

Appendix Table 13.2-6 Financial Sensitive Analysis Summary

	Case 11FA	Case 12FA	Case 13FA	Case 19FA	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 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
Villages and 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
Public Facilities	170	170	170	170	170	170	170	170	170	170	170	170
No. of Localities 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	298.8
kWp of Public PV installed	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
BCS Electrification	62	62	62	62	62	62	62	62	62	62	62	62
Electrification Rate with BCS in BCS Targeted	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471
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	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8
No. of BCS installed	12,985	19,327	22,498	16,156	16,156	16,156	16,156	16,156	16,156	16,156	16,156	16,156
kW of Households electrified with SHS and BCS	40.9%	60.9%	70.9%	50.9%	50.9%	50.9%	50.9%	50.9%	50.9%	50.9%	50.9%	50.9%
Total Electrification Rate	1,044.5	1,435.1	1,650.4	1,219.8	1,219.8	1,219.8	1,219.8	1,219.8	1,219.8	1,219.8	1,219.8	1,902.8
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 (Public facilities)	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650
1000Wp BCS	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project
PV demand by PV size	12.1%	14.5%	15.4%	13.4%	4.4%	9.0%	17.7%	21.9%	17.1%	15.1%	12.0%	17.9%
IRR0I	11.7%	14.3%	15.5%	13.2%	3.2%	8.2%	18.0%	22.7%	17.3%	15.1%	11.5%	18.3%
IRR0E	161,884	223,851	254,834	192,867	192,867	192,867	192,867	192,867	169,222	181,045	204,690	291,156
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	138,989
SHS	26,888	26,888	26,888	26,888	26,888	26,888	26,888	26,888	21,510	29,576	26,888	26,888
Public PV	13,823	13,823	13,823	13,823	13,823	13,823	13,823	13,823	11,058	12,441	15,205	13,823
BCS	63,037	86,247	97,852	74,642	74,642	74,642	74,642	74,642	74,642	74,642	74,642	111,457
Battery and controller renewal	0	0	0	0	0	0	0	0	0	0	0	0
Subsidy for operation cost	91,071	125,873	143,274	108,472	108,472	108,472	108,472	108,472	90,739	99,605	117,339	163,674
Subsidy for investment cost for 12 years	56.3%	56.2%	56.2%	56.2%	56.2%	56.2%	56.2%	56.2%	53.6%	55.0%	57.3%	56.2%
Subsidy rate for total investment cost	114,373	83,393	129,862	98,883	98,883	98,883	98,883	98,883	0	90,393	107,373	148,021
Subsidy for investment cost for 10 years	91,071	125,873	143,274	108,472	108,472	108,472	108,472	108,472	90,739	99,605	117,339	163,674
Total subsidy for 12 years	24,799	34,241	38,962	29,520	29,520	29,520	29,520	29,520	24,791	27,155	31,884	44,456
Equity	2,097	1,807	1,643	1,970	2,833	2,295	1,645	1,321	1,911	1,941	2,000	1,233
Capital increase for previous deficit	117,967	161,921	183,879	139,962	140,825	140,825	139,313	139,313	117,440	128,701	151,223	209,403
Total government fund (subsidy, equity and capital increase)	72.9%	72.9%	72.2%	72.6%	73.0%	72.7%	72.4%	72.4%	69.4%	71.1%	73.9%	71.9%
Total government fund rate for investment investment	41,125	60,722	71,706	50,238	16,407	62,260	84,282	84,282	52,342	51,290	49,185	88,770
Cash generation except saleout of salvaged book value	63,116	91,885	107,455	76,814	42,984	59,792	93,837	110,859	77,161	76,988	76,641	129,895
Cash generation including saleout of salvaged book value												

