55.5	0.0	17.1	0.0	428.5	0.0	428.5	452.6
Assoc.	Annual pasture	25.0	75.0	0	0.0	0.00	0.0	0.0	0.0	4.2	20.5	12.0	24.0	3926	267.0	55.5	0.0	17.1	0.0	459.1	0.0	459.1	
All	Pasture	3.0	8.7	0	0.0	0.00	0.0	0.0	0.0	4.2	25.4	24.0	48.0	0	0.0	0.0	0.0	17.1	0.0	99.2	0.0	99.2	
Indiv.	Vineyard	1250.0	56.3	75	27.5	1.29	47.3	5.0	26.5	2.5	43.8	12.0	24.0	1138	77.4	55.5	0.0	135.0	61.3	554.6	0.0	554.6	756.0
Assoc.	Vineyard	1250.0	56.3	90	25.2	6.25	274.1	14.9	79.0	2.5	48.5	16.0	32.0	1138	77.4	55.5	0.0	135.0	27.5	810.5	0.0	810.5	

Note: *; Seed cost is subsidized (reduced by 30%) or supplied and fertilizer is supplied 70 kg of total quantity required as subside. **; Average of vegetables means the weighted average of salling portion and loss portion. Proportion of cropping area; Individual : Association is 21.3 : 78.7.

Table 6.2.2 - A8 Production Values and Production Cost in the Irrigation Study Area (Financial Price)

(Unit: 10^3 US$)

Classification	Without Project			With Project			With Project - Without Project		
	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value
Agricultural Land									
Arable Land	9176	2933	6242	61805	16639	45166	52629	13705	38924
(without irrigation)	9176	2933	6242				-9176	-2933	-6242
(with irrigation)				61805	16639	45166	61805	16639	45166
Pasture	54	28	26	54	28	26	0	0	0
Vineyard	2533	1095	1438	2212	1100	1113	-321	5	-326
(without irrigation)	2533	1095	1438				-2533	-1095	-1438
(with irrigation)				2212	1100	1113	2212	1100	1113
Total	11763	4056	7707	64071	17767	46305	52308	13710	38598
		With / Without		545%	438%	601%	Average (US$ / ha)		1726

Production Values and Production Cost in the Arable Land (Financial Price)

(Unit: 10^3 US$)

Crop	Without Project			With Project			With Project - Without Project		
	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value
Wheat	822.9	399.4	423.5	999.9	566.1	433.8	177.0	166.7	10.3
Barley	180.2	92.9	87.3	206.0	123.0	82.9	25.7	30.1	-4.3
Maize	2740.0	1094.7	1645.3	3176.0	1969.1	1206.9	436.0	874.4	-438.4
Bean seeds	11.9	2.1	9.9				-11.9	-2.1	-9.9
Sunflower	198.8	72.5	126.3	226.1	107.8	118.3	27.3	35.3	-8.0
Sugar beet	59.1	17.8	41.2	93.5	29.8	63.7	34.4	12.0	22.4
Beans				5025.6	1173.8	3851.8	5025.6	1173.8	3851.8
Potato	617.5	223.7	393.9	846.1	376.7	469.4	228.6	153.0	75.6
Maize for silo				391.1	158.7	232.4	391.1	158.7	232.4
Vegetables	4538.9	1029.0	3509.9	50829.2	12128.5	38700.8	46290.3	11099.4	35190.8
Annual pasture	6.2	1.1	5.1	11.1	5.1	6.0	4.9	4.0	0.9
Total	9175.6	2933.2	6242.4	61804.6	16638.6	45166.0	52629.1	13705.4	38923.6

Production Values and Production Cost of the Vegetables (Financial Price)

(Unit: 10^3 US$)

Vegetable	Without Project			With Project			With Project - Without Project		
	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value
Cabbage									
Medium	325.9	92.7	233.2	1679.4	632.7	1046.7	1353.5	540.0	813.5
Late				9416.1	2172.7	7243.4	9416.1	2172.7	7243.4
Cauliflower									
Medium				1475.5	551.7	923.7	1475.5	551.7	923.7
Late				10282.6	2238.0	8044.5	10282.6	2238.0	8044.5
Cucumber									
Early				2893.1	579.4	2313.7	2893.1	579.4	2313.7
Late				7575.6	1768.9	5806.7	7575.6	1768.9	5806.7
Onion	1455.3	353.1	1102.3	2451.5	699.9	1751.6	996.2	346.8	649.4
Garlic				1182.5	427.0	755.6	1182.5	427.0	755.6
Green pepper				1480.7	400.4	1080.3	1480.7	400.4	1080.3
Egg plant				1838.6	449.0	1389.7	1838.6	449.0	1389.7
Carrot				3853.3	1026.4	2826.9	3853.3	1026.4	2826.9
Tomato									
Medium	561.4	122.1	439.3	2187.2	452.1	1735.1	1625.8	330.0	1295.8
Late				4513.0	730.2	3782.8	4513.0	730.2	3782.8
Others	2196.3	461.2	1735.2				-2196.3	-461.2	-1735.2
Total	4538.9	1029.0	3509.9	50829.2	12128.5	38700.8	46290.3	11099.4	35190.8

Table 6.2.3-A1 Proportion of Benefit Attainment in Gestation Period (Soil Conservation Project)

Moderately Eroded Area (1,839 ha) (Unit: Percentage)

Year order		1	2	3	4	5	6	7	8	9	10	11	12
Completed area						37.4	48.3	14.3					
Yield													
5th year's part		85	80	75	71	75	80	85	85	85	85	85	85
6th year's part		85	80	75	71	67	71	75	80	85	85	85	85
7th year's part		85	80	75	71	67	63	67	71	75	80	85	85
Combined attainment													
5th year's part		31.8	30.0	28.2	26.6	28.2	30.0	31.8	31.8	31.8	31.8	31.8	31.8
6th year's part		41.0	38.7	36.4	34.3	32.3	34.3	36.4	38.7	41.0	41.0	41.0	41.0
7th year's part		12.2	11.5	10.8	10.2	9.6	9.0	9.6	10.2	10.8	11.5	12.2	12.2
With Project		85	80	75	71	70	73	78	81	84	84	85	85
Present condition	85												
Decrease rate	5.8	15.0	19.9	24.6	28.9	33.1	37.0	40.6	44.1	47.3	50.4	50.4	50.4
Without Project		85	80	75	71	67	63	59	56	53	50	50	50
With - Without		0	0	0	0	3	10	18	25	31	35	35	35

Slightly Eroded Area (6,822 ha) (Unit: Percentage)

Year order		1	2	3	4	5	6	7	8	9	10	11	12
Completed area						37.4	48.3	14.3					
Yield													
5th year's part		100	98	96	95	96	98	100	100	100	100	100	100
6th year's part		100	98	96	95	93	95	96	98	100	100	100	100
7th year's part		100	98	96	95	93	91	93	95	96	98	100	100
Combined attainment													
5th year's part		37.4	36.7	36.1	35.4	36.1	36.7	37.4	37.4	37.4	37.4	37.4	37.4
6th year's part		48.3	47.4	46.6	45.7	44.9	45.7	46.6	47.4	48.3	48.3	48.3	48.3
7th year's part		14.3	14.0	13.8	13.5	13.3	13.1	13.3	13.5	13.8	14.0	14.3	14.3
With Project		100	98	96	95	94	96	97	98	99	100	100	100
Present condition	100												
Decrease rate	1.8	0.0	1.8	3.6	5.3	7.0	8.7	10.3	11.9	13.5	15.1	15.1	15.1
Without Project		100	98	96	95	93	91	90	88	86	85	85	85
With - Without		0	0	0	0	1	4	8	10	13	15	15	15

Fig 6.2.3-A1 Concept Figure of Decreased Project Benefit (Soil Conservation Project)

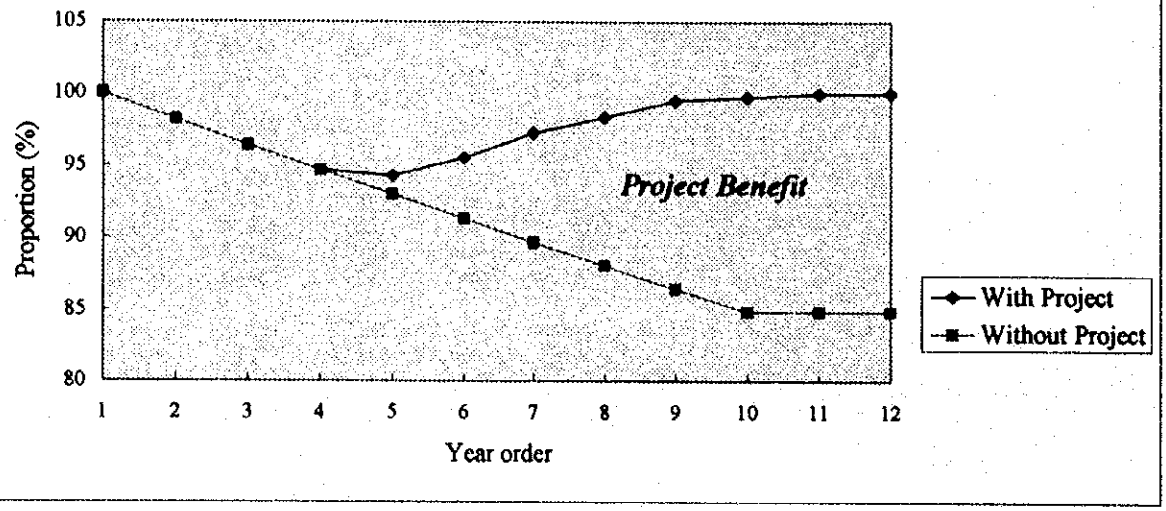


Table 6.2.3 - A2 Yield and Production in the Irrigation Study Area (Soil Conservation Project)

(Unit: kg/ha, ton)

Classification	With Project		Without Project		Without-With
	Yield	Production	Yield	Production	Production
Agricultural Land					
Arable Land		61383		55796	-5587
(without irrigation)	Table (2)	61383	Table (2)	55796	-5587
(with irrigation)					
Pasture	23753	11877	23753	11877	0
Vineyard		26120		26120	0
(without irrigation)	6530	26120	6530	26120	0
(with irrigation)					0
Total		99380		93793	-5587

Yield and Production in the Arable Land (Soil Conservation Project)

(Unit: kg/ha, ton)

Crop	With Project		Without Project		Without-With
	Yield	Production	Yield	Production	Production
Wheat	2266	6557	2266	5960	-597
Barley	2416	1858	2416	1689	-169
Maize	2661	34309	2661	31186	-3123
Bean seeds	1391	25	1391	23	-2
Sunflower	1599	996	1599	905	-91
Sugar beet	17136	1883	17136	1712	-171
Beans					
Potato	12772	3041	12772	2764	-277
Maize for silo					
Vegetables	Table (3)	12467	Table (3)	11332	-1135
Annual pasture	13520	248	13520	225	-23
Total		61383		55796	-5587

Note: With - Yields on the moderate erosion area (1839 ha) are 85% of normal area.
Without - Yields on the moderate erosion area (1,839 ha) are 50% of normal area.
Yields on the erosionable area (6,822 ha) are 85% of normal area.
Yield means at normal area.

Yield and Production of the Vegetables (Soil Conservation Project)

(Unit: kg/ha, ton)

Vegetable	With Project		Without Project		Without-With
	Yield	Production	Yield	Production	Production
Cabbage					
Medium	26700	2445	26700	2222	-223
Late					
Cauliflower					
Medium					
Late					
Cucumber					
Early					
Late					
Onion	19900	2551	19900	2319	-232
Garlic					
Green pepper					
Egg plant					
Carrot					
Tomato					
Medium	15400	2256	15400	2051	-205
Late					
Others	13558	5214	13558	4740	-475
Total		12467		11332	-1135

Note: With - Yields on the moderate erosion area (1839 ha) are 85% of normal area.
Without - Yields on the moderate erosion area (1,839 ha) are 50% of normal area.
Yields on the erosionable area (6,822 ha) are 85% of normal area.
Yield means at normal area.

Table 6.2.3 - A3 Production Values and Production Cost in the Irrigation Study Area (Soil Conservation Project, Financial Price)

(Unit: 10^3 US$)

Classification	With Project			Without Project			With Project - Without Project		
	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value
Agricultural Land									
Arable Land	9176	2933	6242	8340	2933	5407	835	0	835
(without irrigation)	9176	2933	6242	8340	2933	5407	835	0	835
(with irrigation)									
Pasture	54	28	26	54	28	26	0	0	0
Vineyard	2533	1095	1438	2533	1095	1438	0	0	0
(without irrigation)	2533	1095	1438	2533	1095	1438	0	0	0
(with irrigation)									
Total	11763	4056	7707	10928	4056	6872	835	0	835
With / Without	108%	100%	112%				Average (US$ / ha)		96

Production Values and Production Cost in the Arable Land (Soil Conservation Project, Financial Price)

(Unit: 10^3 US$)

Crop	With Project			Without Project			With Project - Without Project		
	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value
Wheat	822.9	399.4	423.5	748.0	399.4	348.6	74.9	0.0	74.9
Barley	180.2	92.9	87.3	163.8	92.9	70.9	16.4	0.0	16.4
Maize	2740.0	1094.7	1645.3	2490.6	1094.7	1395.9	249.4	0.0	249.4
Bean seeds	11.9	2.1	9.9	10.8	2.1	8.8	1.1	0.0	1.1
Sunflower	198.8	72.5	126.3	180.7	72.5	108.2	18.1	0.0	18.1
Sugar beet	59.1	17.8	41.2	53.7	17.8	35.9	5.4	0.0	5.4
Soybean									
Potato	617.5	223.7	393.9	561.3	223.7	337.7	56.2	0.0	56.2
Maize for silo									
Vegetables	4538.9	1029.0	3509.9	4125.8	1029.0	3096.8	413.1	0.0	413.1
Annual pasture	6.2	1.1	5.1	5.6	1.1	4.6	0.6	0.0	0.6
Total	9175.6	2933.2	6242.4	8340.4	2933.2	5407.3	835.2	0.0	835.2

Production Values and Production Cost of the Vegetables (Soil Conservation Project, Financial Price)

(Unit: 10^3 US$)

Vegetable	With Project			Without Project			With Project - Without Project		
	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value
Cabbage									
Medium	325.9	92.7	233.2	296.2	92.7	203.6	29.7	0.0	29.7
Late									
Cauliflower									
Medium									
Late									
Cucumber									
Early									
Late									
Onion	1455.3	353.1	1102.3	1322.8	353.1	969.8	132.5	0.0	132.5
Garlic									
Green pepper									
Egg plant									
Carrot									
Tomato									
Medium	561.4	122.1	439.3	510.3	122.1	388.2	51.1	0.0	51.1
Late									
Others	2196.3	461.2	1735.2	1996.4	461.2	1535.3	199.9	0.0	199.9
Total	4538.9	1029.0	3509.9	4125.8	1029.0	3096.8	413.1	0.0	413.1

Table 6.3.2-A1 Estimate of the Border Prices of Main Crops

(Unit: US$/t)

Item	Cost	Wheat	Barley	Maize	Soybean	Sunflower	Potato
CIF Rotterdam (Oct-94)		205.00		117.00	227.00	307.00	
Freight (Gulf/Rotterdam, Oct-94)	14.50						
FOB Gulf		190.50		102.50	212.50	292.50	
CIF Constanta (estimated)		217.80		129.80	239.80	319.80	
Commodity price							
World Bank (Jul-93)		116.80		101.30	287.00		
Commodity Research Bureau (94)		146.97	108.39	108.26	180.78		137.79
Adopted price		146.97	108.39	108.26	180.78	292.50	137.79
Freight (Gulf/Constanta, Oct-94)	27.30						
Value at Romanian border		174.27	135.69	135.56	208.08	319.80	165.09
Convert to local currency with US$							
Conversion factor	1.07	186.47	145.19	145.05	222.65	342.19	176.65
Importers costs (5% of CIF price)	5%	195.79	152.45	152.30	233.78	359.30	185.48
Inland transport cost (Constanta - Focsani)	4.50						
Border parity price at farmgate		200.29	156.95	156.80	238.28	363.80	189.98
Financial price at farmgate		125.50	96.98	79.86	467.77	199.66	203.08
Relationship with border parity price		63%	62%	51%	196%	55%	107%

Source: Price Prospects for Major Primary Commodities, World Bank, 1993
The CRB Commodity Yearbook 1994, Knight-Ridder Financial / Commodity
Ministry of Agriculture and Food
Commercial Trade Data, Oct-1994

Note: All commodities are relevant for import parities. Bean seeds and beans are evaluated as soybean.

