APPENDIX-5
Electrical Aspect Inventory

Inventory concerned on **Photovoltaic Aspects**

Scheme No. P-01 Scheme Name Tizi Oussem

Administrative Division

Douar	10	Tizi Oussem			
C.R.	11	Oulrgane	Cercle	1	Asni

Location

Latitude	N 31	7'	18"	Longitude	W 7	58'	33"	Altitude	1,800 (m)

Households and Population

	Yr 1996	Yr 2000
Households	72	75
Population	444	461

Size of Residential Area

Fragments	1	
E-W	200	(m)
N-S	150	(m)

Access

Pist	13.0	(km)
Path	3.5	(km)
Total	16.5	(km)

Capacity of Photovoltaic

Power demand	20.96	(kWh/day)	Installed capacity	10,225	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	19	160	
Total Capacity		10,225	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	99	
Total Capacity	9,900	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	99	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	99	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	68,099	(US $)	Variable cost(O M cost)	83,346	(US $)
Delivery of PV module	13,599	(US $)			
Battery	8,980	(US $)	Total Cost	243,719	(US $)
Controller equipment	8,910	(US $)			
Installation cost	25,740	(US $)	Economic/Financial evaluation		
Tax	8,726	(US $)	EIRR	---	(%)
Superviser fee	12,533	(US $)	B / C*	0.50	
Contingency	13,786	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	160,373	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-02	Scheme Name	Id Aissa

Administrative Division

Douar	20	Id Aissa			
C.R.	11	Ourgane	Cercle	1	Asni

Location

Latitude	N 31	8'	43"	Longitude	W 7	58'	47"	Altitude	1,740 (m)

Households and Population

	Yr 1996	Yr 2000
Households	44	46
Population	180	187

Size of Residential Area

Fragments	1	
E-W	250	(m)
N-S	200	(m)

Access

Pist	13.0	(km)
Path	1.5	(km)
Total	14.5	(km)

Capacity of Photovoltaic

Power demand	12.96	(kWh/day)	Installed capacity	6,515	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	15	98	
Total Capacity		6,515	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	64	
Total Capacity	6,400	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	64	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	64	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	43,390	(US $)	Variable cost(O M cost)	52,560	(US $)
Delivery of PV module	8,665	(US $)			
Battery	5,700	(US $)	Total Cost	155,167	(US $)
Controller equipment	5,760	(US $)			
Installation cost	16,640	(US $)	Economic/Financial evaluation		
Tax	5,620	(US $)	EIRR	---	(%)
Superviser fee	8,015	(US $)	B / C*	0.61	
Contingency	8,817	(US $)	Monthly payment per H.H.*	4.3	(US $)
Fixed cost	102,607	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. *P-03* Scheme Name *Tassa Ouirgane*

Administrative Division

Douar	*30*	*Tassa Ouirgane*			
C.R.	*11*	*Ouirgane*	Cercle	*1*	*Asni*

Location

Latitude	*N 31*	*10'*	*66"*	Longitude	*W 8*	*1'*	*50"*	Altitude *1,190* (m)

Households and Population

	Yr 1996	Yr 2000
Households	*55*	*57*
Population	*375*	*389*

Size of Residential Area

Fragments	*1*	
E-W	*800*	(m)
N-S	*500*	(m)

Access

Pist	*6.0*	(km)
Path	*0.0*	(km)
Total	*6.0*	(km)

Capacity of Photovoltaic

Power demand	*15.75*	(kWh/day)	Installed capacity	*7,650*	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	*75*	*55*	(Wp)
Voltage	*12*	*12*	(V)
Numbers of Panel	*14*	*120*	
Total Capacity		*7,650*	(Wp)

>Battery

Type	Portable lead clad	
Capacity	*100*	(Ah)
Voltage	*12*	(V)
Numbers of Battery	*74*	
Total Capacity	*7,400*	(Ah)

>Controller

Type	Battery charge	
Capacity	*500*	(W)
Numbers of Controller	*74*	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	*74*	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	*50,949*	(US $)	Variable cost(O M cost)	*62,952*	(US $)
Delivery of PV module	*10,175*	(US $)			
Battery	*6,760*	(US $)	Total Cost	*182,962*	(US $)
Controller equipment	*6,660*	(US $)			
Installation cost	*19,240*	(US $)	Economic/Financial evaluation		
Tax	*6,532*	(US $)	EIRR	---	(%)
Superviser fee	*9,378*	(US $)	B / C*	*0.57*	
Contingency	*10,316*	(US $)	Monthly payment per H.H.*	*4.1*	(US $)
Fixed cost	*120,010*	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-04	Scheme Name	Igrem

Administrative Division

Douar	40	Igrem			
C.R.	12	Imgdal	Cercle	1	Asni

Location

Latitude	N 31	4'	37"	Longitude	W 8	2'	50"	Altitude	1,750 (m)

Households and Population

	Yr 1996	Yr 2000
Households	27	28
Population	130	135

Size of Residential Area

Fragments	1	
E-W	500	(m)
N-S	150	(m)

Access

Pist	15.0	(km)
Path	0.5	(km)
Total	15.5	(km)

Capacity of Photovoltaic

Power demand	8.01	(kWh/day)	Installed capacity	4,010	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	6	62	
Total Capacity		4,010	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	39	
Total Capacity	3,900	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	39	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	39	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	26,707	(US $)	Variable cost(O M cost)	32,118	(US $)
Delivery of PV module	5,333	(US $)			
Battery	3,480	(US $)	Total Cost	95,040	(US $)
Controller equipment	3,510	(US $)			
Installation cost	10,140	(US $)	Economic/Financial evaluation		
Tax	3,426	(US $)	EIRR	---	(%)
Superviser fee	4,917	(US $)	B / C*	0.81	
Contingency	5,409	(US $)	Monthly payment per H.H.*	4.3	(US $)
Fixed cost	62,922	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. P-05 Scheme Name Aghella

Administrative Division

Douar	60	Aghella			
C.R.	15	Ighil	Cercle	1	Asni

Location

Latitude	N 31	0'	15"	Longitude	W 8	22'	51"	Altitude	2,050 (m)

Households and Population

	Yr 1996	Yr 2000
Households	64	66
Population	394	409

Size of Residential Area

Fragments	1	
E-W	600	(m)
N-S	250	(m)

Access

Pist	10.0	(km)
Path	15.5	(km)
Total	25.5	(km)

Capacity of Photovoltaic

Power demand	18.13	(kWh/day)	Installed capacity	8,715	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	15	133	
Total Capacity		8,715	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	84	
Total Capacity	8,400	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	84	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	84	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	58,042	(US $)	Variable cost(O M cost)	72,168	(US $)
Delivery of PV module	11,591	(US $)			
Battery	7,720	(US $)	Total Cost	208,763	(US $)
Controller equipment	7,560	(US $)			
Installation cost	21,840	(US $)	Economic/Financial evaluation		
Tax	7,424	(US $)	EIRR	---	(%)
Superviser fee	10,675	(US $)	B / C*	0.55	
Contingency	11,743	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	136,595	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-06	Scheme Name	Ikiss

Administrative Division

Douar	90	Ikiss			
C.R.	16	Aghbar	Cercle	1	Asni

Location

Latitude	N 30	55'	55"	Longitude	W 8	23'	54"	Altitude	1,700 (m)

Households and Population

	Yr 1996	Yr 2000
Households	68	71
Population	389	403

Size of Residential Area

Fragments	1	
E-W	1,000	(m)
N-S	900	(m)

Access

Pist	16.5	(km)
Path	4.0	(km)
Total	20.5	(km)

Capacity of Photovoltaic

Power demand	19.13	(kWh/day)	Installed capacity	9,155	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	15	145	
Total Capacity		9,155	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	88	
Total Capacity	8,800	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	88	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	88	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	60,972	(US $)	Variable cost(O M cost)	76,176	(US $)
Delivery of PV module	12,176	(US $)			
Battery	8,140	(US $)	Total Cost	219,591	(US $)
Controller equipment	7,920	(US $)			
Installation cost	22,680	(US $)	Economic/Financial evaluation		
Tax	7,788	(US $)	EIRR	---	(%)
Superviser fee	11,209	(US $)	B / C*	0.54	
Contingency	12,330	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	143,415	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. *P-07* Scheme Name *Tinerhouhrine*

Administrative Division

Douar	*120*	*Tinerhouhrine*			
C.R.	*17*	*Asni*	Cercle	*1*	*Asni*

Location

Latitude	*N 31*	*9'*	*30"*	Longitude	*W 7*	*51'*	*15"*	Altitude *2,000* (m)

Households and Population

	Yr 1996	Yr 2000
Households	*30*	*31*
Population	*250*	*259*

Size of Residential Area

Fragments	*1*	
E-W	*150*	(m)
N-S	*150*	(m)

Access

Pist	*10.0*	(km)
Path	*3.5*	(km)
Total	*13.5*	(km)

Capacity of Photovoltaic

Power demand	*8.72*	(kWh/day)	Installed capacity	*4,380*	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	*75*	*55*	(Wp)
Voltage	*12*	*12*	(V)
Numbers of Panel	*10*	*66*	
Total Capacity		*4,380*	(Wp)

>Battery

Type	Portable lead clad	
Capacity	*100*	(Ah)
Voltage	*12*	(V)
Numbers of Battery	*43*	
Total Capacity	*4,300*	(Ah)

>Controller

Type	Battery charge	
Capacity	*500*	(W)
Numbers of Controller	*43*	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	*43*	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	*29,171*	(US $)	Variable cost(O M cost)	*35,370*	(US $)
Delivery of PV module	*5,825*	(US $)			
Battery	*3,820*	(US $)	Total Cost	*104,322*	(US $)
Controller equipment	*3,870*	(US $)			
Installation cost	*11,180*	(US $)	Economic/Financial evaluation		
Tax	*3,774*	(US $)	EIRR	---	(%)
Superviser fee	*5,387*	(US $)	B / C*	*0.77*	
Contingency	*5,925*	(US $)	Monthly payment per H.H.*	*4.3*	(US $)
Fixed cost	*68,952*	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-08	Scheme Name	Tacheddirt

Administrative Division

Douar	170	Tacheddirt			
C.R.	17	Asni	Cercle	1	Asni

Location

Latitude	N 31	9'	30"	Longitude	W 7	50'	48"	Altitude	2,180 (m)

Households and Population

	Yr 1996	Yr 2000
Households	60	62
Population	360	373

Size of Residential Area

Fragments	1	
E-W	250	(m)
N-S	250	(m)

Access

Pist	10.0	(km)
Path	2.0	(km)
Total	12.0	(km)

Capacity of Photovoltaic

Power demand	17.50	(kWh/day)	Installed capacity	8,760	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	20	132	
Total Capacity		8,760	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	86	
Total Capacity	8,600	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	86	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	86	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	58,342	(US $)	Variable cost(O M cost)	70,728	(US $)
Delivery of PV module	11,651	(US $)			
Battery	7,640	(US $)	Total Cost	208,633	(US $)
Controller equipment	7,740	(US $)			
Installation cost	22,360	(US $)	Economic/Financial evaluation		
Tax	7,548	(US $)	EIRR	---	(%)
Superviser fee	10,773	(US $)	B / C*	0.53	
Contingency	11,851	(US $)	Monthly payment per H.H.*	4.2	(US $)
Fixed cost	137,905	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. P-09 Scheme Name Sqour

Administrative Division

Douar	180	Sqour			
C.R.	21	Ourika	Cercle	2	Tahanaout

Location

Latitude	N 31	20'	39"	Longitude	W 7	43'	32"	Altitude 1,200 (m)

Households and Population

	Yr 1996	Yr 2000
Households	45	47
Population	360	373

Size of Residential Area

Fragments	1	
E-W	120	(m)
N-S	300	(m)

Access

Pist	0.0	(km)
Path	5.0	(km)
Total	5.0	(km)

Capacity of Photovoltaic

Power demand	12.85	(kWh/day)	Installed capacity	4,280	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	49	11	
Total Capacity		4,280	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	60	
Total Capacity	6,000	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	60	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	60	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	28,505	(US $)	Variable cost(O M cost)	51,156	(US $)
Delivery of PV module	5,692	(US $)			
Battery	5,480	(US $)	Total Cost	129,871	(US $)
Controller equipment	5,400	(US $)			
Installation cost	15,600	(US $)	Economic/Financial evaluation		
Tax	5,296	(US $)	EIRR	---	(%)
Superviser fee	6,068	(US $)	B / C*	0.76	
Contingency	6,674	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	78,715	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-10	Scheme Name	Amagdour

