

**Appendix 13 PV 地方電化事業計画モデルと
財務・経済分析**

Appendix Table 13.2-1 Assumption (Base Case A-1)

The Master Plan Study for PV Electrification in Botswana
Financial Calculation

Assumption

1. PV System Configuration

1) Solar Home System	Capacity	50wp	1 pce
	Accessory	Battery (102Ah)	1 pce
2) Concentrated PV system	Capacity	500wp	
	Accessory	Battery (102Ah x 10)	1 lot
3) Battery Charge Station system			
Base Design Configuration	Capacity	500Wp	
	Accessory	Battery (30Ah)	36 pcs as Spare
Households covered by this system		30 households/System	
		20% of total households	
BCS are installed in every village and locality on proportional design configuration to Base Design.			
BCS Capacity per user (Wp/HHs)		16.7	
Battery spare		120% of BCS households	

Coverage rate and number of households applied are based on the above figure.

Selection

Combination of 1)+2):	1	2
Combination of 1)+2)+3):	2	

2. PV electrified Villages and Localities

Electrification Rate (variable)	See INPUT (2)	40%	20% for BCS ←
Installation period from ending in	1. st year		10 th year

Installation period in one village/locality	3 years
Yearly install.rate	1st year 100%
	1st year 35%
	2nd year 40%
	3rd year 25%

Number of Zones for PV Installation 6

3. PV size and demands

1) Households	Projected Ratio	Ratio driven from Socio-economic Survey
50 Wp	77.1% (2-light system)	50.0%
100 Wp	15.8% (3-4light system)	22.0%
150 Wp	3.5% (6light + radio)	8.1%
200 Wp	0.9% (3-4light + W&B TV)	0.9%
250 Wp	2.6% (3-4light + color TV)	5.7%
350 Wp	(3-4light + fidge)	13.3%
	1.358 times of 50Wp PV system	2.435

2) Public facilities

Factor	1.00
1650 Wp/Village	33 times of 50Wp PV system
350 Wp/Localities	7 times of 50Wp PV system

Average of One System
350Wp 7 of 50Wp

4. PV system Installation Procedure and Project Life for the evaluation

Installation Period	As shown in 1.(equal installation)
Project Life for the evaluation	20 years

5. Investment Amount (Facility Cost)

Discount rate (for BCS)	1.00	
Households (size 50wp)	4,500	pula/system
Public facilities (size 50wp)	4,500	pula/system
Battery Charge Station (500Wp)	97,650	pula/system
User of Battery Charging Station	1,400	pula/system including spare battery
Replacement of used Battery		
Households (size 50wp)	500	pula Every 3 years
Public facilities (size 50wp)	500	pula Every 3 years
500wp+Battery C Station	245	pula Every 3 years
Replacement of controller etc. (SHS)	500	pula Every 10 years

Replacement of controller etc. (BCS)	200 pula	Every 10 years
Land Cost:	Free	
Office Building for maintenance persons	50 Pula/month·person (rental)	

6. Manning Schedule

1) Village operation unit

Contract/Deposit Collecting Agent	1 for each Village/Locality
System monitoring Agent	1 for each Village/Locality
Prepaid card/BCS coupon Sales Agent	1 for each Village/Locality

2) Head office

	No. of Person	No. of HHs	Duration	No. of Person	No. of HHs	Duration
Director	1	for the Implementation Body				
Finance/Account/Commercail Section						
Manager	0	for the Implementatin Body				
Accountant	1	per6000HHs	~5th year	1	per12000HHs	6th year~
Finance Officer	0.5	per20000HHs	~5th year	0.5	per20000HHs	6th year~
Commercial Officer	0.5	per20000HHs	~5th year	0.5	per20000HHs	6th year~
Assistant	0	per10000HHs	~5th year	1	per10000HHs	6th year~
Admi. & Training Manager						
Manager	0	for the Implementatin Body				
Officer	1	per20000HHs	~5th year	1	per20000HHs	6th year~
Assistant	1	per20000HHs	~5th year	1	per20000HHs	6th year~
Development & Planing Section						
Manager	0	for the Implementatin Body until installation program is finished				
Officer	1	for the Implementatin Body until installation program is finished				
Assistant	0	for the Implementatin Body until installation program is finished				
Purchasing Section						
Manager	0	for the Implementatin Body				
Officer	1	per2000HHs	evey new insta	1	after install. program is finished	
Assistant	1	per1500HHs	evey new insta	1	after install. program is finished	
Operation Section						
Manager	1	for the Implementatin Body				
Officer	1	per12000HHs	~13th year	1	per12000HHs	14th year~
Assistant	1	per12000HHs	~13th year	1	per12000HHs	14th year~
Miscellaneous Labor	1	per6000HHs	~5th year	1	per6000HHs	6th year~
3) District Office						
Maintenance Section						
Leading technician	1	per each zone	~13th year	1	per each zone	14th year~
Assistant technician	1	per each zone	~13th year	0	per each zone	14th year~
Commercial Section						
Officer	1	per600HHs	evey new insta	1	after installation. program is finished	
Assistant	1	per600HHs	evey new insta	0	after installation program is finished	
Miscellaneous Labor	1	per6000HHs	~13th year	1	per6000HHs	14th year~

7. Finance Arrangement (refer to 12. Case Study)

Equity	20.0% of Initial Investment	Cut off	12 years
Subsidy for Investment Cost (variable)	80.0% of Initial Investment	Cut off	12 years
Subsidy for Operation Cost (variable)	0.0% of Monthly tariff	Cut off	12 years
Loan (variable)	0.0% of Initial Investment	Cut off	12 years
Loan Condition	Interest	14.0% per ann.	
	Repayment term	10 years	
	Grace Period	0 years	

8. Income Condition

Tariff collection rate	90%
Tariff	
H/Hs (size 50wp)	40 Pula/month
Public space (size 50wp)	60 Pula/month
Public (500wp+Battery Charge St.)	15 Pula/month
Deposit	3 months tariff
Amount	0% Surrender rate
Operation Profit	10%

- This money to be allotted in case the users arrears monthly payment
- This money to be allotted for the loss/damage of the facility due to user's fault
- The balance to be returned to the user on surrender(No interest)

9. Operation Cost

Wage

Discount rate for salaries of BPC	1.00
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① Village operation unit