Table 6.3.2-A2 Sunk Cost of the Project

(Unit: 10^3 Lei)

Item	Investment		
Projects	Calimanesti Dam	Siret-Baragan Canal	Ruginesti-Pufesti-Panciu
Year			
1988	0	0	41,868
1989	1,698,179	270,914	121,624
1990	210,198	70,911	124,238
1991	289,937	88,328	24,446
1992	1,970,359	455,363	32,400
1993	1,634,176	356,935	120,801
1994	4,680,324	733,676	296,829
1995	8,598,843	0	392,340

(Unit: 10^3 Lei)

Item	Contribution for the Project			Total
Projects	Calimanesti Dam	Siret-Baragan Canal	Ruginesti-Pufesti-Panciu	
Year	0	0	1	
1988	0	0	41,868	41,868
1989	15,528	12,386	121,624	149,538
1990	1,922	3,242	124,238	129,402
1991	2,651	4,038	24,446	31,136
1992	18,017	20,819	32,400	71,236
1993	14,943	16,319	120,801	152,063
1994	42,797	33,544	296,829	373,170
1995	78,628	0	392,340	470,968

(Unit: 10^3 Lei)

Item	Exchange rate	Total		
Projects	annual average	Financial Price	Economic Price	
Year	(Lei / US$)		0.784	Conversion factor
1988	14	2,932	2,299	
1989	15	10,023	7,860	
1990	24	5,297	4,154	
1991	76	408	320	
1992	308	231	181	
1993	760	200	157	
1994	1,677	223	175	
1995	2,012	234	184	

Note: SGA Vrancea - Dom Proiect, MoE, Aquaproiect and ISPIF.

Note: Prices mean at each expensed year and at 1994 and 1995 are estimated by the study team.

Contribution of irrigation purpose of the Calimanesti Dam is 20% (Total Con. rate = 20% x (22,860ha / 500,000ha)).

Total irrigation management area of the Siret-Baragan Canal Project is 500,000 ha (Con. rate = 22,860ha / 500,000ha).

Exchange rate at 1995 is estimated by the study team and annual increased rate from 1994 to 1995 is 20%.

Conversion factor to estimate the economic price is used the same rate of the project cost (initial cost).

Table 6.3.2 - A3 Farm Gate Price in the Irrigation Study Area (Economic Price)

(Unit: Lei/kg)

Classification	Without and With Project		
	Aug-94	Oct-94	Oct-94
(Lei / US$)	1688	1753	US$ / ton
Agricultural Land			
Arable Land		Table (2)	Table (2)
(without irrigation)			
(with irrigation)			
Pasture		8	4.56
Vineyard			
(without irrigation)		170	96.98
(with irrigation)		170	96.98

Farm Gate Price in the Arable Land (Economic Price)

(Unit: Lei/kg)

Classification	Without and With Project		
	Aug-94	Oct-94	Oct-94
(Lei / US$)	1688	1753	US$ / ton
Wheat		Border Price	200.29
Barley		Border Price	156.95
Maize		Border Price	156.80
Bean seeds		Border Price	238.28
Sunflower		Border Price	363.80
Sugar beet		55	31.37
Beans		820	467.77
Potato		Border Price	189.98
Maize for silo		30	17.11
Vegetables		Table (3)	Table (3)
Annual pasture		44	25.10

Farm Gate Price of the Vegetables (Economic Price)

(Unit: Lei/kg)

Classification	Without and With Project		
	Aug-94	Oct-94	Oct-94
(Lei / US$)	1688	1753	US$ / ton
Cabbage			
Medium	225		133.29
Late		325	185.40
Cauliflower			
Medium	500		296.21
Late		1003	572.16
Cucumber			
Early	500		296.21
Late		607	346.26
Onion		1000	570.45
Garlic		1516	864.80
Green pepper		604	344.55
Egg plant		500	285.23
Carrot		650	370.79
Tomato			
Medium	420		248.82
Late		900	513.41
Others	711		421.21

Table 6.3.2 - A4 Production Cost of Products in the Irrigation Study Area (Economic Price)

(Unit: 10^3 Lei/ha)

Classification	Without Project			With Project		
	Aug-94	Oct-94	Oct-94	Aug-94	Oct-94	Oct-94
(Lei / US$)	1688	1753	US$ / ha	1688	1753	US$ / ha
Agricultural Land						
Arable Land		Table (2)	Table (2)		Table (2)	Table (2)
(without irrigation)						
(with irrigation)						
Pasture		209.4	119.45		94.0	53.64
Vineyard			544.44			772.97
(without irrigation)		954.4	544.44			
(with irrigation)					1355.0	772.97

Production Cost of Products in the Arable Land (Economic Price)

(Unit: 10^3 Lei/ha)

Crop	Without Project			With Project		
	Aug-94	Oct-94	Oct-94	Aug-94	Oct-94	Oct-94
(Lei / US$)	1688	1753	US$ / ha	1688	1753	US$ / ha
Wheat		256.7	146.44		272.1	155.25
Barley		170.8	97.46		175.9	100.32
Maize		204.1	116.40		187.8	107.10
Bean seeds		172.7	98.51			
Sunflower		164.7	93.97		203.9	116.32
Sugar beet		241.5	137.77		348.2	198.61
Beans					229.4	130.88
Potato		678.1	386.84		1005.5	573.60
Maize for silo					288.9	164.82
Vegetables		Table (3)	Table (3)		Table (3)	Table (3)
Annual pasture		201.6	115.03		171.3	97.73

Production Cost of Vegetable Products (Economic Price)

(Unit: 10^3 Lei/ha)

Vegetable	Without Project			With Project		
	Aug-94	Oct-94	Oct-94	Aug-94	Oct-94	Oct-94
(Lei / US$)	1688	1753	US$ / ha	1688	1753	US$ / ha
Cabbage						
Medium	873.8		517.64	1509.4		894.19
Late					1844.5	1052.17
Cauliflower						
Medium				1214.9		719.75
Late					1385.0	790.07
Cucumber						
Early				1571.2		930.82
Late					1385.6	790.40
Onion		1516.7	865.18		1757.2	1002.42
Garlic					1299.7	741.39
Green pepper					1669.6	952.40
Egg plant					1867.1	1065.11
Carrot					1204.8	687.25
Tomato						
Medium	1004.1		594.86	1719.9		1018.91
Late					1501.6	856.56
Others	1051.7		623.05			

Table 6.3.2-A5 Production Cost on Without Project (Economic Price)

(Unit: 10^3 Lei/ha)

Farm type	Crop	Seed		Fertilizer		Chemicals		Labor **		Machinery		Manure		Water fee		Sprinkler	Marketing	Agri. tax	Others	Sub-total	Sales tax	Total cost	
		kg/ha	cost	kg/ha	cost	kg/ha	cost	man-day	cost	hours	cost	ton/ha	cost	cubic m	cost	cost	cost	cost	cost		cost		
	VAT		incl.		incl.		incl.		no incl.		incl.		no incl.		incl.	incl.	no incl.	no incl.	incl.		no incl.		(Average)
Indiv	Wheat	250.0	68.2 *	120	28.5 *	0.03	14.6	7.2	38.2	1.8	67.8	12.0	24.0	0	0.0	0.0	0.0	0.0	2.6	243.8	0.0	243.8	256.7
Assoc.	Wheat	250.0	68.2 *	120	28.5 *	0.06	29.2	6.8	36.0	6.7	121.7	12.0	24.0	0	0.0	0.0	0.0	0.0	0.4	308.0	0.0	308.0	
All	Barley	36.0	11.9	20	4.8	0.00	0.0	1.5	8.0	6.7	121.7	12.0	24.0	0	0.0	0.0	0.0	0.0	0.4	170.8	0.0	170.8	
Indiv.	Maize	20.0	17.7	110	26.0	0.01	5.0	27.5	145.8	0.0	0.0	12.0	24.0	0	0.0	0.0	0.0	0.0	5.7	224.1	0.0	224.1	204.1
Assoc.	Maize	25.0	16.7	90	20.1	0.01	5.0	1.5	8.0	4.3	53.9	10.0	20.0	0	0.0	0.0	0.0	0.0	0.6	124.2	0.0	124.2	
Indiv.	Bean seeds	90.0	76.3	60	23.1	0.00	0.0	4.6	24.4	2.0	10.2	20.0	40.0	0	0.0	0.0	0.0	0.0	0.0	174.0	0.0	174.0	172.7
Assoc.	Bean seeds	80.0	67.8	60	23.1	0.00	0.0	1.6	8.5	4.0	20.3	24.0	48.0	0	0.0	0.0	0.0	0.0	0.0	167.7	0.0	167.7	
Indiv.	Sunflower	5.0	8.8	130	40.3	0.01	1.6	2.1	11.1	5.7	51.4	12.0	24.0	0	0.0	0.0	0.0	0.0	0.0	137.4	0.0	137.4	164.7
Assoc.	Sunflower	6.0	10.5	140	43.5	0.01	1.6	2.1	11.1	10.1	174.4	16.0	32.0	0	0.0	0.0	0.0	0.0	0.4	273.6	0.0	273.6	
All	Sugar beet	7.1	8.5 *	20	4.6	0.01	1.9	2.2	11.7	29.2	178.5	18.0	36.0	0	0.0	0.0	0.0	0.0	0.4	241.5	0.0	241.5	
All	Potato	2400.0	253.1	80	19.5	0.32	43.7	16.0	84.8	4.6	32.2	18.0	36.0	0	0.0	0.0	166.0	0.0	2.8	678.1	0.0	678.1	
All	Cabbage (M)	0.6	41.4	135	41.9	0.12	41.3	96.6	512.0	4.0	36.4	16.0	32.0	0	0.0	0.0	166.0	0.0	2.8	873.8	0.0	873.8	
All	Onion	60.0	254.2	120	37.3	0.24	49.9	163.6	867.1	6.6	86.3	18.0	36.0	0	0.0	0.0	166.0	0.0	19.9	1516.7	0.0	1516.7	
All	Tomato (M)	0.2	35.7	150	46.6	0.15	43.7	110.0	583.0	5.8	79.6	18.0	36.0	0	0.0	0.0	166.0	0.0	13.6	1004.1	0.0	1004.1	
All	Others	0.5	41.6	125	37.4	0.12	24.8	109.6	580.9	12.4	154.0	15.2	30.4	0	0.0	0.0	166.0	0.0	16.6	1051.7	0.0	1051.7	
Indiv.	Annual pasture	10.0	36.9	0	0.0	0.00	0.0	25.0	132.5	0.0	0.0	10.0	20.0	0	0.0	0.0	0.0	0.0	5.1	194.4	0.0	194.4	201.6
Assoc.	Annual pasture	25.0	63.6	0	0.0	0.00	0.0	25.0	132.5	0.0	0.0	12.0	24.0	0	0.0	0.0	0.0	0.0	10.2	230.2	0.0	230.2	
All	Pasture	3.0	7.4	0	0.0	0.00	0.0	25.0	132.5	4.2	21.5	24.0	48.0	0	0.0	0.0	0.0	0.0	0.0	209.4	0.0	209.4	
Indiv.	Vineyard	1250.0	47.7	50	11.9	2.80	77.7	135.8	719.7	0.6	17.5	12.0	24.0	0	0.0	0.0	0.0	0.0	38.7	937.2	0.0	937.2	954.4
Assoc.	Vineyard	1250.0	47.7	90	21.4	4.20	167.8	135.8	719.7	1.2	34.7	10.0	20.0	0	0.0	0.0	0.0	0.0	11.6	1022.9	0.0	1022.9	

Note: *; Seed cost is subsidized (reduced by 30%) or supplied and fertilizer is supplied 70 kg of total quantity required as subside. **; Including farmer's self labor.
Proportion of cropping area; Individual : Association is 79.9 : 20.1.