Administrative Division

Douar	190	Amagdour			
C.R.	21	Ourika	Cercle	2	Tahanaout

Location

Latitude	N 31	20'	58"	Longitude	W 7	43'	9"	Altitude	1,150 (m)

Households and Population

	Yr 1996	Yr 2000
Households	22	23
Population	150	156

Size of Residential Area

Fragments	1	
E-W	900	(m)
N-S	900	(m)

Access

Pist	0.0	(km)
Path	6.0	(km)
Total	6.0	(km)

Capacity of Photovoltaic

Power demand	6.23	(kWh/day)	Installed capacity	2,075	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	24	5	
Total Capacity		2,075	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	29	
Total Capacity	2,900	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	29	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	29	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	13,820	(US $)	Variable cost(O M cost)	24,978	(US $)
Delivery of PV module	2,760	(US $)			
Battery	2,680	(US $)	Total Cost	63,130	(US $)
Controller equipment	2,610	(US $)			
Installation cost	7,540	(US $)	Economic/Financial evaluation		
Tax	2,566	(US $)	EIRR	15	(%)
Superviser fee	2,941	(US $)	B / C*	1.13	
Contingency	3,235	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	38,152	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-11	Scheme Name	Tamaterte

Administrative Division

Douar	200	Tamaterte			
C.R.	22	Settifadma	Cercle	2	Tahanaout

Location

Latitude	N 31	12'	5"	Longitude	W 7	42'	43"	Altitude	1,600 (m)

Households and Population

	Yr 1996	Yr 2000
Households	40	41
Population	240	249

Size of Residential Area

Fragments	1	
E-W	200	(m)
N-S	150	(m)

Access

Pist	0.0	(km)
Path	2.5	(km)
Total	2.5	(km)

Capacity of Photovoltaic

Power demand	11.91	(kWh/day)	Installed capacity	6,000	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	14	90	
Total Capacity		6,000	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	59	
Total Capacity	5,900	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	59	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	59	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	39,960	(US $)	Variable cost(O M cost)	49,146	(US $)
Delivery of PV module	7,980	(US $)			
Battery	5,400	(US $)	Total Cost	143,884	(US $)
Controller equipment	5,310	(US $)			
Installation cost	15,340	(US $)	Economic/Financial evaluation		
Tax	5,210	(US $)	EIRR	---	(%)
Superviser fee	7,399	(US $)	B / C*	0.63	
Contingency	8,139	(US $)	Monthly payment per H.H.*	4.4	(US $)
Fixed cost	94,738	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-12	Scheme Name	Awin Mazouz

Administrative Division

Douar	261	Awin Mazouz			
C.R.	24	Tamesloht	Cercle	2	Tahanaout

Location

Latitude	N 31	32'	0"	Longitude	W 8	7'	52"	Altitude	500 (m)

Households and Population

	Yr 1936	Yr 2000
Households	67	69
Population	420	436

Size of Residential Area

Fragments	3	
E-W	300	(m)
N-S	600	(m)

Access

Pist	0.3	(km)
Path	0.0	(km)
Total	0.3	(km)

Capacity of Photovoltaic

Power demand	18.97	(kWh/day)	Installed capacity	6,335	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	72	17	
Total Capacity		6,335	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	89	
Total Capacity	8,900	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	89	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	89	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	42,191	(US $)	Variable cost(O M cost)	76,110	(US $)
Delivery of PV module	8,426	(US $)			
Battery	8,160	(US $)	Total Cost	192,784	(US $)
Controller equipment	8,010	(US $)			
Installation cost	23,140	(US $)	Economic/Financial evaluation		
Tax	7,862	(US $)	EIRR	---	(%)
Superviser fee	8,993	(US $)	B / C*	0.63	
Contingency	9,692	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	116,674	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. *P-13* Scheme Name *Bouchiha Bon Omar*

Administrative Division

Douar	*262*	*Bouchiha Bon Omar*			
C.R.	*24*	*Tamesloht*	Cercle	*2*	*Tahanaout*

Location

Latitude	*N 31*	*32'*	*44"*	Longitude	*W 8*	*6'*	*28"*	Altitude	*500* (m)

Households and Population

	Yr 1996	Yr 2000
Households	*66*	*68*
Population	*400*	*415*

Size of Residential Area

Fragments	*1*	
E-W	*500*	(m)
N-S	*350*	(m)

Access

Pist	*1.0*	(km)
Path	*0.0*	(km)
Total	*1.0*	(km)

Capacity of Photovoltaic

Power demand	*18.76*	(kWh/day)	Installed capacity	*6,315*	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	*75*	*55*	(Wp)
Voltage	*12*	*12*	(V)
Numbers of Panel	*71*	*18*	
Total Capacity		*6,315*	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	*89*	
Total Capacity	*8,900*	(Ah)

>Controller

Type	Battery charge	
Capacity	*500*	(W)
Numbers of Controller	*89*	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	*89*	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	*42,058*	(US $)	Variable cost(O M cost)	*75,258*	(US $)
Delivery of PV module	*8,399*	(US $)			
Battery	*8,060*	(US $)	Total Cost	*191,597*	(US $)
Controller equipment	*8,010*	(US $)			
Installation cost	*23,140*	(US $)	Economic/Financial evaluation		
Tax	*7,842*	(US $)	EIRR	---	(%)
Superviser fee	*8,967*	(US $)	B / C*	*0.63*	
Contingency	*9,863*	(US $)	Monthly payment per H.H.*	*4.1*	(US $)
Fixed cost	*116,339*	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-14	Scheme Name	Bel Abbas

Administrative Division

Douar	300	Bel Abbas			
C.R.	25	Tahanaout	Cercle	2	Tahanaout

Location

Latitude	N 31	27'	21"	Longitude	W 7	55'	9"	Altitude	660 (m)

Households and Population

	Yr 1996	Yr 2000
Households	140	145
Population	900	933

Size of Residential Area

Fragments	3	
E-W	1,000	(m)
N-S	1,000	(m)

Access

Pist	5.5	(km)
Path	0.0	(km)
Total	5.5	(km)

Capacity of Photovoltaic

Power demand	39.72	(kWh/day)	Installed capacity	13,195	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	151	34	
Total Capacity		13,195	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	185	
Total Capacity	18,500	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	185	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	185	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	87,879	(US $)	Variable cost(O M cost)	158,442	(US $)
Delivery of PV module	17,549	(US $)			
Battery	16,960	(US $)	Total Cost	401,221	(US $)
Controller equipment	16,650	(US $)			
Installation cost	48,100	(US $)	Economic/Financial evaluation		
Tax	16,342	(US $)	EIRR	---	(%)
Superviser fee	18,714	(US $)	B / C*	0.63	
Contingency	20,585	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	242,779	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-15	Scheme Name	Derb Chem's

Administrative Division

Douar	320	Derb Chem's			
C.R.	25	Tahanaout	Cercle	2	Tahanaout

Location

Latitude	N 31	21'	48"	Longitude	W 7	57'	41"	Altitude	900 (m)

Households and Population

	Yr 1996	Yr 2000
Households	60	62
Population	369	383

Size of Residential Area

Fragments	1	
E-W	300	(m)
N-S	400	(m)

Access

Pist	0.0	(km)
Path	0.0	(km)
Total	0.0	(km)

Capacity of Photovoltaic

Power demand	17.07	(kWh/day)	Installed capacity	5,700	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	65	15	
Total Capacity		5,700	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	80	
Total Capacity	8,000	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	80	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	80	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	37,962	(US $)	Variable cost(O M cost)	68,268	(US $)
Delivery of PV module	7,581	(US $)			
Battery	7,320	(US $)	Total Cost	173,176	(US $)
Controller equipment	7,200	(US $)			
Installation cost	20,800	(US $)	Economic/Financial evaluation		
Tax	7,064	(US $)	EIRR	---	(%)
Superviser fee	8,086	(US $)	B / C*	0.48	
Contingency	8,895	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	104,908	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-16	Scheme Name	Ait Ouzkri

Administrative Division

Douar	430	Ait Ouzkri			
C.R.	31	Anougal	Cercle	3	Amizmiz

Location

Latitude	N 31	11'	14"	Longitude	W 8	14'	56"	Altitude	1,100 (m)

Households and Population

	Yr 1996	Yr 2000
Households	40	41
Population	250	259

Size of Residential Area

Fragments	1	
E-W	250	(m)
N-S	150	(m)

Access

Pist	3.0	(km)
Path	0.0	(km)
Total	3.0	(km)

Capacity of Photovoltaic

Power demand	11.43	(kWh/day)	Installed capacity	3,740	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	44	8	
Total Capacity		3,740	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	52	
Total Capacity	5,200	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	52	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	52	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	24,908	(US $)	Variable cost(O M cost)	45,156	(US $)
Delivery of PV module	4,974	(US $)			
Battery	4,840	(US $)	Total Cost	113,799	(US $)
Controller equipment	4,680	(US $)			
Installation cost	13,520	(US $)	Economic/Financial evaluation		
Tax	4,608	(US $)	EIRR	---	(%)
Superviser fee	5,292	(US $)	B / C*	0.82	
Contingency	5,621	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	68,643	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-17	Scheme Name	Ait Hmad

Administrative Division

Douar	440	Ait Hmad			
C.R.	31	Anougal	Cercle	3	Amizmiz

Location

Latitude	N 31	10'	25"	Longitude	W 8	14'	45"	Altitude	1,400 (m)

Households and Population

	Yr 1936	Yr 2000
Households	50	52
Population	300	311

Size of Residential Area

Fragments	1	
E-W	500	(m)
N-S	300	(m)

Access

Pist	5.5	(km)
Path	0.0	(km)
Total	5.5	(km)

Capacity of Photovoltaic

Power demand	14.12	(kWh/day)	Installed capacity	4,655	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	54	11	
Total Capacity		4,655	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	65	
Total Capacity	6,500	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	65	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	65	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	31,002	(US $)	Variable cost(O M cost)	56,154	(US $)
Delivery of PV module	6,191	(US $)			
Battery	6,000	(US $)	Total Cost	141,695	(US $)
Controller equipment	5,850	(US $)			
Installation cost	16,900	(US $)	Economic/Financial evaluation		
Tax	5,750	(US $)	EIRR	---	(%)
Superviser fee	6,594	(US $)	B / C*	0.73	
Contingency	7,254	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	85,541	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-18	Scheme Name	Tizgui

Administrative Division

Douar	450	Tizgui			
C.R.	31	Anougal	Cercle	3	Amizmiz

Location

Latitude	N 31	10'	47"	Longitude	W 8	15'	11"	Altitude	1,180 (m)

Households and Population

	Yr 1996	Yr 2000
Households	60	62
Population	259	259

Size of Residential Area

Fragments	1	
E-W	800	(m)
N-S	1,000	(m)

Access

Pist	4.5	(km)
Path	0.0	(km)
Total	4.5	(km)

Capacity of Photovoltaic

Power demand	17.02	(kWh/day)	Installed capacity	5,645	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	65	14	
Total Capacity		5,645	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	79	
Total Capacity	7,900	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	79	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	79	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	37,596	(US $)	Variable cost(O M cost)	67,938	(US $)
Delivery of PV module	7,508	(US $)			
Battery	7,280	(US $)	Total Cost	171,765	(US $)
Controller equipment	7,110	(US $)			
Installation cost	20,540	(US $)	Economic/Financial evaluation		
Tax	6,986	(US $)	EIRR	---	(%)
Superviser fee	8,003	(US $)	B / C*	0.66	
Contingency	8,804	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	103,827	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. *P-19* Scheme Name *Anermi*

Administrative Division

Douar	*490*	*Anermi*			
C.R.	*32*	*Azgour*	Cercle	*3*	*Amizmiz*

Location

Latitude	*N 31*	*7'*	*15"*	Longitude	*W 8*	*19'*	*5"*	Altitude	*1,700* (m)

Households and Population

	Yr 1996	Yr 2000
Households	*90*	*93*
Population	*540*	*560*

Size of Residential Area

Fragments	*1*	
E-W	*500*	(m)
N-S	*500*	(m)

Access

Pist	*0.0*	(km)
Path	*2.5*	(km)
Total	*2.5*	(km)

Capacity of Photovoltaic

Power demand	*25.63*	(kWh/day)	Installed capacity	*12,430*	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	*75*	*55*	(Wp)
Voltage	*12*	*12*	(V)
Numbers of Panel	*22*	*196*	
Total Capacity		*12,640*	(Wp)

>Battery

Type	Portable lead clad	
Capacity	*100*	(Ah)
Voltage	*12*	(V)
Numbers of Battery	*120*	
Total Capacity	*12,000*	(Ah)