Appendix Table 13.2-7 Financial Sensitive Analysis Summary

Case No.	Case 11FA	Case 12FA	Case 13FA	Basic case FA	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 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 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
Localities	170	170	170	170	170	170	170	170	170	170	170
No. of H/Hs in Target Villages in 2001	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666	60,666
No. of Population 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
No. of H/Hs in Target Localities	315	315	315	315	315	315	315	315	315	315	315
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
kWp of SHS installed	170	170	170	170	170	170	170	170	170	170	170
Public Facilities	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 (1650Wp)	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
No. of Localities for Public Facility PV (350Wp)	62	62	62	62	62	62	62	62	62	62	62
BCS Electrification	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471
Electrification Rate with BCS in BCS Targeted Villages	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	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8
No. of BCS installed	12,985	19,327	22,498	16,156	16,156	16,156	16,156	16,156	16,156	16,156	16,156
kW of BCS installed	40.9%	60.9%	70.9%	50.9%	50.9%	50.9%	50.9%	50.9%	50.9%	50.9%	50.9%
Total No. of Households electrified with SHS and BCS	1,044.5	1,435.1	1,650.4	1,219.8	1,219.8	1,219.8	1,219.8	1,219.8	1,219.8	1,219.8	1,219.8
Total Electrification Rate	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Total kWp installed	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
Equity (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%
Subsidy for Investment Cost (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%
Loan (for the first 12 years)	12	12	12	12	12	12	12	12	12	12	12
Interest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Repayment period (years)											
Subsidy for Operation Cost (to Monthly Tariff)											
Monthly Tariff (Pula/Month)	40.0	40.0	40.0	40.0	32.0	36.0	44.0	48.0	40.0	40.0	40.0
50Wp (H/Hs)	60.0	60.0	60.0	60.0	48.0	54.0	66.0	72.0	60.0	60.0	60.0
50Wp (Public facilities)	15	15	15	15	12	14	17	18	15	15	15
500Wp BCS	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	4,050	4,050	4,500
System investment cost (pula)	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,050	4,050	4,500
50Wp(H/Hs)	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	87,885	87,885	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
IRROI	9.3%	11.2%	11.9%	10.3%	2.5%	6.5%	14.1%	17.7%	11.8%	9.1%	13.9%
IRROE	8.0%	10.2%	11.1%	9.2%	#NUM!	4.6%	13.8%	18.3%	11.0%	7.6%	13.5%
Total Investment Cost in 20 years	161,884	223,851	254,834	192,867	192,867	192,867	192,867	169,222	181,045	204,690	291,156
SHS	58,136	96,893	116,272	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	21,510	24,199	29,576	26,888
BCS	13,823	13,823	13,823	13,823	13,823	13,823	13,823	11,058	12,441	15,205	13,823
Battery and controller renewal	63,037	86,247	97,852	74,642	74,642	74,642	74,642	74,642	74,642	74,642	111,457
Subsidy for operation cost	0	0	0	0	0	0	0	0	0	0	0
Subsidy for investment cost for 12 years	85,000	117,482	133,723	101,241	101,241	101,241	101,241	84,689	92,965	109,517	152,762
Subsidy rate for total investment cost	52.5%	52.5%	52.5%	52.5%	52.5%	52.5%	52.5%	50.0%	51.3%	53.5%	52.5%
Subsidy for investment cost for 10 years	106,748	77,834	121,205	92,291	92,291	92,291	92,291	92,291	84,367	100,215	138,153
Total subsidy for 12 years	85,000	117,482	133,723	101,241	101,241	101,241	101,241	84,689	92,965	109,517	152,762
Equity	24,799	34,241	38,962	29,520	29,520	29,520	29,520	24,791	27,155	31,884	44,496
Capital increase for previous deficit	2,525	2,131	1,996	2,265	3,616	2,847	1,941	1,616	2,206	2,325	1,495
Total government fund (subsidy, equity and capital increase)	112,323	153,853	174,680	133,026	134,377	133,608	132,701	132,377	122,327	143,725	198,753
Total government fund rate for investment	69.4%	68.7%	68.3%	69.0%	69.7%	69.3%	68.8%	68.6%	67.6%	70.2%	68.3%
Cash generation except saleout of salvaged book value	31,038	46,601	55,649	47,110	21,288	55,075	72,098	42,262	40,158	35,948	70,318
Cash generation including saleout of salvaged book value	54,462	79,846	93,804	66,388	33,044	49,622	83,410	100,432	67,438	65,337	114,230

Appendix Table 13.2-8 Financial Sensitive Analysis Summary

	Case 11FA	Case 12FA	Case 13FA	Base 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 Population 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 H/Hs in Target Localities	315	315	315	315	315	315	315	315	315	315	315	315
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
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	1,544.3
No. of H/Hs electrified with SHS	145	145	145	145	145	145	145	145	145	145	145	145
kWp of SHS installed	170	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	298.8
No. of Localities for Public Facility PV (350Wp)	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
kWp of Public PV installed	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471
Electrification Rate with BCS in BCS Targeted	62	62	62	62	62	62	62	62	62	62	62	62
No. of Villages and Localities electrified with BCS	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8
No. of BCS User H/Hs	12,985	19,327	22,498	16,156	16,156	16,156	16,156	16,156	16,156	16,156	16,156	16,156
kW of BCS installed	40.9%	60.9%	70.9%	50.9%	50.9%	50.9%	50.9%	50.9%	50.9%	50.9%	50.9%	50.9%
Total No. of Households electrified with SHS and BCS	1,044.5	1,435.1	1,650.4	1,219.8	1,219.8	1,219.8	1,219.8	1,219.8	1,219.8	1,219.8	1,219.8	1,902.8
Total Electrification Rate	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Total kWp installed	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
Equity (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%	15.0%
Subsidy for Investment Cost (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%
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	12	12	12	12	12	12	12	12	12	12	12	12
Repayment period (years)	12	12	12	12	12	12	12	12	12	12	12	12
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 (Public facilities)	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650
1000Wp BCS	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project
PV demand by PV size	7.2%	8.7%	9.3%	8.0%	1.0%	4.6%	11.3%	14.6%	10.9%	9.3%	6.9%	10.9%
IRROI	4.9%	6.6%	7.4%	5.7%	#DIV/0!	1.6%	10.0%	14.3%	9.5%	7.5%	4.3%	9.3%
IRROE	161,884	223,851	254,834	192,867	192,867	192,867	192,867	192,867	169,222	181,045	204,690	291,156
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	138,989
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	13,823	13,823	13,823	13,823	13,823	13,823	13,823	13,823	11,058	12,441	15,205	13,823
BCS	63,037	86,247	97,852	74,642	74,642	74,642	74,642	74,642	74,642	74,642	74,642	111,457
Battery and controller renewal	0	0	0	0	0	0	0	0	0	0	0	0
Subsidy for operation cost	78,928	109,090	124,171	94,009	94,009	94,009	94,009	94,009	78,640	86,325	101,694	141,851
Subsidy for investment cost for 12 years	48.8%	48.7%	48.7%	48.7%	48.7%	48.7%	48.7%	48.7%	46.5%	47.7%	49.7%	48.7%
Subsidy rate for total investment cost	99,123	72,274	112,547	85,699	85,699	85,699	85,699	85,699	0	78,340	93,057	128,285
Subsidy for investment cost for 10 years	78,928	109,090	124,171	94,009	94,009	94,009	94,009	94,009	78,640	86,325	101,694	141,851
Total subsidy for 12 years	24,799	34,241	38,962	29,520	29,520	29,520	29,520	29,520	24,791	27,155	31,884	44,496
Equity	3,161	2,598	2,444	2,861	2,861	2,861	2,861	2,861	2,432	2,647	3,076	1,881
Capital increase for previous deficit	108,888	145,929	165,576	126,390	132,890	127,228	125,765	125,440	105,862	116,126	136,654	188,228
Total government fund (subsidy, equity and capital increase)	66.0%	65.2%	65.0%	65.5%	68.9%	66.0%	65.2%	65.0%	62.6%	64.1%	66.8%	64.6%
Total government fund rate for investment investment	21,158	32,624	39,687	29,687	29,687	29,687	29,687	29,687	29,231	29,200	23,138	51,990
Cash generation except saleout of salvaged book value	46,016	67,951	80,248	56,261	28,067	39,752	72,983	90,006	59,862	58,062	54,461	98,689
Cash generation including saleout of salvaged book value												