Contract/Deposit Collecting Agent Monitoring/Service personnel	10 % to the Deposit amount for SHS
Salary to be Commission system	7.5 Pula for 50Wp SHS User 10.0 Pula for 100Wp SHS User 12.5 Pula for 150Wp SHS User 15.0 Pula for 200Wp SHS User 17.5 Pula for 250Wp SHS User 20.0 Pula for SHS User of more than 250Wp 33% of Sales of BCS User
Min. Base Salary	300 P/month
Prepaid card/BCS coupon Sales Agent	5 % to the sales amount

Average commission
8.39 P/User
10.755

② Head office

Director	10,000 Pula/month
Manager	7,000 Pula/month
Officer	4,000 Pula/month
Assistant	2,000 Pula/month
Miscellaneous Labor	1,000 Pula/month

③ District office

Maintenance Engineer	5,000 Pula/month
Officer	4,000 Pula/month
Assistant	2,000 Pula/month
Miscellaneous Labor	1,000 Pula/village

Overhead 50% of wage for ② Head office and ③ District office

Maintenance cost

Replacement of batteries to be counted in the investment

Insurance, Taxes as cost 0 pula

Sales Commission

Commision of Deposit Collector

10. Depreciation

Depreciation period	PV system 20 years	Replaced batteries 3 years	Replaced controller 10 years
Method	Straight Curve	Straight Curve	Straight Curve
Salvage Book Value	0%	0%	0%

11. Taxes

Corporate Tax	0%
Import Duty	0%

12. External Benefit

	0 Pula/kWh
CO2 reduction	3.80 kgCO2/kWh
Unit price of CO2 reduction	20 US\$/t-CO2
Benefit of CO2 reduction	0.46 Pula/kWh
Saving Kerosene	8.5 litle/House/month
Unit price of kerosene	2.25 Pura/litle
Benefit of kerosene saving	19.13 Pura/house/month
Benefit of kerosene saving	2.28 Pula/kWh
Saving candle	12 Pura/house/month
Benefit of candle saving	1.41 Pula/kWh
Saving radiocassette batteries	12 Pura/house/month
Benefit of batteries saving	1.41 Pula/kWh

Appendix Table 13.2-1-1 Financial Analysis (Base Case A-1)

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
Depreciation - 8								93	187	187	93	0	0	0	0	0	0	0	0	0	560	
Depreciation - 9									90	180	180	90	0	0	0	0	0	0	0	0	539	
Depreciation - 10									131	262	262	131	0	0	0	0	0	0	0	0	785	
Depreciation - 11									127	255	255	127	0	0	0	0	0	0	0	0	764	
Depreciation - 12									245	490	490	245	0	0	0	0	0	0	0	0	735	
Depreciation - 13									798	1597	1597	798	0	0	0	0	0	0	0	0	4790	
Depreciation - 14									705	1410	1410	705	0	0	0	0	0	0	0	0	4230	
Depreciation - 15									638	1276	1276	638	0	0	0	0	0	0	0	0	3827	
Depreciation - 16									798	1597	1597	798	0	0	0	0	0	0	0	0	4790	
Depreciation - 17									705	1410	1410	705	0	0	0	0	0	0	0	0	4230	
Depreciation - 18									638	1276	1276	638	0	0	0	0	0	0	0	0	3189	
Depreciation - 19									798	1597	1597	798	0	0	0	0	0	0	0	0	4790	
Depreciation - 20									705	1410	1410	705	0	0	0	0	0	0	0	0	4230	
Controller Replacement																						
Accumulated Controller Exchange																						
Book value	0	0	0	0	0	0	0	0	0	0	1247	2408	4305	5534	6574	7664	8660	9638	10640	11505	0	
Accumulated depreciation											62	265	621	1113	1718	2430	3162	3916	4678	5438	6208	
Depreciation (Total)											62	265	621	1113	1718	2430	3162	3916	4678	5438	6208	
Depreciation - 1											62	125	125	125	125	125	125	125	125	125	125	1185
Depreciation - 2											62	125	125	125	125	125	125	125	125	125	125	1185
Depreciation - 3											62	125	125	125	125	125	125	125	125	125	125	1185
Depreciation - 4											62	125	125	125	125	125	125	125	125	125	125	1185
Depreciation - 5											62	125	125	125	125	125	125	125	125	125	125	1185
Depreciation - 6											62	125	125	125	125	125	125	125	125	125	125	1185
Depreciation - 7											62	125	125	125	125	125	125	125	125	125	125	1185
Depreciation - 8											62	125	125	125	125	125	125	125	125	125	125	1185
Depreciation - 9											62	125	125	125	125	125	125	125	125	125	125	1185
Depreciation - 10											62	125	125	125	125	125	125	125	125	125	125	1185
LONG TERM DEBT																						
Long Term Debt																						
Accumulated LTD (A)																						
Principal																						
Interest																						
Debt Service																						
Balance after repayment (A-B)																						
Accumulated Total Repayment (B)																						
Repayment - 1																						
Repayment - 2																						
Repayment - 3																						
Repayment - 4																						
Repayment - 5																						
Repayment - 6																						
Repayment - 7																						
Repayment - 8																						
Repayment - 9																						
Repayment - 10																						
Principal for interest (Total)																						
Principal - 1																						
Principal - 2																						
Principal - 3																						
Principal - 4																						
Principal - 5																						
Principal - 6																						
Principal - 7																						
Principal - 8																						
Principal - 9																						
Principal - 10																						
MANAGING																						
Village Operation Unit																						
Coordinator	30	60	91	122	153	185	217	249	281	315	315	315	315	315	315	315	315	315	315	315	315	
Monitoring/Service personnel	30	60	91	122	153	185	217	249	281	315	315	315	315	315	315	315	315	315	315	315	315	
Head Office																						
Director	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20	
Finance/Account/Commercial Section																						
Manager	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Accountant	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	
Finance Officer	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Commercial Officer	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Assistant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	

Appendix Table 13.2-1-1 Financial Analysis (Base Case A-1)