>Controller

Type	Battery charge	
Capacity	*500*	(W)
Numbers of Controller	*120*	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	*120*	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	*85,514*	(US $)	Variable cost(O M cost)	*102,432*	(US $)
Delivery of PV module	*17,077*	(US $)			
Battery	*10,980*	(US $)	Total Cost	*301,269*	(US $)
Controller equipment	*10,800*	(US $)			
Installation cost	*31,200*	(US $)	Economic/Financial evaluation		
Tax	*10,596*	(US $)	EIRR	---	(%)
Superviser fee	*15,557*	(US $)	B / C*	*0.46*	
Contingency	*17,113*	(US $)	Monthly payment per H.H.*	*4.1*	(US $)
Fixed cost	*198,837*	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-20	Scheme Name	Talat Alt Ihla

Administrative Division

Douar	510	Talat Ait Ihla			
C.R.	32	Azgour	Cercle	3	Amizmiz

Location

Latitude	N 31	6'	0"	Longitude	W 8	20'	59"	Altitude	1,760 (m)

Households and Population

	Yr 1996	Yr 2000
Households	70	73
Population	210	218

Size of Residential Area

Fragments	1	
E-W	500	(m)
N-S	450	(m)

Access

Pist	0.0	(km)
Path	0.0	(km)
Total	0.0	(km)

Capacity of Photovoltaic

Power demand	19.48	(kWh/day)	Installed capacity	9,340	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	16	148	
Total Capacity		9,340	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	90	
Total Capacity	9,000	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	90	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	90	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	62,204	(US $)	Variable cost(O M cost)	78,050	(US $)
Delivery of PV module	12,422	(US $)			
Battery	8,320	(US $)	Total Cost	224,504	(US $)
Controller equipment	8,100	(US $)			
Installation cost	23,400	(US $)	Economic/Financial evaluation		
Tax	7,954	(US $)	EIRR	---	(%)
Superviser fee	11,445	(US $)	B / C*	0.53	
Contingency	12,589	(US $)	Monthly payment per H.H.*	4.0	(US $)
Fixed cost	146,444	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-21	Scheme Name	Adghouss

Administrative Division

Douar	530	Adghouss			
C.R.	32	Azgour	Cercle	3	Amizmiz

Location

Latitude	N 31	11'	12"	Longitude	W 8	19'	18"	Altitude	1,770 (m)

Households and Population

	Yr 1996	Yr 2000
Households	50	52
Population	200	207

Size of Residential Area

Fragments	1	
E-W	150	(m)
N-S	150	(m)

Access

Pist	2.0	(km)
Path	3.5	(km)
Total	5.5	(km)

Capacity of Photovoltaic

Power demand	14.30	(kWh/day)	Installed capacity	6,875	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	11	110	
Total Capacity		6,875	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	66	
Total Capacity	6,600	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	66	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	66	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	45,788	(US $)	Variable cost(O M cost)	56,724	(US $)
Delivery of PV module	9,144	(US $)			
Battery	6,080	(US $)	Total Cost	164,335	(US $)
Controller equipment	5,940	(US $)			
Installation cost	17,160	(US $)	Economic/Financial evaluation		
Tax	5,836	(US $)	EIRR	---	(%)
Superviser fee	8,411	(US $)	B / C*	0.61	
Contingency	9,252	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	107,611	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-22	Scheme Name	Tagadirt

Administrative Division

Douar	560	Tagadirt			
C.R.	32	Azgour	Cercle	3	Amizmiz

Location

Latitude	N 31	11'	9"	Longitude	W 8	23'	54"	Altitude	1,610 (m)

Households and Population

	Yr 1996	Yr 2000
Households	50	52
Population	140	145

Size of Residential Area

Fragments	1	
E-W	150	(m)
N-S	150	(m)

Access

Pist	2.5	(km)
Path	4.5	(km)
Total	7.0	(km)

Capacity of Photovoltaic

Power demand	13.89	(kWh/day)	Installed capacity	6,580	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	10	106	
Total Capacity		6,580	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	63	
Total Capacity	6,300	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	63	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	63	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	43,823	(US $)	Variable cost(O M cost)	55,254	(US $)
Delivery of PV module	8,751	(US $)			
Battery	5,880	(US $)	Total Cost	158,249	(US $)
Controller equipment	5,670	(US $)			
Installation cost	16,380	(US $)	Economic/Financial evaluation		
Tax	5,586	(US $)	EIRR	---	(%)
Superviser fee	8,050	(US $)	B / C*	0.63	
Contingency	8,855	(US $)	Monthly payment per H.H.*	4.0	(US $)
Fixed cost	102,995	(US $)			

* Initial Investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-23	Scheme Name	Tifirt

Administrative Division

Douar	570	Tifirt			
C.R.	32	Azgour	Cercle	3	Amizmiz

Location

Latitude	N 31	10'	43"	Longitude	W 8	24'	28"	Altitude	1,580 (m)

Households and Population

	Yr 1996	Yr 2000
Households	90	93
Population	150	156

Size of Residential Area

Fragments	1	
E-W	600	(m)
N-S	400	(m)

Access

Pist	2.5	(km)
Path	3.5	(km)
Total	6.0	(km)

Capacity of Photovoltaic

Power demand	25.44	(kWh/day)	Installed capacity	12,245	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	21	194	
Total Capacity		12,245	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	118	
Total Capacity	11,800	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	118	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	118	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	81,552	(US $)	Variable cost(O M cost)	101,532	(US $)
Delivery of PV module	16,286	(US $)			
Battery	10,860	(US $)	Total Cost	293,462	(US $)
Controller equipment	10,620	(US $)			
Installation cost	30,680	(US $)	Economic/Financial evaluation		
Tax	10,432	(US $)	EIRR	---	(%)
Superviser fee	15,000	(US $)	B / C*	0.47	
Contingency	16,600	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	191,930	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-24	Scheme Name	Anfrioune

Administrative Division

Douar	580	Anfrioune			
C.R.	32	Azgour	Cercle	3	Amizmiz

Location

Latitude	N 31	11'	25"	Longitude	W 8	22'	17"	Altitude	1,720 (m)

Households and Population

	Yr 1996	Yr 2000
Households	60	62
Population	120	124

Size of Residential Area

Fragments	1	
E-W	300	(m)
N-S	450	(m)

Access

Pist	2.5	(km)
Path	7.0	(km)
Total	9.5	(km)

Capacity of Photovoltaic

Power demand	17.02	(kWh/day)	Installed capacity	8,200	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	14	130	
Total Capacity		8,200	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	79	
Total Capacity	7,900	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	79	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	79	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	54,612	(US $)	Variable cost(O M cost)	67,938	(US $)
Delivery of PV module	10,906	(US $)			
Battery	7,280	(US $)	Total Cost	196,466	(US $)
Controller equipment	7,110	(US $)			
Installation cost	20,540	(US $)	Economic/Financial evaluation		
Tax	6,986	(US $)	EIRR	---	(%)
Superviser fee	10,045	(US $)	B / C*	0.56	
Contingency	11,049	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	128,528	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-25	Scheme Name	Tifratine

Administrative Division

Douar	600	Tifratine			
C.R.	33	Dar Jamaa	Cercle	3	Amizmiz

Location

Latitude	N 31	17'	14"	Longitude	W 8	20'	46"	Altitude	810 (m)

Households and Population

	Yr 1996	Yr 2000
Households	80	83
Population	600	622

Size of Residential Area

Fragments	1	
E-W	3,000	(m)
N-S	2,000	(m)

Access

Pist	3.6	(km)
Path	0.0	(km)
Total	3.6	(km)

Capacity of Photovoltaic

Power demand	22.67	(kWh/day)	Installed capacity	7,550	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	66	20	
Total Capacity		7,550	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	106	
Total Capacity	10,600	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	106	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	106	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	72,994	(US $)	Variable cost(O M cost)	90,624	(US $)
Delivery of PV module	14,677	(US $)			
Battery	9,700	(US $)	Total Cost	262,573	(US $)
Controller equipment	9,540	(US $)			
Installation cost	27,560	(US $)	Economic/Financial evaluation		
Tax	9,360	(US $)	EIRR	---	(%)
Superviser fee	13,437	(US $)	B / C*	0.49	
Contingency	14,781	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	171,949	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. *P-26* Scheme Name *Aguenze*

Administrative Division

Douar	*610*	*Aguenze*			
C.R.	*33*	*Dar Jamaa*	Cercle	*3*	*Amizmiz*

Location

Latitude	*N 31*	*17'*	*14"*	Longitude	*W 8*	*22'*	*3"*	Altitude *820* (m)

Households and Population

	Yr 1996	Yr 2000
Households	*20*	*21*
Population	*200*	*207*

Size of Residential Area

Fragments	*1*	
E-W	*300*	(m)
N-S	*250*	(m)

Access

Pist	*3.7*	(km)
Path	*0.0*	(km)
Total	*3.7*	(km)

Capacity of Photovoltaic

Power demand	*5.88*	(kWh/day)	Installed capacity	*1,945*	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	*23*	*4*	
Total Capacity		*1,945*	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	*27*	
Total Capacity	*2,700*	(Ah)

>Controller

Type	Battery charge	
Capacity	*500*	(W)
Numbers of Controller	*27*	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	*27*	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	*12,954*	(US $)	Variable cost(O M cost)	*23,142*	(US $)
Delivery of PV module	*2,587*	(US $)			
Battery	*2,500*	(US $)	Total Cost	*57,796*	(US $)
Controller equipment	*2,430*	(US $)			
Installation cost	*7,020*	(US $)	Economic/Financial evaluation		
Tax	*2,390*	(US $)	EIRR	*20*	(%)
Superviser fee	*1,749*	(US $)	B / C*	*1.19*	
Contingency	*3,024*	(US $)	Monthly payment per H.H.*	*4.2*	(US $)
Fixed cost	*34,654*	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-27	Scheme Name	Ifit Baragha

Administrative Division

Douar	620	Ifit Baragha			
C.R.	33	Dar Jamaa	Cercle	3	Amizmiz

Location

Latitude	N 31	15'	57"	Longitude	W 8	20'	57"	Altitude	850 (m)

Households and Population

	Yr 1996	Yr 2000
Households	35	36
Population	250	259

Size of Residential Area

Fragments	1	
E-W	1,150	(m)
N-S	1,150	(m)

Access

Pist	1.7	(km)
Path	0.3	(km)
Total	2.0	(km)

Capacity of Photovoltaic

Power demand	9.98	(kWh/day)	Installed capacity	3,290	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	38	8	
Total Capacity		3,290	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	46	
Total Capacity	4,600	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	46	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	46	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	21,911	(US $)	Variable cost(O M cost)	39,588	(US $)
Delivery of PV module	4,376	(US $)			
Battery	4,240	(US $)	Total Cost	100,075	(US $)
Controller equipment	4,140	(US $)			
Installation cost	11,960	(US $)	Economic/Financial evaluation		
Tax	4,068	(US $)	EIRR	---	(%)
Superviser fee	4,663	(US $)	B / C*	0.87	
Contingency	5,129	(US $)	Monthly payment per H.H.*	4.0	(US $)
Fixed cost	60,487	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-28	Scheme Name	Agadir Baragha

Administrative Division

Douar	630	Agadir Baragha			
C.R.	33	Dar Jamaa	Cercle	3	Amizmiz

Location

Latitude	N 31	14'	11"	Longitude	W 8	20'	28"	Altitude	1,070 (m)

Households and Population

	Yr 1996	Yr 2000
Households	40	41
Population	300	311

Size of Residential Area

Fragments	1	
E-W	400	(m)
N-S	800	(m)

Access

Pist	2.0	(km)
Path	0.0	(km)
Total	2.0	(km)

Capacity of Photovoltaic

Power demand	11.43	(kWh/day)	Installed capacity	3,740	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	44	8	
Total Capacity		3,740	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	52	
Total Capacity	5,200	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	52	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	52	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	24,908	(US $)	Variable cost(O M cost)	45,156	(US $)
Delivery of PV module	4,974	(US $)			
Battery	4,840	(US $)	Total Cost	113,799	(US $)
Controller equipment	4,680	(US $)			
Installation cost	13,520	(US $)	Economic/Financial evaluation		
Tax	4,608	(US $)	EIRR	---	(%)
Superviser fee	5,292	(US $)	B / C*	0.82	
Contingency	5,821	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	68,643	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. *P-29* Scheme Name *Adar Baragha*

Administrative Division

Douar	*650*	*Adar Baragha*			
C.R.	*33*	*Dar Jamaa*	Cercle	*3*	*Amizmiz*

Location

Latitude	*N 31*	*13'*	*1"*	Longitude	*W 8*	*20'*	*22"*	Altitude	*1,070* (m)