Appendix Table 13.2-9 Financial Sensitive Analysis Summary

Case No.	Case 11FA	Case 12FA	Case 13FA	Base 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 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	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BCS Electrification	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
No. of Villages and Localities electrified with BCS	0	0	0	0	0	0	0	0	0	0	0	0
No. of BCS User H/Hs	0	0	0	0	0	0	0	0	0	0	0	0
No. of BCS installed	0	0	0	0	0	0	0	0	0	0	0	0
kW of BCS installed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total No. of Households electrified with SHS and BCS	9,513	15,856	19,027	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684
Total Electrification Rate	30.0%	50.0%	60.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Total kWp installed	944.7	1,375.3	1,590.7	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,843.1
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)	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%
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)	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
IRR0I	17.9%	21.1%	22.3%	19.8%	8.6%	14.3%	25.1%	30.5%	23.9%	21.7%	18.1%	25.9%
IRR0E	17.9%	21.1%	22.3%	19.8%	8.6%	14.3%	25.1%	30.5%	23.9%	21.7%	18.1%	25.9%
Total Investment Cost in 20 years	136,967	198,934	229,917	167,950	167,950	167,950	167,950	167,950	147,070	157,510	178,391	266,240
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	0	0	0	0	0	0	0	0	0	0	0	0
Battery and controller renewal	51,944	75,154	86,758	63,549	63,549	63,549	63,549	63,549	63,549	63,549	63,549	100,363
Subsidy for operation cost	0	0	0	0	0	0	0	0	0	0	0	0
Subsidy for investment cost for 12 years	82,050	119,172	137,733	100,611	100,611	100,611	100,611	100,611	83,907	92,259	108,963	159,493
Subsidy rate for total investment cost	59.9%	59.9%	59.9%	59.9%	59.9%	59.9%	59.9%	59.9%	57.1%	58.6%	61.1%	59.9%
Subsidy for investment cost for 10 years	107,536	74,492	124,059	91,014	91,014	91,014	91,014	91,014	0	83,064	98,964	143,428
Total subsidy for 12 years	82,050	119,172	137,733	100,611	100,611	100,611	100,611	100,611	83,907	92,259	108,963	159,493
Equity	20,929	30,371	35,092	25,650	25,650	25,650	25,650	25,650	21,474	23,562	27,738	40,626
Capital increase for previous deficit	2,117	1,758	1,566	1,950	2,544	2,247	1,632	1,355	1,950	1,950	1,950	1,242
Total government fund (subsidy, equity and capital increase)	105,096	151,301	174,391	128,211	128,805	128,508	127,913	127,616	107,330	117,770	138,651	201,361
Total government fund rate for investment investment	76.7%	76.1%	75.8%	76.3%	76.7%	76.5%	76.2%	76.0%	73.0%	74.8%	77.7%	75.6%
Cash generation except saleout of salvaged book value	51,284	74,787	87,708	62,366	29,523	45,945	78,788	95,209	62,366	62,366	62,366	107,161
Cash generation including saleout of salvaged book value	69,567	101,594	118,776	84,911	52,068	68,490	101,332	117,754	83,588	84,250	85,573	143,226