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Administration & Training Manager	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Manager	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Officer	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Assistant	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Development & Planning Section																				
Manager	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Officer	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Assistant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Purchasing Section																				
Manager	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Officer	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Assistant	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Operation Section																				
Manager	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Officer	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Assistant	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Miscellaneous Labor	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Total No. of Director	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total No. of Manager	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total No. of Officer	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total No. of Assistant	3	4	4	3	3	3	4	4	5	5	6	6	7	7	7	7	7	7	7	7
Total No. of Miscellaneous Labor	1	1	1	1	1	1	2	2	2	2	3	3	3	3	3	3	3	3	3	3
Miscellaneous Labor	12	13	13	12	14	14	14	14	15	15	19	19	17	17	17	17	17	17	17	17
Total Head office																				
District Office																				
Maintenance Section																				
Leading technician	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Assistant technician	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Commercial Section																				
Officer	2	3	3	3	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1
Assistant	2	3	3	3	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1
Miscellaneous Labor	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total No. of Technician	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Total No. of Commercial Officer	2	3	3	3	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1
Total No. of Assistant	2	3	3	3	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1
Total No. of Miscellaneous Labor	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total District Office	17	19	19	19	18	18	18	18	18	18	19	17	17	11	11	11	11	11	11	11
TOTAL	29	32	32	31	32	32	32	32	33	33	38	36	34	28	28	28	28	28	28	28
INCOME STATEMENTS																				
OPERATION COST	2440	3035	3470	3836	4246	4608	4984	5334	5706	6018	6488	6616	7360	8302	9408	10430	10134	10234	10333	136050
Commission of Contract/Deposit Collector	14	25	27	21	19	18	18	18	17	16	10	4	0	0	0	0	0	0	0	0
Wage of System Monitoring Agent	146	369	580	742	880	1018	1152	1384	1410	1523	1583	1606	1606	1606	1606	1606	1606	1606	1606	1606
Average H/Hs in one Village/Locality	29	40	44	44	42	41	40	39	39	38	40	40	40	40	40	40	40	40	40	40
Average No. of PV system 50Wp SHS	39	54	60	59	57	56	55	54	53	51	54	55	55	55	55	55	55	55	55	55
Average No. of PV system 50Wp for Public Euc.	30	29	26	25	23	22	21	20	20	20	19	19	19	19	19	19	19	19	19	19
Average salary of System Monitoring Agent(P/m)	405	513	531	507	479	459	442	430	418	403	419	425	425	425	425	425	425	425	425	425
Sales Commission	32	101	175	241	296	348	399	446	495	539	569	581	584	584	584	584	584	584	584	584
Head Office	1452	1548	1548	1524	1524	1500	1500	1500	1524	1524	1668	1596	1524	1164	1164	1164	1164	1164	1164	1164
Director	576	600	600	576	636	612	612	612	636	636	768	768	696	696	696	696	696	696	696	696
Officer	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84
Assistant	72	96	96	72	72	96	96	96	120	120	144	144	144	144	144	144	144	144	144	144
Miscellaneous labor	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
District Office	876	948	948	948	948	888	888	888	888	888	900	828	828	468	468	468	468	468	468	468
Maintenance Engineer	96	144	144	144	144	96	96	96	96	96	96	96	96	360	360	360	360	360	360	360
Commercial Officer	48	72	72	72	72	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Assistant	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Miscellaneous labor	726	774	774	762	762	750	750	750	762	762	834	798	762	582	582	582	582	582	582	582
Overhead																				
Maintenance Cost (input by hand)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Lease for Office Building	69	216	363	545	762	971	1163	1333	1496	1651	1821	2028	2881	4263	5469	6091	6195	6295	6394	6486
Taxes and Insurances (input by hand)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest Paid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reimbursement of Security Money	952	2472	3983	5266	6360	7437	8444	9430	10423	11310	11786	11972	12002	12002	12002	12002	12002	12002	12002	12002
Tariff	632	2025	3503	4818	5923	6963	7972	8929	9891	10790	11382	11623	11688	11688	11688	11688	11688	11688	11688	11688
SHS (50Wp)	254	951	1883	2748	3459	4126	4786	5439	6073	6671	7136	7377	7441	7441	7441	7441	7441	7441	7441	7441
Public PV (50Wp)	295	861	1345	1764	2140	2502	2832	3121	3443	3744	3872	3872	3872	3872	3872	3872	3872	3872	3872	3872
Battery Charge Station (100Wp)	83	213	275	307	324	335	354	369	375	375	375	375	375	375	375	375	375	375	375	375

Appendix Table 13.2-1-1 Financial Analysis (Base Case A-1)

