Feasibility Study on Water Resources Development in
Rural Area in
the Kingdom of Morocco
Final Report
Volume III Supporting Report (1)
Basic Study
Supporting Report VIII
Projects Evaluation and Prioritization

Tables

Table VIII1.1.1: Result of Evaluation on Social Aspects

		I		II		III		IV			
		Project Function and its Conformity with Basic Development Strategy		Status in the Government Development Program		Urgency for Project Implementation		Effects on Stabilization of Social Condition		Total Score	Rank
		Level	Score	Level	Score	Level	Score	Level	Score		
1	NECKOR	B	1	B	1	A	2	C	0	4	B
2	TIZIMELLAL	C	0	B	1	B	1	C	0	2	C
3	AIT BADDOU	B	1	B	1	B	1	C	0	3	C
4	AIN KWACHIYA	A	2	A	2	B	1	A	2	7	A
5	N'FIFIKH	A	2	A	2	A	2	A	2	8	A
6	TAZARANE	B	1	B	1	B	1	B	1	4	B
7	AMEZMIZ	A	2	B	1	B	1	B	1	5	B
8	BOULAOUANE	A	2	A	2	B	1	B	1	6	B
9	TASKOURT	A	2	A	2	B	1	A	2	7	A
10	TIMKIT	A	2	A	2	A	2	A	2	8	A
11	TADIGHOUST	B	1	B	1	C	0	A	2	4	B
12	TIOUZAGUINE	B	1	B	1	C	0	B	1	3	C
13	KHENG GROU	B	1	B	1	C	0	A	2	4	B
14	ADAROUCH	B	1	A	2	B	1	B	1	5	B
15	SIDI OMAR	B	1	B	1	C	0	A	2	4	B
16	TIWINE	B	1	B	1	B	1	A	2	5	B
17	AZGHAR	A	2	B	1	A	2	A	2	7	A
18	BOUKARKOUR	B	1	B	1	B	1	A	2	5	B
19	AOULAI	B	1	B	1	B	1	B	1	4	B
20	SIDI ABBOU	B	1	B	1	B	1	B	1	4	B
21	SIDI EL MOKHFI	A	2	B	1	B	1	A	2	6	B
22	N'OUANTZ	B	1	B	1	B	1	C	0	3	C
23	IGUIN' OUAQA	A	2	B	1	A	2	B	1	6	B
24	AMOUNT ABDELMOUMEN	A	2	B	1	B	1	B	1	5	B
25	SIDI ABDELLAH	A	2	B	1	A	2	A	2	7	A

Note : Total score and relevant rank

<4	: C	(Poor)
4,5,6	: B	(Fair)
7,8	: A	(Good)

Table VIII1.2.1: Criteria for Evaluation on Technical Feasibility

Item	Criteria
I Dam	
1 Topography	
1.1 Suitability as reservoir	A: Good B: Fair C: Poor
1.2 Suitability as dam site	A: Good B: Fair C: Poor
2 Meteo-hydrology	
2.1 Annual inflow volume	A: >50Mm3 B: 50>, >10Mm3 C: 10Mm3>
2.2 Annual sedimentation volume	A: 100Tm3> B: 500>, >100Tm3 C: >500Tm3
3 Geology	
3.1 Foundation condition	A: Good B: Fair C: Poor
3.2 Thicknness of unconsolidated deposits	A: Thin B: Medium C: Thick
3.3 Impervious condition of foundation	A: Good B: Fair C: Poor
3.4 Existince of potential sliding in reservoir	A: None B: Exist but little C: Exist
4 Construction material	
4.1 Availabilty of coarse and fine aggregates	A: Good B: Fair C: Poor
5 Construction	
5.1 Accessibility to dam site	A: Good B: Fair C: Poor
II Irrigation	
6 Irrigation	
6.1 Topographic condition	A: Good B: Fair C: Poor
6.2 Existence of irrigation facilities	A: Exist B: Exist but little C: None
6.3 Necessity of pump up	A: Not Required B: Required but little C: Required
7 Potential of agriculture development	
7.1 Soil suitability	A: Good B: Fair C: Poor
7.2 Necessity of removal of gravel	A: Not Required B: Required but little C: Required
7.3 Irrigated farming technology	A: Good B: Fair C: Poor
7.4 Potential of active operation of farmer's cooperatives	A: Good B: Fair C: Poor
7.5 Potential of participatory O&M of infrastructures	A: Good B: Fair C: Poor
III Water Supply	
8 Location of demand area	
8.1 Distance between dam site and demand area	A: 10km> B: 50km>, >10km C: >50km
8.2 Necessity of high head pump up	A: Not Required B: Required but little C: Required
9 Water quality	
9.1 Suitability as source for potable water	A: Fair B: Good C: Poor
IV Conservation of Ground Water	
10 Restoration	
10.1 Effectiveness for restoration	A: Good B: Fair C: Poor
V Flood and Sediment Control	
11 Flood control	
11.1 Effectiveness	A: Good B: Fair C: Poor
12 nel stabilization	
12.1 Effectiveness	A: Good B: Fair C: Poor
13 ol to lower reservoir	
13.1 Effectiveness	A: Good B: Fair C: Poor
Insufficient Maturity in Planning and/or Study	X: Insufficient maturity in planning and/or study

Table VIII1.2.2: Evaluation on Technical Feasibility

	I Dam																						III Water Supply						
	1.1		1.2		2.1		2.2		3.1		3.2		3.3		3.4		4.1		5.1		Total		8.1		8.2		9.1		Total
	Level	Score	Level	Score	Level	Score	Level	Score	Level	Score	Level	Score	Level	Score	Level	Score	Level	Score	Level	Score	Score		Level	Score	Level	Score	Level	Score	Score
1 NECKOR	C	0	C	0	B	1	C	0	B	1	C	0	C	0	B	1	A	2	B	1	6		X	-	X	-	X	-	-
2 TIZIMELLAL																													
3 AIT BADDOU	B	1	B	1	B	1	B	1	B	1	B	1	C	0	A	2	C	0	B	1	9		X	-	X	-	X	-	-
4 AIN KWACHIYA	C	0	C	0	C	0	A	2	B	1	B	1	A	2	A	2	B	1	A	2	11		A	2	A	2	B	1	5
5 N'FIFIKH (upper)	B	1	B	1	C	0	A	2	B	1	B	1	B	1	B	1	B	1	B	1	10		B	1	A	2	A	2	5
6 TAZARANE	C	0	B	1	B	1	B	1	C	0	A	2	C	0	C	0	B	1	B	1	7		B	1	A	2	B	1	4
7 AMEZMIZ	C	0	B	1	B	1	A	2	B	1	B	1	B	1	B	1	B	1	C	0	9		B	1	A	2	C	0	3
8 BOULAOUANE	B	1	B	1	B	1	B	1	B	1	B	1	C	0	B	1	A	2	A	2	11		A	2	A	2	C	0	4
9 TASKOURT	A	2	B	1	B	1	B	1	B	1	C	0	B	1	C	0	A	2	C	0	9		B	1	A	2	C	0	3
10 TIMKIT	A	2	B	1	B	1	B	1	B	1	B	1	C	0	A	2	A	2	B	1	12		B	1	A	2	A	2	5
11 TADIGHOUST	B	1	C	0	B	1	C	0	B	1	C	0	B	1	A	2	B	1	A	2	9		B	1	A	2	A	2	5
12 TIOUZAGUINE	B	1	A	2	C	0	B	1	B	1	B	1	B	1	B	1	A	2	B	1	11		B	1	A	2	A	2	5
13 KHENG GROU	A	2	A	2	A	2	C	0	A	2	B	1	B	1	A	2	B	1	B	1	14		B	1	A	2	A	2	5
14 ADAROUCH	A	2	B	1	B	1	B	1	B	1	A	2	B	1	B	1	A	2	A	2	14		C	0	A	2	A	2	4
15 SIDI OMAR	A	2	B	1	B	1	B	1	B	1	B	1	B	1	B	1	B	1	A	2	12		A	2	A	2	C	0	4
16 TIWINE	A	2	B	1	A	2	C	0	A	2	A	2	B	1	C	0	C	0	B	1	11		B	1	A	2	B	1	4
17 AZGHAR	A	2	B	1	B	1	B	1	A	2	B	1	B	1	B	1	B	1	A	2	13		A	2	A	2	B	1	5
18 BOUKARKOUR	A	2	A	2	B	1	B	1	B	1	B	1	A	2	B	1	B	1	A	2	14		B	1	C	0	B	1	2
19 AOULAI	A	2	B	1	A	2	B	1	C	0	B	1	B	1	C	0	B	1	B	1	10		B	1	A	2	B	1	4
20 SIDI ABBOU	A	2	A	2	B	1	C	0	B	1	A	2	C	0	A	2	B	1	B	1	12		B	1	A	2	C	0	3
21 SIDI EL MOKHFI	B	1	B	1	A	2	A	2	B	1	B	1	B	1	C	0	B	1	A	2	12		B	1	A	2	B	1	4
22 N'OUANTZ																													
23 IGUIN' OUAQA	B	1	B	1	C	0	A	2	B	1	A	2	C	0	A	2	B	1	B	1	11		B	1	A	2	A	2	5
AMOUNT																													
24 ABDELMOUMEN	B	1	B	1	A	2	B	1	B	1	B	1	B	1	B	1	A	2	B	1	12		X	-	X	-	X	-	-
25 SIDI ABDELLAH	C	0	B	1	B	1	B	1	C	0	C	0	B	1	B	1	A	2	B	1	8		A	2	A	2	A	2	6