Appendix Table 13.2-10 Financial Sensitive Analysis Summary

Case No.	Case 11FA	Case 12FA	Case 13FA	Base 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 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 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 Population 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 H/Hs 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
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	1,544.3
No. of H/Hs electrified with SHS	145	145	145	145	145	145	145	145	145	145	145	145
kWp of SHS installed	170	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	298.8
No. of Localities for Public Facility PV (350Wp)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
kWp of Public PV installed	0	0	0	0	0	0	0	0	0	0	0	0
Electrification Rate with BCS in BCS Targeted Villages	0	0	0	0	0	0	0	0	0	0	0	0
No. of Villages and Localities electrified with BCS	0	0	0	0	0	0	0	0	0	0	0	0
No. of BCS User H/Hs	0	0	0	0	0	0	0	0	0	0	0	0
No. of BCS installed	0	0	0	0	0	0	0	0	0	0	0	0
kW of BCS installed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total No. of Households electrified with SHS and BCS	9,513	15,856	19,027	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684
Total Electrification Rate	30.0%	50.0%	60.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Total kWp installed	944.7	1,375.3	1,590.7	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,843.1
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)	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
Loan (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%
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)	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 (Public facilities)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
500Wp BCS	15	15	15	15	15	15	15	15	15	15	15	15
Collection rate	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
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)	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)	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650
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
IRR/OI	14.2%	16.4%	17.3%	15.5%	5.9%	10.7%	20.1%	24.7%	19.3%	17.2%	14.0%	19.9%
IRR/OE	14.1%	16.6%	17.6%	15.5%	4.8%	10.2%	20.8%	26.0%	19.8%	17.5%	13.8%	20.7%
Total Investment Cost in 20 years	136,967	198,934	229,917	167,950	167,950	167,950	167,950	167,950	147,070	157,510	178,391	266,240
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	0	0	0	0	0	0	0	0	0	0	0	0
Battery and controller renewal	51,944	75,154	86,758	63,549	63,549	63,549	63,549	63,549	63,549	63,549	63,549	100,363
Subsidy for operation cost	0	0	0	0	0	0	0	0	0	0	0	0
Subsidy for investment cost for 12 years	76,922	111,724	129,125	94,323	94,323	94,323	94,323	94,323	78,662	86,493	102,153	149,524
Subsidy rate for total investment cost	56.2%	56.2%	56.2%	56.2%	56.2%	56.2%	56.2%	56.2%	53.5%	54.9%	57.3%	56.2%
Subsidy for investment cost for 10 years	100,815	69,836	116,305	85,326	85,326	85,326	85,326	85,326	0	77,872	92,779	134,464
Total subsidy for 12 years	76,922	111,724	129,125	94,323	94,323	94,323	94,323	94,323	78,662	86,493	102,153	149,524
Equity	20,929	30,371	35,092	25,650	25,650	25,650	25,650	25,650	21,474	23,562	27,329	40,626
Capital increase for previous deficit	2,279	1,977	1,814	3,041	2,438	2,438	2,438	2,438	2,102	2,121	2,160	1,290
Total government fund (subsidy, equity and capital increase)	100,130	144,072	166,031	122,113	123,014	122,416	121,519	102,239	112,176	132,051	191,440	191,440
Total government fund rate for investment cost	73.1%	72.4%	72.2%	72.7%	73.2%	72.9%	72.5%	72.4%	69.5%	71.2%	74.0%	71.9%
Cash generation except saleout of salvaged book value	42,613	62,243	73,227	51,758	19,222	35,337	68,180	84,601	53,625	52,692	50,825	50,825
Cash generation including saleout of salvaged book value	62,225	91,028	106,598	75,957	43,420	59,536	92,378	108,800	76,170	76,064	75,850	128,923

Appendix Table 13.2-11 Financial Sensitive Analysis Summary

Case No.	Case 11FA	Case 12FA	Case 13FA	Base 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 Population 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 H/Hs 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
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	861.3
No. of H/Hs electrified with SHS	145	145	145	145	145	145	145	145	145	145	145	145
kWp of SHS installed	170	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	298.8
No. of Localities for Public Facility PV (350Wp)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
kWp of Public PV installed	0	0	0	0	0	0	0	0	0	0	0	0
Electrification Rate with BCS in BCS Targeted	0	0	0	0	0	0	0	0	0	0	0	0
No. of Villages and Localities electrified with BCS	0	0	0	0	0	0	0	0	0	0	0	0
No. of BCS User H/Hs	0	0	0	0	0	0	0	0	0	0	0	0
No. of BCS installed	0	0	0	0	0	0	0	0	0	0	0	0
kW of BCS installed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total No. of Households electrified with SHS and BCS	9,513	15,856	19,027	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684
Total Electrification Rate	30.0%	50.0%	60.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Total kWp installed	944.7	1,375.3	1,590.7	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0
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)	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
Loan (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%
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)	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 (Public facilities)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
500Wp BCS	15	15	15	15	15	15	15	15	15	15	15	15
Collection rate	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
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 (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
IRR0I	11.4%	13.0%	13.6%	12.3%	3.8%	8.1%	16.4%	20.4%	15.7%	13.9%	10.9%	15.7%
IRR0E	10.6%	12.4%	13.3%	11.6%	1.6%	6.6%	16.6%	21.7%	15.9%	13.6%	9.9%	15.8%
Total Investment Cost in 20 years	136,967	198,934	229,917	167,950	167,950	167,950	167,950	167,950	147,070	157,510	178,391	266,240
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	0	0	0	0	0	0	0	0	0	0	0	0
Battery and controller renewal	51,944	75,154	86,758	63,549	63,549	63,549	63,549	63,549	63,549	63,549	63,549	100,363
Subsidy for operation cost	0	0	0	0	0	0	0	0	0	0	0	0
Subsidy for investment cost for 12 years	71,794	104,275	120,516	88,034	88,034	88,034	88,034	88,034	73,418	80,726	95,343	139,556
Subsidy rate for total investment cost	52.4%	52.4%	52.4%	52.4%	52.4%	52.4%	52.4%	52.4%	49.9%	51.3%	53.4%	52.4%
Subsidy for investment cost for 10 years	94,094	65,180	108,551	79,637	79,637	79,637	79,637	79,637	0	72,681	86,594	125,910
Total subsidy for 12 years	71,794	104,275	120,516	88,034	88,034	88,034	88,034	88,034	73,418	80,726	95,343	139,556
Equity	20,929	30,371	35,092	25,650	25,650	25,650	25,650	25,650	21,474	23,562	27,738	40,626
Capital increase for previous deficit	2,632	2,197	2,062	2,332	3,588	2,891	2,034	1,737	2,255	2,293	2,370	1,561
Total government fund (subsidy, equity and capital increase)	95,355	136,443	157,670	116,016	117,272	116,575	115,719	115,422	97,147	106,582	125,450	181,744
Total government fund rate for investment investment	69.6%	68.8%	68.6%	69.1%	69.8%	69.4%	68.9%	68.7%	66.1%	67.7%	70.3%	68.3%
Cash generation except saleout of salvaged book value	34,132	49,699	58,747	41,151	41,151	41,151	41,151	41,151	34,991	37,993	44,884	73,416
Cash generation including saleout of salvaged book value	55,074	80,462	94,420	67,003	34,822	50,844	83,424	99,846	68,752	67,878	66,128	114,845