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Deposits	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
SHS (50Wp)	305	397	390	323	281	290	260	263	268	231	98	36	0	0	0	0	0	0	0	0
Public PV (50Wp)	141	246	271	209	186	185	182	181	171	160	98	36	0	0	0	0	0	0	0	0
BCS user	164	150	119	114	95	106	78	82	96	71	0	0	0	0	0	0	0	0	0	0
Operating Profit of Deposit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET PROFIT BEFORE TAX	15	50	90	125	156	184	212	238	264	289	306	312	314	314	314	314	314	314	314	314
INCOME TAX	(1488)	(563)	(513)	(430)	(214)	(283)	(346)	(406)	(471)	(529)	(529)	(535)	(464)	(380)	(259)	(172)	(186)	(176)	(169)	(225)
SUBSIDY FOR MONTHLY TARIFF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET PROFIT AFTER TAX	(1488)	(563)	(513)	(430)	(214)	(283)	(346)	(406)	(471)	(529)	(529)	(535)	(464)	(380)	(259)	(172)	(186)	(176)	(169)	(225)
DIVIDENDS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RETAINED EARNINGS	(1488)	(563)	(513)	(430)	(214)	(283)	(346)	(406)	(471)	(529)	(529)	(535)	(464)	(380)	(259)	(172)	(186)	(176)	(169)	(225)
FUND FLOW																				
SOURCES OF FUND	13806	15525	14901	15270	13994	15549	16763	17406	17749	18654	18465	12722	7523	8063	8063	8063	8063	8063	8063	29015
Capital Generated from Operations	(1419)	(347)	876	1975	2876	3800	4623	5429	6213	6943	7119	7384	7523	8063	8063	8063	8063	8063	8063	29015
Operating profit	(1488)	(563)	(513)	(430)	(214)	(283)	(346)	(406)	(471)	(529)	(529)	(535)	(464)	(380)	(259)	(172)	(186)	(176)	(169)	(225)
Depreciation	69	216	363	545	762	971	1163	1333	1496	1651	1821	2028	2881	4263	5469	6091	6195	6295	6394	6486
Tax paid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Financial Resources	15225	13872	14024	13295	11117	11749	12141	11977	11536	11711	7747	5337	0	0	0	0	0	0	0	0
Equity	2761	3105	2805	2659	2223	2350	2428	2395	2307	3342	1749	1317	0	0	0	0	0	0	0	0
Subsidy	11045	12420	11219	10636	8894	9399	9712	9382	9229	9369	5998	4020	0	0	0	0	0	0	0	0
Long Term Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital Increase for Previous Deficit	1419	347	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
USES OF FUNDS	13806	15525	14024	13295	11117	11749	12141	11977	11536	11711	8745	6386	6386	5459	4867	5880	5226	4825	5773	5095
Fixed Capital Expenditures	13806	15525	14024	13295	11117	11749	12141	11977	11536	11711	8745	6386	6386	5459	4867	5880	5226	4825	5773	5095
PV System	13806	15525	14024	13295	11117	11749	12141	11977	11536	11711	8745	6386	6386	5459	4867	5880	5226	4825	5773	5095
Battery Exchange	0	0	0	1594	1758	1560	2895	2798	3695	3925	3822	3677	4790	4230	3827	4790	4230	3827	4790	4230
Controller Replacement	0	0	0	0	0	0	0	0	0	0	1247	1560	1497	1229	1040	1090	996	998	982	865
Replacement of Long Term Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CASH INCREASE OR DECREASE	0	0	876	1975	2876	3800	4623	5429	6213	6943	6121	6136	1235	2604	3196	2328	3238	2290	23919	86497
Beginning Cash Balance	0	0	876	876	2852	5728	9528	14151	19580	25792	32736	38856	44993	46238	48832	52028	54211	57049	60287	62578
Ending Cash Balance	0	0	876	2852	5728	9528	14151	19580	25792	32736	38856	44993	46238	48832	52028	54211	57049	60287	62578	662802
BALANCE SHEET																				
ASSETS	13737	29046	43583	58308	71539	86118	101718	117791	134044	151047	164091	174784	179426	183227	185821	187793	189661	191429	193099	215627
Current Assets	0	0	876	2852	5728	9528	14151	19580	25792	32736	38856	44993	46238	48832	52028	54211	57049	60287	62578	86497
Accumulated Excess Cash	13737	29046	43583	58308	71539	86118	101718	117791	134044	151047	164091	174784	179426	183227	185821	187793	189661	191429	193099	215627
Net Fixed Assets	13806	29331	43355	58056	64415	74604	88850	99029	109655	113331	114679	114679	114679	114679	114679	114679	114679	114679	114679	174118
Investment	13806	29331	43355	58056	64415	74604	88850	99029	109655	113331	114679	114679	114679	114679	114679	114679	114679	114679	114679	174118
PV System (accumulation)	0	0	0	1594	3352	4912	7807	10605	13399	17225	21047	24724	29514	33744	37571	42362	46592	50419	55209	59440
Battery exchange (accumulation)	0	0	0	0	0	0	0	0	0	0	1247	2808	4305	5534	6574	7664	8660	9688	10640	11505
Controller Replacement (accumulation)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(Less) accumulated depreciation	69	285	648	1193	1936	2926	4089	5422	6918	8569	10390	12419	15300	19563	25032	31123	37318	43613	50007	56494
LIABILITIES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Current Liabilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Current portion of long term debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fixed Liabilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Long term debt balance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other fixed liabilities (input by hand)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STOCK HOLDERS EQUITY	13737	29046	43583	58308	71539	86118	101718	117791	134044	151047	164091	174784	179426	183227	185821	187793	189661	191429	193099	215627
Equity (accumulation)	2761	3105	2805	2659	2223	2350	2428	2395	2307	3342	1749	1317	0	0	0	0	0	0	0	0
Subsidy (accumulation)	11045	12464	11263	10679	8918	9509	9819	9487	9326	9454	5998	4020	0	0	0	0	0	0	0	0
Capital Increase for Previous Deficit (accumulation)	1419	347	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retained Earnings (accumulation)	(1488)	(563)	(513)	(430)	(214)	(283)	(346)	(406)	(471)	(529)	(529)	(535)	(464)	(380)	(259)	(172)	(186)	(176)	(169)	(225)
LIABILITIES AND SH EQUITY	13737	29046	43583	58308	71539	86118	101718	117791	134044	151047	164091	174784	179426	183227	185821	187793	189661	191429	193099	215627
CASH FLOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OPERATIONS	(1488)	(563)	(513)	(430)	(214)	(283)	(346)	(406)	(471)	(529)	(529)	(535)	(464)	(380)	(259)	(172)	(186)	(176)	(169)	(225)
Profit after tax	69	216	363	545	762	971	1163	1333	1496	1651	1821	2028	2881	4263	5469	6091	6195	6295	6394	6486
Depreciation	(1419)	(347)	876	1975	2876	3800	4623	5429	6213	6943	7119	7384	7523	8063	8063	8063	8063	8063	8063	29015
Cash generated from operations	(13806)	(15525)	(14024)	(13295)	(11117)	(11749)	(12141)	(11977)	(11536)	(11711)	(8745)	(6386)	(6386)	(5459)	(4867)	(5880)	(5226)	(4825)	(5773)	(5095)
INVESTMENTS	(13806)	(15525)	(14024)	(13295)	(11117)	(11749)	(12141)	(11977)	(11536)	(11711)	(8745)	(6386)	(6386)	(5459)	(4867)	(5880)	(5226)	(4825)	(5773)	(5095)
Initial Investments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PV system	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Battery exchange	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Controller replacement	0																			

Appendix Table 13.2-1-1 Financial Analysis (Base Case A-1)