Table 6.3.2-A6 Production Cost on With Project (Economic Price)

(Unit: 10^3 Lei/ha)

Farm type	Crop	Seed		Fertilizer		Chemicals		Labor **		Machinery		Manure		Water fee		Sprinkler	Marketing	Agri. tax	Others	Sub-total	Sales tax	Total cost	
		kg/ha	cost	kg/ha	cost	kg/ha	cost	man-day	cost	hours	cost	ton/ha	cost	cubic m	cost	cost	cost ***	cost	cost		cost		
	VAT		incl.		incl.		incl.		no incl.		incl.		no incl.		incl.	incl.	no incl.	no incl.	incl.		no incl.		(Average)
Indiv	Wheat	210.0	57.3 *	130	30.8 *	0.03	14.6	8.0	42.4	2.6	41.0	12.0	24.0	2354	0.0	55.5	0.0	0.0	2.7	268.3	0.0	268.3	272.1
Assoc.	Wheat	210.0	57.3 *	130	30.8 *	0.06	29.2	7.2	38.2	2.0	37.8	12.0	24.0	2354	0.0	55.5	0.0	0.0	0.4	273.2	0.0	273.2	
All	Barley	220.0	73.1	20	4.8	0.00	0.0	1.5	8.0	2.0	37.8	12.0	24.0	2354	0.0	27.8	0.0	0.0	0.4	175.9	0.0	175.9	
Indiv.	Maize	20.0	17.7	110	26.0	0.24	5.0	9.3	49.3	2.8	41.0	12.0	24.0	2609	0.0	55.5	0.0	0.0	2.1	220.6	0.0	220.6	187.8
Assoc.	Maize	25.0	22.1	90	20.1	0.24	5.0	1.5	8.0	2.6	47.8	10.0	20.0	2609	0.0	55.5	0.0	0.0	0.4	178.9	0.0	178.9	
Indiv.	Sunflower	6.0	3.2	120	37.3	0.10	25.5	2.3	12.2	1.7	38.2	12.0	24.0	2263	0.0	55.5	0.0	0.0	0.3	196.2	0.0	196.2	203.9
Assoc.	Sunflower	6.0	10.5	140	43.5	0.01	1.6	2.1	11.1	2.5	51.5	16.0	32.0	2263	0.0	55.5	0.0	0.0	0.3	206.0	0.0	206.0	
All	Sugar beet	7.1	24.2 *	20	4.6	0.01	1.9	2.8	14.8	29.2	210.7	18.0	36.0	2630	0.0	55.5	0.0	0.0	0.4	348.2	0.0	348.2	
Indiv.	Bushbean	90.0	76.3	60	23.1	0.00	0.0	5.2	27.6	2.6	41.0	6.0	12.0	2353	0.0	55.5	0.0	0.0	0.0	235.5	0.0	235.5	229.4
Assoc.	Bushbean	80.0	67.8	60	23.1	0.00	0.0	1.9	10.1	2.0	39.3	16.0	32.0	2353	0.0	55.5	0.0	0.0	0.0	227.8	0.0	227.8	
All	Soybean	110.0	78.6	100	38.5	0.25	77.5	1.9	10.1	2.0	39.3	16.0	32.0	2353	0.0	55.5	0.0	0.0	0.0	331.4	0.0	331.4	
All	Potato	2400.0	293.1	80	19.5	0.32	43.7	33.1	175.4	10.4	151.6	10.0	20.0	2573	0.0	55.5	243.9	0.0	2.8	1005.5	0.0	1005.5	
All	Maize for silo	30.0	20.3	90	7.2	0.00	0.0	2.5	13.3	18.4	184.6	12.0	24.0	2271	0.0	27.8	0.0	0.0	11.7	288.9	0.0	288.9	
All	Cabbage (M)	0.6	41.4	135	41.9	0.12	41.3	155.4	823.6	16.9	211.0	16.0	32.0	3632	0.0	55.5	243.9	0.0	18.9	1509.4	0.0	1509.4	
All	Cabbage (L)	0.6	41.4	150	46.6	0.12	41.3	205.2	1087.6	22.3	276.4	16.0	32.0	3995	0.0	55.5	243.9	0.0	19.9	1844.5	0.0	1844.5	
All	Cauliflower (M)	0.7	46.3	120	37.3	0.10	34.4	113.3	600.5	10.0	151.6	16.0	32.0	3632	0.0	55.5	243.9	0.0	13.6	1214.9	0.0	1214.9	
All	Cauliflower (L)	0.7	46.3	135	41.9	0.12	41.3	140.3	743.6	11.3	161.7	16.0	32.0	3995	0.0	55.5	243.9	0.0	18.9	1385.0	0.0	1385.0	
All	Cucumber (E)	1.2	101.6	120	37.3	0.08	61.0	149.7	793.4	18.0	229.8	16.0	32.0	3632	0.0	55.5	243.9	0.0	16.7	1571.2	0.0	1571.2	
All	Cucumber (L)	1.2	94.2	135	41.9	0.15	64.1	124.8	661.4	12.3	176.8	16.0	32.0	3995	0.0	55.5	243.9	0.0	15.7	1385.6	0.0	1385.6	
All	Onion	60.0	254.2	120	37.3	0.24	49.9	180.9	958.8	6.6	101.8	18.0	36.0	3269	0.0	55.5	243.9	0.0	19.9	1757.2	0.0	1757.2	
All	Garlic	22.5	152.5	120	37.3	0.24	49.9	116.8	619.0	5.6	92.0	18.0	36.0	3269	0.0	55.5	243.9	0.0	13.6	1299.7	0.0	1299.7	
All	Green pepper	0.4	34.0	135	41.9	0.15	43.7	192.0	1017.6	12.5	182.1	16.0	32.0	3632	0.0	55.5	243.9	0.0	18.9	1669.6	0.0	1669.6	
All	Egg plant	0.4	45.5	135	41.9	0.15	43.7	221.5	1174.0	15.5	211.8	16.0	32.0	3632	0.0	55.5	243.9	0.0	18.9	1867.1	0.0	1867.1	
All	Carrot	0.8	36.1	100	23.7	0.10	32.3	108.4	574.5	15.9	201.2	12.0	24.0	3269	0.0	55.5	243.9	0.0	13.6	1204.8	0.0	1204.8	
All	Tomato (M)	0.4	35.7	150	46.6	0.15	43.7	177.1	938.6	22.4	297.6	18.0	36.0	3995	0.0	55.5	243.9	0.0	22.3	1719.9	0.0	1719.9	
All	Tomato (L)	0.4	35.7	150	46.6	0.15	43.7	135.9	720.3	22.4	297.6	18.0	36.0	3995	0.0	55.5	243.9	0.0	22.3	1501.6	0.0	1501.6	
Indiv.	Annual pasture	10.0	36.9	0	0.0	0.00	0.0	2.5	13.3	4.2	25.4	10.0	20.0	3926	0.0	55.5	0.0	0.0	0.0	151.0	0.0	151.0	171.3
Assoc.	Annual pasture	25.0	63.6	0	0.0	0.00	0.0	2.5	13.3	4.2	20.5	12.0	24.0	3926	0.0	55.5	0.0	0.0	0.0	176.8	0.0	176.8	
All	Pasture	3.0	7.4	0	0.0	0.00	0.0	2.5	13.3	4.2	25.4	24.0	48.0	0	0.0	0.0	0.0	0.0	0.0	94.0	0.0	94.0	
Indiv.	Vineyard	1250.0	47.7	75	23.3	1.29	42.9	176.0	932.8	2.5	43.8	12.0	24.0	1138	0.0	55.5	0.0	0.0	26.0	1196.0	0.0	1196.0	1355.0
Assoc.	Vineyard	1250.0	47.7	90	21.4	6.25	248.5	176.0	932.8	2.5	48.5	16.0	32.0	1138	0.0	55.5	0.0	0.0	11.7	1398.1	0.0	1398.1	

Note: *; Seed cost is subsidized (reduced by 30%) or supplied and fertilizer is supplied 70 kg of total quantity required as subside. **; Including farmer's self labor.
***; 80% of marketing cost is depreciation cost of the Vegetable Treatment Center. Proportion of cropping area; Individual : Association is 21.3 : 78.7.

Table 6.3.2 - A7 Production Values and Production Cost in the Irrigation Study Area (Economic Price)

(Unit: 10^3 US$)

Classification	Without Project			With Project			With Project - Without Project		
	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value
Agricultural Land									
Arable Land	12535	2694	9841	65719	6287	59432	53184	3593	49591
(without irrigation)	12535	2694	9841				-12535	-2694	-9841
(with irrigation)				65719	6287	59432	65719	6287	59432
Pasture	54	60	-6	54	27	27	0	-33	33
Vineyard	2533	2178	355	2212	1971	241	-321	-207	-114
(without irrigation)	2533	2178	355				-2533	-2178	-355
(with irrigation)				2212	1971	241	2212	1971	241
Total	15122	4932	10190	67985	8285	59701	52863	3353	49510
		With / Without		450%	168%	586%	Average (US$ / ha)		2214

Production Values and Production Cost in the Arable Land (Economic Price)

(Unit: 10^3 US$)

Crop	Without Project			With Project			With Project - Without Project		
	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value
Wheat	1313.3	430.1	883.2	1595.8	369.1	1226.8	282.5	-61.1	343.6
Barley	291.7	76.1	215.6	333.3	59.6	273.7	41.7	-16.5	58.1
Maize	5379.7	1523.4	3856.2	6235.6	954.8	5280.9	856.0	-568.7	1424.6
Bean seeds	6.1	1.8	4.2				-6.1	-1.8	-4.2
Sunflower	362.2	59.4	302.8	412.0	57.6	354.4	49.8	-1.8	51.6
Sugar beet	59.1	15.4	43.7	93.5	19.7	73.8	34.4	4.3	30.1
Beans				5025.6	648.2	4377.4	5025.6	648.2	4377.4
Potato	577.7	93.5	484.2	791.5	113.6	677.9	213.8	20.1	193.7
Maize for silo				391.1	98.0	293.2	391.1	98.0	293.2
Vegetables	4538.9	492.4	4046.5	50829.2	3964.5	46864.8	46290.3	3472.1	42818.2
Annual pasture	6.2	2.1	4.1	11.1	1.9	9.2	4.9	-0.2	5.1
Total	12534.9	2694.3	9840.6	65718.9	6286.9	59432.0	53184.0	3592.6	49591.4

Production Values and Production Cost of the Vegetables (Economic Price)

(Unit: 10^3 US$)

Vegetable	Without Project			With Project			With Project - Without Project		
	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value
Cabbage									
Medium	325.9	48.1	277.8	1679.4	265.7	1413.7	1353.5	217.6	1135.9
Late				9416.1	833.7	8582.3	9416.1	833.7	8582.3
Cauliflower									
Medium				1475.5	213.9	1261.6	1475.5	213.9	1261.6
Late				10282.6	626.0	9656.5	10282.6	626.0	9656.5
Cucumber									
Early				2893.1	184.4	2708.7	2893.1	184.4	2708.7
Late				7575.6	626.3	6949.3	7575.6	626.3	6949.3
Onion	1455.3	112.6	1342.7	2451.5	198.6	2252.9	996.2	86.0	910.2
Garlic				1182.5	146.9	1035.7	1182.5	146.9	1035.7
Green pepper				1480.7	188.7	1292.0	1480.7	188.7	1292.0
Egg plant				1838.6	211.0	1627.6	1838.6	211.0	1627.6
Carrot				3853.3	190.6	3662.7	3853.3	190.6	3662.7
Tomato									
Medium	561.4	88.5	472.9	2187.2	151.4	2035.8	1625.8	62.9	1562.9
Late				4513.0	127.3	4385.8	4513.0	127.3	4385.8
Others	2196.3	243.2	1953.1				-2196.3	-243.2	-1953.1
Total	4538.9	492.4	4046.5	50829.2	3964.5	46864.8	46290.3	3472.1	42818.2

Table 6.3.2 - A8 **Production Values and Production Cost in the Irrigation Study Area (Soil Conservation Project, Economic Price)**

(Unit: 10^3 US$)

Classification	With Project			Without Project			With Project - Without Project		
	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value
Agricultural Land									
Arable Land	12535	2694	9841	11394	2694	8700	1141	0	1141
(without irrigation)	12535	2694	9841	11394	2694	8700	1141	0	1141
(with irrigation)									
Pasture	54	60	-6	54	60	-6	0	0	0
Vineyard	2533	2178	355	2533	2178	355	0	0	0
(without irrigation)	2533	2178	355	2533	2178	355	0	0	0
(with irrigation)									
Total	15122	4932	10190	13981	4932	9049	1141	0	1141
With / Without	108%	100%	113%				Average (US$ / ha)		132

Production Values and Production Cost in the Arable Land (Soil Conservation Project, Economic Price)

(Unit: 10^3 US$)

Crop	With Project			Without Project			With Project - Without Project		
	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value
Wheat	1313.3	430.1	883.2	1193.8	430.1	763.6	119.5	0.0	119.5
Barley	291.7	76.1	215.6	265.1	76.1	189.0	26.5	0.0	26.5
Maize	5379.7	1523.4	3856.2	4890.0	1523.4	3366.6	489.7	0.0	489.7
Bean seeds	6.1	1.8	4.2	5.5	1.8	3.7	0.6	0.0	0.6
Sunflower	362.2	59.4	302.8	329.2	59.4	269.9	33.0	0.0	33.0
Sugar beet	59.1	15.4	43.7	53.7	15.4	38.3	5.4	0.0	5.4
Soybean									
Potato	577.7	93.5	484.2	525.1	93.5	431.6	52.6	0.0	52.6
Maize for silo									
Vegetables	4538.9	492.4	4046.5	4125.8	492.4	3633.4	413.1	0.0	413.1
Annual pasture	6.2	2.1	4.1	5.6	2.1	3.5	0.6	0.0	0.6
Total	12534.9	2694.3	9840.6	11393.9	2694.3	8699.7	1140.9	0.0	1140.9

Production Values and Production Cost of the Vegetables (Soil Conservation Project, Economic Price)

(Unit: 10^3 US$)

Vegetable	With Project			Without Project			With Project - Without Project		
	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value	Gross Prod.Value	Production Cost	Net Prod. Value
Cabbage									
Medium	325.9	48.1	277.8	296.2	48.1	248.1	29.7	0.0	29.7
Late									
Cauliflower									
Medium									
Late									
Cucumber									
Early									
Late									
Onion	1455.3	112.6	1342.7	1322.8	112.6	1210.3	132.5	0.0	132.5
Garlic									
Green pepper									
Egg plant									
Carrot									
Tomato									
Medium	561.4	88.5	472.9	510.3	88.5	421.8	51.1	0.0	51.1
Late									
Others	2196.3	243.2	1953.1	1996.4	243.2	1753.2	199.9	0.0	199.9
Total	4538.9	492.4	4046.5	4125.8	492.4	3633.4	413.1	0.0	413.1

Table 6.3.2-A9 Disbursement Schedule of the Project Cost (Economic Price)

(Unit: 10^3 US$)

Year Order	Conversion Fac.		1st Year		2nd Year		3rd Year		4th Year		5th Year		6th Year		Total	
Currency	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local
I. Construction Phase I																
Land Acquisition	-	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction Works	0.91	0.81	0	0	0	0	0	0	3,270	16,529	3,967	20,060	1,083	5,472	8,320	42,062
Sub-total			0	0	0	0	0	0	3,270	16,529	3,967	20,060	1,083	5,472	8,320	42,062
II. Construction Phase II																
Land Acquisition	-	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction Works	0.91	0.81	0	0	0	0	0	0	187	943	745	3,769	559	2,827	1,492	7,539
Sub-total			0	0	0	0	0	0	187	943	745	3,769	559	2,827	1,492	7,539
III. O/M Equipment Procurement	0.91	0.85	0	0	0	0	0	0	0	0	448	21	0	0	448	21
IV. Administration	-	0.81	0	0	0	87	0	260	0	347	0	347	0	173	0	1,216
V. Consultant Service	0.91	0.67	0	0	0	0	861	338	380	276	508	313	362	267	2,111	1,193
Total			0	0	0	87	861	598	3,837	18,095	5,668	24,511	2,004	8,739	12,370	52,030
VI. Physical Contengency (10%)	1.00	1.00	0	0	0	11	95	214	423	2,730	625	3,038	221	1,087	1,364	7,080
Gran-total			0	0	0	98	956	812	4,260	20,825	6,293	27,548	2,225	9,826	13,735	59,110
TOTAL			0		98		1,768		25,085		33,842		12,052		72,844	

Table 6.3.2-A10 Annual Operation and Mentenanse Cost

(Unit: Lei/10^3 m^3)