Appendix Table 13.2-12 Financial Sensitive Analysis Summary

	Case 11FA	Case 12FA	Case 13FA	Base case FA	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 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	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 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 H/Hs 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
SHS Electrification	30%	50%	60%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Electrification Rate 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
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	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Electrification Rate with BCS in BCS Targeted	0	0	0	0	0	0	0	0	0	0	0	0
No. of Villages and Localities electrified with BCS	0	0	0	0	0	0	0	0	0	0	0	0
No. of BCS User H/Hs	0	0	0	0	0	0	0	0	0	0	0	0
No. of BCS installed	0	0	0	0	0	0	0	0	0	0	0	0
kW of BCS installed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total No. of Households electrified with SHS and BCS	9,513	15,856	19,027	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684
Total Electrification Rate	30.0%	50.0%	60.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Total kWp installed	944.7	1,375.3	1,590.7	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0
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)	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
Loan (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%	15.0%
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)	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%
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)	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)	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650	97,650
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
IRR0I	9.2%	10.3%	10.9%	9.8%	2.3%	6.1%	13.5%	17.0%	13.0%	11.3%	8.6%	12.5%
IRR0E	7.4%	8.8%	9.4%	8.2%	#NUM!	3.5%	12.9%	17.7%	12.3%	10.0%	6.6%	11.5%
Total Investment Cost in 20 years	136,967	198,934	229,917	167,950	167,950	167,950	167,950	167,950	147,070	157,510	178,391	266,240
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	0	0	0	0	0	0	0	0	0	0	0	0
Battery and controller renewal	51,944	75,154	86,758	63,549	63,549	63,549	63,549	63,549	63,549	63,549	63,549	100,363
Subsidy for operation cost	0	0	0	0	0	0	0	0	0	0	0	0
Subsidy for investment cost for 12 years	66,665	96,827	111,908	81,746	81,746	81,746	81,746	81,746	68,174	74,960	88,532	129,588
Subsidy rate for total investment cost	48.7%	48.7%	48.7%	48.7%	48.7%	48.7%	48.7%	48.7%	46.4%	47.6%	49.6%	48.7%
Subsidy for investment cost for 10 years	87,373	60,525	100,798	73,949	73,949	73,949	73,949	73,949	0	67,489	80,409	116,535
Total subsidy for 12 years	66,665	96,827	111,908	81,746	81,746	81,746	81,746	81,746	68,174	74,960	88,532	129,588
Equity	20,929	30,371	35,092	25,650	25,650	25,650	25,650	25,650	21,474	23,562	27,738	40,626
Capital increase for previous deficit	3,051	2,477	2,323	2,741	4,677	3,412	2,225	1,928	2,441	2,591	2,890	1,843
Total government fund (subsidy, equity and capital increase)	90,646	129,676	149,323	110,808	109,622	109,325	109,622	109,325	92,089	101,113	119,161	172,057
Total government fund rate for investment cost	66.2%	65.2%	64.9%	66.7%	66.0%	66.3%	65.1%	62.6%	62.9%	66.8%	66.8%	64.6%
Cash generation except saleout of salvaged book value	25,717	37,216	44,279	30,761	739	14,713	46,964	63,386	36,177	33,469	28,053	56,665
Cash generation including saleout of salvaged book value	47,989	69,957	82,254	58,267	26,766	42,219	74,470	90,892	61,368	59,817	56,717	100,777

The Master Plan Study for PV Electrification in Botswana
Economic 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 propotional 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

See INPUT (2)		
Electrification Rate (variable)	40% for SHS	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	0.0% (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 Instllation 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)	4,050	pula/system
Public facilities (size 50wp)	4,050	pula/system
Battery Charge Station (500Wp)	87,885	pula/system
User of Battery Charging Station	1,260	pula/system including spare battery
Replacement of used Battery		
Households (size 50wp)	450	pula Every 3 years
Public facilities (size 50wp)	450	pula Every 3 years
500wp+Battery C Station	221	pula Every 3 years
Replacement of controller etc. (SHS)	450	pula Every 10 years