	II Irrigation																		IV Recharge			V Flood and Sediment Control							
	6.1		6.2		6.3		7.1		7.2		7.3		7.4		7.5		Total		10.1		Total	11.1		12.1		13.1		Total
	Level	Score	Level	Score	Level	Score	Level	Score	Level	Score	Level	Score	Level	Score	Level	Score	Score		Level	Score	Score	Level	Score	Level	Score	Level	Score	Score
1 NECKOR	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-	-		X	-	-	C	0	C	0	A	2	2
2 TIZIMELLAL																												
3 AIT BADDOU	B	1	B	1	A	2	B	1	A	2	B	1	B	1	B	1	10		X	-	-	B	1	B	1	B	1	3
4 AIN KWACHIYA	A	2	C	0	A	2	B	1	A	2	B	1	B	1	B	1	10		X	-	-	B	1	B	1	C	0	2
5 N'FIFIKH	B	1	B	1	A	2	B	1	A	2	A	2	A	2	A	2	13		X	-	-	A	2	A	2	C	0	4
6 TAZARANE	B	1	A	2	A	2	B	1	A	2	A	2	A	2	A	2	14		X	-	-	C	0	C	0	C	0	0
7 AMEZMIZ	A	2	A	2	A	2	B	1	B	1	A	2	A	2	A	2	14		X	-	-	A	2	A	2	A	2	6
8 BOULAOUANE	A	2	A	2	A	2	B	1	B	1	A	2	A	2	A	2	14		X	-	-	A	2	A	2	C	0	4
9 TASKOURT	A	2	A	2	A	2	B	1	B	1	A	2	A	2	A	2	14		X	-	-	A	2	A	2	C	0	4
10 TIMKIT	A	2	A	2	B	1	A	2	A	2	A	2	A	2	A	2	15		B	1	1	B	1	C	0	C	0	1
11 TADIGHOUST	A	2	A	2	A	2	A	2	A	2	A	2	A	2	A	2	16		X	-	-	B	1	C	0	C	0	1
12 TIOUZAGUINE	B	1	A	2	A	2	B	1	B	1	A	2	A	2	A	2	13		X	-	-	A	2	C	0	C	0	2
13 KHENG GROU	B	1	B	1	A	2	B	1	B	1	A	2	A	2	A	2	12		X	-	-	B	1	C	0	C	0	1
14 ADAROUCH	B	1	B	1	A	2	B	1	B	1	A	2	A	2	A	2	12		X	-	^	B	1	B	1	C	0	2
15 SIDI OMAR	A	2	B	1	A	2	A	2	A	2	B	1	B	1	B	1	12		X	-	-	B	1	B	1	C	0	2
16 TIWINE	A	2	B	1	A	2	B	1	B	1	B	1	B	1	B	1	10		X	-	-	B	1	B	1	B	1	3
17 AZGHAR	A	2	B	1	A	2	A	2	A	2	A	2	A	2	A	2	15		X	-	-	B	1	B	1	C	0	2
18 BOUKARKOUR	B	1	C	0	C	0	B	1	B	1	B	1	B	1	B	1	6		X	-	-	B	1	B	1	B	1	3
19 AOULAI	A	2	C	0	A	2	B	1	B	1	B	1	B	1	B	1	9		X	-	-	C	0	C	0	B	1	1
20 SIDI ABBOU	B	1	C	0	A	2	B	1	B	1	B	1	B	1	B	1	8		X	-	-	A	2	A	2	C	0	4
21 SIDI EL MOKHFI	B	1	C	0	A	2	B	1	A	2	B	1	B	1	B	1	9		X	-	-	B	1	B	1	B	1	3
22 N'OUANTZ																												
23 IGUIN' OUAQA	B	1	A	2	A	2	B	1	B	1	A	2	A	2	A	2	13		C	0	0	B	1	B	1	C	0	2
AMOUNT																												
24 ABDELMOUMEN	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X	-	-		X	-	-	B	1	B	1	A	2	4
25 SIDI ABDELLAH	A	2	A	2	A	2	B	1	B	1	A	2	A	2	A	2	14		C	0	0	B	1	B	1	C	0	2
																	Total : 16				Total : 2							Total : 6

Table VIII1.2.3: Weighing for Scoring

		I	II	III	IV	V	
		Dam	Irrigation	Water Supply	Groundwater Restoration	Flood and Sediment Control	Total
1	NECKOR	50				50	100
2	TIZIMELLAL						
3	AIT BADDOU AIN	50	10			40	100
4	KWACHIYA	50	35	5		10	100
5	N'FIFIKH	50	35	5		10	100
6	TAZARANE	50	35	5		10	100
7	AMEZMIZ	50	35	5		10	100
8	BOULAOUAN	50	35	5		10	100
9	TASKOURT	50	35	5		10	100
10	TIMKIT	50	30	5	5	10	100
11	TADIGHOUS	50	35	5		10	100
12	TIOUZAGUIN	50	30	10		10	100
13	KHENG	50	35	5		10	100
14	ADAROUCH	50	30	10		10	100
15	SIDI OMAR	50	35	5		10	100
16	TIWINE	50	35	5		10	100
17	AZGHAR	50	35	5		10	100
18	BOUKARKOU R	50	35	5		10	100
19	AOULAI	50	35	5		10	100
20	SIDI ABBOU	50	35	5		10	100
21	SIDI EL MOKHFI	50	35	5		10	100
22	N'OUANTZ						
23	IGUIN' AMOUNT	50	20	5	15	10	100
24	ABDELMOU MEN	50				50	100
25	SIDI ABDELLAH	50	20	5	15	10	100

Table VIII1.2.4: Result of Evaluation on Technical Feasibilty

		I	II	III	IV	V			
		Dam	Irrigation	Water Supply	Groundwater	Restoration Flood and Sediment	Total Score	Level	Insufficient Maturity in
1	NECKOR	15				17	32	C	
2	TIZIMELLAL							X	
3	AIT	23	6			20	49	B	
4	AIN	28	22	4		3	57	B	
5	N'FIFIKH	25	28	4		7	64	A	
6	TAZARANE	18	31	3		0	52	B	
7	AMEZMIZ	23	31	3		10	67	A	
8	BOULAOUA	28	31	3		7	69	A	
9	TASKOURT	23	31	3		7	64	A	
10	TIMKIT	30	28	4	3	2	67	A	
11	TADIGHOUS	23	35	4		2	64	A	X
12	TIOUZAGUI	28	24	8		3	63	A	X
13	KHENG	35	26	4		2	67	A	X
14	ADAROUCH	35	23	7		3	68	A	X
15	SIDI OMAR	30	26	3		3	62	A	
16	TIWINE	28	22	3		5	58	B	X
17	AZGHAR	33	33	4		3	73	A	
18	BOUKARKO	35	13	2		5	55	B	X
19	AOULAI	25	20	3		2	50	B	
20	SIDI ABBOU	30	18	3		7	58	B	X
21	SIDI EL	30	20	3		5	58	B	
22	N'OUANTZ							X	
23	OUAQA AMOUNT	28	16	4	0	3	51	B	X
24	ABDELMOU	30				33	63	A	X
25	SIDI	20	18	5	0	3	46	B	X

Note: Serious problem is identified. : X

<40 : C

40 < <60 : B

60< : A

Table VIII1.3.1: Principal Features of Middle-Scale Dam Sites Proposed by MOE, The Kingdom of Morocco

No.	Name of Damsite	Study Level	River Basin	Purposes	Dam Type	Annual Inflow (mil m^3)	Storage (mil m^3)	Dam Height (m)	Dam Volume (m^3)	Catchment Area (km^2)	Reservoir Surface Area (ha)	Proposed Irrigation Area (ha)
①	NECKOR	APD	Neckor	PE	TERRE	11.7	15.6	36.4	1,577,500	710	196	0
②	TIZIMELLAL	APD	Sebou	PE, I	BCR	38.4	21.28	80	150,000	170	91.11	0
3	AIT BADDOU	PRE	Oum-er-Rbia	PE	T.Z	27.9	12.44	54	800,000	194	-	80
④	AIN KWACHIYA	APD	Yquem	I	BCR	6.6	11	29.5	78,000	162	180	500
⑤	N'FIFIKH	APD	Nhhkh	I	T.Z	13	8	44	99,100	606	680	800
⑥	TAZARANE	APD	Sebou	I, PE	ENR	11.9	9.2	64	416,100	30	51	900
⑦	AMEZMIZ	APD	Tensift	I	BCR	15.5	11	72.5	241,800	80	55.2	1,500
8	BOULAOUANE	PRE	Tensift	I	BCR	46.7	10	60	799,000	565	2.4	900
9	TASKOURT	PRE	Tensift	I	BCR	43.5	106	88	457,000	439	-	4,600
⑩	TIMKIT	APD	Rheris	I, AN	BCR	9.1	14	56	136,500	592	164	1,300
11	TADIGHOUST	PRE	Rheris	I	BCR	36.8	54	68	593,800	2,239	4.5	1,500
12	TIOUZAGUINE	PRE	Guir	I, AEP	BCR	4.1	10.2	58.7	128,000	258	75	220 (150)
⑬	KHENG GROU	APD	Guir	I, AN	BCR	65.5	90	70	310,000	4,900	840	1,210
⑭	ADAROUCH	APD	Sebou	I, AC, AEP	BCR	64.4	48	51	130,000	630	328	2,200 (1,200)
15	SIDI OMAR	PRE	Boure	I	BCR	27.8	35	59	222,000	350	165	1,500
16	TIWINE	PRE	Draa	I, EC	BCR	96.8	102.9	68.5	405,530	1,540	705	2,000
17	AZGHAR	PRE	Sebou	I	BCR	51.9	40	55	299,280	295	263.63	1,600
⑱	BOUKARKOUR	APD	Mellah	I, AC	BCR	-	30.1	59.5	172,140	1,120	217.5	1,000
19	AOULAI	PRE	Sebou	I, PE	BCR	177.7	145	50	310,500	490	710	5,000
20	SIDI ABBOU	PRE	Sebou	I	Beton	34.8	58	30	32,000	363	432	2,000
21	SIDI EL MOKHFI	PRE	Sebou	I, AC	BCR	181.4	36.7	64.5	-	378	-	3,600
㉒	N'OUANTZ	APD	Sous	I, AC	BCR	17.8	2.92	35.5	75,200	204	29	200
㉓	IGUIN' OUAQA	APD	Sous	PC, AN, I	BCR	8.3	10.5	57	186,200	161	66.7	600
24	AMOUNT ABDELMOUMEN	PRE	Sous	-	-	72.1	-	-	-	938	-	0
㉕	SIDI ABDELLAH	APD	Sous	AN, I	TZ	-	10.37	69	2,055,300	233	49.36	600

Notes 1) The mark ○ or APD means F/S level in Morocco
The mark □ or PRE means Preliminary Study level in Morocco
2) PE : Protection of Landslide、I : Irrigation、AN : Conservation of underground water
AEP : Portable water、AC : water for livestock、PC : Flood control, EC: Hydro-power
3) TERRE : Homogenous type earthfill dam、BCR : RCC type dam、TZ : Zone type earthfill dam
ENR : Rockfill type dam、Beton : Concrete gravity type dam

Table VIII1.3.2: Results of Environmental Screening for Negative Impacts on Natural Environment