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
FINANCINGS																					
<i>Repayment of Principal</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cash Used for Financings</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CASH INCREASE OR DECREASE	0	(0)	876	1975	2876	3800	4623	5429	6213	6943	6121	6136	1235	2604	3196	2183	2838	3238	2290	23919	86497
<i>Beginning Cash Balance</i>	0	0	(0)	876	2852	5728	9528	14151	19580	25792	32736	38856	44993	46228	48832	52028	54211	57049	60287	62578	62578
<i>Ending Cash Balance</i>	0	(0)	876	2852	5728	9528	14151	19580	25792	32736	38856	44993	46228	48832	52028	54211	57049	60287	62578	62578	86497
IRROE (without external benefit)																					
FIXED CAPITAL EXPENDITURES	4180	3452	2805	2659	2223	2350	2428	2395	2307	2342	1749	1317	0	0	0	0	0	0	0	0	0
Equity	2761	3105	2805	2659	2223	2350	2428	2395	2307	2342	1749	1317	0	0	0	0	0	0	0	0	0
Capital Increase for Previous Deficit	1419	347	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Long-Term Loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CASH INFLOW	0	(0)	876	1975	2876	3800	4623	5429	6213	6943	6121	6136	1235	2604	3196	2183	2838	3238	2290	23919	86497
Cash Increase or Decrease	0	(0)	876	1975	2876	3800	4623	5429	6213	6943	6121	6136	1235	2604	3196	2183	2838	3238	2290	23919	86497
Repayment of Principal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest paid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BEFORE TAX INFLOW	(4180)	(3452)	(1928)	(684)	653	1450	2195	3033	3906	4601	4372	4819	1235	2604	3196	2183	2838	3238	2290	23919	56289
IRROE (without external benefit)																					
PAID-UP CAPITAL	4180	3452	2805	2659	2223	2350	2428	2395	2307	2342	1749	1317	0	0	0	0	0	0	0	0	0
Equity	2761	3105	2805	2659	2223	2350	2428	2395	2307	2342	1749	1317	0	0	0	0	0	0	0	0	0
Capital Increase for Previous Deficit	1419	347	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CASH INFLOW	0	(0)	876	1975	2876	3800	4623	5429	6213	6943	6121	6136	1235	2604	3196	2183	2838	3238	2290	23919	86497
Cash Increase or Decrease	0	(0)	876	1975	2876	3800	4623	5429	6213	6943	6121	6136	1235	2604	3196	2183	2838	3238	2290	23919	86497
NET CASH INFLOW	(4180)	(3452)	(1928)	(684)	653	1450	2195	3033	3906	4601	4372	4819	1235	2604	3196	2183	2838	3238	2290	23919	56289
IRROE =	18.05%	18.05%	18.05%	18.05%	18.05%	18.05%	18.05%	18.05%	18.05%	18.05%	18.05%	18.05%	18.05%	18.05%	18.05%	18.05%	18.05%	18.05%	18.05%	18.05%	18.05%

Appendix Table 13.2-1-2 Financial Sensitive Analysis Summary

	Case No.	Case 11FA	Case 12FA	Case 13FA	Base case F	Case 20FA (C)	Case 20FA	Case 21FA	Case 22FA	Case 30FA	Case 31FA	Case 32FA	Case 40FA
Villages	No. of Target Villages	145	145	145	145	145	145	145	145	145	145	145	145
	No. of Population in Target Villages	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767
	No. of H/Hs in Target Villages in 2001	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787
Localities	No. of Target Localities	170	170	170	170	170	170	170	170	170	170	170	170
	No. of Population in Target Localities	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666
	No. of H/Hs in Target Localities	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542
Villages and Localities	Total No. of Villages and Localities	315	315	315	315	315	315	315	315	315	315	315	315
	Population in Target Villages and Localities	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433
	Total No. of H/Hs in Target Villages and Localities	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329
SHS Electrification	Electrification Rate with SHS	30%	50%	60%	40%	40%	40%	40%	40%	40%	40%	40%	40%
	No. of H/Hs electrified with SHS	9,513	15,856	19,027	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684
	kWp of SHS installed	646.0	1,076.6	1,291.9	861.3	861.3	861.3	861.3	861.3	861.3	861.3	861.3	861.3
Public Facilities	No. of Villages for Public Facility PV (1630Wp)	145	145	145	145	145	145	145	145	145	145	145	145
	No. of Localities for Public Facility PV (350Wp)	170	170	170	170	170	170	170	170	170	170	170	170
	kWp of Public PV installed	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8
BCS Electrification	Electrification Rate with BCS in BCS Targeted	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	No. of Villages and Localities electrified with BCS	62	62	62	62	62	62	62	62	62	62	62	62
	No. of BCS User H/Hs	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314
	No. of BCS installed	62	62	62	62	62	62	62	62	62	62	62	62
	kW of BCS installed	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9
	Total No. of Households electrified with SHS and BCS	11,828	18,170	21,341	14,999	14,999	14,999	14,999	14,999	14,999	14,999	14,999	14,999
	Total Electrification Rate	37.3%	57.3%	67.3%	47.3%	47.3%	47.3%	47.3%	47.3%	47.3%	47.3%	47.3%	47.3%
	Total kWp installed	984.6	1,415.2	1,630.6	1,199.9	1,199.9	1,199.9	1,199.9	1,199.9	1,199.9	1,199.9	1,199.9	1,883.0
Equity (for the first 12 years)		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Subsidy for Investment Cost (for the first 12 years)		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
Loan (for the first 12 years)		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Interest		14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%
Repayment period (years)		12	12	12	12	12	12	12	12	12	12	12	12
Subsidy for Operation Cost (to Monthly Tariff)		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Monthly Tariff (Pula/Month)	50Wp (H/Hs)	40.0	40.0	40.0	40.0	32.0	36.0	44.0	48.0	40.0	40.0	40.0	40.0
	50Wp (Public facilities)	60.0	60.0	60.0	60.0	48.0	54.0	66.0	72.0	60.0	60.0	60.0	60.0
	500Wp BCS	15	15	15	15	12	14	17	18	15	15	15	15
	Collection rate	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
	50Wp(H/Hs)	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
	50Wp(Public facilities)	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
	1000Wp BCS	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650
PV demand by PV size		Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project
IRROI		16.2%	19.4%	20.7%	18.0%	7.4%	12.9%	23.1%	28.0%	22.1%	19.9%	16.4%	24.1%
IRROE		16.2%	19.4%	20.7%	18.0%	7.4%	12.9%	23.1%	28.0%	22.1%	19.9%	16.4%	24.1%
Total Investment Cost in 20 years		154,640	216,607	247,590	185,623	185,623	185,623	185,623	185,623	162,688	174,155	197,091	283,913
	SHS	58,136	96,893	116,272	77,514	77,514	77,514	77,514	77,514	62,011	69,763	85,266	138,989
	Public PV	26,888	26,888	26,888	26,888	26,888	26,888	26,888	26,888	21,510	24,199	29,576	26,888
	BCS	10,277	10,277	10,277	10,277	10,277	10,277	10,277	10,277	8,222	9,249	11,305	10,277
	Battery and controller renewal	59,339	82,549	94,154	70,944	70,944	70,944	70,944	70,944	70,944	70,944	70,944	107,759
Subsidy for operation cost		0	0	0	0	0	0	0	0	0	0	0	0
Subsidy for investment cost for 12 years		92,961	130,083	148,644	111,522	111,522	111,522	111,522	111,522	93,174	102,348	120,696	170,404
Subsidy rate for total investment cost		60.1%	60.1%	60.1%	60.1%	60.1%	60.1%	60.1%	60.1%	57.3%	58.8%	61.2%	60.9%
Subsidy for investment cost for 10 years		118,026	84,982	134,549	101,504	101,504	101,504	101,504	101,504	0	92,732	110,277	153,918
Total subsidy for 12 years		92,961	130,083	148,644	111,522	111,522	111,522	111,522	111,522	93,174	102,348	120,696	170,404
Equity		23,721	33,163	37,884	28,442	28,442	28,442	28,442	28,442	23,855	26,149	30,736	43,419
Capital increase for previous deficit		1,922	1,574	1,383	2,397	2,082	1,451	1,243	1,451	1,766	1,766	1,766	1,191
Total government fund (subsidy, equity and capital increase)		118,604	164,821	187,911	142,362	142,046	141,415	141,207	141,207	118,795	130,263	153,198	215,013
Total government fund rate for investment		76.7%	76.1%	75.9%	76.4%	76.5%	76.1%	76.1%	76.1%	73.0%	74.8%	77.7%	75.7%
Cash generation except saleout of salvaged book value		51,355	74,825	87,746	62,404	28,759	45,581	79,226	96,155	62,404	62,404	62,404	107,331
Cash generation including saleout of salvaged book value		71,187	103,181	120,363	86,497	52,853	69,675	103,320	120,249	85,112	85,805	87,190	144,944