Item	Financial Price	Economic Price
A. Pumping Station Operation Cost (in 1993 SCELIF-Vrancea)		
a. Booster Pump Operation Costs	68,281	70,393
a-1. Direct costs material/energy	65,077	64,957
Electricity	64,833	64,833
Spare Parts	75	75
Lubricants	49	49
Cost for water intakes	120	0
a-2. Salary for operators (Gov. subsidy 50-60%)	3,204	5,436
Basic salary	2,446	2,446
Social charge (25% of salary)	612	0
Insurance for unemployment (5% of salary)	122	0
Insurance for security (1% of salary)	24	0
b. Depreciation for Investment	224	224
c. Repair Cost of Facilities	631	631
d. Office administration cost (Gov. subsidy 50-60%)	641	1,087
Administrators basic salary	489	489
Social charge (25% of salary)	122	0
Insurance for unemployment (5% of salary)	24	0
Insurance for security (1% of salary)	5	0
e. Direct cost sub-total	69,777	72,334
f. Indirect cost	250	250
h. Benefit (10% of e.+f.)	7,003	7,003
i. Sub-total	77,030	79,587
j. Value added tax (VAT) (18% of i.)	13,865	0
k. Total	90,895	79,587
Costs for evaluation (k.- (water cost + b.+ c.)) (Lei / 1,000m^3)	89,920	78,732
(US$ / 1,000 m^3; Exchenge rate in 1993 is Lei 760 / US$)	118.32	103.59
The price of water that MAF pay MoE (Lei 60,000 / 1,000 m^3		
Exchenge rate in Oct-94 is Lei 1753 / US$)	34.23	0.00
Total (US$ / 1,000 m^3)	152.54	103.59
Total required water 43,911 thou. m^3		
Total irrigation O/M cost (thou. US$)	6,698	4,549
Total drainage O/M cost; 12.4% of irrigation O/M (thou. US$)	829	563
TOTAL O/M COST (thou. US$)	7,527	5,112
(Cost without water fee to MoE)	5,839	

Source: SCELIF Vrancea and ISPIF

Table 6.3.3-A1 Flow of Economic Cost and Benefit (EIRR)

(Unit: 10^3 US$)

Year in Order	Cost				Benefit			Present Value	
	Const. Cost	Replace-ment Cost	O/M Cost	Total	Irrigation	Soil Consav.	Total	Cost	Benefit
-7	2,299	0	0	2,299	0	0	0	10,192	0
-6	7,860	0	0	7,860	0	0	0	28,927	0
-5	4,154	0	0	4,154	0	0	0	12,691	0
-4	320	0	0	320	0	0	0	812	0
-3	181	0	0	181	0	0	0	381	0
-2	157	0	0	157	0	0	0	274	0
-1	175	0	0	175	0	0	0	254	0
0	184	0	0	184	0	0	0	222	0
1	0	0	0	0	0	0	0	0	0
2	98	0	0	98	0	0	0	81	0
3	8,042	0	0	8,042	0	0	0	5,542	0
4	31,359	0	0	31,359	0	0	0	17,941	0
5	33,842	0	978	34,820	9,475	99	9,575	16,538	4,547
6	12,052	0	2,797	14,849	27,090	323	27,412	5,855	10,808
7	0	0	4,217	4,217	40,841	582	41,424	1,380	13,559
8	0	0	4,913	4,913	47,585	786	48,372	1,335	13,144
9	0	0	5,112	5,112	49,510	990	50,500	1,153	11,391
10	0	0	5,112	5,112	49,510	1,120	50,630	957	9,481
11	0	0	5,112	5,112	49,510	1,141	50,651	795	7,874
12	0	0	5,112	5,112	49,510	1,141	50,651	660	6,537
13	0	0	5,112	5,112	49,510	1,141	50,651	548	5,426
14	0	0	5,112	5,112	49,510	1,141	50,651	455	4,505
15	0	0	5,112	5,112	49,510	1,141	50,651	377	3,740
16	0	0	5,112	5,112	49,510	1,141	50,651	313	3,105
17	0	0	5,112	5,112	49,510	1,141	50,651	260	2,577
18	0	0	5,112	5,112	49,510	1,141	50,651	216	2,140
19	0	0	5,112	5,112	49,510	1,141	50,651	179	1,776
20	0	1,270	5,112	6,382	49,510	1,141	50,651	186	1,474
21	0	0	5,112	5,112	49,510	1,141	50,651	124	1,224
22	0	0	5,112	5,112	49,510	1,141	50,651	103	1,016
23	0	0	5,112	5,112	49,510	1,141	50,651	85	844
24	0	0	5,112	5,112	49,510	1,141	50,651	71	700
25	0	0	5,112	5,112	49,510	1,141	50,651	59	581
26	0	0	5,112	5,112	49,510	1,141	50,651	49	483
27	0	0	5,112	5,112	49,510	1,141	50,651	40	401
28	0	0	5,112	5,112	49,510	1,141	50,651	34	333
29	0	0	5,112	5,112	49,510	1,141	50,651	28	276
30	0	2,117	5,112	7,229	49,510	1,141	50,651	33	229
31	0	0	5,112	5,112	49,510	1,141	50,651	19	190
32	0	0	5,112	5,112	49,510	1,141	50,651	16	158
33	0	0	5,112	5,112	49,510	1,141	50,651	13	131
34	0	0	5,112	5,112	49,510	1,141	50,651	11	109
35	0	1,270	5,112	6,382	49,510	1,141	50,651	11	90
36	0	0	5,112	5,112	49,510	1,141	50,651	8	75
37	0	0	5,112	5,112	49,510	1,141	50,651	6	62
38	0	0	5,112	5,112	49,510	1,141	50,651	5	52
39	0	0	5,112	5,112	49,510	1,141	50,651	4	43
40	0	0	5,112	5,112	49,510	1,141	50,651	4	36
41	0	0	5,112	5,112	49,510	1,141	50,651	3	30
42	0	0	5,112	5,112	49,510	1,141	50,651	2	25
43	0	0	5,112	5,112	49,510	1,141	50,651	2	20
44	0	0	5,112	5,112	49,510	1,141	50,651	2	17
45	0	0	5,112	5,112	49,510	1,141	50,651	1	14
46	0	0	5,112	5,112	49,510	1,141	50,651	1	12
47	0	0	5,112	5,112	49,510	1,141	50,651	1	10
48	0	0	5,112	5,112	49,510	1,141	50,651	1	8
49	0	0	5,112	5,112	49,510	1,141	50,651	1	7
50	0	-423	5,112	4,689	49,510	1,141	50,651	1	6
Total	100,723	4,234	227,610	332,567	2,204,422	49,538	2,253,959	109,260	109,264

E. B / C = 1.00004
ENPV = 4.05
E I R R = 20.45900

Table 6.3.3-A2 Flow of Economic Cost and Benefit (ENPV and E.B/C)

(Unit: 10^3 US$)

Year in Order	Cost				Benefit			Present Value	
	Const. Cost	Replace-ment Cost	O/M Cost	Total	Irrigation	Soil Consav.	Total	Cost	Benefit
-7	2,299	0	0	2,299	0	0	0	5,692	0
-6	7,860	0	0	7,860	0	0	0	17,376	0
-5	4,154	0	0	4,154	0	0	0	8,199	0
-4	320	0	0	320	0	0	0	564	0
-3	181	0	0	181	0	0	0	285	0
-2	157	0	0	157	0	0	0	221	0
-1	175	0	0	175	0	0	0	220	0
0	184	0	0	184	0	0	0	206	0
1	0	0	0	0	0	0	0	0	0
2	98	0	0	98	0	0	0	88	0
3	8,042	0	0	8,042	0	0	0	6,411	0
4	31,359	0	0	31,359	0	0	0	22,321	0
5	33,842	0	978	34,820	9,475	99	9,575	22,129	6,085
6	12,052	0	2,797	14,849	27,090	323	27,412	8,426	15,555
7	0	0	4,217	4,217	40,841	582	41,424	2,136	20,987
8	0	0	4,913	4,913	47,585	786	48,372	2,223	21,881
9	0	0	5,112	5,112	49,510	990	50,500	2,065	20,396
10	0	0	5,112	5,112	49,510	1,120	50,630	1,843	18,258
11	0	0	5,112	5,112	49,510	1,141	50,651	1,646	16,308
12	0	0	5,112	5,112	49,510	1,141	50,651	1,470	14,561
13	0	0	5,112	5,112	49,510	1,141	50,651	1,312	13,001
14	0	0	5,112	5,112	49,510	1,141	50,651	1,172	11,608
15	0	0	5,112	5,112	49,510	1,141	50,651	1,046	10,364
16	0	0	5,112	5,112	49,510	1,141	50,651	934	9,254
17	0	0	5,112	5,112	49,510	1,141	50,651	834	8,262
18	0	0	5,112	5,112	49,510	1,141	50,651	745	7,377
19	0	0	5,112	5,112	49,510	1,141	50,651	665	6,587
20	0	1,270	5,112	6,382	49,510	1,141	50,651	741	5,881
21	0	0	5,112	5,112	49,510	1,141	50,651	530	5,251
22	0	0	5,112	5,112	49,510	1,141	50,651	473	4,688
23	0	0	5,112	5,112	49,510	1,141	50,651	422	4,186
24	0	0	5,112	5,112	49,510	1,141	50,651	377	3,737
25	0	0	5,112	5,112	49,510	1,141	50,651	337	3,337
26	0	0	5,112	5,112	49,510	1,141	50,651	301	2,979
27	0	0	5,112	5,112	49,510	1,141	50,651	268	2,660
28	0	0	5,112	5,112	49,510	1,141	50,651	240	2,375
29	0	0	5,112	5,112	49,510	1,141	50,651	214	2,121
30	0	2,117	5,112	7,229	49,510	1,141	50,651	270	1,894
31	0	0	5,112	5,112	49,510	1,141	50,651	171	1,691
32	0	0	5,112	5,112	49,510	1,141	50,651	152	1,509
33	0	0	5,112	5,112	49,510	1,141	50,651	136	1,348
34	0	0	5,112	5,112	49,510	1,141	50,651	121	1,203
35	0	1,270	5,112	6,382	49,510	1,141	50,651	135	1,074
36	0	0	5,112	5,112	49,510	1,141	50,651	97	959
37	0	0	5,112	5,112	49,510	1,141	50,651	86	857
38	0	0	5,112	5,112	49,510	1,141	50,651	77	765
39	0	0	5,112	5,112	49,510	1,141	50,651	69	683
40	0	0	5,112	5,112	49,510	1,141	50,651	62	610
41	0	0	5,112	5,112	49,510	1,141	50,651	55	544
42	0	0	5,112	5,112	49,510	1,141	50,651	49	486
43	0	0	5,112	5,112	49,510	1,141	50,651	44	434
44	0	0	5,112	5,112	49,510	1,141	50,651	39	387
45	0	0	5,112	5,112	49,510	1,141	50,651	35	346
46	0	0	5,112	5,112	49,510	1,141	50,651	31	309
47	0	0	5,112	5,112	49,510	1,141	50,651	28	276
48	0	0	5,112	5,112	49,510	1,141	50,651	25	246
49	0	0	5,112	5,112	49,510	1,141	50,651	22	220
50	0	-423	5,112	4,689	49,510	1,141	50,651	18	196
Total	100,723	4,234	227,610	332,567	2,204,422	49,538	2,253,959	115,852	253,736

E. B / C = 2.19017
ENPV = 137884
E I R R = 12.00000

Table 6.3.4-A1 Sensitivity Analysis: Project Cost Increased by 10% (EIRR)

(Unit: 10^3 US$)

Year	Cost				Benefit			Present Value	
in Order	Const. Cost	Replace-ment Cost	O/M Cost	Total	Irrigation	Soil Consav.	Total	Cost	Benefit
-7	2,299	0	0	2,299	0	0	0	9,983	0
-6	7,860	0	0	7,860	0	0	0	28,406	0
-5	4,154	0	0	4,154	0	0	0	12,495	0
-4	320	0	0	320	0	0	0	801	0
-3	181	0	0	181	0	0	0	377	0
-2	157	0	0	157	0	0	0	272	0
-1	175	0	0	175	0	0	0	253	0
0	184	0	0	184	0	0	0	221	0
1	0	0	0	0	0	0	0	0	0
2	108	0	0	108	0	0	0	90	0
3	8,219	0	0	8,219	0	0	0	5,694	0
4	33,868	0	0	33,868	0	0	0	19,527	0
5	37,226	0	978	38,205	9,475	99	9,575	18,334	4,595
6	13,257	0	2,797	16,054	27,090	323	27,412	6,412	10,949
7	0	0	4,217	4,217	40,841	582	41,424	1,402	13,771
8	0	0	4,913	4,913	47,585	786	48,372	1,359	13,384
9	0	0	5,112	5,112	49,510	990	50,500	1,177	11,630
10	0	0	5,112	5,112	49,510	1,120	50,630	980	9,705
11	0	0	5,112	5,112	49,510	1,141	50,651	816	8,081
12	0	0	5,112	5,112	49,510	1,141	50,651	679	6,726
13	0	0	5,112	5,112	49,510	1,141	50,651	565	5,598
14	0	0	5,112	5,112	49,510	1,141	50,651	470	4,659
15	0	0	5,112	5,112	49,510	1,141	50,651	391	3,878
16	0	0	5,112	5,112	49,510	1,141	50,651	326	3,228
17	0	0	5,112	5,112	49,510	1,141	50,651	271	2,686
18	0	0	5,112	5,112	49,510	1,141	50,651	226	2,236
19	0	0	5,112	5,112	49,510	1,141	50,651	188	1,861
20	0	1,270	5,112	6,382	49,510	1,141	50,651	195	1,549
21	0	0	5,112	5,112	49,510	1,141	50,651	130	1,289
22	0	0	5,112	5,112	49,510	1,141	50,651	108	1,073
23	0	0	5,112	5,112	49,510	1,141	50,651	90	893
24	0	0	5,112	5,112	49,510	1,141	50,651	75	743
25	0	0	5,112	5,112	49,510	1,141	50,651	62	619
26	0	0	5,112	5,112	49,510	1,141	50,651	52	515
27	0	0	5,112	5,112	49,510	1,141	50,651	43	429
28	0	0	5,112	5,112	49,510	1,141	50,651	36	357
29	0	0	5,112	5,112	49,510	1,141	50,651	30	297
30	0	2,117	5,112	7,229	49,510	1,141	50,651	35	247
31	0	0	5,112	5,112	49,510	1,141	50,651	21	206
32	0	0	5,112	5,112	49,510	1,141	50,651	17	171
33	0	0	5,112	5,112	49,510	1,141	50,651	14	142
34	0	0	5,112	5,112	49,510	1,141	50,651	12	119
35	0	1,270	5,112	6,382	49,510	1,141	50,651	12	99
36	0	0	5,112	5,112	49,510	1,141	50,651	8	82
37	0	0	5,112	5,112	49,510	1,141	50,651	7	68
38	0	0	5,112	5,112	49,510	1,141	50,651	6	57
39	0	0	5,112	5,112	49,510	1,141	50,651	5	47
40	0	0	5,112	5,112	49,510	1,141	50,651	4	39
41	0	0	5,112	5,112	49,510	1,141	50,651	3	33
42	0	0	5,112	5,112	49,510	1,141	50,651	3	27
43	0	0	5,112	5,112	49,510	1,141	50,651	2	23
44	0	0	5,112	5,112	49,510	1,141	50,651	2	19
45	0	0	5,112	5,112	49,510	1,141	50,651	2	16
46	0	0	5,112	5,112	49,510	1,141	50,651	1	13
47	0	0	5,112	5,112	49,510	1,141	50,651	1	11
48	0	0	5,112	5,112	49,510	1,141	50,651	1	9
49	0	0	5,112	5,112	49,510	1,141	50,651	1	8
50	0	-423	5,112	4,689	49,510	1,141	50,651	1	6
Total	108,008	4,234	227,610	339,851	2,204,422	49,538	2,253,959	112,696	112,194

E. B / C = 0.99554
ENPV = -502.1184
E I R R = 20.14700

Table 6.3.4-A2 Sensitivity Analysis: Project Cost Increased by 10% (ENPV and E.B/C)