Dam Sites	A(1) (×4) No	Points	B(2) (×3) No	Points	C(3) (×2) No	Points	D(4) (×1) No	Points	Total Points	Rank
1	1	4	5	15	15	30	5	5	54	A
2	0	0	3	9	18	36	8	8	53	A
3	0	0	1	3	22	44	7	7	54	A
4	0	0	0	0	25	50	5	5	55	A
5	1	4	0	0	21	42	9	9	55	A
6	0	0	1	3	19	38	6	6	47	A
7	0	0	3	9	19	38	7	7	54	A
8	1	4	3	9	18	36	6	6	55	A
9	0	0	6	18	17	34	6	6	58	B
10	0	0	0	0	21	42	6	6	48	A
11	0	0	2	6	19	38	8	8	52	A
12	0	0	0	0	25	50	4	4	54	A
13	1	4	3	9	19	38	4	4	55	A
14	0	0	4	12	19	38	8	8	58	B
15	1	4	0	0	24	48	6	6	58	B
16	1	4	5	15	16	32	7	7	58	B
17	0	0	1	3	22	44	5	5	52	A
18	0	0	1	3	19	38	9	9	50	A
19	4	16	4	12	16	32	7	7	67	C
20	0	0	5	15	19	38	6	6	59	B
21	3	12	3	9	20	40	6	6	67	C
22	0	0	0	0	19	38	7	7	45	A
23	0	0	0	0	18	36	6	6	42	A
24	0	0	1	3	14	28	7	7	38	A
25	2	8	2	6	19	38	7	7	59	B

(1) A: Significant impact (No of As x 4 = Point)
(2) B: Moderate impact (No of Bs x 3 = Point)
(3) C: Minor impact (No of Cs x 2 = Point)
(4) D: Impact is unknown (No of Ds x 1 = Points)

A: Minor impact (<55 points)
B: Moderate impact (56 – 60)
C: Significant impact (>61 points)

Table VIII1.4.1: Sites Ranked according to Potential Negative Social Impact

Dam	A(1) (×4)		B(2) (×3)		C(3) (×2)		D(4) (×1)		Total	Rank
Sites	No	Points	No	Points	No	Points	No	Points	Points	
1	12	48	5	15	33	66	7	7	136	H
2	0	0	4	12	26	52	4	4	68	C
3	4	16	11	33	30	60	4	4	103	H
4	0	0	2	6	9	18	2	2	26	A
5*	2	8	9	27	5	10	3	3	38	A
5**	15	60	6	18	15	30	3	3	111	H
6	0	0	6	18	20	40	3	3	61	C
7	3	12	7	21	21	42	2	2	77	C
8	1	4	1	6	17	34	2	2	46	B
9	1	4	5	15	18	36	3	3	58	B
10	0	0	3	9	11	22	6	6	37	A
11	0	0	0	0	6	12	5	5	17	A
12	0	0	4	12	9	8	6	6	36	A
13	2	8	4	12	17	34	5	5	59	B
14	0	0	0	0	16	32	4	4	36	A
15	0	0	1	3	16	32	2	2	37	A
16	1	4	3	9	6	12	2	2	27	A
17	0	0	0	0	15	30	2	2	32	A
18	0	0	0	0	14	28	2	2	30	A
19	7	28	8	24	8	16	2	2	70	C
20	0	0	8	24	8	16	2	2	42	B
21	0	0	5	15	13	26	2	2	43	B
22	11	44	4	12	8	16	3	3	75	C
23	0	0	3	0	18	36	2	2	47	B
24	8	32	2	6	7	14	2	2	54	B
25	0	0	0	0	14	28	2	2	30	A

Rank-A: Site having a minor negative social impact (<40)
Rank-B: Site having a moderate negative social impact (40 – 60)
Rank-C: Site having a significant negative social impact (>60)
Rank-H: Site having critical negative social impact exceeding Class C (>100)

5* N'Fifikh (Upstream)
5** N'Fifikh (Downstream)

Table VIII1.5.1: Net Income after Installtion of Irrigation Facilities (1/2)
(Economic Price, Per Hectare)

(Per Hectare)

Wheat		Unit	Unit Price (DH)	Q'ty	Amount (DH)
1.	Gross Income				
1)	Grain	kg	2.19	3,500	7,665
2)	Strow	UF	2.25	1,000	2,250
	Sub-total				9,915
2.	Production Cost				
1)	Seed	kg	3	120	360
2)	Manure	ton			
3)	Fertilizer				
-	Urea	kg	1.90	196	372
-	TSP	kg	2.43	156	379
-	K2SO4	kg	2.46	140	344
4)	Agriculture Chemicals	ha	35	1	35
5)	Mechanization				
-	Tractor	hr	13.8	6.5	90
-	Animal Traction	day	29	7.0	203
-	Baler	hr	13.8	4.0	55
6)	Labor Force	day	24.2	30	726
7)	Other	%		10	256
	Sub-total				2,820
3.	Net Income (1.- 2.)				7,095

(Per Hectare)

Summer Vegetable (Tomato)		Unit	Unit Price (DH)	Q'ty	Amount (DH)
1.	Gross Income				
1)	Tomato	kg	1.60	35,000	56,000
	Sub-total				56,000
2.	Production Cost				
1)	Seed	kg	820	0.5	410
2)	Manure	ton	150	30	4,500
3)	Fertilizer				
-	Urea	kg	1.90	200	380
-	TSP	kg	2.43	200	486
-	K2SO4	kg	2.46	340	836
4)	Agriculture Chemicals	ha	420	1	420
5)	Mechanization				
-	Tractor	hr	13.8	9.5	131
-	Animal Traction	day	29	38.0	1,102
-	Baler	hr			
6)	Labor Force	day	24.2	200	4,840
7)	Other	%		10	1,311
	Sub-total				14,416
3.	Net Income (1.- 2.)				41,585

(Per Hectare)

Winter Vegetable (Potato)		Unit	Unit Price (DH)	Q'ty	Amount (DH)
1.	Gross Income				
1)	Potato	kg	2.07	28,000	57,960
	Sub-total				57,960
2.	Production Cost				
1)	Seed	kg	3.5	2000	7,000
2)	Manure	ton	150	30	4,500
3)	Fertilizer				
-	Urea	kg	1.90	196	372
-	TSP	kg	2.43	200	486
-	K2SO4	kg	2.46	240	590
4)	Agriculture Chemicals	ha	140	1	140
5)	Mechanization				
-	Tractor	hr	13.8	12.5	173
-	Animal Traction	day	29	19	551
-	Baler	hr			
6)	Labor Force	day	24.2	120	2,904
7)	Other	%		10	1,672
	Sub-total				18,388
3.	Net Income (1.- 2.)				39,572

(Per Hectare)

Fruits (Olive)		Unit	Unit Price (DH)	Q'ty	Amount (DH)
1.	Gross Income				
1)	Olive	kg	3.06	10,000	30,600
	Sub-total				30,600
2.	Production Cost				
1)	Seed (lifetime: 30 years, replacement cost only)				140
2)	Manure	ton			
3)	Fertilizer				
-	Urea	kg	1.90	130	247
-	TSP	kg	2.43	111	270
-	K2SO4	kg	2.46	60	148
4)	Agriculture Chemicals	ha	105	1	105
5)	Mechanization				
-	Tractor	hr			
-	Animal Traction	day	29	12	348
-	Baler	hr			
6)	Labor Force	day	24.2	68	1,646
7)	Other	%		10	290
	Sub-total				3,194
3.	Net Income (1.- 2.)				27,406

Table VIII1.5.1: Net Income after Installtion of Irrigation Facilities (2/2)
(Economic Price, Per Hectare)

(Per Hectare)

2nd Fruits (Almond)		Unit	Unit Price (DH)	Q'ty	Amount (DH)
1.	Gross Income				
1)	Almond	kg	7.00	2,000	14,000
	Sub-total				14,000
2.	Production Cost				
1)	Seed (No new planting considered)				
2)	Manure	ton			
3)	Fertilizer *1	ha	1,094	1	1,094
-	Urea				
-	TSP				
-	K2SO4				
4)	Agriculture Chemicals	ha			
5)	Mechanization				
-	Tractor	hr			
-	Animal Traction	day			
-	Baler	hr			
6)	Labor Force	day	24.2	31	744
7)	Other	%		10	184
	Sub-total				2,022
3.	Net Income (1.- 2.)				11,978

Note *1: Convertion rate of 1.29 has been applied. It is the weighted mean rate of fertilizer for olive.

(Per Hectare)

2nd Fruits (Grapes)		Unit	Unit Price (DH)	Q'ty	Amount (DH)
1.	Gross Income				
1)	Grapes	kg	3.04	10,000	30,400
	Sub-total				30,400
2.	Production Cost				
1)	Seed (No new planting considered)				
2)	Manure	ton			
3)	Fertilizer	ha			
-	Urea				
-	TSP	<<No cost breakdown available>>			
-	K2SO4				
4)	Agriculture Chemicals	ha			
5)	Mechanization				
-	Tractor	hr			
-	Animal Traction	day			
-	Baler	hr			
6)	Labor Force	day			
7)	Other	%			
	Sub-total *2				6,390
3.	Net Income (1.- 2.)				24,010

Note *2: Convertion rate of 0.71 has been applied, since no breakdown is available. It is the weighted mean rate of the production cost of olive.

(Per Hectare)

2nd Fruits (Dates)		Unit	Unit Price (DH)	Q'ty	Amount (DH)
1.	Gross Income				
1)	Dates	kg	10.00	3,000	30,000
	Sub-total				30,000
2.	Production Cost				
1)	Seed (lifetime: 50 years, replacement cost only)				465
2)	Manure	ton			
3)	Fertilizer *3	ha	820	1	820
-	Urea				
-	TSP				
-	K2SO4				
4)	Agriculture Chemicals	ha			
5)	Mechanization				
-	Tractor	hr			
-	Animal Traction	day			
-	Baler	hr			
6)	Labor Force	day	24.2	34	826
7)	Other	%		10	211
	Sub-total				2,322
3.	Net Income (1.- 2.)				27,678

Note *3: Convertion rate of 1.29 has been applied. It is the weighted mean rate of fertilizer for olive.