Households and Population

	Yr 1996	Yr 2000
Households	*11*	*11*
Population	*60*	*62*

Size of Residential Area

Fragments	*1*	
E-W	*500*	(m)
N-S	*250*	(m)

Access

Pist	*2.5*	(km)
Path	*1.5*	(km)
Total	*4.0*	(km)

Capacity of Photovoltaic

Power demand	*3.33*	(kWh/day)	Installed capacity	*1,085*	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	*13*	*2*	
Total Capacity		*1,085*	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	*15*	
Total Capacity	*1,500*	(Ah)

>Controller

Type	Battery charge	
Capacity	*500*	(W)
Numbers of Controller	*15*	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	*15*	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	*72,226*	(US $)	Variable cost(O M cost)	*12,894*	(US $)
Delivery of PV module	*1,443*	(US $)			
Battery	*1,400*	(US $)	Total Cost	*97,760*	(US $)
Controller equipment	*1,350*	(US $)			
Installation cost	*3,900*	(US $)	Economic/Financial evaluation		
Tax	*1,330*	(US $)	EIRR	*>100*	(%)
Superviser fee	*1,532*	(US $)	B / C*	*1.81*	
Contingency	*1,685*	(US $)	Monthly payment per H.H.*	*4.1*	(US $)
Fixed cost	*84,866*	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-30	Scheme Name	Tadchert

Administrative Division

Douar	660	Tadchert			
C.R.	33	Dar Jamaa	Cercle	3	Amizmiz

Location

Latitude	N 31	14'	1"	Longitude	W 8	20'	12"	Altitude	1,100 (m)

Households and Population

	Yr 1996	Yr 2000
Households	30	31
Population	200	207

Size of Residential Area

Fragments	1	
E-W	600	(m)
N-S	400	(m)

Access

Pist	2.5	(km)
Path	0.0	(km)
Total	2.5	(km)

Capacity of Photovoltaic

Power demand	8.39	(kWh/day)	Installed capacity	2,785	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	32	7	
Total Capacity		2,785	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	39	
Total Capacity	3,900	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	39	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	39	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	18,548	(US $)	Variable cost(O M cost)	33,570	(US $)
Delivery of PV module	3,704	(US $)			
Battery	3,580	(US $)	Total Cost	84,789	(US $)
Controller equipment	3,510	(US $)			
Installation cost	10,140	(US $)	Economic/Financial evaluation		
Tax	3,446	(US $)	EIRR	4	(%)
Superviser fee	3,948	(US $)	B / C*	0.97	
Contingency	4,343	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	51,219	(US $)			

* Initial Investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. P-31 Scheme Name Tamsoult

Administrative Division

Douar	670	Tamsoult			
C.R.	33	Dar Jamaa	Cercle	3	Amizmiz

Location

Latitude	N 31	14'	3"	Longitude	W 8	20'	25"	Altitude	960 (m)

Households and Population

	Yr 1996	Yr 2000
Households	5	5
Population	37	38

Size of Residential Area

Fragments	1	
E-W	500	(m)
N-S	500	(m)

Access

Pist	2.5	(km)
Path	0.0	(km)
Total	2.5	(km)

Capacity of Photovoltaic

Power demand	1.32	(kWh/day)	Installed capacity	430	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	5	1	
Total Capacity		430	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	6	
Total Capacity	600	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	6	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	6	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	2,864	(US $)	Variable cost(O M cost)	5,340	(US $)
Delivery of PV module	572	(US $)			
Battery	560	(US $)	Total Cost	13,249	(US $)
Controller equipment	540	(US $)			
Installation cost	1,560	(US $)	Economic/Financial evaluation		
Tax	532	(US $)	EIRR	---	(%)
Superviser fee	610	(US $)	B / C*	3.98	
Contingency	671	(US $)	Monthly payment per H.H.*	4.0	(US $)
Fixed cost	7,909	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-32	Scheme Name	Dar Jamaa Ait Ali

Administrative Division

Douar	680	Dar Jamaa Ait Ali			
C.R.	33	Dar Jamaa	Cercle	3	Amizmiz

Location

Latitude	N 31	14'	58"	Longitude	W 8	22'	59"	Altitude	970 (m)

Households and Population

	Yr 1996	Yr 2000
Households	60	62
Population	220	228

Size of Residential Area

Fragments	1	
E-W	400	(m)
N-S	300	(m)

Access

Pist	1.0	(km)
Path	0.0	(km)
Total	1.0	(km)

Capacity of Photovoltaic

Power demand	17.22	(kWh/day)	Installed capacity	5,755	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	65	16	
Total Capacity		5,755	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	81	
Total Capacity	8,100	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	81	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	81	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	38,328	(US $)	Variable cost(O M cost)	68,839	(US $)
Delivery of PV module	7,654	(US $)			
Battery	7,400	(US $)	Total Cost	174,885	(US $)
Controller equipment	7,290	(US $)			
Installation cost	21,050	(US $)	Economic/Financial evaluation		
Tax	7,150	(US $)	EIRR	---	(%)
Superviser fee	8,173	(US $)	B / C*	0.65	
Contingency	6,991	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	106,036	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-33	Scheme Name	Agadir Ait Brahim

Administrative Division

Douar	690	Agadir Ait Brahim			
C.R.	33	Dar Jamaa	Cercle	3	Amizmiz

Location

Latitude	N 31	14'	49"	Longitude	W 8	22'	49"	Altitude	980 (m)

Households and Population

	Yr 1996	Yr 2000
Households	28	29
Population	120	124

Size of Residential Area

Fragments	1	
E-W	500	(m)
N-S	300	(m)

Access

Pist	1.0	(km)
Path	0.0	(km)
Total	1.0	(km)

Capacity of Photovoltaic

Power demand	7.71	(kWh/day)	Installed capacity	2,560	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	29	7	
Total Capacity		2,560	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	36	
Total Capacity	3,600	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	36	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	36	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	17,050	(US $)	Variable cost(O.M cost)	31,044	(US $)
Delivery of PV module	3,405	(US $)			
Battery	3,300	(US $)	Total Cost	78,213	(US $)
Controller equipment	3,240	(US $)			
Installation cost	9,360	(US $)	Economic/Financial evaluation		
Tax	3,180	(US $)	EIRR	6	(%)
Superviser fee	3,635	(US $)	B / C*	1.00	
Contingency	3,999	(US $)	Monthly payment per H.H.*	4.0	(US $)
Fixed cost	47,169	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-34	Scheme Name	Iouraghan

Administrative Division

Douar	700	Iouraghan			
C.R.	33	Dar Jamaa	Cercle	3	Amizmiz

Location

Latitude	N 31	14'	39"	Longitude	W 8	23'	6"	Altitude	950 (m)

Households and Population

	Yr 1996	Yr 2000
Households	18	19
Population	80	83

Size of Residential Area

Fragments	1	
E-W	300	(m)
N-S	200	(m)

Access

Pist	3.0	(km)
Path	0.0	(km)
Total	3.0	(km)

Capacity of Photovoltaic

Power demand	5.18	(kWh/day)	Installed capacity	1,720	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	20	4	
Total Capacity		1,720	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	24	
Total Capacity	2,400	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	24	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	24	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	11,455	(US $)	Variable cost(O M cost)	20,640	(US $)
Delivery of PV module	2,288	(US $)			
Battery	2,220	(US $)	Total Cost	52,243	(US $)
Controller equipment	2,160	(US $)			
Installation cost	6,240	(US $)	Economic/Financial evaluation		
Tax	2,124	(US $)	EIRR	37	(%)
Superviser fee	2,436	(US $)	B / C*	1.29	
Contingency	2,680	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	31,603	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. *P-35* Scheme Name *Imikl*

Administrative Division

Douar	*710*	*Imikl*			
C.R.	*33*	*Dar Jamaa*	Cercle	*3*	*Amizmiz*

Location

Latitude	*N 31*	*15'*	*21"*	Longitude	*W 8*	*23'*	*43"*	Altitude	*880* (m)

Households and Population

	Yr 1996	Yr 2000
Households	*50*	*52*
Population	*500*	*519*

Size of Residential Area

Fragments	*1*	
E-W	*400*	(m)
N-S	*300*	(m)

Access

Pist	*0.7*	(km)
Path	*0.0*	(km)
Total	*0.7*	(km)

Capacity of Photovoltaic

Power demand	*13.99*	(kWh/day)	Installed capacity	*4,635*	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	*75*	*55*	(Wp)
Voltage	*12*	*12*	(V)
Numbers of Panel	*53*	*12*	
Total Capacity		*4,635*	(Wp)

>Battery

Type	Portable lead clad	
Capacity	*100*	(Ah)
Voltage	*12*	(V)
Numbers of Battery	*65*	
Total Capacity	*6,500*	(Ah)

>Controller

Type	Battery charge	
Capacity	*500*	(W)
Numbers of Controller	*65*	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	*65*	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	*30,869*	(US $)	Variable cost(O M cost)	*55,914*	(US $)
Delivery of PV module	*6,165*	(US $)			
Battery	*5,960*	(US $)	Total Cost	*141,206*	(US $)
Controller equipment	*5,850*	(US $)			
Installation cost	*18,900*	(US $)	Economic/Financial evaluation		
Tax	*5,742*	(US $)	EIRR	---	(%)
Superviser fee	*6,574*	(US $)	B / C*	*0.73*	
Contingency	*7,232*	(US $)	Monthly payment per H.H.*	*4.1*	(US $)
Fixed cost	*85,292*	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-36	Scheme Name	Ifit Ait Alla

Administrative Division

Douar	720	Ifit Ait Alla			
C.R.	33	Dar Jamaa	Cercle	3	Amizmiz

Location

Latitude	N 31	15'	25"	Longitude	W 8	24'	16"	Altitude	900 (m)

Households and Population

	Yr 1996	Yr 2000
Households	22	23
Population	200	207

Size of Residential Area

Fragments	1	
E-W	1,000	(m)
N-S	500	(m)

Access

Pist	1.2	(km)
Path	0.0	(km)
Total	1.2	(km)

Capacity of Photovoltaic

Power demand	6.28	(kWh/day)	Installed capacity	2,130	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	24	6	
Total Capacity		2,130	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	30	
Total Capacity	3,000	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	30	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	30	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	14,186	(US $)	Variable cost(O M cost)	25,308	(US $)
Delivery of PV module	2,833	(US $)			
Battery	2,720	(US $)	Total Cost	64,541	(US $)
Controller equipment	2,700	(US $)			
Installation cost	7,800	(US $)	Economic/Financial evaluation		
Tax	2,644	(US $)	EIRR	13	(%)
Superviser fee	3,024	(US $)	B / C*	1.11	
Contingency	3,326	(US $)	Monthly payment per H.H.*	4.2	(US $)
Fixed cost	39,233	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-37	Scheme Name	Boukhelf

Administrative Division

Douar	730	Boukhelf			
C.R.	33	Dar Jamaa	Cercle	3	Amizmiz

Location

Latitude	N 31	14'	40"	Longitude	W 8	23'	57"	Altitude	950 (m)

Households and Population

	Yr 1996	Yr 2000
Households	85	88
Population	425	441

Size of Residential Area

Fragments	1	
E-W	1,000	(m)
N-S	500	(m)

Access

Pist	3.0	(km)
Path	0.0	(km)
Total	3.0	(km)

Capacity of Photovoltaic

Power demand	24.20	(kWh/day)	Installed capacity	8,110	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	92	22	
Total Capacity		8,110	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	114	
Total Capacity	11,400	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	114	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	114	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	54,013	(US $)	Variable cost(O M cost)	96,852	(US $)
Delivery of PV module	10,786	(US $)			
Battery	10,380	(US $)	Total Cost	246,154	(US $)
Controller equipment	10,260	(US $)			
Installation cost	29,640	(US $)	Economic/Financial evaluation		
Tax	10,056	(US $)	EIRR	---	(%)
Superviser fee	11,508	(US $)	B / C*	0.57	
Contingency	12,659	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	149,302	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-38	Scheme Name	Addar Ait All

Administrative Division

Douar	740	Addar Ait All			
C.R.	33	Dar Jamaa	Cercle	3	Amizmiz

Location

Latitude	N 31	14'	26"	Longitude	W 8	23'	27"	Altitude	1,030 (m)

Households and Population

	Yr 1996	Yr 2000
Households	22	23
Population	150	156

Size of Residential Area

Fragments	1	
E-W	400	(m)
N-S	300	(m)