(Unit: 10^3 US$)

Year in Order	Cost				Benefit			Present Value	
	Const. Cost	Replace-ment Cost	O/M Cost	Total	Irrigation	Soil Consav.	Total	Cost	Benefit
-7	2,299	0	0	2,299	0	0	0	5,692	0
-6	7,860	0	0	7,860	0	0	0	17,376	0
-5	4,154	0	0	4,154	0	0	0	8,199	0
-4	320	0	0	320	0	0	0	564	0
-3	181	0	0	181	0	0	0	285	0
-2	157	0	0	157	0	0	0	221	0
-1	175	0	0	175	0	0	0	220	0
0	184	0	0	184	0	0	0	206	0
1	0	0	0	0	0	0	0	0	0
2	108	0	0	108	0	0	0	96	0
3	8,216	0	0	8,216	0	0	0	6,549	0
4	30,509	0	0	30,509	0	0	0	21,716	0
5	34,104	0	978	35,083	9,475	99	9,575	22,296	6,085
6	12,719	0	2,797	15,516	27,090	323	27,412	8,804	15,555
7	0	0	4,217	4,217	40,841	582	41,424	2,136	20,987
8	0	0	4,913	4,913	47,585	786	48,372	2,223	21,881
9	0	0	5,112	5,112	49,510	990	50,500	2,065	20,396
10	0	0	5,112	5,112	49,510	1,120	50,630	1,843	18,258
11	0	0	5,112	5,112	49,510	1,141	50,651	1,646	16,308
12	0	0	5,112	5,112	49,510	1,141	50,651	1,470	14,561
13	0	0	5,112	5,112	49,510	1,141	50,651	1,312	13,001
14	0	0	5,112	5,112	49,510	1,141	50,651	1,172	11,608
15	0	0	5,112	5,112	49,510	1,141	50,651	1,046	10,364
16	0	0	5,112	5,112	49,510	1,141	50,651	934	9,254
17	0	0	5,112	5,112	49,510	1,141	50,651	834	8,262
18	0	0	5,112	5,112	49,510	1,141	50,651	745	7,377
19	0	0	5,112	5,112	49,510	1,141	50,651	665	6,587
20	0	1,270	5,112	6,382	49,510	1,141	50,651	741	5,881
21	0	0	5,112	5,112	49,510	1,141	50,651	530	5,251
22	0	0	5,112	5,112	49,510	1,141	50,651	473	4,688
23	0	0	5,112	5,112	49,510	1,141	50,651	422	4,186
24	0	0	5,112	5,112	49,510	1,141	50,651	377	3,737
25	0	0	5,112	5,112	49,510	1,141	50,651	337	3,337
26	0	0	5,112	5,112	49,510	1,141	50,651	301	2,979
27	0	0	5,112	5,112	49,510	1,141	50,651	268	2,660
28	0	0	5,112	5,112	49,510	1,141	50,651	240	2,375
29	0	0	5,112	5,112	49,510	1,141	50,651	214	2,121
30	0	2,117	5,112	7,229	49,510	1,141	50,651	270	1,894
31	0	0	5,112	5,112	49,510	1,141	50,651	171	1,691
32	0	0	5,112	5,112	49,510	1,141	50,651	152	1,509
33	0	0	5,112	5,112	49,510	1,141	50,651	136	1,348
34	0	0	5,112	5,112	49,510	1,141	50,651	121	1,203
35	0	1,270	5,112	6,382	49,510	1,141	50,651	135	1,074
36	0	0	5,112	5,112	49,510	1,141	50,651	97	959
37	0	0	5,112	5,112	49,510	1,141	50,651	86	857
38	0	0	5,112	5,112	49,510	1,141	50,651	77	765
39	0	0	5,112	5,112	49,510	1,141	50,651	69	683
40	0	0	5,112	5,112	49,510	1,141	50,651	62	610
41	0	0	5,112	5,112	49,510	1,141	50,651	55	544
42	0	0	5,112	5,112	49,510	1,141	50,651	49	486
43	0	0	5,112	5,112	49,510	1,141	50,651	44	434
44	0	0	5,112	5,112	49,510	1,141	50,651	39	387
45	0	0	5,112	5,112	49,510	1,141	50,651	35	346
46	0	0	5,112	5,112	49,510	1,141	50,651	31	309
47	0	0	5,112	5,112	49,510	1,141	50,651	28	276
48	0	0	5,112	5,112	49,510	1,141	50,651	25	246
49	0	0	5,112	5,112	49,510	1,141	50,651	22	220
50	0	-423	5,112	4,689	49,510	1,141	50,651	18	196
Total	100,986	4,234	227,610	332,830	2,204,422	49,538	2,253,959	115,940	253,736

E. B / C = 2.18851
ENPV = 137796
E I R R = 12.00000

Table 6.3.4-A3 Sensitivity Analysis: Project Benefit Decreased by 10% (EIRR)

(Unit: 10^3 US$)

Year in Order	Cost				Benefit			Present Value	
	Const. Cost	Replace-ment Cost	O/M Cost	Total	Irrigation	Soil Consav.	Total	Cost	Benefit
-7	2299	0	0	2299	0	0	0	9471.297	0.000
-6	7,860	0	0	7,860	0	0	0	27,129	0
-5	4,154	0	0	4,154	0	0	0	12,012	0
-4	320	0	0	320	0	0	0	775	0
-3	181	0	0	181	0	0	0	367	0
-2	157	0	0	157	0	0	0	267	0
-1	175	0	0	175	0	0	0	249	0
0	184	0	0	184	0	0	0	220	0
1	0	0	0	0	0	0	0	0	0
2	98	0	0	98	0	0	0	82	0
3	8,042	0	0	8,042	0	0	0	5,645	0
4	31,359	0	0	31,359	0	0	0	18,441	0
5	33,842	0	978	34,820	8,528	109	8,637	17,155	4,255
6	12,052	0	2,797	14,849	24,381	355	24,736	6,129	10,210
7	0	0	4,217	4,217	36,757	641	37,398	1,458	12,933
8	0	0	4,913	4,913	42,827	865	43,692	1,423	12,659
9	0	0	5,112	5,112	44,559	1,089	45,648	1,241	11,080
10	0	0	5,112	5,112	44,559	1,232	45,791	1,040	9,312
11	0	0	5,112	5,112	44,559	1,255	45,814	871	7,806
12	0	0	5,112	5,112	44,559	1,255	45,814	730	6,540
13	0	0	5,112	5,112	44,559	1,255	45,814	611	5,479
14	0	0	5,112	5,112	44,559	1,255	45,814	512	4,590
15	0	0	5,112	5,112	44,559	1,255	45,814	429	3,846
16	0	0	5,112	5,112	44,559	1,255	45,814	360	3,222
17	0	0	5,112	5,112	44,559	1,255	45,814	301	2,699
18	0	0	5,112	5,112	44,559	1,255	45,814	252	2,262
19	0	0	5,112	5,112	44,559	1,255	45,814	211	1,895
20	0	1,270	5,112	6,382	44,559	1,255	45,814	221	1,587
21	0	0	5,112	5,112	44,559	1,255	45,814	148	1,330
22	0	0	5,112	5,112	44,559	1,255	45,814	124	1,114
23	0	0	5,112	5,112	44,559	1,255	45,814	104	933
24	0	0	5,112	5,112	44,559	1,255	45,814	87	782
25	0	0	5,112	5,112	44,559	1,255	45,814	73	655
26	0	0	5,112	5,112	44,559	1,255	45,814	61	549
27	0	0	5,112	5,112	44,559	1,255	45,814	51	460
28	0	0	5,112	5,112	44,559	1,255	45,814	43	385
29	0	0	5,112	5,112	44,559	1,255	45,814	36	323
30	0	2,117	5,112	7,229	44,559	1,255	45,814	43	270
31	0	0	5,112	5,112	44,559	1,255	45,814	25	227
32	0	0	5,112	5,112	44,559	1,255	45,814	21	190
33	0	0	5,112	5,112	44,559	1,255	45,814	18	159
34	0	0	5,112	5,112	44,559	1,255	45,814	15	133
35	0	1,270	5,112	6,382	44,559	1,255	45,814	16	112
36	0	0	5,112	5,112	44,559	1,255	45,814	10	94
37	0	0	5,112	5,112	44,559	1,255	45,814	9	78
38	0	0	5,112	5,112	44,559	1,255	45,814	7	66
39	0	0	5,112	5,112	44,559	1,255	45,814	6	55
40	0	0	5,112	5,112	44,559	1,255	45,814	5	46
41	0	0	5,112	5,112	44,559	1,255	45,814	4	39
42	0	0	5,112	5,112	44,559	1,255	45,814	4	32
43	0	0	5,112	5,112	44,559	1,255	45,814	3	27
44	0	0	5,112	5,112	44,559	1,255	45,814	3	23
45	0	0	5,112	5,112	44,559	1,255	45,814	2	19
46	0	0	5,112	5,112	44,559	1,255	45,814	2	16
47	0	0	5,112	5,112	44,559	1,255	45,814	1	13
48	0	0	5,112	5,112	44,559	1,255	45,814	1	11
49	0	0	5,112	5,112	44,559	1,255	45,814	1	9
50	0	-423	5,112	4,689	44,559	1,255	45,814	1	8
Total	100,723	4,234	227,610	332,567	1,983,979	54,491	2,038,471	108,531	108,533

E. B / C = 1.00003
ENPV = 2.8650
E I R R = 19.36000

Table 6.3.4-A4 Sensitivity Analysis: Project Benefit Decreased by 10% (ENPV and E.B/C)

(Unit: 10^3 US$)

Year in Order	Cost				Benefit			Present Value	
	Const. Cost	Replace-ment Cost	O/M Cost	Total	Irrigation	Soil Consav.	Total	Cost	Benefit
-7	2,299	0	0	2,299	0	0	0	5,692	0
-6	7,860	0	0	7,860	0	0	0	17,376	0
-5	4,154	0	0	4,154	0	0	0	8,199	0
-4	320	0	0	320	0	0	0	564	0
-3	181	0	0	181	0	0	0	285	0
-2	157	0	0	157	0	0	0	221	0
-1	175	0	0	175	0	0	0	220	0
0	184	0	0	184	0	0	0	206	0
1	0	0	0	0	0	0	0	0	0
2	98	0	0	98	0	0	0	88	0
3	8,042	0	0	8,042	0	0	0	6,411	0
4	31,359	0	0	31,359	0	0	0	22,321	0
5	33,842	0	978	34,820	8,528	109	8,637	22,129	5,489
6	12,052	0	2,797	14,849	24,381	355	24,736	8,426	14,036
7	0	0	4,217	4,217	36,757	641	37,398	2,136	18,947
8	0	0	4,913	4,913	42,827	865	43,692	2,223	19,764
9	0	0	5,112	5,112	44,559	1,089	45,648	2,065	18,436
10	0	0	5,112	5,112	44,559	1,232	45,791	1,843	16,513
11	0	0	5,112	5,112	44,559	1,255	45,814	1,646	14,751
12	0	0	5,112	5,112	44,559	1,255	45,814	1,470	13,170
13	0	0	5,112	5,112	44,559	1,255	45,814	1,312	11,759
14	0	0	5,112	5,112	44,559	1,255	45,814	1,172	10,499
15	0	0	5,112	5,112	44,559	1,255	45,814	1,046	9,374
16	0	0	5,112	5,112	44,559	1,255	45,814	934	8,370
17	0	0	5,112	5,112	44,559	1,255	45,814	834	7,473
18	0	0	5,112	5,112	44,559	1,255	45,814	745	6,673
19	0	0	5,112	5,112	44,559	1,255	45,814	665	5,958
20	0	1,270	5,112	6,382	44,559	1,255	45,814	741	5,319
21	0	0	5,112	5,112	44,559	1,255	45,814	530	4,749
22	0	0	5,112	5,112	44,559	1,255	45,814	473	4,241
23	0	0	5,112	5,112	44,559	1,255	45,814	422	3,786
24	0	0	5,112	5,112	44,559	1,255	45,814	377	3,381
25	0	0	5,112	5,112	44,559	1,255	45,814	337	3,018
26	0	0	5,112	5,112	44,559	1,255	45,814	301	2,695
27	0	0	5,112	5,112	44,559	1,255	45,814	268	2,406
28	0	0	5,112	5,112	44,559	1,255	45,814	240	2,148
29	0	0	5,112	5,112	44,559	1,255	45,814	214	1,918
30	0	2,117	5,112	7,229	44,559	1,255	45,814	270	1,713
31	0	0	5,112	5,112	44,559	1,255	45,814	171	1,529
32	0	0	5,112	5,112	44,559	1,255	45,814	152	1,365
33	0	0	5,112	5,112	44,559	1,255	45,814	136	1,219
34	0	0	5,112	5,112	44,559	1,255	45,814	121	1,088
35	0	1,270	5,112	6,382	44,559	1,255	45,814	135	972
36	0	0	5,112	5,112	44,559	1,255	45,814	97	868
37	0	0	5,112	5,112	44,559	1,255	45,814	86	775
38	0	0	5,112	5,112	44,559	1,255	45,814	77	692
39	0	0	5,112	5,112	44,559	1,255	45,814	69	618
40	0	0	5,112	5,112	44,559	1,255	45,814	62	551
41	0	0	5,112	5,112	44,559	1,255	45,814	55	492
42	0	0	5,112	5,112	44,559	1,255	45,814	49	440
43	0	0	5,112	5,112	44,559	1,255	45,814	44	393
44	0	0	5,112	5,112	44,559	1,255	45,814	39	350
45	0	0	5,112	5,112	44,559	1,255	45,814	35	313
46	0	0	5,112	5,112	44,559	1,255	45,814	31	279
47	0	0	5,112	5,112	44,559	1,255	45,814	28	249
48	0	0	5,112	5,112	44,559	1,255	45,814	25	223
49	0	0	5,112	5,112	44,559	1,255	45,814	22	199
50	0	-423	5,112	4,689	44,559	1,255	45,814	18	178
Total	100,723	4,234	227,610	332,567	1,983,979	54,491	2,038,471	115,852	229,381

E. B / C = 1.97994
ENPV = 113,529
E I R R = 12.00000

Table 6.3.4-A5 Sensitivity Analysis: Construction Delayed for 1 year (EIRR)

(Unit: 10^3 US$)