Appendix Table 13.2-2 Financial Sensitive Analysis Summary

Case No.	Case 11FA	Case 12FA	Case 13FA	Basic Case FC	Case 20FA (C)	Case 20FA	Case 21FA	Case 22FA	Case 30FA	Case 31FA	Case 32FA	Case 40FA
Villages	145	145	145	145	145	145	145	145	145	145	145	145
No. of Population in Target Villages	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767
No. of H/Hs in Target Villages in 2001	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787
Localities	170	170	170	170	170	170	170	170	170	170	170	170
No. of Population in Target Localities	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666
No. of H/Hs in Target Localities	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542
Total No. of Villages and Localities	315	315	315	315	315	315	315	315	315	315	315	315
Population in Target Villages and Localities	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433
Total No. of H/Hs in Target Villages and Localities	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329
SHS Electrification	30%	50%	60%	40%	40%	40%	40%	40%	40%	40%	40%	40%
No. of H/Hs electrified with SHS	9,513	15,856	19,027	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684
kWp of SHS installed	646.0	1,076.6	1,291.9	861.3	861.3	861.3	861.3	861.3	861.3	861.3	861.3	1,544.3
Public Facilities	145	145	145	145	145	145	145	145	145	145	145	145
No. of Villages for Public Facility PV (1650Wp)	170	170	170	170	170	170	170	170	170	170	170	170
No. of Localities for Public Facility PV (350Wp)	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8
kWp of Public PV installed	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
BCS Electrification	62	62	62	62	62	62	62	62	62	62	62	62
Electrification Rate with BCS in BCS Targeted Villages	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314
No. of BCS User H/Hs	62	62	62	62	62	62	62	62	62	62	62	62
No. of BCS installed	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9
kW of BCS installed	11,828	18,170	21,341	14,999	14,999	14,999	14,999	14,999	14,999	14,999	14,999	14,999
Total No. of Households electrified with SHS and BCS	37.3%	57.3%	67.3%	47.3%	47.3%	47.3%	47.3%	47.3%	47.3%	47.3%	47.3%	47.3%
Total Electrification Rate	984.6	1,415.2	1,630.6	1,199.9	1,199.9	1,199.9	1,199.9	1,199.9	1,199.9	1,199.9	1,199.9	1,883.0
Total kWp installed	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Equity (for the first 12 years)	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
Subsidy for Investment Cost (for the first 12 years)	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Loan (for the first 12 years)	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%
Interest	12	12	12	12	12	12	12	12	12	12	12	12
Repayment period (years)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Subsidy for Operation Cost (to Monthly Tariff)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Monthly Tariff (Pula/Month)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
50Wp (Public facilities)	15	15	15	15	15	15	15	15	15	15	15	15
500Wp BCS	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Collection rate	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
System investment cost (pula)	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
50Wp(H/Hs)	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650
50Wp(Public facilities)	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0
1000Wp BCS	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0
PV demand by PV size	17.5%	14.9%	15.8%	13.9%	4.7%	9.4%	18.2%	22.4%	17.5%	15.5%	12.4%	18.3%
IRROI	12.2%	14.8%	15.9%	13.7%	3.6%	8.7%	18.5%	23.4%	17.8%	15.6%	12.0%	18.8%
IRROE	154,640	216,607	247,590	185,623	185,623	185,623	185,623	185,623	162,688	174,155	197,091	283,913
Total Investment Cost in 20 years	58,136	96,893	116,272	77,514	77,514	77,514	77,514	77,514	62,011	69,763	85,266	136,989
SHS	26,888	26,888	26,888	26,888	26,888	26,888	26,888	26,888	21,510	24,199	29,576	26,888
Public PV	10,277	10,277	10,277	10,277	10,277	10,277	10,277	10,277	8,222	9,249	11,305	10,277
BCS	59,339	82,549	94,154	70,944	70,944	70,944	70,944	70,944	70,944	70,944	70,944	107,759
Battery and controller renewal	0	0	0	0	0	0	0	0	0	0	0	0
Subsidy for operation cost	87,151	121,953	139,354	104,552	104,552	104,552	104,552	104,552	87,350	95,951	113,153	159,754
Subsidy for investment cost for 12 years	56.4%	56.3%	56.3%	56.3%	56.3%	56.3%	56.3%	56.3%	53.7%	55.1%	57.4%	56.3%
Subsidy rate for total investment cost	110,650	79,670	126,140	95,160	95,160	95,160	95,160	95,160	87,350	86,936	103,384	144,298
Subsidy for investment cost for 10 years	87,151	121,953	139,354	104,552	104,552	104,552	104,552	104,552	87,350	95,951	113,153	159,754
Total subsidy for 12 years	23,721	33,163	37,884	28,442	28,442	28,442	28,442	28,442	23,855	26,149	30,736	43,419
Equity	2,162	1,871	1,708	2,035	2,919	2,350	1,719	1,404	1,981	2,008	2,061	1,254
Capital increase for previous deficit	113,034	156,987	178,946	135,029	135,029	135,029	135,029	135,029	113,186	124,107	145,950	204,426
Total government fund (subsidy, equity and capital increase)	73.1%	72.5%	72.3%	72.7%	73.2%	72.9%	72.6%	72.4%	69.6%	71.3%	74.1%	72.0%
Total government fund rate for investment investment	41,541	61,138	72,122	50,653	50,653	50,653	50,653	50,653	52,697	51,675	49,631	89,141
Cash generation except saleout of salvaged book value	62,780	91,549	107,119	76,478	43,087	59,656	93,300	110,122	76,790	76,634	76,322	129,514
Cash generation including saleout of salvaged book value												