(Per Hectare)

Fodder (Alfalfa)		Unit	Unit Price (DH)	Q'ty	Amount (DH)
1.	Gross Income				
1)	Alfalfa	UF	3.75	8,500	31,875
	Sub-total				31,875
2.	Production Cost				
1)	Seed	ha	360	1	360
2)	Manure	ton			
3)	Fertilizer				
-	Urea	kg	1.90	100	190
-	TSP	kg	2.43	300	729
-	K2SO4	kg	2.46	200	492
4)	Agriculture Chemicals	ha			
5)	Mechanization				
-	Tractor	hr			
-	Animal Traction	day	29	19.0	551
-	Baler	hr			
6)	Labor Force	day	24.2	114	2,759
7)	Other	%		10	508
	Sub-total				5,589
3.	Net Income (1.- 2.)				26,286

Table VIII1.5.2 Estimated Farm Income under Present Condition (Economic Price, DH/ha)

ZONE		Project Name		Gross income (DH/ha)															Net Income (DH/ha)
				Cereals				Legumes				Vegetable	Oli Plants	Fodder	Fruits		Non-cultivated Land	Total	
				Wheat (hard)	Wheat (soft)	Barley	Corn	Broad bean	Green bean	Chick pea	Lentil	Calculated by Tomato			Olive	Others			
I	1	Neckor	AL HOCEIMA																
	2	Tizimellal	AL HOCEIMA	125	303	1,349	27	16	43	0	0	176	0	852	41	416	Almond	3,346	2,017
	6	Tazarane	CHEFCHAOUEN	411	1,292	269	15	21	6	57	9	269	0	1,353	216	111	Almond	4,031	2,702
	14	Adarouch	IFRANE	912	499	575	15	9	0	8	25	267	0	2,189	4	157	Almond	4,660	3,331
	17	Azghar	SEFROU	774	463	533	14	30	0	19	88	107	0	879	12	538	Almond	3,456	2,127
	19	Aoulai	TAOUNATE	429	592	184	12	56	5	28	6	46	1	816	733	121	Almond	3,029	1,700
	20	Sidi Abbou	TAOUNATE	581	801	249	16	170	14	87	18	208	0	981	229	38	Almond	3,390	2,061
	21	Sidi El Mokhfi	TAOUNATE	337	465	145	9	132	11	67	14	172	0	488	879	146	Almond	2,865	1,536
																	Average of Zone I		2,211
II	4	Ain Kwachiya	SKHIRAT TEMARA	115	1,204	134	47	9	0	0	0	1,345	1	4,015	3	1,659	Ggrapes	8,531	7,202
	5(1)	N'Fiikh (Lower)	BENSLIMANE	894	1,425	324	46	20	15	12	24	2,225	4	2,182	21	1,416	Ggrapes	8,608	7,279
	5(2)	N'Fiikh (Upper)	BENSLIMANE	983	1,567	357	50	38	28	23	45	1,250	0	1,784	12	772	Ggrapes	6,909	5,580
	15	Sidi Omar	KHEMISSET	515	1,781	55	335	15	5	13	43	804	0	804	81	411	Ggrapes	4,862	3,533
	18	Boukatkaour	SETTAT	992	726	498	81	126	48	36	147	758	0	902	9	3	Almond	4,324	2,995
																	Average of Zone II		5,318
III	3	Ait Baddou	AZILAL	455	259	852	28	20	10	0	14	116	1	1,000	238	292	Almond	3,284	1,955
	7	Amezmiz	EL HAOUZ	222	239	657	0	6	8	0	1	604	0	1,189	321	114	Almond	3,362	2,033
	8	Boulaouane	CHICHAOUA	214	231	634	0	2	2	0	1	246	0	962	465	165	Almond	2,920	1,591
	9	Taskourt	CHICHAOUA	241	260	714	0	5	6	0	2	258	0	1,035	206	73	Almond	2,799	1,470
	22	N'Ountz	BENI MELLAL	585	2,464	265	138	3	1	0	0	375	0	1,215	93	336	Citrus	5,475	4,146
																	Average of Zone III		2,239
IV	16	Tiwine	OUARZAZATE	31	1,003	1,137	138	180	0	0	0	1,252	0	3,194	32	2,402	Dates	9,368	8,039
	23	Iguin' Quaqa	TAROUDANT	34	1,059	1,255	150	29	0	0	0	1,794	0	1,292	350	181	Almond	6,143	4,814
	24	Am. Abdelmoume	TAROUDANT	42	1,320	1,565	187	0	0	0	0	118	0	885	231	120	Almond	4,467	3,138
	25	Sidi Abdellah	TAROUDANT	30	949	1,124	134	0	0	0	0	2,065	0	1,620	418	216	Almond	6,556	5,227
																	Average of Zone IV		5,304
V	10	Timkit	ERRACHIDIA	1,715	708	320	217	56	0	0	0	1,375	0	2,277	283	2,530	Dates	9,479	8,150
	11	Tadighoust	ERRACHIDIA	1,423	587	265	180	54	0	0	0	153	0	3,270	375	3,359	Dates	9,666	8,337
	12	Tiouzaguine	ERRACHIDIA	2,414	997	450	305	59	0	0	0	302	0	1,820	85	758	Dates	7,190	5,861
	13	Kheng Grou	FIGUIG	330	238	942	150	60	0	0	0	652	0	1,286	258	2,282	Dates	6,198	4,869

*1) Estimated Fertilizer cost = 219DH/ha
*2) Seed 120kg/ha x 3 =360DH
*3) Extimated operation cost of machineries = 110DH/ha
*4) Animal Atraction = 11DH (3hour/8hour x 29DH/day)
*5) Manpower = 508DH (21day x 24.2DH/day) Sub-total = 1,208DH
*6) Other expected expentiture =121DH [(*1) + *2) + *3) +*4) + *5)] x 0.10
Total expenditure = 1,329DH

Table VIII1.5.3: Estimation of Annual Flood and Erosion Control Benefit

Unit: DH

		Flood occurrence probability per year	Flood Control Benefit					Erosion Control Benefit		Sediment Alleviation Benefit	Total Benefit	Remarks
			Riverine Crops	Land crops	Livestock	Houses	Infrastructure	Land crops	Houses			
	ZONE I											
6	Tazarane	0.00	0	0	0	0	0	0	0	0	0	
19	Aoulai	0.00	0	0	0	0	0	0	0	0	0	
21	Sidi El Mokhfi	0.55	0	277,530	69,383	534,600	0	25,230	13,365	0	920,108	
17	Azghar	0.50	0	399,475	99,869	524,875	0	79,895	26,244	0	1,130,358	
	ZONE II											
4	Ain Kwachiya	0.25	0	52,563	13,141	25,313	0	42,050	2,531	0	135,597	
5	N'fifikh (Upper)	0.40	0	807,360	201,840	523,200	0	100,920	13,080	0	1,646,400	
15	Sidi Omar	0.20	0	420,500	105,125	307,500	0	84,100	6,150	0	923,375	
	ZONE III											
7	Amezmiz	0.40	706,440	0	176,610	0	0	0	0	35,750	918,800	
8	Boulaouane	0.30	0	1,261,500	315,375	1,537,500	0	294,350	53,813	0	3,462,538	
9	Taskourt	0.25	0	1,760,844	440,211	2,010,000	0	441,525	63,000	0	4,715,580	
	ZONE V											
10	Timkit	0.25	220,763	0	55,191	0	525,000	0	0	0	800,953	

Note: 1. Production cost spent by the time of flood occurrence is assumed to be 50 % of the total production cost.

2. Benefit of the sediment alleviation accumulates year by year.

Table VIII1.5.4: Financial and Economic Project Cost (1/3)

Cost Item	F.C. (million DH)		L.C. (million DH)		Total financial cost (million DH)
	Financial cost	Economic cost	Financial cost	Economic cost	
ZONE I					
6. Tazarane					
1. Construction cost					
1.1 Dam and appurtenant facilities	125.6	100.5	67.7	46.6	193.3
1.2 Irrigation facilities	24.2	19.4	13.0	8.9	37.2
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	15.0	12.0	8.0	6.4	23.0
Sub-total of (1.- 2.)	164.8	131.9	88.7	61.9	253.5
3. Physical contingency	16.5	13.2	8.9	6.2	25.4
Total of (1.- 3.)	181.3	145.1	97.6	68.1	278.9
19. Aoulai					
1. Construction cost					
1.1 Dam and appurtenant facilities	318.5	254.8	171.5	118.0	490.0
1.2 Irrigation facilities	134.3	107.4	72.3	49.7	206.6
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	45.3	36.2	24.4	19.5	69.7
Sub-total of (1.- 2.)	498.1	398.4	268.2	187.2	766.3
3. Physical contingency	49.8	39.8	26.8	18.7	76.6
Total of (1.- 3.)	547.9	438.2	295.0	205.9	842.9
21. Sidi El Mokhfi					
1. Construction cost					
1.1 Dam and appurtenant facilities	241.9	193.5	130.3	89.6	372.2
1.2 Irrigation facilities	96.7	77.4	52.1	35.8	148.8
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	33.9	27.1	18.2	14.6	52.1
Sub-total of (1.- 2.)	372.5	298.0	200.6	140.0	573.1
3. Physical contingency	37.2	29.8	20.1	14.0	57.3
Total of (1.- 3.)	409.7	327.8	220.7	154.0	630.4
17. Azghar					
1. Construction cost					
1.1 Dam and appurtenant facilities	129.9	103.9	70.0	48.2	199.9
1.2 Irrigation facilities	43.0	34.4	23.1	15.9	66.1
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	17.3	13.8	9.3	7.4	26.6
Sub-total of (1.- 2.)	190.2	152.1	102.4	71.5	292.6
3. Physical contingency	19.0	15.2	10.3	7.2	29.3
Total of (1.- 3.)	209.2	167.3	112.7	78.7	321.9
ZONE II					
4. Ain Kwachiya					
1. Construction cost					
1.1 Dam and appurtenant facilities	53.0	42.4	28.6	19.7	81.6
1.2 Irrigation facilities	13.4	10.7	7.2	5.0	20.6
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	6.7	5.4	3.6	2.9	10.3
Sub-total of (1.- 2.)	73.1	58.5	39.4	27.6	112.5
3. Physical contingency	7.3	5.9	4.0	2.8	11.3
Total of (1.- 3.)	80.4	64.4	43.4	30.4	123.8

Table VIII1.5.4: Financial and Economic Project Cost (2/3)