Year in Order	Cost				Benefit			Present Value	
	Const. Cost	Replace-ment Cost	O/M Cost	Total	Irrigation	Soil Consav.	Total	Cost	Benefit
-7	2,299	0	0	2,299	0	0	0	9,117	0
-6	7,860	0	0	7,860	0	0	0	26,238	0
-5	4,154	0	0	4,154	0	0	0	11,673	0
-4	320	0	0	320	0	0	0	757	0
-3	181	0	0	181	0	0	0	360	0
-2	157	0	0	157	0	0	0	263	0
-1	175	0	0	175	0	0	0	247	0
0	184	0	0	184	0	0	0	219	0
1	0	0	0	0	0	0	0	0	0
2	98	0	0	98	0	0	0	82	0
3	8,042	0	0	8,042	0	0	0	5,699	0
4	31,359	0	0	31,359	0	0	0	18,707	0
5	33,842	0	0	33,842	0	0	0	16,994	0
6	12,052	0	978	13,030	9,475	99	9,575	5,508	4,047
7	0	0	2,797	2,797	27,090	323	27,412	995	9,755
8	0	0	4,217	4,217	40,841	582	41,424	1,263	12,409
9	0	0	4,913	4,913	47,585	786	48,372	1,239	12,198
10	0	0	5,112	5,112	49,510	990	50,500	1,085	10,720
11	0	0	5,112	5,112	49,510	1,120	50,630	914	9,048
12	0	0	5,112	5,112	49,510	1,141	50,651	769	7,620
13	0	0	5,112	5,112	49,510	1,141	50,651	647	6,414
14	0	0	5,112	5,112	49,510	1,141	50,651	545	5,400
15	0	0	5,112	5,112	49,510	1,141	50,651	459	4,545
16	0	0	5,112	5,112	49,510	1,141	50,651	386	3,826
17	0	0	5,112	5,112	49,510	1,141	50,651	325	3,221
18	0	0	5,112	5,112	49,510	1,141	50,651	274	2,711
19	0	0	5,112	5,112	49,510	1,141	50,651	230	2,283
20	0	1,270	5,112	6,382	49,510	1,141	50,651	242	1,921
21	0	0	5,112	5,112	49,510	1,141	50,651	163	1,618
22	0	0	5,112	5,112	49,510	1,141	50,651	137	1,362
23	0	0	5,112	5,112	49,510	1,141	50,651	116	1,146
24	0	0	5,112	5,112	49,510	1,141	50,651	97	965
25	0	0	5,112	5,112	49,510	1,141	50,651	82	812
26	0	0	5,112	5,112	49,510	1,141	50,651	69	684
27	0	0	5,112	5,112	49,510	1,141	50,651	58	576
28	0	0	5,112	5,112	49,510	1,141	50,651	49	485
29	0	0	5,112	5,112	49,510	1,141	50,651	41	408
30	0	2,117	5,112	7,229	49,510	1,141	50,651	49	343
31	0	0	5,112	5,112	49,510	1,141	50,651	29	289
32	0	0	5,112	5,112	49,510	1,141	50,651	25	243
33	0	0	5,112	5,112	49,510	1,141	50,651	21	205
34	0	0	5,112	5,112	49,510	1,141	50,651	17	172
35	0	1,270	5,112	6,382	49,510	1,141	50,651	18	145
36	0	0	5,112	5,112	49,510	1,141	50,651	12	122
37	0	0	5,112	5,112	49,510	1,141	50,651	10	103
38	0	0	5,112	5,112	49,510	1,141	50,651	9	87
39	0	0	5,112	5,112	49,510	1,141	50,651	7	73
40	0	0	5,112	5,112	49,510	1,141	50,651	6	61
41	0	0	5,112	5,112	49,510	1,141	50,651	5	52
42	0	0	5,112	5,112	49,510	1,141	50,651	4	43
43	0	0	5,112	5,112	49,510	1,141	50,651	4	37
44	0	0	5,112	5,112	49,510	1,141	50,651	3	31
45	0	0	5,112	5,112	49,510	1,141	50,651	3	26
46	0	0	5,112	5,112	49,510	1,141	50,651	2	22
47	0	0	5,112	5,112	49,510	1,141	50,651	2	18
48	0	0	5,112	5,112	49,510	1,141	50,651	2	15
49	0	0	5,112	5,112	49,510	1,141	50,651	1	13
50	0	-423	5,112	4,689	49,510	1,141	50,651	1	11
Total	100,723	4,234	222,498	327,455	2,154,911	48,397	2,203,308	106,283	106,286

E. B / C = 1.00003
ENPV = 2.7838
E I R R = 18.79200

Table 6.3.4-A6 Sensitivity Analysis: Construction Delayed for 1 year (ENPV and E.B/C)

(Unit: 10^3 US$)

Year in Order	Cost				Benefit			Present Value	
	Const. Cost	Replace-ment Cost	O/M Cost	Total	Irrigation	Soil Consav.	Total	Cost	Benefit
-7	2,299	0	0	2,299	0	0	0	5,692	0
-6	7,860	0	0	7,860	0	0	0	17,376	0
-5	4,154	0	0	4,154	0	0	0	8,199	0
-4	320	0	0	320	0	0	0	564	0
-3	181	0	0	181	0	0	0	285	0
-2	157	0	0	157	0	0	0	221	0
-1	175	0	0	175	0	0	0	220	0
0	184	0	0	184	0	0	0	206	0
1	0	0	0	0	0	0	0	0	0
2	98	0	0	98	0	0	0	88	0
3	8,042	0	0	8,042	0	0	0	6,411	0
4	31,359	0	0	31,359	0	0	0	22,321	0
5	33,842	0	0	33,842	0	0	0	21,507	0
6	12,052	0	978	13,030	9,475	99	9,575	7,394	5,433
7	0	0	2,797	2,797	27,090	323	27,412	1,417	13,888
8	0	0	4,217	4,217	40,841	582	41,424	1,908	18,738
9	0	0	4,913	4,913	47,585	786	48,372	1,984	19,537
10	0	0	5,112	5,112	49,510	990	50,500	1,843	18,211
11	0	0	5,112	5,112	49,510	1,120	50,630	1,646	16,302
12	0	0	5,112	5,112	49,510	1,141	50,651	1,470	14,561
13	0	0	5,112	5,112	49,510	1,141	50,651	1,312	13,001
14	0	0	5,112	5,112	49,510	1,141	50,651	1,172	11,608
15	0	0	5,112	5,112	49,510	1,141	50,651	1,046	10,364
16	0	0	5,112	5,112	49,510	1,141	50,651	934	9,254
17	0	0	5,112	5,112	49,510	1,141	50,651	834	8,262
18	0	0	5,112	5,112	49,510	1,141	50,651	745	7,377
19	0	0	5,112	5,112	49,510	1,141	50,651	665	6,587
20	0	1,270	5,112	6,382	49,510	1,141	50,651	741	5,881
21	0	0	5,112	5,112	49,510	1,141	50,651	530	5,251
22	0	0	5,112	5,112	49,510	1,141	50,651	473	4,688
23	0	0	5,112	5,112	49,510	1,141	50,651	422	4,186
24	0	0	5,112	5,112	49,510	1,141	50,651	377	3,737
25	0	0	5,112	5,112	49,510	1,141	50,651	337	3,337
26	0	0	5,112	5,112	49,510	1,141	50,651	301	2,979
27	0	0	5,112	5,112	49,510	1,141	50,651	268	2,660
28	0	0	5,112	5,112	49,510	1,141	50,651	240	2,375
29	0	0	5,112	5,112	49,510	1,141	50,651	214	2,121
30	0	2,117	5,112	7,229	49,510	1,141	50,651	270	1,894
31	0	0	5,112	5,112	49,510	1,141	50,651	171	1,691
32	0	0	5,112	5,112	49,510	1,141	50,651	152	1,509
33	0	0	5,112	5,112	49,510	1,141	50,651	136	1,348
34	0	0	5,112	5,112	49,510	1,141	50,651	121	1,203
35	0	1,270	5,112	6,382	49,510	1,141	50,651	135	1,074
36	0	0	5,112	5,112	49,510	1,141	50,651	97	959
37	0	0	5,112	5,112	49,510	1,141	50,651	86	857
38	0	0	5,112	5,112	49,510	1,141	50,651	77	765
39	0	0	5,112	5,112	49,510	1,141	50,651	69	683
40	0	0	5,112	5,112	49,510	1,141	50,651	62	610
41	0	0	5,112	5,112	49,510	1,141	50,651	55	544
42	0	0	5,112	5,112	49,510	1,141	50,651	49	486
43	0	0	5,112	5,112	49,510	1,141	50,651	44	434
44	0	0	5,112	5,112	49,510	1,141	50,651	39	387
45	0	0	5,112	5,112	49,510	1,141	50,651	35	346
46	0	0	5,112	5,112	49,510	1,141	50,651	31	309
47	0	0	5,112	5,112	49,510	1,141	50,651	28	276
48	0	0	5,112	5,112	49,510	1,141	50,651	25	246
49	0	0	5,112	5,112	49,510	1,141	50,651	22	220
50	0	-423	5,112	4,689	49,510	1,141	50,651	18	196
Total	100,723	4,234	222,498	327,455	2,154,911	48,397	2,203,308	113,084	226,375

E. B / C = 2.00183
ENPV = 113291
E I R R = 12.00000

Table 6.3.4 - A7 Disbursement Schedule of the Project Cost: for Phase I only (Economic Price)

(Unit: 10^3 US$)

Year Order	Conversion Fac.		1st Year		2nd Year		3rd Year		4th Year		5th Year		6th Year		Total	
Currency	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local
I. Construction Phase I																
Land Acquisition	-	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction Works	0.91	0.81	0	0	0	0	0	0	3,270	16,529	3,967	20,060	1,083	5,472	8,320	42,062
Sub-total			0	0	0	0	0	0	3,270	16,529	3,967	20,060	1,083	5,472	8,320	42,062
II. Construction Phase II																
Land Acquisition	-	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction Works	0.91	0.81	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total			0	0	0	0	0	0	0	0	0	0	0	0	0	0
III. O/M Equipment Procurement	0.91	0.85	0	0	0	0	0	0	0	0	349	16	0	0	349	16
IV. Administration	-	0.81	0	0	0	68	0	203	0	271	0	271	0	135	0	946
V. Consultant Service	0.91	0.67	0	0	0	0	670	263	296	215	402	243	282	208	1,651	929
Total			0	0	0	68	670	466	3,566	17,014	4,718	20,591	1,365	5,815	10,319	43,953
VI. Physical Contengency (10%)	1.00	1.00	0	0	0	8	74	196	393	2,502	520	2,551	150	724	1,138	5,982
Gran-total			0	0	0	76	744	662	3,959	19,516	5,239	23,142	1,515	6,539	11,457	49,935
TOTAL			0		76		1,406		23,475		28,381		8,054		61,392	

Table 6.3.4 - A8 Sunk Cost of the Project: for Phase I only

(Unit: 10^3 Lei)

Item	Investment		
Projects	Calimanesti Dam	Siret-Baragan Canal	Ruginesti-Pufesti-Panciu
Year			
1988	0	0	41,868
1989	1,698,179	270,914	121,624
1990	210,198	70,911	124,238
1991	289,937	88,328	24,446
1992	1,970,359	455,363	32,400
1993	1,634,176	356,935	120,801
1994	4,680,324	733,676	296,829
1995	8,598,843	0	392,340

(Unit: 10^3 Lei)

Item	Contribution for the Project (%)			Total
Projects	Calimanesti Dam	Siret-Baragan Canal	Ruginesti-Pufesti-Panciu	
Year	0	0	1	
1988	0	0	32,597	32597
1989	11,825	9,433	94,694	115952
1990	1,464	2,469	96,729	100662
1991	2,019	3,075	19,033	24128
1992	13,721	15,855	25,226	54802
1993	11,380	12,428	94,053	117860
1994	32,592	25,545	231,104	289242
1995	59,879	0	305,467	365346

(Unit: 10^3 Lei)

Item	Exchange rate	Total		
Projects	annual average	Financial Price	Economic Price	
Year	(Lei / US$)		0.784	Conversion factor
1988	14	2,283	1,790	
1989	15	7,772	6,095	
1990	24	4,120	3,231	
1991	76	316	248	
1992	308	178	140	
1993	760	155	122	
1994	1,677	172	135	
1995	2,012	182	142	

Note: SGA Vrancea - Dom Proiect, MoE, Aquaproiect and ISPIF.

Note: Prices mean at each expensed year and at 1994 and 1995 are estimated by the study team.

Contribution of irrigation purpose of the Calimanesti Dam is 20% (Total Con. rate = 20% x (17,409ha / 500,000ha)).

Total irrigation management area of the Siret-Baragan Canal Project is 500,000 ha (Con. rate = 17,409ha / 500,000ha).

Original irrigation purpose of the Ruginesti-Pufesti-Panciu Project is 22,360 ha (Con. rate = 17,409 ha / 22,360 ha).

Exchange rate at 1995 is estimated by the study team and annual increased rate from 1994 to 1995 is 20%.

Conversion factor to estimate the economic price is used the same rate of the project cost (initial cost).

Table 6.3.4 - A9 Flow of Economic Cost and Benefit: for Phase I only (EIRR)

(Unit: 10^3 US$)

Year	Cost				Benefit			Present Value	
in Order	Const. Cost	Replace-ment Cost	O/M Cost	Total	Irrigation	Soil Consav.	Total	Cost	Benefit
-7	1,790	0	0	1,790	0	0	0	7,774	0
-6	6,095	0	0	6,095	0	0	0	22,032	0
-5	3,231	0	0	3,231	0	0	0	9,720	0
-4	248	0	0	248	0	0	0	621	0
-3	140	0	0	140	0	0	0	292	0
-2	122	0	0	122	0	0	0	212	0
-1	135	0	0	135	0	0	0	195	0
0	142	0	0	142	0	0	0	171	0
1	0	0	0	0	0	0	0	0	0
2	76	0	0	76	0	0	0	63	0
3	7,680	0	0	7,680	0	0	0	5,320	0
4	29,749	0	0	29,749	0	0	0	17,151	0
5	28,381	0	893	29,274	8,653	99	8,752	14,047	4,200
6	8,054	0	2,344	10,398	22,705	323	23,028	4,153	9,197
7	0	0	3,368	3,368	32,620	582	33,202	1,120	11,036
8	0	0	3,866	3,866	37,445	786	38,231	1,070	10,577
9	0	0	3,980	3,980	38,548	990	39,537	916	9,104
10	0	0	3,980	3,980	38,548	1,120	39,668	763	7,602
11	0	0	3,980	3,980	38,548	1,141	39,688	635	6,330
12	0	0	3,980	3,980	38,548	1,141	39,688	528	5,269
13	0	0	3,980	3,980	38,548	1,141	39,688	440	4,385
14	0	0	3,980	3,980	38,548	1,141	39,688	366	3,650
15	0	0	3,980	3,980	38,548	1,141	39,688	305	3,038
16	0	0	3,980	3,980	38,548	1,141	39,688	254	2,528
17	0	0	3,980	3,980	38,548	1,141	39,688	211	2,104
18	0	0	3,980	3,980	38,548	1,141	39,688	176	1,751
19	0	0	3,980	3,980	38,548	1,141	39,688	146	1,458
20	0	841	3,980	4,821	38,548	1,141	39,688	147	1,213
21	0	0	3,980	3,980	38,548	1,141	39,688	101	1,010
22	0	0	3,980	3,980	38,548	1,141	39,688	84	840
23	0	0	3,980	3,980	38,548	1,141	39,688	70	699
24	0	0	3,980	3,980	38,548	1,141	39,688	58	582
25	0	0	3,980	3,980	38,548	1,141	39,688	49	484
26	0	0	3,980	3,980	38,548	1,141	39,688	40	403
27	0	0	3,980	3,980	38,548	1,141	39,688	34	336
28	0	0	3,980	3,980	38,548	1,141	39,688	28	279
29	0	0	3,980	3,980	38,548	1,141	39,688	23	232
30	0	1,402	3,980	5,382	38,548	1,141	39,688	26	193
31	0	0	3,980	3,980	38,548	1,141	39,688	16	161
32	0	0	3,980	3,980	38,548	1,141	39,688	13	134
33	0	0	3,980	3,980	38,548	1,141	39,688	11	112
34	0	0	3,980	3,980	38,548	1,141	39,688	9	93
35	0	841	3,980	4,821	38,548	1,141	39,688	9	77
36	0	0	3,980	3,980	38,548	1,141	39,688	6	64
37	0	0	3,980	3,980	38,548	1,141	39,688	5	54
38	0	0	3,980	3,980	38,548	1,141	39,688	4	45
39	0	0	3,980	3,980	38,548	1,141	39,688	4	37
40	0	0	3,980	3,980	38,548	1,141	39,688	3	31
41	0	0	3,980	3,980	38,548	1,141	39,688	3	26
42	0	0	3,980	3,980	38,548	1,141	39,688	2	21
43	0	0	3,980	3,980	38,548	1,141	39,688	2	18
44	0	0	3,980	3,980	38,548	1,141	39,688	1	15
45	0	0	3,980	3,980	38,548	1,141	39,688	1	12
46	0	0	3,980	3,980	38,548	1,141	39,688	1	10
47	0	0	3,980	3,980	38,548	1,141	39,688	1	9
48	0	0	3,980	3,980	38,548	1,141	39,688	1	7
49	0	0	3,980	3,980	38,548	1,141	39,688	1	6
50	0	-280	3,980	3,700	38,548	1,141	39,688	0	5
Total	85,843	2,803	177,636	266,282	1,720,420	49,538	1,769,958	89,436	89,436