Appendix Table 13.2-3 Financial Sensitive Analysis Summary

Case No.	Case 11FA	Case 12FA	Case 13FA	Basic Case FA	Case 20FA (2)	Case 20FA	Case 21FA	Case 22FA	Case 30FA	Case 31FA	Case 32FA	Case 40FA
Villages	145	145	145	145	145	145	145	145	145	145	145	145
No. of Target Villages	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767
No. of Population in Target Villages	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787
No. of H/Hs in Target Villages in 2001	170	170	170	170	170	170	170	170	170	170	170	170
Localities	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666
No. of H/Hs in Target Localities	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542
No. of Population in Target Localities	315	315	315	315	315	315	315	315	315	315	315	315
Total No. of Villages and Localities	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433
Population in Target Villages and Localities	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329
Total No. of H/Hs in Target Villages and Localities	30%	50%	60%	40%	40%	40%	40%	40%	40%	40%	40%	40%
SHS Electrification	9,513	15,856	19,027	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684
No. of H/Hs electrified with SHS	646.0	1,076.6	1,291.9	861.3	861.3	861.3	861.3	861.3	861.3	861.3	861.3	861.3
kWp of SHS installed	145	145	145	145	145	145	145	145	145	145	145	145
No. of Villages for Public Facility PV (1650Wp)	170	170	170	170	170	170	170	170	170	170	170	170
No. of Localities for Public Facility PV (350Wp)	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8
kWp of Public PV installed	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
BCS Electrification	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314
No. of Villages and Localities electrified with BCS	62	62	62	62	62	62	62	62	62	62	62	62
No. of BCS User H/Hs	62	62	62	62	62	62	62	62	62	62	62	62
No. of BCS installed	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9
kW of BCS installed	11,828	18,170	21,341	14,999	14,999	14,999	14,999	14,999	14,999	14,999	14,999	14,999
Total No. of Households electrified with SHS and BCS	37.3%	57.3%	67.3%	47.3%	47.3%	47.3%	47.3%	47.3%	47.3%	47.3%	47.3%	47.3%
Total Electrification Rate	984.6	1,415.2	1,630.6	1,199.9	1,199.9	1,199.9	1,199.9	1,199.9	1,199.9	1,199.9	1,199.9	1,199.9
Total kWp installed	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Equity (for the first 12 years)	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
Subsidy for Investment Cost (for the first 12 years)	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Loan (for the first 12 years)	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%
Interest	12	12	12	12	12	12	12	12	12	12	12	12
Repayment period (years)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Subsidy for Operation Cost (to Monthly Tariff)												
Monthly Tariff (Pula/Month)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
50Wp (H/Hs)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
50Wp (Public facilities)	15	15	15	15	15	15	15	15	15	15	15	15
500Wp BCS	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Collection rate	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
System investment cost (pula)	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
50Wp(H/Hs)	97.650	97.650	97.650	97.650	97.650	97.650	97.650	97.650	97.650	97.650	97.650	97.650
50Wp(Public facilities)												
1000Wp BCS												
PV demand by PV size	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project
IRROI	9.8%	11.6%	12.3%	10.8%	2.8%	6.9%	14.6%	18.3%	14.1%	12.3%	9.5%	14.3%
IRROE	8.6%	10.7%	11.6%	9.7%	0.4%	5.0%	14.4%	19.0%	13.8%	11.6%	8.1%	14.0%
Total Investment Cost in 20 years	154,640	216,007	247,590	185,623	185,623	185,623	185,623	185,623	162,688	174,155	197,091	283,913
SHS	58,136	96,893	116,272	77,514	77,514	77,514	77,514	77,514	62,011	69,763	85,266	138,989
Public PV	26,888	26,888	26,888	26,888	26,888	26,888	26,888	26,888	21,510	24,199	29,576	26,888
BCS	10,277	10,277	10,277	10,277	10,277	10,277	10,277	10,277	8,222	9,249	11,305	10,277
Battery and controller renewal	59,339	82,549	94,154	70,944	70,944	70,944	70,944	70,944	70,944	70,944	70,944	107,759
Subsidy for operation cost	0	0	0	0	0	0	0	0	0	0	0	0
Subsidy for investment cost for 12 years	81,341	113,823	130,064	97,582	97,582	97,582	97,582	97,582	81,527	89,554	105,609	149,103
Subsidy rate for total investment cost	52.6%	52.5%	52.5%	52.6%	52.6%	52.6%	52.6%	52.6%	50.1%	51.4%	53.6%	52.5%
Subsidy for investment cost for 10 years	103,273	74,359	117,730	88,816	88,816	88,816	88,816	88,816	81,340	96,492	134,678	
Total subsidy for 12 years	81,341	113,823	130,064	97,582	97,582	97,582	97,582	97,582	81,527	89,554	105,609	149,103
Equity	23,721	33,163	37,884	28,442	28,442	28,442	28,442	28,442	23,855	26,149	30,736	43,419
Capital increase for previous deficit	2,589	2,168	2,033	2,303	3,657	2,894	1,988	1,672	2,196	2,249	2,357	1,533
Total government fund (subsidy, equity and capital increase)	107,651	149,154	169,981	128,327	129,681	128,918	128,011	127,696	107,577	117,952	138,702	194,054
Total government fund rate for investment investment	69.6%	68.9%	68.7%	69.1%	69.9%	69.5%	69.0%	68.8%	66.1%	67.7%	70.4%	68.4%
Cash generation except saleout of salvaged book value	31,913	47,450	56,498	38,902	5,981	22,355	55,724	72,546	42,990	40,946	36,858	71,167
Cash generation including saleout of salvaged book value	54,559	79,917	93,875	66,458	33,537	49,912	83,281	100,103	68,469	67,463	65,453	114,301