Replacement of controller etc. (BCS)	180 pula	Every 10 years
Land Cost:	Free	
Office Building for maintenance persons	0 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	per600HHs evey new installation				
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	~10th year	1	per6000HHs	11th year~

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

Equity	100.0% of Initial Investment	Cut off	10 years
Subsidy for Investment Cost (variable)	0.0% of Initial Investment	Cut off	10 years
Subsidy for Operation Cost (variable)	0.0% of Monthly tariff	Cut off	10 years
Loan (variable)	0.0% of Initial Investment	Cut off	10 years
Loan Condition	Interest	0.0% per ann.	
	Repayment term	10 years	
	Grace Period	0 years	

8. Income Condition

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

- This money to be allotted in case the users arrears monthy 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	0 % to the Deposit amount for SHS
Monitoring/Service personnel	
Salary to be Commission system	0.0 Pula for 50Wp SHS User 0.0 Pula for 100Wp SHS User 0.0 Pula for 150Wp SHS User 0.0 Pula for 200Wp SHS User 0.0 Pula for 250Wp SHS User 0.0 Pula for SHS User of more than 250Wp 0% of Sales of BCS User
Min. Base Salary	0 P/month
Prepaid card/BCS coupon Sales Agent	0 % to the sales amount
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	0 Pula/month
③ District office	
Maintenance Engineer	5,000 Pula/month
Officer	4,000 Pula/month
Assistant	0 Pula/month
Miscellaneous Labor	0 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	
Commission of Deposit Collector	

Average commission
0 P/User
0

10. Depreciation	PV system	Replaced batteries	Replaced controller
Depreciation period	20 years	3 years	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	6 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 litre/House/month
Unit price of kerosene	2.25 Pura/litre
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 13.3-1-1 Economic Analysis (Base Case A-1)

No. of Villages unelectrified	145	Monthly Tariff (Pula/Month)	System investment cost (Pula)	Initial Investment in 20 years (1000 Pula)	167,061
No. of H/Hs in Villages unelectrified	13,787	SHS (50Wp) 40	SHS (50Wp) 4,050	Subsidy for initial investment (1000 Pula)	0
No. of Localities unelectrified (Pop.>200)	170	Public (50Wp) 60	Public (50Wp) 4,050	Initial investment deducted Subsidy (1000 Pula)	167,061
No. of H/Hs in Localities unelectrified	13,542	BCS users 15	BCS (1000Wp) 87,885	Equity (1000 Pula)	114,192
SHS	40.0%	Financial Resources			1000 Pula
Electrification rate	12,684	Subsidy for Initial Investment (for the first 10 years)	0.0%	Capital increase for previous deficit	1,048
No. of Households	20.0%	Equity (for the first 10 years)	100.0%	Total government fund including equity and capital increase	115,240
Electrification rate	2,314	Loan (for the first 10 years)	0.0%	Total government fund rate to investment	69.0%
No. of Households	5.55	Subsidy for Operation Cost (to Monthly Tariff)	0.0%	Cash generation except saleout of salvaged book value	111,422
External Benefit		ERR = 15.8%		Cash generation incl. saleout of salvaged book value	158,038
External benefit (Pula/kWh)					

Base Case EA

Unit: 1000 Pula

Year A13 - 25	Annual Power Consumption (kWh)	(1) Cost						(2) Benefit				(3) Balance (2)-(1)			
		Operation and Maintenance Cost						Operating Income							
		Fixed Capital Expenditure	Battery Exchange	Contoller Exchange	Village Monitor & Commission Fees	Head Office & District Office	Overhead	Other	Total	Tariff	Deposit		Operating Profit of Deposit	Sale Out of Book Value	External Benefit
1	2002	152,328	12,425	0	0	1,380	690	0	14,495	702	305	15	0	845	1,868
2	2003	363,140	13,972	0	0	1,452	726	0	16,150	2,250	397	50	0	2,015	4,712
3	2004	576,415	12,622	0	0	1,452	726	0	14,800	3,892	390	90	0	3,199	7,571
4	2005	749,684	10,531	1,434	0	1,428	714	0	14,107	5,354	323	125	0	4,161	9,962
5	2006	901,512	8,423	1,582	0	1,428	714	0	12,148	6,581	281	156	0	5,003	12,021
6	2007	1,056,702	9,170	1,404	0	1,404	702	0	12,680	7,736	290	184	0	5,864	14,075
7	2008	1,199,042	8,321	2,605	0	1,404	702	0	13,032	8,858	260	212	0	6,654	15,984
8	2009	1,342,512	8,261	2,518	0	1,404	702	0	12,885	9,921	263	238	0	7,451	17,872
9	2010	1,485,933	7,957	2,425	0	1,428	714	0	12,524	10,990	268	264	0	8,246	19,769
10	2011	1,612,227	7,007	3,533	0	1,428	714	0	12,682	11,988	231	289	0	8,947	21,456
11	2012	1,671,852	3,308	3,440	1,123	1,548	774	0	10,192	12,647	98	306	0	9,278	22,329
12	2013	1,693,721	1,213	3,309	1,404	1,500	750	0	8,177	12,915	36	312	0	9,400	22,663
13	2014	1,693,721	0	4,311	1,348	1,428	714	0	7,801	12,987	0	314	0	9,400	22,701
14	2015	1,693,721	0	3,807	1,106	1,068	534	0	6,515	12,987	0	314	0	9,400	22,701
15	2016	1,693,721	0	3,444	936	1,068	534	0	5,982	12,987	0	314	0	9,400	22,701
16	2017	1,693,721	0	4,311	981	1,068	534	0	6,894	12,987	0	314	0	9,400	22,701
17	2018	1,693,721	0	3,807	896	1,068	534	0	6,305	12,987	0	314	0	9,400	22,701
18	2019	1,693,721	0	3,444	898	1,068	534	0	5,944	12,987	0	314	0	9,400	22,701
19	2020	1,693,721	0	4,311	884	1,068	534	0	6,798	12,987	0	314	0	9,400	22,701
20	2021	1,693,721	0	3,807	779	1,068	534	0	9,330	12,987	0	314	0	9,400	22,701
Total		26,354,834	103,211	53,496	10,354	26,160	13,080	3,143	209,444	197,728	3,143	4,755	46,616	146,261	398,503