Cost Item	F.C. (million DH)		L.C. (million DH)		Total financial cost (million DH)
	Financial cost	Economic cost	Financial cost	Economic cost	
5. N'fifikh (upper)					
1. Construction cost					
1.1 Dam and appurtenant facilities	79.2	63.4	42.6	29.3	121.8
1.2 Irrigation facilities	21.5	17.2	11.5	7.9	33.0
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	10.1	8.1	5.4	4.3	15.5
Sub-total of (1.- 2.)	110.8	88.7	59.5	41.5	170.3
3. Physical contingency	11.1	8.9	5.9	4.2	17.0
Total of (1.- 3.)	121.9	97.6	65.4	45.7	187.3
15. Sidi Omar					
1. Construction cost					
1.1 Dam and appurtenant facilities	140.5	112.4	75.7	52.1	216.2
1.2 Irrigation facilities	40.3	32.2	21.7	14.9	62.0
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	18.1	14.5	9.7	7.8	27.8
Sub-total of (1.- 2.)	198.9	159.1	107.1	74.8	306.0
3. Physical contingency	19.9	15.9	10.7	7.5	30.6
Total of (1.- 3.)	218.8	175.0	117.8	82.3	336.6
Zone III					
7. Amezmiz					
1. Direct construction cost					
1.1 Dam and appurtenant facilities	132.2	105.8	71.2	49.0	203.4
1.2 Irrigation facilities	4.7	3.8	2.5	1.7	7.2
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	13.2	10.6	7.1	5.7	20.3
Sub-total of (1.- 2.)	150.1	120.2	80.8	56.4	230.9
3. Physical contingency	14.6	12.0	7.8	5.6	22.4
Total of (1.- 3.)	164.7	132.2	88.6	62.0	253.3
8. Boulaouane					
1. Direct construction cost					
1.1 Dam and appurtenant facilities	97.1	77.7	52.3	36.0	149.4
1.2 Irrigation facilities	19.4	15.5	10.4	7.2	29.8
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	11.6	9.3	6.3	5.0	17.9
Sub-total of (1.- 2.)	128.1	102.5	69.0	48.2	197.1
3. Physical contingency	12.8	10.3	6.9	4.8	19.7
Total of (1.- 3.)	140.9	112.8	75.9	53.0	216.8
9. Taskourt					
1. Direct construction cost					
1.1 Dam and appurtenant facilities	312.1	249.7	168.1	115.7	480.2
1.2 Irrigation facilities	98.8	79.0	53.2	36.6	152.0
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	41.1	32.9	22.1	17.7	63.2
Sub-total of (1.- 2.)	452.0	361.6	243.4	170.0	695.4
3. Physical contingency	45.2	36.2	24.3	17.0	69.5
Total of (1.- 3.)	497.2	397.8	267.7	187.0	764.9

Table VIII1.5.4: Financial and Economic Project Cost (3/3)

Cost Item	F.C. (million DH)		L.C. (million DH)		Total financial cost (million DH)
	Financial cost	Economic cost	Financial cost	Economic cost	
ZONE V					
10. Timkit					
1. Direct construction cost					
1.1 Dam and appurtenant facilities	124.5	99.6	67.0	46.1	191.5
1.2 Irrigation facilities	21.0	16.8	11.3	7.8	32.3
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	14.6	11.7	7.8	6.2	22.4
Sub-total of (1.- 2.)	160.1	128.1	86.1	60.1	246.2
3. Physical contingency	16.1	12.8	8.6	6.0	24.7
Total of (1.- 3.)	176.2	140.9	94.7	66.1	270.9

Note: 1. Price level: as of April 2000, US$1.0 = 10.68 DH, J. Yen100 = 9.90 DH
2. Engineering service fee is estimated as 10 % of total direct construction cost
3. Physical contingency is estimated as 10 % of total of (1.- 2.)
4. All the financial cost includes the Value Added Tax of 20 %.

Table VIII1.5.5: Breakdown of Annual Cost (1/2)
(Economic Price, million DH)

Cost Item	Year in Order					Total
	1st	2nd	3rd	4th	5th	cost (million DH)
ZONE I						
6. Tazarane						
1. Construction cost						
1.1 Dam and appurtenant facilities	73.6	73.5	0.0	0.0	0.0	147.1
1.2 Irrigation facilities	14.2	14.1	0.0	0.0	0.0	28.3
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	9.2	9.2	0.0	0.0	0.0	18.4
Sub-total of (1.- 2.)	97.0	96.8	0.0	0.0	0.0	193.8
3. Physical contingency	9.7	9.7	0.0	0.0	0.0	19.4
Total of (1.- 3.)	106.7	106.5	0.0	0.0	0.0	213.2
19. Aoulai						
1. Construction cost						
1.1 Dam and appurtenant facilities	186.4	186.4	0.0	0.0	0.0	372.8
1.2 Irrigation facilities	78.6	78.5	0.0	0.0	0.0	157.1
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	27.9	27.8	0.0	0.0	0.0	55.7
Sub-total of (1.- 2.)	292.9	292.7	0.0	0.0	0.0	585.6
3. Physical contingency	29.3	29.2	0.0	0.0	0.0	58.5
Total of (1.- 3.)	322.2	321.9	0.0	0.0	0.0	644.1
21. Sidi El Mokhfi						
1. Construction cost						
1.1 Dam and appurtenant facilities	141.6	141.5	0.0	0.0	0.0	283.1
1.2 Irrigation facilities	56.6	56.6	0.0	0.0	0.0	113.2
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	20.9	20.8	0.0	0.0	0.0	41.7
Sub-total of (1.- 2.)	219.1	218.9	0.0	0.0	0.0	438.0
3. Physical contingency	21.9	21.9	0.0	0.0	0.0	43.8
Total of (1.- 3.)	241.0	240.8	0.0	0.0	0.0	481.8
17. Azghar						
1. Construction cost						
1.1 Dam and appurtenant facilities	76.1	76.0	0.0	0.0	0.0	152.1
1.2 Irrigation facilities	25.2	25.1	0.0	0.0	0.0	50.3
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	10.6	10.6	0.0	0.0	0.0	21.2
Sub-total of (1.- 2.)	111.9	111.7	0.0	0.0	0.0	223.6
3. Physical contingency	11.2	11.2	0.0	0.0	0.0	22.4
Total of (1.- 3.)	123.1	122.9	0.0	0.0	0.0	246.0
ZONE II						
4. Ain Kwachiya						
1. Construction cost						
1.1 Dam and appurtenant facilities	31.1	31.0	0.0	0.0	0.0	62.1
1.2 Irrigation facilities	7.9	7.8	0.0	0.0	0.0	15.7
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	4.2	4.1	0.0	0.0	0.0	8.3
Sub-total of (1.- 2.)	43.2	42.9	0.0	0.0	0.0	86.1
3. Physical contingency	4.3	4.4	0.0	0.0	0.0	8.7
Total of (1.- 3.)	47.5	47.3	0.0	0.0	0.0	94.8
5. N'fifikh (upper)						
1. Construction cost						
1.1 Dam and appurtenant facilities	46.4	46.3	0.0	0.0	0.0	92.7
1.2 Irrigation facilities	12.6	12.5	0.0	0.0	0.0	25.1
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	6.2	6.2	0.0	0.0	0.0	12.4
Sub-total of (1.- 2.)	65.2	65.0	0.0	0.0	0.0	130.2
3. Physical contingency	6.5	6.6	0.0	0.0	0.0	13.1
Total of (1.- 3.)	71.7	71.6	0.0	0.0	0.0	143.3

Table VIII1.5.5: Breakdown of Annual Cost (2/2)
(Economic Price, million DH)

Cost Item	Year in Order					Total
	1st	2nd	3rd	4th	5th	cost (million DH)
15. Sidi Omar						
1. Construction cost						
1.1 Dam and appurtenant facilities	82.3	82.2	0.0	0.0	0.0	164.5
1.2 Irrigation facilities	23.6	23.5	0.0	0.0	0.0	47.1
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	11.2	11.1	0.0	0.0	0.0	22.3
Sub-total of (1.- 2.)	117.1	116.8	0.0	0.0	0.0	233.9
3. Physical contingency	11.7	11.7	0.0	0.0	0.0	23.4
Total of (1.- 3.)	128.8	128.5	0.0	0.0	0.0	257.3
Zone III						
7. Amezmiz						
1. Construction cost						
1.1 Dam and appurtenant facilities	77.4	77.4	0.0	0.0	0.0	154.8
1.2 Irrigation facilities	2.8	2.7	0.0	0.0	0.0	5.5
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	8.2	8.1	0.0	0.0	0.0	16.3
Sub-total of (1.- 2.)	88.4	88.2	0.0	0.0	0.0	176.6
3. Physical contingency	8.8	8.8	0.0	0.0	0.0	17.6
Total of (1.- 3.)	97.2	97.0	0.0	0.0	0.0	194.2
8. Boulaouane						
1. Construction cost						
1.1 Dam and appurtenant facilities	56.9	56.8	0.0	0.0	0.0	113.7
1.2 Irrigation facilities	11.4	11.3	0.0	0.0	0.0	22.7
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	7.2	7.1	0.0	0.0	0.0	14.3
Sub-total of (1.- 2.)	75.5	75.2	0.0	0.0	0.0	150.7
3. Physical contingency	7.6	7.5	0.0	0.0	0.0	15.1
Total of (1.- 3.)	83.1	82.7	0.0	0.0	0.0	165.8
9. Taskourt						
1. Construction cost						
1.1 Dam and appurtenant facilities	182.7	182.7	0.0	0.0	0.0	365.4
1.2 Irrigation facilities	57.8	57.8	0.0	0.0	0.0	115.6
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	25.3	25.3	0.0	0.0	0.0	50.6
Sub-total of (1.- 2.)	265.8	265.8	0.0	0.0	0.0	531.6
3. Physical contingency	26.6	26.6	0.0	0.0	0.0	53.2
Total of (1.- 3.)	292.4	292.4	0.0	0.0	0.0	584.8
ZONE V						
10. Timkit						
1. Construction cost						
1.1 Dam and appurtenant facilities	72.9	72.8	0.0	0.0	0.0	145.7
1.2 Irrigation facilities	12.3	12.3	0.0	0.0	0.0	24.6
1.3 Potable water facilities	0.0	0.0	0.0	0.0	0.0	0.0
2. Engineering services cost	9.0	8.9	0.0	0.0	0.0	17.9
Sub-total of (1.- 2.)	94.2	94.0	0.0	0.0	0.0	188.2
3. Physical contingency	9.4	9.4	0.0	0.0	0.0	18.8
Total of (1.- 3.)	103.6	103.4	0.0	0.0	0.0	207.0

Table VIII1.5.6: Cost-Benefit Analysis for Selection of Priority Projects (1/11)