E. B / C = 1.00000
ENPV = 0.00000
E I R R = 20.15016

Table 6.3.4 - A10 Flow of Economic Cost and Benefit: for Phase I only (EPNV and E.B/C)

(Unit: 10^3 US$)

Year in Order	Cost				Benefit			Present Value	
	Const. Cost	Replace-ment Cost	O/M Cost	Total	Irrigation	Soil Consav.	Total	Cost	Benefit
-7	1,790	0	0	1,790	0	0	0	4,432	0
-6	6,095	0	0	6,095	0	0	0	13,474	0
-5	3,231	0	0	3,231	0	0	0	6,377	0
-4	248	0	0	248	0	0	0	437	0
-3	140	0	0	140	0	0	0	220	0
-2	122	0	0	122	0	0	0	171	0
-1	135	0	0	135	0	0	0	169	0
0	142	0	0	142	0	0	0	159	0
1	0	0	0	0	0	0	0	0	0
2	76	0	0	76	0	0	0	68	0
3	7,680	0	0	7,680	0	0	0	6,123	0
4	29,749	0	0	29,749	0	0	0	21,175	0
5	28,381	0	893	29,274	8,653	99	8,752	18,604	5,562
6	8,054	0	2,344	10,398	22,705	323	23,028	5,900	13,067
7	0	0	3,368	3,368	32,620	582	33,202	1,706	16,821
8	0	0	3,866	3,866	37,445	786	38,231	1,749	17,294
9	0	0	3,980	3,980	38,548	990	39,537	1,607	15,968
10	0	0	3,980	3,980	38,548	1,120	39,668	1,435	14,305
11	0	0	3,980	3,980	38,548	1,141	39,688	1,281	12,779
12	0	0	3,980	3,980	38,548	1,141	39,688	1,144	11,409
13	0	0	3,980	3,980	38,548	1,141	39,688	1,022	10,187
14	0	0	3,980	3,980	38,548	1,141	39,688	912	9,096
15	0	0	3,980	3,980	38,548	1,141	39,688	814	8,121
16	0	0	3,980	3,980	38,548	1,141	39,688	727	7,251
17	0	0	3,980	3,980	38,548	1,141	39,688	649	6,474
18	0	0	3,980	3,980	38,548	1,141	39,688	580	5,780
19	0	0	3,980	3,980	38,548	1,141	39,688	518	5,161
20	0	841	3,980	4,821	38,548	1,141	39,688	560	4,608
21	0	0	3,980	3,980	38,548	1,141	39,688	413	4,114
22	0	0	3,980	3,980	38,548	1,141	39,688	368	3,674
23	0	0	3,980	3,980	38,548	1,141	39,688	329	3,280
24	0	0	3,980	3,980	38,548	1,141	39,688	294	2,929
25	0	0	3,980	3,980	38,548	1,141	39,688	262	2,615
26	0	0	3,980	3,980	38,548	1,141	39,688	234	2,335
27	0	0	3,980	3,980	38,548	1,141	39,688	209	2,084
28	0	0	3,980	3,980	38,548	1,141	39,688	187	1,861
29	0	0	3,980	3,980	38,548	1,141	39,688	167	1,662
30	0	1,402	3,980	5,382	38,548	1,141	39,688	201	1,484
31	0	0	3,980	3,980	38,548	1,141	39,688	133	1,325
32	0	0	3,980	3,980	38,548	1,141	39,688	119	1,183
33	0	0	3,980	3,980	38,548	1,141	39,688	106	1,056
34	0	0	3,980	3,980	38,548	1,141	39,688	95	943
35	0	841	3,980	4,821	38,548	1,141	39,688	102	842
36	0	0	3,980	3,980	38,548	1,141	39,688	75	752
37	0	0	3,980	3,980	38,548	1,141	39,688	67	671
38	0	0	3,980	3,980	38,548	1,141	39,688	60	599
39	0	0	3,980	3,980	38,548	1,141	39,688	54	535
40	0	0	3,980	3,980	38,548	1,141	39,688	48	478
41	0	0	3,980	3,980	38,548	1,141	39,688	43	427
42	0	0	3,980	3,980	38,548	1,141	39,688	38	381
43	0	0	3,980	3,980	38,548	1,141	39,688	34	340
44	0	0	3,980	3,980	38,548	1,141	39,688	30	304
45	0	0	3,980	3,980	38,548	1,141	39,688	27	271
46	0	0	3,980	3,980	38,548	1,141	39,688	24	242
47	0	0	3,980	3,980	38,548	1,141	39,688	22	216
48	0	0	3,980	3,980	38,548	1,141	39,688	19	193
49	0	0	3,980	3,980	38,548	1,141	39,688	17	172
50	0	-280	3,980	3,700	38,548	1,141	39,688	14	154
Total	85,843	2,803	177,636	266,282	1,720,420	49,538	1,769,958	95,807	201,002

E. B / C = 2.09799
ENPV = 105,195
E I R R = 12.00000

Table 6.4.2-A1 Flow of Financial Cost and Benefit (FIRR)

(Unit: 10^3 US$)

Year in Order	Cost				Benefit			Present Value	
	Const. Cost	Replace-ment Cost	O/M Cost	Total	Irrigation	Soil Consav.	Total	Cost	Benefit
1	0	0	0	0	0	0	0	0	0
2	119	0	0	119	0	0	0	92	0
3	3,399	0	0	3,399	0	0	0	2,015	0
4	34,683	0	0	34,683	0	0	0	15,827	0
5	40,292	0	1,117	41,409	7,387	73	7,460	14,548	2,621
6	14,391	0	3,195	17,586	21,119	236	21,355	4,756	5,776
7	0	0	4,817	4,817	31,840	426	32,266	1,003	6,719
8	0	0	5,612	5,612	37,097	576	37,673	900	6,039
9	0	0	5,839	5,839	38,598	725	39,322	721	4,853
10	0	0	5,839	5,839	38,598	820	39,418	555	3,746
11	0	0	5,839	5,839	38,598	835	39,433	427	2,885
12	0	0	5,839	5,839	38,598	835	39,433	329	2,221
13	0	0	5,839	5,839	38,598	835	39,433	253	1,710
14	0	0	5,839	5,839	38,598	835	39,433	195	1,316
15	0	0	5,839	5,839	38,598	835	39,433	150	1,013
16	0	0	5,839	5,839	38,598	835	39,433	116	780
17	0	0	5,839	5,839	38,598	835	39,433	89	601
18	0	0	5,839	5,839	38,598	835	39,433	68	462
19	0	0	5,839	5,839	38,598	835	39,433	53	356
20	0	1,500	5,839	7,339	38,598	835	39,433	51	274
21	0	0	5,839	5,839	38,598	835	39,433	31	211
22	0	0	5,839	5,839	38,598	835	39,433	24	162
23	0	0	5,839	5,839	38,598	835	39,433	19	125
24	0	0	5,839	5,839	38,598	835	39,433	14	96
25	0	0	5,839	5,839	38,598	835	39,433	11	74
26	0	0	5,839	5,839	38,598	835	39,433	8	57
27	0	0	5,839	5,839	38,598	835	39,433	7	44
28	0	0	5,839	5,839	38,598	835	39,433	5	34
29	0	0	5,839	5,839	38,598	835	39,433	4	26
30	0	2,500	5,839	8,339	38,598	835	39,433	4	20
31	0	0	5,839	5,839	38,598	835	39,433	2	15
32	0	0	5,839	5,839	38,598	835	39,433	2	12
33	0	0	5,839	5,839	38,598	835	39,433	1	9
34	0	0	5,839	5,839	38,598	835	39,433	1	7
35	0	1,500	5,839	7,339	38,598	835	39,433	1	5
36	0	0	5,839	5,839	38,598	835	39,433	1	4
37	0	0	5,839	5,839	38,598	835	39,433	0	3
38	0	0	5,839	5,839	38,598	835	39,433	0	2
39	0	0	5,839	5,839	38,598	835	39,433	0	2
40	0	0	5,839	5,839	38,598	835	39,433	0	1
41	0	0	5,839	5,839	38,598	835	39,433	0	1
42	0	0	5,839	5,839	38,598	835	39,433	0	1
43	0	0	5,839	5,839	38,598	835	39,433	0	1
44	0	0	5,839	5,839	38,598	835	39,433	0	1
45	0	0	5,839	5,839	38,598	835	39,433	0	0
46	0	0	5,839	5,839	38,598	835	39,433	0	0
47	0	0	5,839	5,839	38,598	835	39,433	0	0
48	0	0	5,839	5,839	38,598	835	39,433	0	0
49	0	0	5,839	5,839	38,598	835	39,433	0	0
50	0	-500	5,839	5,339	38,598	835	39,433	0	0
Total	92,884	5,000	259,979	357,863	1,718,552	36,262	1,754,814	42,283	42,289

F. B / C = 1.00013
FNPV = 5.70
F I R R = 29.89000

Table 6.4.2-A2 Flow of Financial Cost and Benefit (FNPV amd F.B/C)

(Unit: 10^3 US$)

Year	Cost				Benefit			Present Value	
in Order	Const. Cost	Replace-ment Cost	O/M Cost	Total	Irrigation	Soil Consav.	Total	Cost	Benefit
1	0	0	0	0	0	0	0	0	0
2	119	0	0	119	0	0	0	108	0
3	3,399	0	0	3,399	0	0	0	2,809	0
4	34,683	0	0	34,683	0	0	0	26,058	0
5	40,292	0	1,117	41,409	7,387	73	7,460	28,283	5,095
6	14,391	0	3,195	17,586	21,119	236	21,355	10,919	13,260
7	0	0	4,817	4,817	31,840	426	32,266	2,719	18,213
8	0	0	5,612	5,612	37,097	576	37,673	2,880	19,332
9	0	0	5,839	5,839	38,598	725	39,322	2,724	18,344
10	0	0	5,839	5,839	38,598	820	39,418	2,476	16,717
11	0	0	5,839	5,839	38,598	835	39,433	2,251	15,203
12	0	0	5,839	5,839	38,598	835	39,433	2,047	13,821
13	0	0	5,839	5,839	38,598	835	39,433	1,860	12,565
14	0	0	5,839	5,839	38,598	835	39,433	1,691	11,422
15	0	0	5,839	5,839	38,598	835	39,433	1,538	10,384
16	0	0	5,839	5,839	38,598	835	39,433	1,398	9,440
17	0	0	5,839	5,839	38,598	835	39,433	1,271	8,582
18	0	0	5,839	5,839	38,598	835	39,433	1,155	7,802
19	0	0	5,839	5,839	38,598	835	39,433	1,050	7,092
20	0	1,500	5,839	7,339	38,598	835	39,433	1,200	6,448
21	0	0	5,839	5,839	38,598	835	39,433	868	5,861
22	0	0	5,839	5,839	38,598	835	39,433	789	5,329
23	0	0	5,839	5,839	38,598	835	39,433	717	4,844
24	0	0	5,839	5,839	38,598	835	39,433	652	4,404
25	0	0	5,839	5,839	38,598	835	39,433	593	4,003
26	0	0	5,839	5,839	38,598	835	39,433	539	3,640
27	0	0	5,839	5,839	38,598	835	39,433	490	3,309
28	0	0	5,839	5,839	38,598	835	39,433	445	3,008
29	0	0	5,839	5,839	38,598	835	39,433	405	2,734
30	0	2,500	5,839	8,339	38,598	835	39,433	526	2,486
31	0	0	5,839	5,839	38,598	835	39,433	335	2,260
32	0	0	5,839	5,839	38,598	835	39,433	304	2,054
33	0	0	5,839	5,839	38,598	835	39,433	277	1,868
34	0	0	5,839	5,839	38,598	835	39,433	251	1,698
35	0	1,500	5,839	7,339	38,598	835	39,433	287	1,544
36	0	0	5,839	5,839	38,598	835	39,433	208	1,403
37	0	0	5,839	5,839	38,598	835	39,433	189	1,276
38	0	0	5,839	5,839	38,598	835	39,433	172	1,160
39	0	0	5,839	5,839	38,598	835	39,433	156	1,054
40	0	0	5,839	5,839	38,598	835	39,433	142	958
41	0	0	5,839	5,839	38,598	835	39,433	129	871
42	0	0	5,839	5,839	38,598	835	39,433	117	792
43	0	0	5,839	5,839	38,598	835	39,433	107	720
44	0	0	5,839	5,839	38,598	835	39,433	97	655
45	0	0	5,839	5,839	38,598	835	39,433	88	595
46	0	0	5,839	5,839	38,598	835	39,433	80	541
47	0	0	5,839	5,839	38,598	835	39,433	73	492
48	0	0	5,839	5,839	38,598	835	39,433	66	447
49	0	0	5,839	5,839	38,598	835	39,433	60	406
50	0	-500	5,839	5,339	38,598	835	39,433	50	370
Total	92,884	5,000	259,979	357,863	1,718,552	36,262	1,754,814	103,650	254,501

F. B / C = 2.45540
FNPV = 150,851
F I R R = 10.00000

Table 6.4.2-A3 Sensitivity Analysis: Project Cost Increased by 10% (FIRR)

(Unit: 10^3 US$)