Access

Pist	2.5	(km)
Path	0.0	(km)
Total	2.5	(km)

Capacity of Photovoltaic

Power demand	6.46	(kWh/day)	Installed capacity	2,205	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	25	6	
Total Capacity		2,205	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	31	
Total Capacity	3,100	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	31	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	31	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	14,685	(US $)	Variable cost(O M cost)	25,878	(US $)
Delivery of PV module	2,933	(US $)			
Battery	2,800	(US $)	Total Cost	66,442	(US $)
Controller equipment	2,790	(US $)			
Installation cost	8,060	(US $)	Economic/Financial evaluation		
Tax	2,730	(US $)	EIRR	11	(%)
Superviser fee	3,127	(US $)	B / C*	1.08	
Contingency	3,439	(US $)	Monthly payment per H.H.*	4.3	(US $)
Fixed cost	40,564	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-39	Scheme Name	Ait M'Barek

Administrative Division

Douar	770	Ait M'Barek			
C.R.	33	Dar Jamaa	Cercle	3	Amizmiz

Location

Latitude	N 31	13'	42"	Longitude	W 8	21'	56"	Altitude	1,060 (m)

Households and Population

	Yr 1996	Yr 2000
Households	30	31
Population	120	124

Size of Residential Area

Fragments	1	
E-W	300	(m)
N-S	200	(m)

Access

Pist	3.5	(km)
Path	0.4	(km)
Total	3.9	(km)

Capacity of Photovoltaic

Power demand	8.39	(kWh/day)	Installed capacity	2,785	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	32	7	
Total Capacity		2,765	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	39	
Total Capacity	3,900	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	39	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	39	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	18,548	(US $)	Variable cost(O M cost)	33,570	(US $)
Delivery of PV module	3,704	(US $)			
Battery	3,580	(US $)	Total Cost	84,789	(US $)
Controller equipment	3,510	(US $)			
Installation cost	10,140	(US $)	Economic/Financial evaluation		
Tax	3,446	(US $)	EIRR	4	(%)
Superviser fee	3,948	(US $)	B / C*	0.97	
Contingency	4,343	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	51,219	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-40	Scheme Name	Agadir Alt Bourd

Administrative Division

Douar	780	Agadir Alt Bourd			
C.R.	33	Dar Jamaa	Cercle	3	Amizmiz

Location

Latitude	N 31	13'	14"	Longitude	W 8	22'	31"	Altitude	1,190 (m)

Households and Population

	Yr 1996	Yr 2000
Households	60	62
Population	400	415

Size of Residential Area

Fragments	1	
E-W	500	(m)
N-S	300	(m)

Access

Pist	3.5	(km)
Path	1.5	(km)
Total	5.0	(km)

Capacity of Photovoltaic

Power demand	16.84	(kWh/day)	Installed capacity	5,570	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	64	14	
Total Capacity		5,570	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	78	
Total Capacity	7,800	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	78	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	78	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	36,730	(US $)	Variable cost(O M cost)	67,038	(US $)
Delivery of PV module	7,335	(US $)			
Battery	7,160	(US $)	Total Cost	168,451	(US $)
Controller equipment	6,930	(US $)			
Installation cost	20,020	(US $)	Economic/Financial evaluation		
Tax	6,822	(US $)	EIRR	---	(%)
Superviser fee	7,817	(US $)	B / C*	0.68	
Contingency	8,599	(US $)	Monthly payment per H.H.*	4.0	(US $)
Fixed cost	101,413	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-41	Scheme Name	Afella Ouassif

Administrative Division

Douar	790	Afella Ouassif			
C.R.	33	Dar Jamaa	Cercle	3	Amizmiz

Location

Latitude	N 31	13'	10"	Longitude	W 8	22'	8"	Altitude	1,110 (m)

Households and Population

	Yr 1996	Yr 2000
Households	25	26
Population	120	124

Size of Residential Area

Fragments	1	
E-W	700	(m)
N-S	400	(m)

Access

Pist	3.5	(km)
Path	0.9	(km)
Total	4.4	(km)

Capacity of Photovoltaic

Power demand	6.86	(kWh/day)	Installed capacity	2,225	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	26	5	
Total Capacity		2,225	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	31	
Total Capacity	3,100	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	31	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	31	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	14,819	(US $)	Variable cost(O M cost)	27,365	(US $)
Delivery of PV module	2,959	(US $)			
Battery	2,900	(US $)	Total Cost	68,265	(US $)
Controller equipment	2,790	(US $)			
Installation cost	8,060	(US $)	Economic/Financial evaluation		
Tax	2,750	(US $)	EIRR	12	(%)
Superviser fee	3,153	(US $)	B / C*	1.09	
Contingency	3,468	(US $)	Monthly payment per H.H.*	4.0	(US $)
Fixed cost	40,899	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-42	Scheme Name	Afella Ighil

Administrative Division

Douar	810	Afella Ighil			
C.R.	34	Ameghrass	Cercle	3	Amizmiz

Location

Latitude	N 31	12'	14"	Longitude	W 8	10'	49"	Altitude	1,033 (m)

Households and Population

	Yr 1996	Yr 2000
Households	10	10
Population	70	73

Size of Residential Area

Fragments	1	
E-W	150	(m)
N-S	150	(m)

Access

Pist	1.5	(km)
Path	0.5	(km)
Total	2.0	(km)

Capacity of Photovoltaic

Power demand	2.80	(kWh/day)	Installed capacity	935	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	11	2	
Total Capacity		935	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	13	
Total Capacity	1,300	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	13	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	13	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	6,227	(US $)	Variable cost(O M cost)	11,238	(US $)
Delivery of PV module	1,244	(US $)			
Battery	1,200	(US $)	Total Cost	28,385	(US $)
Controller equipment	1,170	(US $)			
Installation cost	3,380	(US $)	Economic/Financial evaluation		
Tax	1,150	(US $)	EIRR	>100	(%)
Superviser fee	1,322	(US $)	B / C*	2.05	
Contingency	1,454	(US $)	Monthly payment per H.H.*	4.2	(US $)
Fixed cost	17,147	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-43	Scheme Name	Anfeg

Administrative Division

Douar	831	Anfeg			
C.R.	34	Ameghrass	Cercle	3	Amizmiz

Location

Latitude	N 31	12'	5"	Longitude	W 8	11'	1"	Altitude	1,020 (m)

Households and Population

	Yr 1996	Yr 2000
Households	15	16
Population	95	99

Size of Residential Area

Fragments	1	
E-W	150	(m)
N-S	200	(m)

Access

Pist	1.5	(km)
Path	0.0	(km)
Total	1.5	(km)

Capacity of Photovoltaic

Power demand	4.38	(kWh/day)	Installed capacity	1,440	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	17	3	
Total Capacity		1,440	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	20	
Total Capacity	2,000	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	20	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	20	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	9,590	(US $)	Variable cost(O.M cost)	17,268	(US $)
Delivery of PV module	1,915	(US $)			
Battery	1,860	(US $)	Total Cost	43,682	(US $)
Controller equipment	1,800	(US $)			
Installation cost	5,200	(US $)	Economic/Financial evaluation		
Tax	1,772	(US $)	EIRR	>100	(%)
Superviser fee	2,037	(US $)	B / C*	1.46	
Contingency	2,240	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	26,414	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. *P-44* Scheme Name *Aguersouak*

Administrative Division

Douar	*832*	*Aguersouak*			
C.R.	*34*	*Ameghrass*	Cercle	*3*	*Amizmiz*

Location

Latitude	*N 31*	*12'*	*32"*	Longitude	*W 8*	*10'*	*25"*	Altitude *970* (m)

Households and Population

	Yr 1996	Yr 2000
Households	*20*	*21*
Population	*100*	*104*

Size of Residential Area

Fragments	*1*	
E-W	*200*	(m)
N-S	*100*	(m)

Access

Pist	*0.0*	(km)
Path	*0.4*	(km)
Total	*0.4*	(km)

Capacity of Photovoltaic

Power demand	*5.88*	(kWh/day)	Installed capacity	*1,945*	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	*75*	*55*	(Wp)
Voltage	*12*	*12*	(V)
Numbers of Panel	*23*	*4*	
Total Capacity		*1,945*	(Wp)

>Battery

Type	Portable lead clad	
Capacity	*100*	(Ah)
Voltage	*12*	(V)
Numbers of Battery	*27*	
Total Capacity	*2,700*	(Ah)

>Controller

Type	Battery charge	
Capacity	*500*	(W)
Numbers of Controller	*27*	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	*27*	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	*12,954*	(US $)	Variable cost(O M cost)	*23,142*	(US $)
Delivery of PV module	*2,587*	(US $)			
Battery	*2,500*	(US $)	Total Cost	*58,796*	(US $)
Controller equipment	*2,430*	(US $)			
Installation cost	*7,020*	(US $)	Economic/Financial evaluation		
Tax	*2,390*	(US $)	EIRR	*20*	(%)
Superviser fee	*2,749*	(US $)	B / C*	*1.19*	
Contingency	*3,024*	(US $)	Monthly payment per H.H.*	*4.2*	(US $)
Fixed cost	*35,654*	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. **P-45** Scheme Name **Oumast**

Administrative Division

Douar	851	Oumast			
C.R.	34	Ameghrass	Cercle	3	Anizmiz

Location

Latitude	N 31	13'	31"	Longitude	W 8	10'	36"	Altitude	940 (m)

Households and Population

	Yr 1996	Yr 2000
Households	35	36
Population	180	187

Size of Residential Area

Fragments	1	
E-W	250	(m)
N-S	200	(m)

Access

Pist	1.2	(km)
Path	0.0	(km)
Total	1.2	(km)

Capacity of Photovoltaic

Power demand	10.11	(kWh/day)	Installed capacity	3,310	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	39	7	
Total Capacity		3,310	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	46	
Total Capacity	4,600	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	46	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	46	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	22,045	(US $)	Variable cost(O M cost)	39,828	(US $)
Delivery of PV module	4,402	(US $)			
Battery	4,280	(US $)	Total Cost	142,765	(US $)
Controller equipment	4,140	(US $)			
Installation cost	11,960	(US $)	Economic/Financial evaluation		
Tax	4,076	(US $)	EIRR	---	(%)
Superviser fee	46,883	(US $)	B / C*	0.87	
Contingency	5,151	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	102,937	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-46	Scheme Name	Ait Zitoun

Administrative Division

Douar	852	Ait Zitoun			
C.R.	34	Amegtrass	Cercle	3	Amizmiz

Location

Latitude	N 31	13'	13"	Longitude	W 8	10'	28"	Altitude	1,000 (m)

Households and Population

	Yr 1996	Yr 2000
Households	35	36
Population	180	187

Size of Residential Area

Fragments	1	
E-W	200	(m)
N-S	200	(m)

Access

Pist	0.8	(km)
Path	0.0	(km)
Total	0.8	(km)

Capacity of Photovoltaic

Power demand	9.77	(kWh/day)	Installed capacity	3,160	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	37	7	
Total Capacity		3,160	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	44	
Total Capacity	4,400	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	44	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	44	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	21,046	(US $)	Variable cost(O M cost)	38,688	(US $)
Delivery of PV module	4,203	(US $)			
Battery	4,120	(US $)	Total Cost	96,763	(US $)
Controller equipment	3,960	(US $)			
Installation cost	11,440	(US $)	Economic/Financial evaluation		
Tax	3,904	(US $)	EIRR	1	(%)
Superviser fee	4,477	(US $)	B / C*	0.90	
Contingency	4,925	(US $)	Monthly payment per H.H.*	4.0	(US $)
Fixed cost	58,075	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. *P-47* Scheme Name *Tagadirt (Ait Boulmzgan)*

Administrative Division

Douar	*860*	*Tagadirt (Ait Boulmzgan)*			
C.R.	*34*	*Ameghrass*	Cercle	*3*	*Amizmiz*

Location

Latitude	*N 31*	*14'*	*0"*	Longitude	*W 8*	*8'*	*25"*	Altitude	*1,150* (m)

Households and Population

	Yr 1996	Yr 2000
Households	*28*	*29*
Population	*137*	*142*

Size of Residential Area

Fragments	*1*	
E-W	*200*	(m)
N-S	*200*	(m)

Access

Pist	*2.8*	(km)
Path	*2.2*	(km)
Total	*5.0*	(km)

Capacity of Photovoltaic

Power demand	*7.66*	(kWh/day)	Installed capacity	*2,505*	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	*75*	*55*	(Wp)
Voltage	*12*	*12*	(V)
Numbers of Panel	*29*	*6*	
Total Capacity		*2,505*	(Wp)