Zone I No.6 Tazarane

Unit: million

Year in order	Year	Benefit					Cost									N
		Agriculture	Water supply	Flood & erosion control	Other	Total Benefit	Investment						O/M	Replace-ment	Total Cost	
							Dam	Irrigation	Water supply	Engr. services	Physical conti.	Sub-total				
0	2000	0.0			0.0	0.0	73.6	14.2		9.2	9.7	106.7	0.0		106.7	
1	2001	0.0			0.0	0.0	73.5	14.1		9.2	9.7	106.5	0.0		106.5	
2	2002	7.0			0.7	7.7						0.0	1.0		1.0	
3	2003	9.4			0.9	10.3						0.0	1.0		1.0	
4	2004	11.7			1.2	12.9						0.0	1.0		1.0	
5	2005	11.7			1.2	12.9						0.0	1.0		1.0	
6	2006	11.7			1.2	12.9						0.0	1.0		1.0	
7	2007	11.7			1.2	12.9						0.0	1.0		1.0	
8	2008	11.7			1.2	12.9						0.0	1.0		1.0	
9	2009	11.7			1.2	12.9						0.0	1.0		1.0	
10	2010	11.7			1.2	12.9						0.0	1.0		1.0	
11	2011	11.7			1.2	12.9						0.0	1.0		1.0	
12	2012	11.7			1.2	12.9						0.0	1.0		1.0	
13	2013	11.7			1.2	12.9						0.0	1.0		1.0	
14	2014	11.7			1.2	12.9						0.0	1.0		1.0	
15	2015	11.7			1.2	12.9						0.0	1.0		1.0	
16	2016	11.7			1.2	12.9						0.0	1.0		1.0	
17	2017	11.7			1.2	12.9						0.0	1.0		1.0	
18	2018	11.7			1.2	12.9						0.0	1.0		1.0	
19	2019	11.7			1.2	12.9						0.0	1.0		1.0	
20	2020	11.7			1.2	12.9						0.0	1.0		1.0	
21	2021	11.7			1.2	12.9						0.0	1.0	11.2	12.2	
22	2022	11.7			1.2	12.9						0.0	1.0		1.0	
23	2023	11.7			1.2	12.9						0.0	1.0		1.0	
24	2024	11.7			1.2	12.9						0.0	1.0		1.0	
25	2025	11.7			1.2	12.9						0.0	1.0		1.0	
26	2026	11.7			1.2	12.9						0.0	1.0		1.0	
27	2027	11.7			1.2	12.9						0.0	1.0		1.0	
28	2028	11.7			1.2	12.9						0.0	1.0		1.0	
29	2029	11.7			1.2	12.9						0.0	1.0		1.0	
30	2030	11.7			1.2	12.9						0.0	1.0		1.0	
31	2031	11.7			1.2	12.9						0.0	1.0		1.0	
32	2032	11.7			1.2	12.9						0.0	1.0		1.0	
33	2033	11.7			1.2	12.9						0.0	1.0		1.0	
34	2034	11.7			1.2	12.9						0.0	1.0		1.0	
35	2035	11.7			1.2	12.9						0.0	1.0		1.0	
36	2036	11.7			1.2	12.9						0.0	1.0		1.0	
37	2037	11.7			1.2	12.9						0.0	1.0		1.0	
38	2038	11.7			1.2	12.9						0.0	1.0		1.0	
39	2039	11.7			1.2	12.9						0.0	1.0		1.0	
40	2040	11.7			1.2	12.9						0.0	1.0		1.0	
41	2041	11.7			1.2	12.9						0.0	1.0		1.0	

EIRR=	4.2%		
B/C =	0.89	(at discount rate:	5%)
NPV=	-24.1	(at discount rate:	5%)
NPV=	-47.9	(at discount rate:	6%)
NPV=	-82.3	(at discount rate:	8%)
NPV=	-105.2	(at discount rate:	10%)

Table VIII1.5.6: Cost-Benefit Analysis for Selection of Priority Projects (2/11)

Zone I No.19 Aoulai

Unit: million

Year in order	Year	Benefit					Cost									N
		Agriculture	Water supply	Flood & erosion control	Other	Total Benefit	Investment						O/M	Replace-ment	Total Cost	
							Dam	Irrigation	Water supply	Engr. services	Physical conti.	Sub-total				
0	2000	0.0			0.0	0.0	186.4	78.6		27.9	29.3	322.2	0.0		322.2	
1	2001	0.0			0.0	0.0	186.4	78.5		27.8	29.2	321.9	0.0		321.9	
2	2002	39.1			3.9	43.0						0.0	2.9		2.9	
3	2003	52.1			5.2	57.3						0.0	2.9		2.9	
4	2004	65.1			6.5	71.6						0.0	2.9		2.9	
5	2005	65.1			6.5	71.6						0.0	2.9		2.9	
6	2006	65.1			6.5	71.6						0.0	2.9		2.9	
7	2007	65.1			6.5	71.6						0.0	2.9		2.9	
8	2008	65.1			6.5	71.6						0.0	2.9		2.9	
9	2009	65.1			6.5	71.6						0.0	2.9		2.9	
10	2010	65.1			6.5	71.6						0.0	2.9		2.9	
11	2011	65.1			6.5	71.6						0.0	2.9		2.9	
12	2012	65.1			6.5	71.6						0.0	2.9		2.9	
13	2013	65.1			6.5	71.6						0.0	2.9		2.9	
14	2014	65.1			6.5	71.6						0.0	2.9		2.9	
15	2015	65.1			6.5	71.6						0.0	2.9		2.9	
16	2016	65.1			6.5	71.6						0.0	2.9		2.9	
17	2017	65.1			6.5	71.6						0.0	2.9		2.9	
18	2018	65.1			6.5	71.6						0.0	2.9		2.9	
19	2019	65.1			6.5	71.6						0.0	2.9		2.9	
20	2020	65.1			6.5	71.6						0.0	2.9		2.9	
21	2021	65.1			6.5	71.6						0.0	2.9	37.8	40.7	
22	2022	65.1			6.5	71.6						0.0	2.9		2.9	
23	2023	65.1			6.5	71.6						0.0	2.9		2.9	
24	2024	65.1			6.5	71.6						0.0	2.9		2.9	
25	2025	65.1			6.5	71.6						0.0	2.9		2.9	
26	2026	65.1			6.5	71.6						0.0	2.9		2.9	
27	2027	65.1			6.5	71.6						0.0	2.9		2.9	
28	2028	65.1			6.5	71.6						0.0	2.9		2.9	
29	2029	65.1			6.5	71.6						0.0	2.9		2.9	
30	2030	65.1			6.5	71.6						0.0	2.9		2.9	
31	2031	65.1			6.5	71.6						0.0	2.9		2.9	
32	2032	65.1			6.5	71.6						0.0	2.9		2.9	
33	2033	65.1			6.5	71.6						0.0	2.9		2.9	
34	2034	65.1			6.5	71.6						0.0	2.9		2.9	
35	2035	65.1			6.5	71.6						0.0	2.9		2.9	
36	2036	65.1			6.5	71.6						0.0	2.9		2.9	
37	2037	65.1			6.5	71.6						0.0	2.9		2.9	
38	2038	65.1			6.5	71.6						0.0	2.9		2.9	
39	2039	65.1			6.5	71.6						0.0	2.9		2.9	
40	2040	65.1			6.5	71.6						0.0	2.9		2.9	
41	2041	65.1			6.5	71.6						0.0	2.9		2.9	

EIRR=	9.3%		
B/C =	1.64	(at discount rate:	5%)
NPV=	441.8	(at discount rate:	5%)
NPV=	300.5	(at discount rate:	6%)
NPV=	94.7	(at discount rate:	8%)
NPV=	-43.8	(at discount rate:	10%)

Table VIII1.5.6: Cost-Benefit Analysis for Selection of Priority Projects (3/11)

Zone I No.21 Sidi El Mokhfi

Unit: million

Year in order	Year	Benefit					Cost									N
		Agriculture	Water supply	Flood & erosion control	Other	Total Benefit	Investment						O/M	Replace-ment	Total Cost	
							Dam	Irrigation	Water supply	Engr. services	Physical conti.	Sub-total				
0	2000	0.0			0.0	0.0	141.6	56.6		20.9	21.9	241.0	0.0		241.0	
1	2001	0.0			0.0	0.0	141.5	56.6		20.8	21.9	240.8	0.0		240.8	
2	2002	28.1		0.9	2.9	32.0						0.0	2.2		2.2	
3	2003	37.5		0.9	3.8	42.2						0.0	2.2		2.2	
4	2004	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
5	2005	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
6	2006	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
7	2007	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
8	2008	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
9	2009	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
10	2010	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
11	2011	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
12	2012	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
13	2013	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
14	2014	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
15	2015	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
16	2016	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
17	2017	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
18	2018	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
19	2019	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
20	2020	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
21	2021	46.9		0.9	4.8	52.6						0.0	2.2	28.0	30.2	
22	2022	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
23	2023	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
24	2024	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
25	2025	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
26	2026	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
27	2027	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
28	2028	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
29	2029	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
30	2030	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
31	2031	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
32	2032	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
33	2033	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
34	2034	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
35	2035	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
36	2036	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
37	2037	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
38	2038	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
39	2039	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
40	2040	46.9		0.9	4.8	52.6						0.0	2.2		2.2	
41	2041	46.9		0.9	4.8	52.6						0.0	2.2		2.2	

EIRR=	9.1%		
B/C =	1.61	(at discount rate:	5%)
NPV=	316.2	(at discount rate:	5%)
NPV=	212.5	(at discount rate:	6%)
NPV=	61.4	(at discount rate:	8%)
NPV=	-40.2	(at discount rate:	10%)

Table VIII1.5.6: Cost-Benefit Analysis for Selection of Priority Projects (4/11)

Zone I No.17 Azghar

Unit: million

Year in order	Year	Benefit					Cost									N
		Agriculture	Water supply	Flood & erosion control	Other	Total Benefit	Investment						O/M	Replace-ment	Total Cost	
							Dam	Irrigation	Water supply	Engr. services	Physical conti.	Sub-total				
0	2000	0.0			0.0	0.0	76.1	25.2		10.6	11.2	123.1	0.0		123.1	
1	2001	0.0			0.0	0.0	76.0	25.1		10.6	11.2	122.9	0.0		122.9	
2	2002	12.5		1.1	1.4	15.0						0.0	1.1		1.1	
3	2003	16.6		1.1	1.8	19.6						0.0	1.1		1.1	
4	2004	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
5	2005	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
6	2006	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
7	2007	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
8	2008	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
9	2009	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
10	2010	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
11	2011	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
12	2012	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
13	2013	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
14	2014	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
15	2015	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
16	2016	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
17	2017	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
18	2018	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
19	2019	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
20	2020	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
21	2021	20.8		1.1	2.2	24.1						0.0	1.1	13.9	15.0	
22	2022	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
23	2023	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
24	2024	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
25	2025	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
26	2026	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
27	2027	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
28	2028	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
29	2029	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
30	2030	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
31	2031	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
32	2032	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
33	2033	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
34	2034	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
35	2035	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
36	2036	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
37	2037	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
38	2038	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
39	2039	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
40	2040	20.8		1.1	2.2	24.1						0.0	1.1		1.1	
41	2041	20.8		1.1	2.2	24.1						0.0	1.1		1.1	