Appendix Table 13.3-1-2 Economic Sensitive Analysis Summary

	Case 11EA	Case 12EA	Case 13EA	Case 20EA (1)	Case 20EA (2)	Case 20EA	Case 21EA	Case 22EA	Case 31EA	Case 32EA	Case 40EA
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
Total No. of Villages and Localities	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
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
SHS Electrification	30%	50%	60%	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
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	1,544.3
Public Facilities	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
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
kWp of Public PV installed	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
BCS Electrification	62	62	62	62	62	62	62	62	62	62	62
No. of Villages and Localities electrified with BCS	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
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
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	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Equity for Investment Cost (for the first 10 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 Investment Cost (for the first 10 years)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Loan (for the first 10 years)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Interest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Repayment period (years)	10	10	10	10	10	10	10	10	10	10	10
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%
Monthly Tariff (Pula/Month)	40.0	40.0	40.0	32.0	36.0	44.0	44.0	48.0	40.0	40.0	40.0
50Wp (H/Hs)	60.0	60.0	60.0	48.0	54.0	66.0	66.0	72.0	60.0	60.0	60.0
50Wp (Public facilities)	15	15	15	12	14	17	17	18	15	15	15
500Wp BCS											
System investment cost (pula)	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050	3,645	4,455	4,050
50Wp(H/Hs)	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050	3,645	4,455	4,050
50Wp(Public facilities)	87,885	87,885	87,885	87,885	87,885	87,885	87,885	87,885	79,097	96,674	87,885
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
IRROI	3.4%	4.0%	4.3%	3.8%	3.8%	2.0%	5.5%	7.2%	4.8%	2.9%	4.8%
IRROE	3.4%	4.0%	4.3%	3.8%	3.8%	2.0%	5.5%	7.2%	4.8%	2.9%	4.8%
EIRR	14.9%	16.4%	17.0%	15.8%	17.4%	18.0%	18.0%	19.1%	14.0%	14.0%	17.8%
Total Investment Cost in 20 years	139,176	194,946	222,831	167,061	167,061	167,061	167,061	167,061	156,740	177,382	255,521
SHS	52,322	87,204	104,644	69,763	69,763	69,763	69,763	69,763	55,810	62,787	125,090
Public PV	24,199	24,199	24,199	24,199	24,199	24,199	24,199	24,199	21,779	26,619	24,999
BCS	9,249	9,249	9,249	9,249	9,249	9,249	9,249	9,249	8,324	10,174	9,249
Battery and controller renewal	53,406	74,294	84,739	63,850	63,850	63,850	63,850	63,850	63,850	63,850	96,983
Subsidy for operation cost	0	0	0	0	0	0	0	0	0	0	0
Subsidy for investment cost	0	0	0	0	0	0	0	0	0	0	0
Subsidy rate for total investment cost	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Equity	95,605	132,780	151,367	114,192	114,192	114,192	114,192	114,192	104,323	124,061	173,158
Capital increase for previous deficit	1,155	940	905	1,048	1,273	1,150	945	843	1,048	1,048	707
Total government fund (subsidy, equity and capital increase)	96,760	133,720	152,272	115,240	115,465	115,342	115,138	115,035	95,502	105,371	173,865
Total government fund rate for investment	69.5%	68.6%	68.3%	69.0%	69.1%	69.0%	68.9%	68.9%	65.2%	67.2%	68.0%
Cash generation except saleout of salvaged book value	91,977	132,091	153,445	111,422	111,422	111,422	111,422	111,422	111,874	110,970	181,331
Cash generation including saleout of salvaged book value	130,087	187,212	217,071	158,038	117,766	137,892	178,184	198,330	152,709	160,702	254,928