>Battery

Type	Portable lead clad	
Capacity	*100*	(Ah)
Voltage	*12*	(V)
Numbers of Battery	*35*	
Total Capacity	*3,500*	(Ah)

>Controller

Type	Battery charge	
Capacity	*500*	(W)
Numbers of Controller	*35*	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	*35*	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	*16,683*	(US $)	Variable cost(O M cost)	*30,714*	(US $)
Delivery of PV module	*3,332*	(US $)			
Battery	*3,260*	(US $)	Total Cost	*76,801*	(US $)
Controller equipment	*3,150*	(US $)			
Installation cost	*9,100*	(US $)	Economic/Financial evaluation		
Tax	*3,102*	(US $)	EIRR	*7*	(%)
Superviser fee	*3,652*	(US $)	B / C*	*1.02*	
Contingency	*3,908*	(US $)	Monthly payment per H.H.*	*4.0*	(US $)
Fixed cost	*46,097*	(US $)			

*Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. *P-48* Scheme Name *Zaouit*

Administrative Division

Douar	*871*	*Zaouit*			
C.R.	*34*	*Ameghrass*	Cercle	*3*	*Amizmiz*

Location

Latitude	*N 31*	*11'*	*42"*	Longitude	*W 8*	*11'*	*48"*	Altitude *1,160* (m)

Households and Population

	Yr 1996	Yr 2000
Households	*9*	*9*
Population	*60*	*62*

Size of Residential Area

Fragments	*1*	
E-W	*200*	(m)
N-S	*200*	(m)

Access

Pist	*2.8*	(km)
Path	*2.0*	(km)
Total	*4.8*	(km)

Capacity of Photovoltaic

Power demand	*2.54*	(kWh/day)	Installed capacity	*860*	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	*10*	*2*	
Total Capacity		*860*	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	*12*	
Total Capacity	*1,200*	(Ah)

>Controller

Type	Battery charge	
Capacity	*500*	(W)
Numbers of Controller	*12*	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	*12*	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	*5,728*	(US $)	Variable cost(O M cost)	*10,272*	(US $)
Delivery of PV module	*1,144*	(US $)			
Battery	*1,100*	(US $)	Total Cost	*26,060*	(US $)
Controller equipment	*1,080*	(US $)			
Installation cost	*3,120*	(US $)	Economic/Financial evaluation		
Tax	*1,060*	(US $)	EIRR	*>100*	(%)
Superviser fee	*1,217*	(US $)	B / C*	*2.19*	
Contingency	*1,339*	(US $)	Monthly payment per H.H.*	*4.3*	(US $)
Fixed cost	*15,786*	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. *P-49* Scheme Name *Izalaghan (Dar Brahim Ou Ali)*

Administrative Division

Douar	*872*	*Izalaghan (Dar Brahim Ou Ali)*			
C.R.	*34*	*Ameghrass*	Cercle	*3*	*Amizmiz*

Location

Latitude	*N 31*	*12'*	*44"*	Longitude	*W 8*	*12'*	*24"*	Altitude *1,020* (m)

Households and Population

	Yr 1996	Yr 2000
Households	*12*	*12*
Population	*62*	*64*

Size of Residential Area

Fragments	*1*	
E-W	*250*	(m)
N-S	*200*	(m)

Access

Pist	*1.3*	(km)
Path	*0.0*	(km)
Total	*1.3*	(km)

Capacity of Photovoltaic

Power demand	*3.59*	(kWh/day)	Installed capacity	*1,215*	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	*75*	*55*	(Wp)
Voltage	*12*	*12*	(V)
Numbers of Panel	*14*	*3*	
Total Capacity		*1,215*	(Wp)

>Battery

Type	Portable lead clad	
Capacity	*100*	(Ah)
Voltage	*12*	(V)
Numbers of Battery	*17*	
Total Capacity	*1,700*	(Ah)

>Controller

Type	Battery charge	
Capacity	*500*	(W)
Numbers of Controller	*17*	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	*17*	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	*8,092*	(US $)	Variable cost(O M cost)	*14,334*	(US $)
Delivery of PV module	*1,616*	(US $)			
Battery	*1,560*	(US $)	Total Cost	*36,670*	(US $)
Controller equipment	*1,530*	(US $)			
Installation cost	*4,420*	(US $)	Economic/Financial evaluation		
Tax	*1,502*	(US $)	EIRR	*>100*	(%)
Superviser fee	*1,722*	(US $)	B / C*	*1.65*	
Contingency	*1,694*	(US $)	Monthly payment per H.H.*	*4.2*	(US $)
Fixed cost	*22,336*	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-50	Scheme Name	Tigouder (Ben said, Zyoubi)

Administrative Division

Douar	880	Tigouder (Ben said, Zyoubi)			
C.R.	34	Ameghrass	Cercle	3	Amizmiz

Location

Latitude	N 31	11'	22"	Longitude	W 8	11'	25"	Altitude	1,240 (m)

Households and Population

	Yr 1996	Yr 2000
Households	24	25
Population	130	135

Size of Residential Area

Fragments	1	
E-W	200	(m)
N-S	200	(m)

Access

Pist	2.8	(km)
Path	2.5	(km)
Total	5.3	(km)

Capacity of Photovoltaic

Power demand	6.96	(kWh/day)	Installed capacity	2,300	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	27	5	
Total Capacity		2,300	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	32	
Total Capacity	3,200	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	32	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	32	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	15,318	(US $)	Variable cost(O M cost)	27,492	(US $)
Delivery of PV module	3,059	(US $)			
Battery	2,960	(US $)	Total Cost	101,914	(US $)
Controller equipment	2,890	(US $)			
Installation cost	8,320	(US $)	Economic/Financial evaluation		
Tax	2,832	(US $)	EIRR	10	(%)
Superviser fee	3,254	(US $)	B / C*	1.07	
Contingency	35,799	(US $)	Monthly payment per H.H.*	4.2	(US $)
Fixed cost	74,422	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-51	Scheme Name	Amezi

Administrative Division

Douar	890	Amezi			
C.R.	34	Ameghrass	Cercle	3	Amizmiz

Location

Latitude	N 31	11'	53"	Longitude	W 8	12'	19"	Altitude	1,180 (m)

Households and Population

	Yr 1996	Yr 2000
Households	36	37
Population	181	188

Size of Residential Area

Fragments	1	
E-W	500	(m)
N-S	200	(m)

Access

Pist	2.8	(km)
Path	0.5	(km)
Total	3.3	(km)

Capacity of Photovoltaic

Power demand	10.37	(kWh/day)	Installed capacity	3,440	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	40	8	
Total Capacity		3,440	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	48	
Total Capacity	4,800	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	48	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	48	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	22,910	(US $)	Variable cost(O M cost)	41,280	(US $)
Delivery of PV module	4,575	(US $)			
Battery	4,440	(US $)	Total Cost	104,486	(US $)
Controller equipment	4,320	(US $)			
Installation cost	12,480	(US $)	Economic/Financial evaluation		
Tax	4,248	(US $)	EIRR	---	(%)
Superviser fee	4,873	(US $)	B / C*	0.85	
Contingency	5,360	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	63,206	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. *P-52* Scheme Name *Agouni*

Administrative Division

Douar	*900*	*Agouni*			
C.R.	*34*	*Ameghrass*	Cercle	*3*	*Amizmiz*

Location

Latitude	*N 31*	*12'*	*11"*	Longitude	*W 8*	*12'*	*7"*	Altitude	*1,100* (m)

Households and Population

	Yr 1996	Yr 2000
Households	*30*	*31*
Population	*172*	*178*

Size of Residential Area

Fragments	*1*	
E-W	*100*	(m)
N-S	*300*	(m)

Access

Pist	*2.8*	(km)
Path	*0.0*	(km)
Total	*2.8*	(km)

Capacity of Photovoltaic

Power demand	*8.52*	(kWh/day)	Installed capacity	*2,805*	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	*33*	*6*	
Total Capacity		*2,805*	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	*39*	
Total Capacity	*3,900*	(Ah)

>Controller

Type	Battery charge	
Capacity	*500*	(W)
Numbers of Controller	*39*	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	*39*	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	*18,681*	(US $)	Variable cost(O M cost)	*33,810*	(US $)
Delivery of PV module	*3,731*	(US $)			
Battery	*3,620*	(US $)	Total Cost	*85,279*	(US $)
Controller equipment	*3,510*	(US $)			
Installation cost	*10,140*	(US $)	Economic/Financial evaluation		
Tax	*3,454*	(US $)	EIRR	*4*	(%)
Superviser fee	*3,968*	(US $)	B / C*	*0.97*	
Contingency	*4,365*	(US $)	Monthly payment per H.H.*	*4.1*	(US $)
Fixed cost	*51,469*	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. **P-53** Scheme Name ***Chaabat Tarik (Talet N'Tghharast)***

Administrative Division

Douar	910	Chaabat Tarik (Talet N'Tghharast)			
C.R.	34	Ameghrass	Cercle	3	Amizmiz

Location

Latitude	N 31	15'	7"	Longitude	W 8	9'	41"	Altitude	830 (m)

Households and Population

	Yr 1996	Yr 2000
Households	53	55
Population	254	263

Size of Residential Area

Fragments	1	
E-W	250	(m)
N-S	300	(m)

Access

Pist	5.0	(km)
Path	0.0	(km)
Total	5.0	(km)

Capacity of Photovoltaic

Power demand	15.38	(kWh/day)	Installed capacity	5,140	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	59	13	
Total Capacity		5,140	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	72	
Total Capacity	7,200	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	72	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	72	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	34,232	(US $)	Variable cost(O M cost)	61,116	(US $)
Delivery of PV module	6,636	(US $)			
Battery	6,580	(US $)	Total Cost	155,618	(US $)
Controller equipment	6,480	(US $)			
Installation cost	18,720	(US $)	Economic/Financial evaluation		
Tax	6,356	(US $)	EIRR	---	(%)
Superviser fee	7,285	(US $)	B / C*	0.69	
Contingency	8,013	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	94,502	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-54	Scheme Name	Ighil Sdidene (Draa Rkik)

Administrative Division

Douar	920	Ighil Sdidene (Draa Rkik)			
C.R.	34	Ameghrass	Cercle	3	Amizmiz

Location

Latitude	N 31	14'	16"	Longitude	W 8	10'	1"	Altitude	900 (m)

Households and Population

	Yr 1996	Yr 2000
Households	14	15
Population	54	56

Size of Residential Area

Fragments	1	
E-W	300	(m)
N-S	500	(m)

Access

Pist	3.0	(km)
Path	0.0	(km)
Total	3.0	(km)

Capacity of Photovoltaic

Power demand	4.12	(kWh/day)	Installed capacity	1,365	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	16	3	
Total Capacity		1,365	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	19	
Total Capacity	1,900	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	19	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	19	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	9,091	(US $)	Variable cost(O M cost)	16,278	(US $)
Delivery of PV module	1,815	(US $)			
Battery	1,760	(US $)	Total Cost	41,333	(US $)
Controller equipment	1,710	(US $)			
Installation cost	4,940	(US $)	Economic/Financial evaluation		
Tax	1,682	(US $)	EIRR	>100	(%)
Superviser fee	1,932	(US $)	B / C*	1.52	
Contingency	2,125	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	25,055	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-55	Scheme Name	Tizi

Administrative Division

Douar	930	Tizi			
C.R.	34	Ameghrass	Cercle	3	Amizmiz

Location

Latitude	N 31	13'	33"	Longitude	W 8	10'	13"	Altitude	930 (m)

Households and Population

	Yr 1996	Yr 2000
Households	59	61
Population	284	295

Size of Residential Area

Fragments	1	
E-W	500	(m)
N-S	500	(m)

Access

Pist	2.2	(km)
Path	0.0	(km)
Total	2.2	(km)

Capacity of Photovoltaic

Power demand	16.76	(kWh/day)	Installed capacity	5,515	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	64	13	
Total Capacity		5,515	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	77	
Total Capacity	7,700	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	77	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	77	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	36,730	(US $)	Variable cost(O M cost)	66,534	(US $)
Delivery of PV module	7,335	(US $)			
Battery	7,120	(US $)	Total Cost	167,891	(US $)
Controller equipment	6,930	(US $)			
Installation cost	20,020	(US $)	Economic/Financial evaluation		
Tax	6,814	(US $)	EIRR	---	(%)
Superviser fee	7,813	(US $)	B / C*	0.67	
Contingency	8,595	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	101,357	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-56	Scheme Name	Aghbalou

Administrative Division

Douar	940	Aghbalou			
C.R.	34	Ameghrass	Cercle	3	Amizmiz

Location

Latitude	N 31	13'	53"	Longitude	W 8	9'	1"	Altitude	850 (m)