EIRR=	8.1%		
B/C =	1.45	(at discount rate:	5%)
NPV=	118.8	(at discount rate:	5%)
NPV=	71.6	(at discount rate:	6%)
NPV=	3.0	(at discount rate:	8%)
NPV=	-43.0	(at discount rate:	10%)

Table VIII1.5.6: Cost-Benefit Analysis for Selection of Priority Projects (5/11)

Zone II No.4 Ain Kwachiya

Unit: million

Year in order	Year	Benefit					Cost									N
		Agriculture	Water supply	Flood & erosion control	Other	Total Benefit	Investment						O/M	Replace-ment	Total Cost	
							Dam	Irrigation	Water supply	Engr. services	Physical conti.	Sub-total				
0	2000	0.0			0.0	0.0	31.1	7.9		4.2	4.3	47.5	0.0		47.5	
1	2001	0.0			0.0	0.0	31.0	7.8		4.1	4.4	47.3	0.0		47.3	
2	2002	3.6		0.1	0.7	4.4						0.0	0.4		0.4	
3	2003	4.8		0.1	1.0	5.9						0.0	0.4		0.4	
4	2004	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
5	2005	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
6	2006	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
7	2007	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
8	2008	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
9	2009	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
10	2010	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
11	2011	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
12	2012	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
13	2013	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
14	2014	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
15	2015	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
16	2016	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
17	2017	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
18	2018	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
19	2019	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
20	2020	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
21	2021	6.0		0.1	1.2	7.3						0.0	0.4	5.1	5.6	
22	2022	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
23	2023	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
24	2024	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
25	2025	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
26	2026	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
27	2027	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
28	2028	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
29	2029	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
30	2030	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
31	2031	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
32	2032	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
33	2033	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
34	2034	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
35	2035	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
36	2036	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
37	2037	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
38	2038	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
39	2039	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
40	2040	6.0		0.1	1.2	7.3						0.0	0.4		0.4	
41	2041	6.0		0.1	1.2	7.3						0.0	0.4		0.4	

EIRR=	6.1%		
B/C =	1.14	(at discount rate:	5%)
NPV=	14.7	(at discount rate:	5%)
NPV=	0.7	(at discount rate:	6%)
NPV=	-19.6	(at discount rate:	8%)
NPV=	-33.2	(at discount rate:	10%)

Table VIII1.5.6: Cost-Benefit Analysis for Selection of Priority Projects (6/11)

Zone II No.5 N'fifikh

Unit: million

Year in order	Year	Benefit					Cost									N
		Agriculture	Water supply	Flood & erosion control	Other	Total Benefit	Investment						O/M	Replace-ment	Total Cost	
							Dam	Irrigation	Water supply	Engr. services	Physical conti.	Sub-total				
0	2000	0.0			0.0	0.0	46.4	12.6		6.2	6.5	71.7	0.0		71.7	
1	2001	0.0			0.0	0.0	46.3	12.5		6.2	6.6	71.6	0.0		71.6	
2	2002	5.8		1.6	1.5	8.9						0.0	0.6		0.6	
3	2003	7.7		1.6	1.9	11.2						0.0	0.6		0.6	
4	2004	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
5	2005	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
6	2006	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
7	2007	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
8	2008	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
9	2009	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
10	2010	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
11	2011	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
12	2012	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
13	2013	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
14	2014	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
15	2015	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
16	2016	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
17	2017	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
18	2018	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
19	2019	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
20	2020	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
21	2021	9.6		1.6	2.2	13.4						0.0	0.6	7.9	8.5	
22	2022	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
23	2023	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
24	2024	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
25	2025	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
26	2026	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
27	2027	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
28	2028	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
29	2029	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
30	2030	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
31	2031	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
32	2032	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
33	2033	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
34	2034	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
35	2035	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
36	2036	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
37	2037	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
38	2038	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
39	2039	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
40	2040	9.6		1.6	2.2	13.4						0.0	0.6		0.6	
41	2041	9.6		1.6	2.2	13.4						0.0	0.6		0.6	

EIRR=	7.8%	
B/C =	1.39	(at discount rate: 5%)
NPV=	60.4	(at discount rate: 5%)
NPV=	34.2	(at discount rate: 6%)
NPV=	-3.9	(at discount rate: 8%)
NPV=	-29.5	(at discount rate: 10%)

Table VIII1.5.6: Cost-Benefit Analysis for Selection of Priority Projects (7/11)

Zone II No.15 Sidi Omar

Unit: million

Year in order	Year	Benefit: Agriculture	Benefit: Water supply	Benefit: Flood & erosion control	Benefit: Other	Benefit: Total Benefit	Cost: Investment: Dam	Cost: Investment: Irrigation	Cost: Investment: Water supply	Cost: Investment: Engr. services	Cost: Investment: Physical conti.	Cost: Investment: Sub-total	Cost: O/M	Cost: Replace-ment	Cost: Total Cost	N
0	2000	0.0			0.0	0.0	82.3	23.6		11.2	11.7	128.8	0.0		128.8	
1	2001	0.0			0.0	0.0	82.2	23.5		11.1	11.7	128.5	0.0		128.5	
2	2002	10.8		0.9	2.3	14.0						0.0	1.2		1.2	
3	2003	14.4		0.9	3.1	18.4						0.0	1.2		1.2	
4	2004	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
5	2005	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
6	2006	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
7	2007	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
8	2008	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
9	2009	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
10	2010	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
11	2011	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
12	2012	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
13	2013	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
14	2014	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
15	2015	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
16	2016	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
17	2017	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
18	2018	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
19	2019	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
20	2020	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
21	2021	18.0		0.9	3.8	22.7						0.0	1.2	14.2	15.4	
22	2022	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
23	2023	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
24	2024	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
25	2025	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
26	2026	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
27	2027	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
28	2028	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
29	2029	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
30	2030	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
31	2031	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
32	2032	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
33	2033	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
34	2034	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
35	2035	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
36	2036	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
37	2037	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
38	2038	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
39	2039	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
40	2040	18.0		0.9	3.8	22.7						0.0	1.2		1.2	
41	2041	18.0		0.9	3.8	22.7						0.0	1.2		1.2	

EIRR=	7.2%	
B/C =	1.31	(at discount rate: 5%)
NPV=	84.4	(at discount rate: 5%)
NPV=	40.5	(at discount rate: 6%)
NPV=	-23.4	(at discount rate: 8%)
NPV=	-66.3	(at discount rate: 10%)

Table VIII1.5.6: Cost-Benefit Analysis for Selection of Priority Projects (8/11)

Zone III No.7 Amezmiz

Unit: million

Year in order	Year	Benefit					Cost									N
		Agriculture	Water supply	Flood & erosion control	Other	Total Benefit	Investment						O/M	Replace-ment	Total Cost	
							Dam	Irrigation	Water supply	Engr. services	Physical conti.	Sub-total				
0	2000	0.0			0.0	0.0	77.4	2.8		8.2	8.8	97.2	0.0		97.2	
1	2001	0.0			0.0	0.0	77.4	2.7		8.1	8.8	97.0	0.0		97.0	
2	2002	8.8		1.0	1.0	10.7						0.0	0.9		0.9	
3	2003	11.7		1.0	1.3	14.0						0.0	0.9		0.9	
4	2004	14.6		1.0	1.6	17.2						0.0	0.9		0.9	
5	2005	14.6		1.1	1.6	17.3						0.0	0.9		0.9	
6	2006	14.6		1.1	1.6	17.3						0.0	0.9		0.9	
7	2007	14.6		1.1	1.6	17.3						0.0	0.9		0.9	
8	2008	14.6		1.2	1.6	17.4						0.0	0.9		0.9	
9	2009	14.6		1.2	1.6	17.4						0.0	0.9		0.9	
10	2010	14.6		1.2	1.6	17.4						0.0	0.9		0.9	
11	2011	14.6		1.3	1.6	17.5						0.0	0.9		0.9	
12	2012	14.6		1.3	1.6	17.5						0.0	0.9		0.9	
13	2013	14.6		1.3	1.6	17.5						0.0	0.9		0.9	
14	2014	14.6		1.4	1.6	17.6						0.0	0.9		0.9	
15	2015	14.6		1.4	1.6	17.6						0.0	0.9		0.9	
16	2016	14.6		1.5	1.6	17.7						0.0	0.9		0.9	
17	2017	14.6		1.5	1.6	17.7						0.0	0.9		0.9	
18	2018	14.6		1.5	1.6	17.7						0.0	0.9		0.9	
19	2019	14.6		1.6	1.6	17.8						0.0	0.9		0.9	
20	2020	14.6		1.6	1.6	17.8						0.0	0.9		0.9	
21	2021	14.6		1.6	1.6	17.8						0.0	0.9	9.1	10.0	
22	2022	14.6		1.7	1.6	17.9						0.0	0.9		0.9	
23	2023	14.6		1.7	1.6	17.9						0.0	0.9		0.9	
24	2024	14.6		1.7	1.6	17.9						0.0	0.9		0.9	
25	2025	14.6		1.8	1.6	18.0						0.0	0.9		0.9	
26	2026	14.6		1.8	1.6	18.0						0.0	0.9		0.9	
27	2027	14.6		1.8	1.6	18.0						0.0	0.9		0.9	
28	2028	14.6		1.9	1.6	18.1						0.0	0.9		0.9	
29	2029	14.6		1.9	1.7	18.2						0.0	0.9		0.9	
30	2030	14.6		2.0	1.7	18.3						0.0	0.9		0.9	
31	2031	14.6		2.0	1.7	18.3						0.0	0.9		0.9	
32	2032	14.6		2.0	1.7	18.3						0.0	0.9		0.9	
33	2033	14.6		2.1	1.7	18.4						0.0	0.9		0.9	
34	2034	14.6		2.1	1.7	18.4						0.0	0.9		0.9	
35	2035	14.6		2.1	1.7	18.4						0.0	0.9		0.9	
36	2036	14.6		2.2	1.7	18.5						0.0	0.9		0.9	
37	2037	14.6		2.2	1.7	18.5						0.0	0.9		0.9	
38	2038	14.6		2.2	1.7	18.5						0.0	0.9		0.9	
39	2039	14.6		2.3	1.7	18.6						0.0	0.9		0.9	
40	2040	14.6		2.3	1.7	18.6						0.0	0.9		0.9	
41	2041	14.6		2.3	1.7	18.6						0.0	0.9		0.9	