Appendix Table 13.2-4 Financial Sensitive Analysis Summary

Case No.	Case 11FA	Case 12FA	Case 13FA	BSC Case 14FA	Case 20FA (2)	Case 21FA	Case 22FA	Case 30FA	Case 31FA	Case 32FA	Case 40FA
Villages	145	145	145	145	145	145	145	145	145	145	145
No. of Population in Target Villages	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767	61,767
No. of H/Hs in Target Villages in 2001	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787	13,787
Localities	170	170	170	170	170	170	170	170	170	170	170
No. of Population in Target Localities	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666
No. of H/Hs in Target Localities	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542	13,542
Villages and Localities	315	315	315	315	315	315	315	315	315	315	315
Total No. of Villages and Localities	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433	122,433
Population in Target Villages and Localities	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329	27,329
Total No. of H/Hs in Target Villages and Localities	30%	50%	60%	40%	40%	40%	40%	40%	40%	40%	40%
SHS Electrification	9,513	15,856	19,027	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684
Electrification Rate with SHS	646.0	1,076.6	1,291.9	861.3	861.3	861.3	861.3	861.3	861.3	861.3	861.3
No. of H/Hs electrified with SHS	145	145	145	145	145	145	145	145	145	145	145
Public Facilities	170	170	170	170	170	170	170	170	170	170	170
No. of Villages for Public Facility PV (1650Wp)	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8	298.8
No. of Localities for Public Facility PV (350Wp)	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
kWp of Public PV installed	62	62	62	62	62	62	62	62	62	62	62
BCS Electrification	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314	2,314
Electrification Rate with BCS in BCS Targeted Villages and Localities	62	62	62	62	62	62	62	62	62	62	62
No. of Villages and Localities electrified with BCS	62	62	62	62	62	62	62	62	62	62	62
No. of BCS User H/Hs	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9
kW of BCS installed	11,828	18,170	21,341	14,999	14,999	14,999	14,999	14,999	14,999	14,999	14,999
Total No. of Households electrified with SHS and BCS	37.3%	57.3%	67.3%	47.3%	47.3%	47.3%	47.3%	47.3%	47.3%	47.3%	47.3%
Total Electrification Rate	984.6	1,415.2	1,630.6	1,199.9	1,199.9	1,199.9	1,199.9	1,199.9	1,199.9	1,199.9	1,883.0
Total kWp installed	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Equity (for the first 12 years)	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
Subsidy for Investment Cost (for the first 12 years)	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Loan (for the first 12 years)	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%
Interest	12	12	12	12	12	12	12	12	12	12	12
Repayment period (years)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Subsidy for Operation Cost (to Monthly Tariff)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Monthly Tariff (Pula/Month)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
50Wp (H/Hs)	15	15	15	15	15	15	15	15	15	15	15
50Wp (Public facilities)	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
500Wp BCS	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
Collection rate	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
System investment cost (pula)	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650
50Wp(H/Hs)	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project
50Wp(Public facilities)	7.6%	9.1%	9.7%	8.4%	1.3%	4.9%	11.8%	11.4%	9.7%	7.3%	11.2%
1000Wp BCS	5.5%	7.1%	7.9%	6.3%	#DIV/0!	2.0%	15.0%	10.2%	8.0%	4.8%	9.8%
PV demand by PV size	154,640	216,607	247,590	185,623	185,623	185,623	185,623	162,688	174,155	197,091	283,913
IRROI	58,136	96,893	116,272	77,514	77,514	77,514	77,514	62,011	69,763	85,266	138,989
IRROE	26,888	26,888	26,888	26,888	26,888	26,888	26,888	21,510	24,199	29,576	26,888
Total Investment Cost in 20 years	10,277	10,277	10,277	10,277	10,277	10,277	10,277	8,222	9,249	11,305	10,277
SHS	59,339	82,549	94,154	70,944	70,944	70,944	70,944	70,944	70,944	70,944	107,759
Public PV	0	0	0	0	0	0	0	0	0	0	0
Battery and controller renewal	75,531	105,693	120,774	90,612	90,612	90,612	90,612	75,703	83,158	98,066	138,453
Subsidy for operation cost	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	46.5%	47.7%	49.8%	48.8%
Subsidy for investment cost for 12 years	95,897	69,048	109,321	82,472	82,472	82,472	82,472	0	75,345	89,600	125,058
Subsidy rate for total investment cost	75,531	105,693	120,774	90,612	90,612	90,612	90,612	75,703	83,158	98,066	138,453
Subsidy for investment cost for 10 years	23,721	33,163	37,884	28,442	28,442	28,442	28,442	23,855	26,149	30,736	43,419
Total subsidy for 12 years	3,168	2,606	2,451	2,869	2,748	2,566	1,940	2,473	2,671	3,067	1,891
Equity	102,420	141,462	161,109	121,923	122,732	121,310	120,994	102,032	111,977	131,869	183,763
Capital increase for previous deficit	66.2%	65.3%	65.1%	65.7%	66.1%	65.4%	65.2%	62.7%	64.3%	66.9%	64.7%
Total government fund (subsidy, equity and capital increase)	22,439	33,904	40,967	27,449	1,948	11,121	43,973	33,346	30,397	24,501	53,273
Total government fund rate for investment investment	46,492	68,426	80,724	56,737	27,340	40,409	90,083	60,210	58,473	55,000	99,167
Cash generation except saleout of salvaged book value											
Cash generation including saleout of salvaged book value											