Households and Population

	Yr 1996	Yr 2000
Households	90	93
Population	472	490

Size of Residential Area

Fragments	1	
E-W	400	(m)
N-S	500	(m)

Access

Pist	0.0	(km)
Path	0.0	(km)
Total	0.0	(km)

Capacity of Photovoltaic

Power demand	25.44	(kWh/day)	Installed capacity	8,430	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	97	21	
Total Capacity		8,430	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	118	
Total Capacity	11,800	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	118	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	118	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	56,144	(US $)	Variable cost(O M cost)	101,532	(US $)
Delivery of PV module	11,212	(US $)			
Battery	10,860	(US $)	Total Cost	256,579	(US $)
Controller equipment	10,620	(US $)			
Installation cost	30,680	(US $)	Economic/Financial evaluation		
Tax	10,432	(US $)	EIRR	---	(%)
Superviser fee	11,952	(US $)	B / C*	0.56	
Contingency	13,147	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	155,047	(US $)			

* Initial Investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-57	Scheme Name	Ait Hsain

Administrative Division

Douar	950	Ait Hsain			
C.R.	34	Ameghrass	Cercle	3	Amizmiz

Location

Latitude	N 31	12'	21"	Longitude	W 8	9'	9"	Altitude	1,080 (m)

Households and Population

	Yr 1996	Yr 2000
Households	13	13
Population	75	78

Size of Residential Area

Fragments	1	
E-W	200	(m)
N-S	200	(m)

Access

Pist	2.5	(km)
Path	0.3	(km)
Total	2.8	(km)

Capacity of Photovoltaic

Power demand	3.91	(kWh/day)	Installed capacity	1,345	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	15	4	
Total Capacity		1,345	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	19	
Total Capacity	1,900	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	19	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	19	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	6,958	(US $)	Variable cost(O M cost)	15,630	(US $)
Delivery of PV module	1,789	(US $)			
Battery	1,700	(US $)	Total Cost	40,408	(US $)
Controller equipment	1,710	(US $)			
Installation cost	4,940	(US $)	Economic/Financial evaluation		
Tax	1,670	(US $)	EIRR	>100	(%)
Superviser fee	1,910	(US $)	B / C*	1.53	
Contingency	2,101	(US $)	Monthly payment per H.H.*	4.2	(US $)
Fixed cost	24,778	(US $)			

*Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-58	Scheme Name	Ait Boubker

Administrative Division

Douar	960	Ait Boubker			
C.R.	34	Ameghrass	Cercle	3	Amizmiz

Location

Latitude	N 31	12'	11"	Longitude	W 8	9'	24"	Altitude	1,160 (m)

Households and Population

	Yr 1996	Yr 2000
Households	14	15
Population	80	83

Size of Residential Area

Fragments	1	
E-W	300	(m)
N-S	600	(m)

Access

Pist	2.5	(km)
Path	1.2	(km)
Total	3.7	(km)

Capacity of Photovoltaic

Power demand	4.30	(kWh/day)	Installed capacity	1,440 (Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	17	3	
Total Capacity		1,440	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	20	
Total Capacity	2,000	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	20	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	20	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	9,590	(US $)	Variable cost(O M cost)	16,848	(US $)
Delivery of PV module	1,915	(US $)			
Battery	1,840	(US $)	Total Cost	43,234	(US $)
Controller equipment	1,800	(US $)			
Installation cost	5,200	(US $)	Economic/Financial evaluation		
Tax	1,768	(US $)	EIRR	>100	(%)
Superviser fee	2,035	(US $)	B / C*	1.47	
Contingency	2,238	(US $)	Monthly payment per H.H.*	4.2	(US $)
Fixed cost	26,386	(US $)			

* Initial Investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. *P-59* Scheme Name *Tazatourt*

Administrative Division

Douar	*970*	*Tazatourt*			
C.R.	*34*	*Ameghrass*	Cercle	*3*	*Amizmiz*

Location

Latitude	*N 31*	*12'*	*26"*	Longitude	*W 8*	*8'*	*8"*	Altitude	*1,050* (m)

Households and Population

	Yr 1996	Yr 2000
Households	*33*	*34*
Population	*152*	*158*

Size of Residential Area

Fragments	*1*	
E-W	*200*	(m)
N-S	*300*	(m)

Access

Pist	*2.5*	(km)
Path	*2.5*	(km)
Total	*5.0*	(km)

Capacity of Photovoltaic

Power demand	*9.50*	(kWh/day)	Installed capacity	*3,195*	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	*75*	*55*	(Wp)
Voltage	*12*	*12*	(V)
Numbers of Panel	*36*	*9*	
Total Capacity		*3,195*	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	*45*	
Total Capacity	*4,500*	(Ah)

>Controller

Type	Battery charge	
Capacity	*500*	(W)
Numbers of Controller	*45*	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	*45*	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	*21,279*	(US $)	Variable cost(O.M cost)	*37,950*	(US $)
Delivery of PV module	*4,249*	(US $)			
Battery	*4,080*	(US $)	Total Cost	*96,799*	(US $)
Controller equipment	*4,050*	(US $)			
Installation cost	*11,700*	(US $)	Economic/Financial evaluation		
Tax	*3,966*	(US $)	EIRR	---	(%)
Superviser fee	*4,536*	(US $)	B / C*	*0.88*	
Contingency	*4,989*	(US $)	Monthly payment per H.H.*	*4.1*	(US $)
Fixed cost	*58,849*	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-60	Scheme Name	Tamsoulte

Administrative Division

Douar	980	Tamsoulte			
C.R.	34	Ameghrass	Cercle	3	Amizmiz

Location

Latitude	N 31	12'	34"	Longitude	W 8	9'	18"	Altitude	1,050 (m)

Households and Population

	Yr 1996	Yr 2000
Households	33	34
Population	320	332

Size of Residential Area

Fragments	1	
E-W	200	(m)
N-S	200	(m)

Access

Pist	2.5	(km)
Path	0.0	(km)
Total	2.5	(km)

Capacity of Photovoltaic

Power demand	9.58	(kWh/day)	Installed capacity	3,160	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	37	7	
Total Capacity		3,160	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	44	
Total Capacity	4,400	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	44	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	44	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	21,046	(US $)	Variable cost(O M cost)	37,860	(US $)
Delivery of PV module	4,203	(US $)			
Battery	4,060	(US $)	Total Cost	95,878	(US $)
Controller equipment	3,960	(US $)			
Installation cost	11,440	(US $)	Economic/Financial evaluation		
Tax	3,896	(US $)	EIRR	---	(%)
Superviser fee	4,473	(US $)	B / C*	0.83	
Contingency	4,920	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	58,018	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-61	Scheme Name	Tizgui

Administrative Division

Douar	990	Tizgui			
C.R.	34	Ameghrass	Cercle	3	Amizmiz

Location

Latitude	N 31	11'	10"	Longitude	W 8	10'	42"	Altitude	1,220 (m)

Households and Population

	Yr 1996	Yr 2000
Households	50	52
Population	360	373

Size of Residential Area

Fragments	1	
E-W	300	(m)
N-S	250	(m)

Access

Pist	1.5	(km)
Path	1.7	(km)
Total	3.2	(km)

Capacity of Photovoltaic

Power demand	14.12	(kWh/day)	Installed capacity	4,655	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	54	11	
Total Capacity		4,655	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	65	
Total Capacity	6,500	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	65	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	65	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	31,002	(US $)	Variable cost(O M cost)	56,154	(US $)
Delivery of PV module	6,191	(US $)			
Battery	6,000	(US $)	Total Cost	141,695	(US $)
Controller equipment	5,850	(US $)			
Installation cost	16,900	(US $)	Economic/Financial evaluation		
Tax	5,750	(US $)	EIRR	---	(%)
Superviser fee	6,594	(US $)	B / C*	0.73	
Contingency	7,254	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	85,541	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-62	Scheme Name	Ait Tirghit

Administrative Division

Douar	1000	Ait Tirghit			
C.R.	34	Ameghrass	Cercle	3	Amizmiz

Location

Latitude	N 31	10'	39"	Longitude	W 8	11'	37"	Altitude	1,480 (m)

Households and Population

	Yr 1996	Yr 2000
Households	50	52
Population	600	622

Size of Residential Area

Fragments	1	
E-W	400	(m)
N-S	600	(m)

Access

Pist	11.5	(km)
Path	0.0	(km)
Total	11.5	(km)

Capacity of Photovoltaic

Power demand	14.07	(kWh/day)	Installed capacity	4,600	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	54	10	
Total Capacity		4,600	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	64	
Total Capacity	6,400	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	64	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	64	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	30,636	(US $)	Variable cost(O M cost)	55,824	(US $)
Delivery of PV module	6,118	(US $)			
Battery	5,960	(US $)	Total Cost	140,284	(US $)
Controller equipment	5,760	(US $)			
Installation cost	16,640	(US $)	Economic/Financial evaluation		
Tax	5,672	(US $)	EIRR	---	(%)
Superviser fee	6,511	(US $)	B / C*	0.74	
Contingency	7,163	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	84,460	(US $)			

* Initial Investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-63	Scheme Name	Tachbibt Kabli

Administrative Division

Douar	1010	Tachbibt Kabli			
C.R.	35	Sidi Badhaj	Cercle	3	Amizmiz

Location

Latitude	N 31	15'	48"	Longitude	W 8	12'	11"	Altitude	850 (m)

Households and Population

	Yr 1996	Yr 2000
Households	30	31
Population	220	228

Size of Residential Area

Fragments	1	
E-W	500	(m)
N-S	1,000	(m)

Access

Pist	2.5	(km)
Path	0.5	(km)
Total	3.0	(km)

Capacity of Photovoltaic

Power demand	8.60	(kWh/day)	Installed capacity	2,915	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	33	8	
Total Capacity		2,915	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	41	
Total Capacity	4,100	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	41	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	41	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	19,414	(US $)	Variable cost(O M cost)	34,470	(US $)
Delivery of PV module	3,877	(US $)			
Battery	3,700	(US $)	Total Cost	88,102	(US $)
Controller equipment	3,690	(US $)			
Installation cost	10,660	(US $)	Economic/Financial evaluation		
Tax	3,610	(US $)	EIRR	2	(%)
Superviser fee	4,134	(US $)	B / C*	0.93	
Contingency	4,547	(US $)	Monthly payment per H.H.*	4.2	(US $)
Fixed cost	53,632	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-64	Scheme Name	Tachbibt Echatoui

Administrative Division

Douar	1020	Tachbibt Echatoui			
C.R.	35	Sidi Badhaj	Cercle	3	Amizmiz

Location

Latitude	N 31	16'	6"	Longitude	W 8	12'	11"	Altitude	850 (m)

Households and Population

	Yr 1996	Yr 2000
Households	30	31
Population	150	156

Size of Residential Area

Fragments	1	
E-W	500	(m)
N-S	1,500	(m)

Access

Pist	2.5	(km)
Path	0.0	(km)
Total	2.5	(km)

Capacity of Photovoltaic

Power demand	8.62	(kWh/day)	Installed capacity	2,915	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	33	8	
Total Capacity		2,915	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	41	
Total Capacity	4,100	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	41	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	41	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	19,414	(US $)	Variable cost(O M cost)	34,470	(US $)
Delivery of PV module	3,877	(US $)			
Battery	3,700	(US $)	Total Cost	88,102	(US $)
Controller equipment	3,690	(US $)			
Installation cost	10,660	(US $)	Economic/Financial evaluation		
Tax	3,610	(US $)	EIRR	3	(%)
Superviser fee	4,134	(US $)	B / C*	0.94	
Contingency	4,547	(US $)	Monthly payment per H.H.*	4.2	(US $)
Fixed cost	53,632	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-65	Scheme Name	Asgoune

Administrative Division

Douar	1030	Asgoune			
C.R.	35	Sidi Badhaj	Cercle	3	Amizmiz

Location

Latitude	N 31	16'	49"	Longitude	W 8	11'	15"	Altitude	820 (m)

Households and Population

	Yr 1996	Yr 2000
Households	30	31
Population	270	260

Size of Residential Area

Fragments	1	
E-W	1,000	(m)
N-S	400	(m)

Access

Pist	5.0	(km)
Path	0.0	(km)
Total	5.0	(km)