EIRR= 7.4%

B/C = 1.35 (at discount rate: 5%)

NPV= 72.5 (at discount rate: 5%)

NPV= 37.6 (at discount rate: 6%)

NPV= -13.0 (at discount rate: 8%)

NPV= -46.7 (at discount rate: 10%)

Table VIII1.5.6: Cost-Benefit Analysis for Selection of Priority Projects (9/11)

Zone III No.8 Boulaouane

Unit: million

Year in order	Year	Benefit					Cost									N
		Agriculture	Water supply	Flood & erosion control	Other	Total Benefit	Investment						O/M	Replace-ment	Total Cost	
							Dam	Irrigation	Water supply	Engr. services	Physical conti.	Sub-total				
0	2000	0.0			0.0	0.0	56.9	11.4		7.2	7.6	83.1	0.0		83.1	
1	2001	0.0			0.0	0.0	56.8	11.3		7.1	7.5	82.7	0.0		82.7	
2	2002	5.2		3.5	0.9	9.6						0.0	0.8		0.8	
3	2003	7.0		3.5	1.0	11.5						0.0	0.8		0.8	
4	2004	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
5	2005	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
6	2006	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
7	2007	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
8	2008	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
9	2009	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
10	2010	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
11	2011	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
12	2012	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
13	2013	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
14	2014	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
15	2015	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
16	2016	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
17	2017	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
18	2018	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
19	2019	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
20	2020	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
21	2021	8.7		3.5	1.2	13.4						0.0	0.8	8.8	9.5	
22	2022	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
23	2023	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
24	2024	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
25	2025	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
26	2026	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
27	2027	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
28	2028	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
29	2029	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
30	2030	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
31	2031	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
32	2032	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
33	2033	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
34	2034	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
35	2035	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
36	2036	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
37	2037	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
38	2038	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
39	2039	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
40	2040	8.7		3.5	1.2	13.4						0.0	0.8		0.8	
41	2041	8.7		3.5	1.2	13.4						0.0	0.8		0.8	

EIRR=	6.5%		
B/C =	1.21	(at discount rate:	5%)
NPV=	36.6	(at discount rate:	5%)
NPV=	10.8	(at discount rate:	6%)
NPV=	-26.6	(at discount rate:	8%)
NPV=	-51.6	(at discount rate:	10%)

Table VIII1.5.6: Cost-Benefit Analysis for Selection of Priority Projects (10/11)

Zone III No.9 Taskourt

Unit: million

Year in order	Year	Benefit					Cost									N
		Agriculture	Water supply	Flood & erosion control	Other	Total Benefit	Investment						O/M	Replace-ment	Total Cost	
							Dam	Irrigation	Water supply	Engr. services	Physical conti.	Sub-total				
0	2000	0.0			0.0	0.0	182.7	57.8		25.3	26.6	292.4	0.0		292.4	
1	2001	0.0			0.0	0.0	182.7	57.8		25.3	26.6	292.4	0.0		292.4	
2	2002	26.8		4.7	3.2	34.7						0.0	2.6		2.6	
3	2003	35.7		4.7	4.0	44.4						0.0	2.6		2.6	
4	2004	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
5	2005	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
6	2006	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
7	2007	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
8	2008	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
9	2009	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
10	2010	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
11	2011	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
12	2012	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
13	2013	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
14	2014	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
15	2015	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
16	2016	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
17	2017	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
18	2018	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
19	2019	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
20	2020	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
21	2021	44.6		4.7	4.9	54.3						0.0	2.6	32.8	35.5	
22	2022	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
23	2023	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
24	2024	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
25	2025	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
26	2026	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
27	2027	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
28	2028	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
29	2029	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
30	2030	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
31	2031	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
32	2032	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
33	2033	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
34	2034	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
35	2035	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
36	2036	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
37	2037	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
38	2038	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
39	2039	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
40	2040	44.6		4.7	4.9	54.3						0.0	2.6		2.6	
41	2041	44.6		4.7	4.9	54.3						0.0	2.6		2.6	

EIRR=	7.6%		
B/C =	1.37	(at discount rate:	5%)
NPV=	234.7	(at discount rate:	5%)
NPV=	129.1	(at discount rate:	6%)
NPV=	-24.3	(at discount rate:	8%)
NPV=	-127.3	(at discount rate:	10%)

Table VIII1.5.6: Cost-Benefit Analysis for Selection of Priority Projects (11/11)

Zone V No.10 Timkit

Unit: million DH

Year in order	Year	Benefit					Cost									Net Cash Flow
		Agriculture	Water supply	Flood & erosion control	Other	Total Benefit	Investment						O/M	Replace-ment	Total Cost	
							Dam	Irrigation	Water supply	Engr. services	Physical conti.	Sub-total				
0	2000	0.0			0.0	0.0	72.9	12.3		9.0	9.4	103.6	0.0		103.6	-103.6
1	2001	0.0			0.0	0.0	72.8	12.3		8.9	9.4	103.4	0.0		103.4	-103.4
2	2002	7.8		0.8	0.9	9.5						0.0	0.9		0.9	8.6
3	2003	10.4		0.8	1.1	12.3						0.0	0.9		0.9	11.4
4	2004	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
5	2005	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
6	2006	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
7	2007	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
8	2008	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
9	2009	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
10	2010	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
11	2011	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
12	2012	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
13	2013	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
14	2014	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
15	2015	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
16	2016	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
17	2017	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
18	2018	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
19	2019	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
20	2020	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
21	2021	13.0		0.8	1.4	15.2						0.0	0.9	10.7	11.7	3.5
22	2022	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
23	2023	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
24	2024	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
25	2025	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
26	2026	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
27	2027	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
28	2028	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
29	2029	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
30	2030	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
31	2031	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
32	2032	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
33	2033	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
34	2034	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
35	2035	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
36	2036	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
37	2037	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
38	2038	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
39	2039	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
40	2040	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3
41	2041	13.0		0.8	1.4	15.2						0.0	0.9		0.9	14.3

EIRR= 5.7%

B/C = 1.09 (at discount rate: 5%)

NPV= 19.6 (at discount rate: 5%)

NPV= -9.3 (at discount rate: 6%)

NPV= -51.1 (at discount rate: 8%)

NPV= -79.1 (at discount rate: 10%)

Feasibility Study on Water Resources Development in
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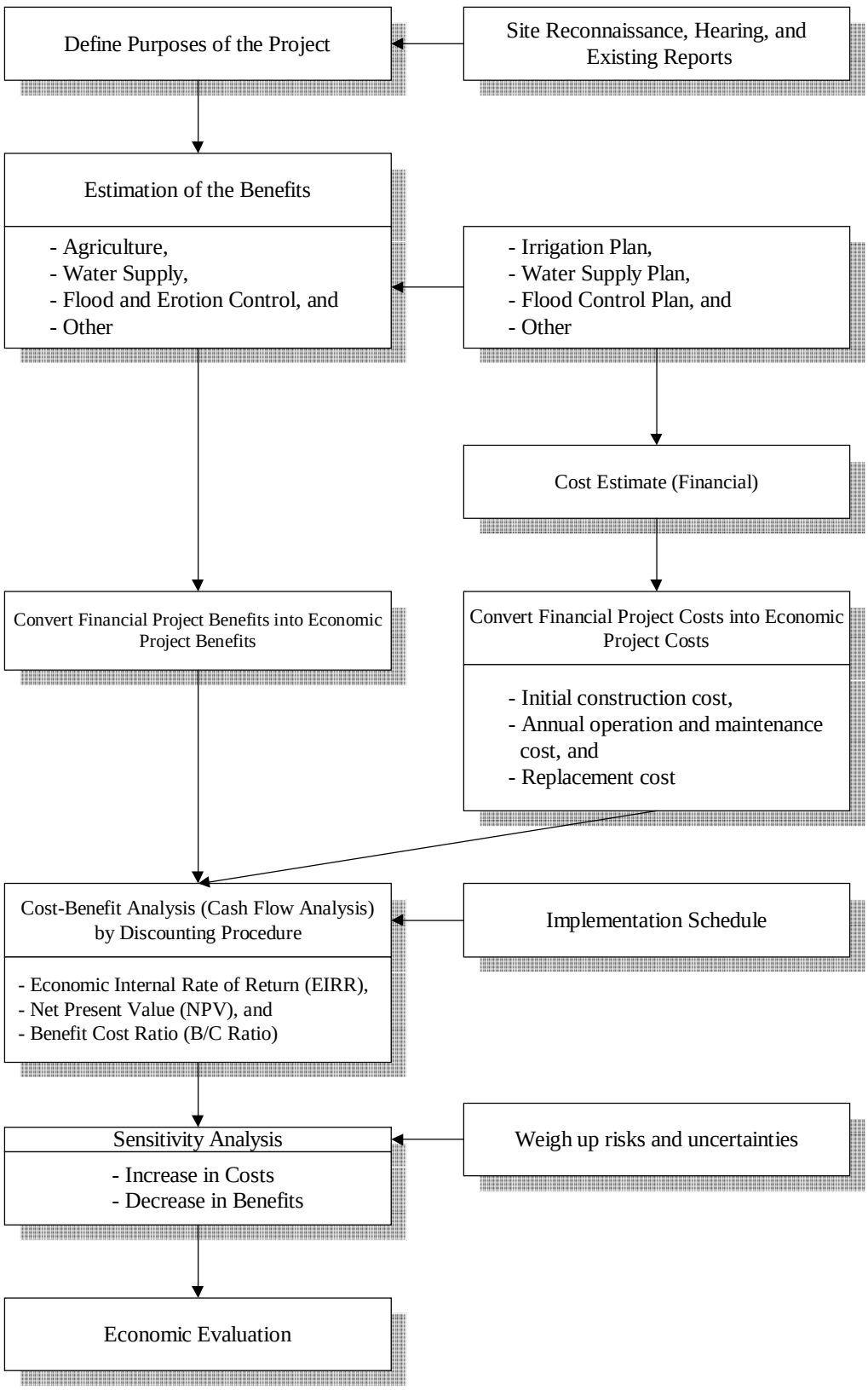
Figures



FEASIBILITY STUDY ON WATER RESOURCES DEVELOPMENT IN RURAL AREA	**Figure VIII1.5.1** **Flow Chart of Economic Evaluation**
JAPAN INTERNATIONAL COOPERATION AGENCY	