Year in Order	Cost				Benefit			Present Value	
	Const. Cost	Replace-ment Cost	O/M Cost	Total	Irrigation	Soil Consav.	Total	Cost	Benefit
1	0	0	0	0	0	0	0	0	0
2	131	0	0	131	0	0	0	103	0
3	3,739	0	0	3,739	0	0	0	2,300	0
4	38,151	0	0	38,151	0	0	0	18,402	0
5	44,321	0	1,117	45,439	7,387	73	7,460	17,188	2,822
6	15,830	0	3,195	19,025	21,119	236	21,355	5,644	6,335
7	0	0	4,817	4,817	31,840	426	32,266	1,121	7,507
8	0	0	5,612	5,612	37,097	576	37,673	1,024	6,873
9	0	0	5,839	5,839	38,598	725	39,322	835	5,626
10	0	0	5,839	5,839	38,598	820	39,418	655	4,423
11	0	0	5,839	5,839	38,598	835	39,433	514	3,470
12	0	0	5,839	5,839	38,598	835	39,433	403	2,721
13	0	0	5,839	5,839	38,598	835	39,433	316	2,134
14	0	0	5,839	5,839	38,598	835	39,433	248	1,674
15	0	0	5,839	5,839	38,598	835	39,433	194	1,313
16	0	0	5,839	5,839	38,598	835	39,433	152	1,029
17	0	0	5,839	5,839	38,598	835	39,433	120	807
18	0	0	5,839	5,839	38,598	835	39,433	94	633
19	0	0	5,839	5,839	38,598	835	39,433	74	497
20	0	1,500	5,839	7,339	38,598	835	39,433	72	389
21	0	0	5,839	5,839	38,598	835	39,433	45	305
22	0	0	5,839	5,839	38,598	835	39,433	35	239
23	0	0	5,839	5,839	38,598	835	39,433	28	188
24	0	0	5,839	5,839	38,598	835	39,433	22	147
25	0	0	5,839	5,839	38,598	835	39,433	17	116
26	0	0	5,839	5,839	38,598	835	39,433	13	91
27	0	0	5,839	5,839	38,598	835	39,433	11	71
28	0	0	5,839	5,839	38,598	835	39,433	8	56
29	0	0	5,839	5,839	38,598	835	39,433	6	44
30	0	2,500	5,839	8,339	38,598	835	39,433	7	34
31	0	0	5,839	5,839	38,598	835	39,433	4	27
32	0	0	5,839	5,839	38,598	835	39,433	3	21
33	0	0	5,839	5,839	38,598	835	39,433	2	17
34	0	0	5,839	5,839	38,598	835	39,433	2	13
35	0	1,500	5,839	7,339	38,598	835	39,433	2	10
36	0	0	5,839	5,839	38,598	835	39,433	1	8
37	0	0	5,839	5,839	38,598	835	39,433	1	6
38	0	0	5,839	5,839	38,598	835	39,433	1	5
39	0	0	5,839	5,839	38,598	835	39,433	1	4
40	0	0	5,839	5,839	38,598	835	39,433	0	3
41	0	0	5,839	5,839	38,598	835	39,433	0	2
42	0	0	5,839	5,839	38,598	835	39,433	0	2
43	0	0	5,839	5,839	38,598	835	39,433	0	1
44	0	0	5,839	5,839	38,598	835	39,433	0	1
45	0	0	5,839	5,839	38,598	835	39,433	0	1
46	0	0	5,839	5,839	38,598	835	39,433	0	1
47	0	0	5,839	5,839	38,598	835	39,433	0	1
48	0	0	5,839	5,839	38,598	835	39,433	0	0
49	0	0	5,839	5,839	38,598	835	39,433	0	0
50	0	-500	5,839	5,339	38,598	835	39,433	0	0
Total	102,172	5,000	259,979	367,151	1,718,552	36,262	1,754,814	49,669	49,669

F. B / C = 0.99999
FNPV = -0.69
F I R R = 27.51200

Table 6.4.2-A4 Sensitivity Analysis: Project Cost Increased by 10% (FNPV and F.B/C)

(Unit: 10^3 US$)

Year in Order	Cost				Benefit			Present Value	
	Const. Cost	Replace-ment Cost	O/M Cost	Total	Irrigation	Soil Consav.	Total	Cost	Benefit
1	0	0	0	0	0	0	0	0	0
2	131	0	0	131	0	0	0	119	0
3	3,739	0	0	3,739	0	0	0	3,090	0
4	38,151	0	0	38,151	0	0	0	28,664	0
5	44,321	0	1,117	45,439	7,387	73	7,460	31,035	5,095
6	15,830	0	3,195	19,025	21,119	236	21,355	11,813	13,260
7	0	0	4,817	4,817	31,840	426	32,266	2,719	18,213
8	0	0	5,612	5,612	37,097	576	37,673	2,880	19,332
9	0	0	5,839	5,839	38,598	725	39,322	2,724	18,344
10	0	0	5,839	5,839	38,598	820	39,418	2,476	16,717
11	0	0	5,839	5,839	38,598	835	39,433	2,251	15,203
12	0	0	5,839	5,839	38,598	835	39,433	2,047	13,821
13	0	0	5,839	5,839	38,598	835	39,433	1,860	12,565
14	0	0	5,839	5,839	38,598	835	39,433	1,691	11,422
15	0	0	5,839	5,839	38,598	835	39,433	1,538	10,384
16	0	0	5,839	5,839	38,598	835	39,433	1,398	9,440
17	0	0	5,839	5,839	38,598	835	39,433	1,271	8,582
18	0	0	5,839	5,839	38,598	835	39,433	1,155	7,802
19	0	0	5,839	5,839	38,598	835	39,433	1,050	7,092
20	0	1,500	5,839	7,339	38,598	835	39,433	1,200	6,448
21	0	0	5,839	5,839	38,598	835	39,433	868	5,861
22	0	0	5,839	5,839	38,598	835	39,433	789	5,329
23	0	0	5,839	5,839	38,598	835	39,433	717	4,844
24	0	0	5,839	5,839	38,598	835	39,433	652	4,404
25	0	0	5,839	5,839	38,598	835	39,433	593	4,003
26	0	0	5,839	5,839	38,598	835	39,433	539	3,640
27	0	0	5,839	5,839	38,598	835	39,433	490	3,309
28	0	0	5,839	5,839	38,598	835	39,433	445	3,008
29	0	0	5,839	5,839	38,598	835	39,433	405	2,734
30	0	2,500	5,839	8,339	38,598	835	39,433	526	2,486
31	0	0	5,839	5,839	38,598	835	39,433	335	2,260
32	0	0	5,839	5,839	38,598	835	39,433	304	2,054
33	0	0	5,839	5,839	38,598	835	39,433	277	1,868
34	0	0	5,839	5,839	38,598	835	39,433	251	1,698
35	0	1,500	5,839	7,339	38,598	835	39,433	287	1,544
36	0	0	5,839	5,839	38,598	835	39,433	208	1,403
37	0	0	5,839	5,839	38,598	835	39,433	189	1,276
38	0	0	5,839	5,839	38,598	835	39,433	172	1,160
39	0	0	5,839	5,839	38,598	835	39,433	156	1,054
40	0	0	5,839	5,839	38,598	835	39,433	142	958
41	0	0	5,839	5,839	38,598	835	39,433	129	871
42	0	0	5,839	5,839	38,598	835	39,433	117	792
43	0	0	5,839	5,839	38,598	835	39,433	107	720
44	0	0	5,839	5,839	38,598	835	39,433	97	655
45	0	0	5,839	5,839	38,598	835	39,433	88	595
46	0	0	5,839	5,839	38,598	835	39,433	80	541
47	0	0	5,839	5,839	38,598	835	39,433	73	492
48	0	0	5,839	5,839	38,598	835	39,433	66	447
49	0	0	5,839	5,839	38,598	835	39,433	60	406
50	0	-500	5,839	5,339	38,598	835	39,433	50	370
Total	102,172	5,000	259,979	367,151	1,718,552	36,262	1,754,814	110,193	254,501

F. B / C = 2.30960
FNPV = 144,308
F I R R = 10.00000

Table 6.4.2-A5 Sensitivity Analysis: Project Benefit Decreased by 10% (FIRR)

(Unit: 10^3 US$)

Year in Order	Cost				Benefit			Present Value	
	Const. Cost	Replace-ment Cost	O/M Cost	Total	Irrigation	Soil Consav.	Total	Cost	Benefit
1	0	0	0	0	0	0	0	0	0
2	119	0	0	119	0	0	0	94	0
3	3,399	0	0	3,399	0	0	0	2,114	0
4	34,683	0	0	34,683	0	0	0	17,010	0
5	40,292	0	1,117	41,409	6,648	65	6,714	16,016	2,597
6	14,391	0	3,195	17,586	19,007	213	19,220	5,364	5,862
7	0	0	4,817	4,817	28,656	384	29,039	1,159	6,985
8	0	0	5,612	5,612	33,387	518	33,906	1,065	6,432
9	0	0	5,839	5,839	34,738	652	35,390	873	5,294
10	0	0	5,839	5,839	34,738	738	35,476	689	4,185
11	0	0	5,839	5,839	34,738	752	35,490	543	3,302
12	0	0	5,839	5,839	34,738	752	35,490	428	2,604
13	0	0	5,839	5,839	34,738	752	35,490	338	2,053
14	0	0	5,839	5,839	34,738	752	35,490	266	1,619
15	0	0	5,839	5,839	34,738	752	35,490	210	1,277
16	0	0	5,839	5,839	34,738	752	35,490	166	1,007
17	0	0	5,839	5,839	34,738	752	35,490	131	794
18	0	0	5,839	5,839	34,738	752	35,490	103	626
19	0	0	5,839	5,839	34,738	752	35,490	81	494
20	0	1,500	5,839	7,339	34,738	752	35,490	81	390
21	0	0	5,839	5,839	34,738	752	35,490	51	307
22	0	0	5,839	5,839	34,738	752	35,490	40	242
23	0	0	5,839	5,839	34,738	752	35,490	31	191
24	0	0	5,839	5,839	34,738	752	35,490	25	151
25	0	0	5,839	5,839	34,738	752	35,490	20	119
26	0	0	5,839	5,839	34,738	752	35,490	15	94
27	0	0	5,839	5,839	34,738	752	35,490	12	74
28	0	0	5,839	5,839	34,738	752	35,490	10	58
29	0	0	5,839	5,839	34,738	752	35,490	8	46
30	0	2,500	5,839	8,339	34,738	752	35,490	9	36
31	0	0	5,839	5,839	34,738	752	35,490	5	29
32	0	0	5,839	5,839	34,738	752	35,490	4	23
33	0	0	5,839	5,839	34,738	752	35,490	3	18
34	0	0	5,839	5,839	34,738	752	35,490	2	14
35	0	1,500	5,839	7,339	34,738	752	35,490	2	11
36	0	0	5,839	5,839	34,738	752	35,490	1	9
37	0	0	5,839	5,839	34,738	752	35,490	1	7
38	0	0	5,839	5,839	34,738	752	35,490	1	5
39	0	0	5,839	5,839	34,738	752	35,490	1	4
40	0	0	5,839	5,839	34,738	752	35,490	1	3
41	0	0	5,839	5,839	34,738	752	35,490	0	3
42	0	0	5,839	5,839	34,738	752	35,490	0	2
43	0	0	5,839	5,839	34,738	752	35,490	0	2
44	0	0	5,839	5,839	34,738	752	35,490	0	1
45	0	0	5,839	5,839	34,738	752	35,490	0	1
46	0	0	5,839	5,839	34,738	752	35,490	0	1
47	0	0	5,839	5,839	34,738	752	35,490	0	1
48	0	0	5,839	5,839	34,738	752	35,490	0	1
49	0	0	5,839	5,839	34,738	752	35,490	0	0
50	0	-500	5,839	5,339	34,738	752	35,490	0	0
Total	92,884	5,000	259,979	357,863	1,546,696	32,636	1,579,332	46,972	46,973

F. B / C = 1.00001
FNPV = 0.50
F I R R = 26.80500

Table 6.4.2-A6 Sensitivity Analysis: Project Benefit Decreased by 10% (FNPV and F.B/C)

(Unit: 10^3 US$)

Year in Order	Cost				Benefit			Present Value	
	Const. Cost	Replace-ment Cost	O/M Cost	Total	Irrigation	Soil Consav.	Total	Cost	Benefit
1	0	0	0	0	0	0	0	0	0
2	119	0	0	119	0	0	0	108	0
3	3,399	0	0	3,399	0	0	0	2,809	0
4	34,683	0	0	34,683	0	0	0	26,058	0
5	40,292	0	1,117	41,409	6,648	65	6,714	28,283	4,586
6	14,391	0	3,195	17,586	19,007	213	19,220	10,919	11,934
7	0	0	4,817	4,817	28,656	384	29,039	2,719	16,392
8	0	0	5,612	5,612	33,387	518	33,906	2,880	17,399
9	0	0	5,839	5,839	34,738	652	35,390	2,724	16,510
10	0	0	5,839	5,839	34,738	738	35,476	2,476	15,045
11	0	0	5,839	5,839	34,738	752	35,490	2,251	13,683
12	0	0	5,839	5,839	34,738	752	35,490	2,047	12,439
13	0	0	5,839	5,839	34,738	752	35,490	1,860	11,308
14	0	0	5,839	5,839	34,738	752	35,490	1,691	10,280
15	0	0	5,839	5,839	34,738	752	35,490	1,538	9,346
16	0	0	5,839	5,839	34,738	752	35,490	1,398	8,496
17	0	0	5,839	5,839	34,738	752	35,490	1,271	7,724
18	0	0	5,839	5,839	34,738	752	35,490	1,155	7,021
19	0	0	5,839	5,839	34,738	752	35,490	1,050	6,383
20	0	1,500	5,839	7,339	34,738	752	35,490	1,200	5,803
21	0	0	5,839	5,839	34,738	752	35,490	868	5,275
22	0	0	5,839	5,839	34,738	752	35,490	789	4,796
23	0	0	5,839	5,839	34,738	752	35,490	717	4,360
24	0	0	5,839	5,839	34,738	752	35,490	652	3,963
25	0	0	5,839	5,839	34,738	752	35,490	593	3,603
26	0	0	5,839	5,839	34,738	752	35,490	539	3,276
27	0	0	5,839	5,839	34,738	752	35,490	490	2,978
28	0	0	5,839	5,839	34,738	752	35,490	445	2,707
29	0	0	5,839	5,839	34,738	752	35,490	405	2,461
30	0	2,500	5,839	8,339	34,738	752	35,490	526	2,237
31	0	0	5,839	5,839	34,738	752	35,490	335	2,034
32	0	0	5,839	5,839	34,738	752	35,490	304	1,849
33	0	0	5,839	5,839	34,738	752	35,490	277	1,681
34	0	0	5,839	5,839	34,738	752	35,490	251	1,528
35	0	1,500	5,839	7,339	34,738	752	35,490	287	1,389
36	0	0	5,839	5,839	34,738	752	35,490	208	1,263
37	0	0	5,839	5,839	34,738	752	35,490	189	1,148
38	0	0	5,839	5,839	34,738	752	35,490	172	1,044
39	0	0	5,839	5,839	34,738	752	35,490	156	949
40	0	0	5,839	5,839	34,738	752	35,490	142	863
41	0	0	5,839	5,839	34,738	752	35,490	129	784
42	0	0	5,839	5,839	34,738	752	35,490	117	713
43	0	0	5,839	5,839	34,738	752	35,490	107	648
44	0	0	5,839	5,839	34,738	752	35,490	97	589
45	0	0	5,839	5,839	34,738	752	35,490	88	536
46	0	0	5,839	5,839	34,738	752	35,490	80	487
47	0	0	5,839	5,839	34,738	752	35,490	73	443
48	0	0	5,839	5,839	34,738	752	35,490	66	402
49	0	0	5,839	5,839	34,738	752	35,490	60	366
50	0	-500	5,839	5,339	34,738	752	35,490	50	333
Total	92,884	5,000	259,979	357,863	1,546,696	32,636	1,579,332	103,650	229,051

F. B / C = 2.20986
FNPV = 125,401
F I R R = 10.00000