Capacity of Photovoltaic

Power demand	8.44	(kWh/day)	Installed capacity	2,640	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	32	8	
Total Capacity		2,640	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	40	
Total Capacity	4,000	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	40	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	40	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	18,914	(US $)	Variable cost(O M cost)	33,900	(US $)
Delivery of PV module	3,777	(US $)			
Battery	3,620	(US $)	Total Cost	86,200	(US $)
Controller equipment	3,600	(US $)			
Installation cost	10,400	(US $)	Economic/Financial evaluation		
Tax	3,524	(US $)	EIRR	3	(%)
Superviser fee	4,031	(US $)	B / C*	0.95	
Contingency	4,434	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	52,300	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-66	Scheme Name	Ait Aamara Loued

Administrative Division

Douar	1040	Ait Aamara Loued			
C.R.	35	Sidi Badhaj	Cercle	3	Amizmiz

Location

Latitude	N 31	17'	27"	Longitude	W 8	9'	55"	Altitude	750 (m)

Households and Population

	Yr 1996	Yr 2000
Households	80	83
Population	420	436

Size of Residential Area

Fragments	3	
E-W	1,000	(m)
N-S	600	(m)

Access

Pist	8.0	(km)
Path	0.0	(km)
Total	8.0	(km)

Capacity of Photovoltaic

Power demand	22.83	(kWh/day)	Installed capacity	7,625	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	87	20	
Total Capacity		7,625	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	107	
Total Capacity	10,700	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	107	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	107	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	50,783	(US $)	Variable cost(O M cost)	91,194	(US $)
Delivery of PV module	10,141	(US $)			
Battery	9,780	(US $)	Total Cost	231,486	(US $)
Controller equipment	9,610	(US $)			
Installation cost	27,820	(US $)	Economic/Financial evaluation		
Tax	9,446	(US $)	EIRR	---	(%)
Superviser fee	10,815	(US $)	B / C*	0.58	
Contingency	11,897	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	140,292	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-67	Scheme Name	Lakaarna

Administrative Division

Douar	1060	Lakaarna			
C.R.	35	Sidi Badhaj	Cercle	3	Amizmiz

Location

Latitude	N 31	14'	47"	Longitude	W 8	15'	9"	Altitude	930 (m)

Households and Population

	Yr 1996	Yr 2000
Households	30	31
Population	185	192

Size of Residential Area

Fragments	1	
E-W	300	(m)
N-S	1,300	(m)

Access

Pist	3.0	(km)
Path	0.0	(km)
Total	3.0	(km)

Capacity of Photovoltaic

Power demand	8.34	(kWh/day)	Installed capacity	2,730	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	32	6	
Total Capacity		2,730	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	38	
Total Capacity	3,800	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	38	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	38	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	18,182	(US $)	Variable cost(O M cost)	33,240	(US $)
Delivery of PV module	3,631	(US $)			
Battery	3,540	(US $)	Total Cost	83,378	(US $)
Controller equipment	3,420	(US $)			
Installation cost	9,880	(US $)	Economic/Financial evaluation		
Tax	3,368	(US $)	EIRR	5	(%)
Superviser fee	3,865	(US $)	B / C*	0.98	
Contingency	4,252	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	50,138	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-68	Scheme Name	Tarast

Administrative Division

Douar	1131	Tarast			
C.R.	41	Ait Aadel	Cercle	4	Ait Ourir

Location

Latitude	N 31	33'	44"	Longitude	W 7	12'	22"	Altitude	1,210 (m)

Households and Population

	Yr 1996	Yr 2000
Households	45	47
Population	417	433

Size of Residential Area

Fragments	1	
E-W	800	(m)
N-S	500	(m)

Access

Pist	28.0	(km)
Path	0.0	(km)
Total	28.0	(km)

Capacity of Photovoltaic

Power demand	13.11	(kWh/day)	Installed capacity	4,465	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	50	13	
Total Capacity		4,465	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	63	
Total Capacity	6,300	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	63	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	63	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	29,737	(US $)	Variable cost(O M cost)	52,866	(US $)
Delivery of PV module	5,938	(US $)			
Battery	5,720	(US $)	Total Cost	135,169	(US $)
Controller equipment	5,670	(US $)			
Installation cost	16,380	(US $)	Economic/Financial evaluation		
Tax	5,554	(US $)	EIRR	---	(%)
Superviser fee	6,345	(US $)	B / C*	0.74	
Contingency	6,979	(US $)	Monthly payment per H.H.*	4.2	(US $)
Fixed cost	82,323	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. P-69 Scheme Name Assaka

Administrative Division

Douar	1132	Assaka			
C.R.	41	Ait Aadel	Cercle	4	Ait Ourir

Location

Latitude	N 31	32'	25"	Longitude	W 7	12'	53"	Altitude 1,200 (m)

Households and Population

	Yr 1996	Yr 2000
Households	45	47
Population	387	401

Size of Residential Area

Fragments	1	
E-W	700	(m)
N-S	500	(m)

Access

Pist	28.0	(km)
Path	3.5	(km)
Total	31.5	(km)

Capacity of Photovoltaic

Power demand	12.82	(kWh/day)	Installed capacity	4,370	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	48	14	
Total Capacity		4,370	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	62	
Total Capacity	6,200	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	62	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	62	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	29,104	(US $)	Variable cost(O M cost)	51,576	(US $)
Delivery of PV module	5,812	(US $)			
Battery	5,520	(US $)	Total Cost	132,205	(US $)
Controller equipment	5,580	(US $)			
Installation cost	16,120	(US $)	Economic/Financial evaluation		
Tax	5,444	(US $)	EIRR	---	(%)
Superviser fee	6,214	(US $)	B / C*	0.74	
Contingency	6,835	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	80,629	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No.	P-70	Scheme Name	Ansa

Administrative Division

Douar	1170	Ansa			
C.R.	44	Tighdouine	Cercle	4	Ait Ourir

Location

Latitude	N 31	24'	14"	Longitude	W 7	28'	55"	Altitude	1,880 (m)

Households and Population

	Yr 1996	Yr 2000
Households	59	61
Population	300	311

Size of Residential Area

Fragments	1	
E-W	300	(m)
N-S	800	(m)

Access

Pist	0.0	(km)
Path	11.0	(km)
Total	11.0	(km)

Capacity of Photovoltaic

Power demand	17.02	(kWh/day)	Installed capacity	8,275	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	15	130	
Total Capacity		8,275	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	80	
Total Capecity	8,000	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	80	(kit)

>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	80	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	55,112	(US $)	Variable cost(O M cost)	67,764	(US $)
Delivery of PV module	11,006	(US $)			
Battery	7,280	(US $)	Total Cost	197,512	(US $)
Controller equipment	7,200	(US $)			
Installation cost	20,800	(US $)	Economic/Financial evaluation		
Tax	7,056	(US $)	EIRR	---	(%)
Superviser fee	10,140	(US $)	B / C*	0.55	
Contingency	11,154	(US $)	Monthly payment per H.H.*	4.1	(US $)
Fixed cost	129,748	(US $)			

* Initial investment 0%, Discount Rate 6%

Inventory concerned on **Photovoltaic Aspects**

Scheme No. **P-71** Scheme Name **Ezzaoulte**

Administrative Division

Douar	1200	Ezzaoulte			
C.R.	44	Tighdouine	Cercle	4	Ait Ouir

Location

Latitude	N 31	21'	24"	Longitude	W 7	31'	55"	Altitude	1,690 (m)

Households and Population

	Yr 1996	Yr 2000
Households	16	17
Population	121	126

Size of Residential Area

Fragments	1	
E-W	200	(m)
N-S	400	(m)

Access

Pist	0.0	(km)
Path	18.0	(km)
Total	18.0	(km)

Capacity of Photovoltaic

Power demand	5.30	(kWh/day)	Installed capacity	2,760	(Wp)

Facility Description

>PV module

Type	Silicon Type		
Panel output	75	55	(Wp)
Voltage	12	12	(V)
Numbers of Panel	6	42	
Total Capacity		2,760	(Wp)

>Battery

Type	Portable lead clad	
Capacity	100	(Ah)
Voltage	12	(V)
Numbers of Battery	27	
Total Capacity	2,700	(Ah)

>Controller

Type	Battery charge	
Capacity	500	(W)
Numbers of Controller	27	(kit)

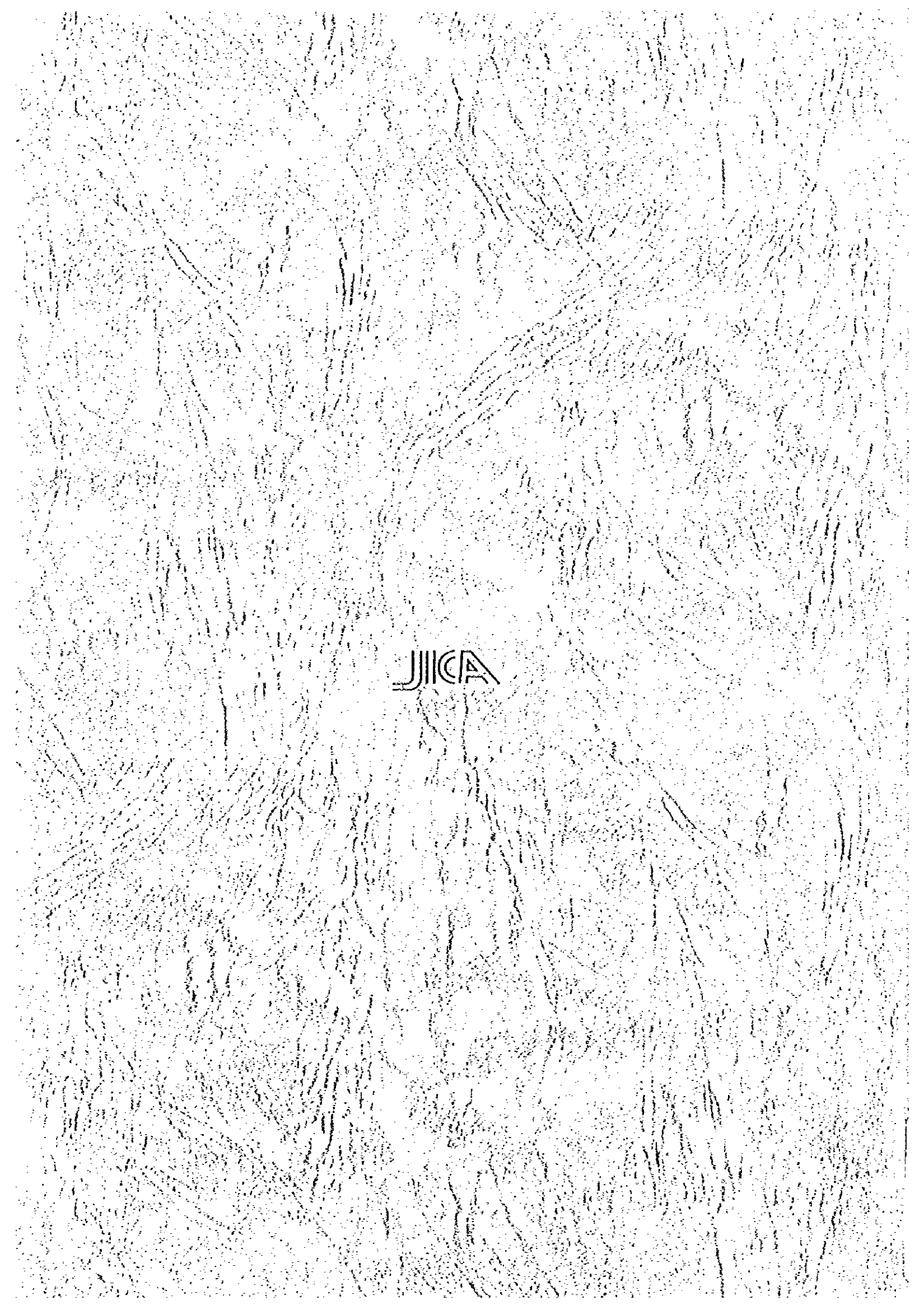
>Connecting Cable and Switch

Type of Switch	Single phase switch	
Type of Cable	Single phase CV	
Numbers of System	27	(kit)

Preliminary Cost Estimate and Project Evaluation

PV module	18,382	(US $)	Variable cost(O M cost)	20,922	(US $)
Delivery of PV module	0	(US $)			
Battery	2,320	(US $)	Total Cost	0	(US $)
Controller equipment	2,430	(US $)			
Installation cost	7,020	(US $)	Economic/Financial evaluation		
Tax	2,354	(US $)	EIRR	---	(%)
Superviser fee	3,382	(US $)	B / C*	0.99	
Contingency	3,720	(US $)	Monthly payment per H.H.*	4.6	(US $)
Fixed cost	43,279	(US $)			

* Initial investment 0%, Discount Rate 6%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