Appendix Table 13.3-2 Economic Sensitive Analysis Summary

	Case 11EA	Case 12EA	Case 13EA	Base case EA	Case 20EA (2)	Case 20EA	Case 21EA	Case 22EA	Case 30EA	Case 31EA	Case 32EA	Case 40EA
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 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 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 Population 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 H/Hs 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	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Electrification Rate with BCS in BCS Targeted	62	62	62	62	62	62	62	62	62	62	62	62
No. of Villages and Localities electrified with BCS	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471	3,471
No. of BCS User H/Hs	62	62	62	62	62	62	62	62	62	62	62	62
No. of BCS installed	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8	59.8
kW of BCS installed	12,985	19,327	22,498	16,156	16,156	16,156	16,156	16,156	16,156	16,156	16,156	16,156
Total No. of Households electrified with SHS and BCS	40.9%	60.9%	70.9%	50.9%	50.9%	50.9%	50.9%	50.9%	50.9%	50.9%	50.9%	50.9%
Total Electrification Rate	1,004.5	1,435.1	1,650.4	1,219.8	1,219.8	1,219.8	1,219.8	1,219.8	1,219.8	1,219.8	1,219.8	1,902.8
Total kWp installed	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Equity (for the first 10 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 Investment Cost (for the first 10 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%
Loan (for the first 10 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	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Repayment period (years)	10	10	10	10	10	10	10	10	10	10	10	10
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)	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 (H/Hs)	60.0	60.0	60.0	60.0	48.0	54.0	66.0	72.0	60.0	60.0	60.0	60.0
50Wp (Public facilities)	15	15	15	15	12	14	17	18	15	15	15	15
500Wp BCS												
System investment cost (pula)	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050
50Wp(H/Hs)	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050
50Wp(Public facilities)	87,885	87,885	87,885	87,885	87,885	87,885	87,885	87,885	87,885	87,885	87,885	87,885
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	3.1%	3.8%	4.1%	3.5%	1.8%	1.8%	5.2%	6.9%	4.5%	4.5%	2.6%	4.6%
IRROE	14.1%	15.8%	16.3%	15.1%	11.8%	13.5%	16.7%	18.3%	19.7%	17.1%	13.3%	17.3%
EIRR	145,695	201,466	229,351	173,580	173,580	173,580	173,580	173,580	152,300	162,940	184,221	262,041
Total Investment Cost in 20 years	52,322	87,204	104,644	69,763	69,763	69,763	69,763	69,763	55,810	62,787	76,739	125,090
SHS	24,199	24,199	24,199	24,199	24,199	24,199	24,199	24,199	24,199	24,199	24,199	24,199
Public PV	12,441	12,441	12,441	12,441	12,441	12,441	12,441	12,441	12,441	12,441	12,441	12,441
BCS	56,734	77,622	88,067	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	100,311
Battery and controller renewal	0	0	0	0	0	0	0	0	0	0	0	0
Subsidy for operation cost	0	0	0	0	0	0	0	0	0	0	0	0
Subsidy for investment cost	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 rate for total investment cost	100,072	137,247	155,835	118,659	118,659	118,659	118,659	118,659	98,283	108,471	128,848	177,625
Equity	1,109	894	859	1,002	1,108	895	788	1,002	1,002	1,002	1,002	661
Capital increase for previous deficit	101,181	138,141	156,693	119,661	119,661	119,661	119,661	119,661	99,285	109,473	129,849	178,286
Total government fund (subsidy, equity and capital increase)	69.4%	68.6%	68.3%	69.0%	69.0%	69.0%	68.8%	68.8%	65.2%	67.2%	70.5%	68.0%
Total government fund rate for investment	93,633	133,748	155,101	113,078	113,078	113,078	113,078	113,078	113,983	113,531	112,626	182,988
Cash generation except saleout of salvaged book value	132,778	189,903	219,761	160,728	119,694	140,211	181,245	201,762	155,304	158,016	163,440	257,618
Cash generation including saleout of salvaged book value												

Appendix Table 13.3-3 Economic Sensitive Analysis Summary

	Case 11EA	Case 12EA	Case 13EA	Base case E	Case 20EA (2)	Case 20EA	Case 21EA	Case 22EA	Case 30EA	Case 31EA	Case 32EA	Case 40EA
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%
Electrification Rate 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
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	1,544.3
kWp of SHS installed												
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	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BCS Electrification	0	0	0	0	0	0	0	0	0	0	0	0
Electrification Rate with BCS in BCS Targeted Villages	0	0	0	0	0	0	0	0	0	0	0	0
No. of Villages and Localities electrified with BCS	0	0	0	0	0	0	0	0	0	0	0	0
No. of BCS User H/Hs	0	0	0	0	0	0	0	0	0	0	0	0
No. of BCS installed	0	0	0	0	0	0	0	0	0	0	0	0
kW of BCS installed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total No. of Households electrified with SHS and BCS	9,513	15,856	19,027	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684	12,684
Total Electrification Rate	30.0%	50.0%	60.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Total kWp installed	944.7	1,375.3	1,590.7	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,160.0	1,843.1
Equity (for the first 10 years)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Subsidy for Investment Cost (for the first 10 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%
Loan (for the first 10 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	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Repayment period (years)	10	10	10	10	10	10	10	10	10	10	10	10
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)	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 (H/Hs)	60.0	60.0	60.0	60.0	48.0	54.0	66.0	72.0	60.0	60.0	60.0	60.0
50Wp (Public facilities)	15	15	15	15	12	14	17	18	15	15	15	15
500Wp BCS												
System investment cost (pula)	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050	3,240	3,645	4,455	4,050
50Wp (Public facilities)	4,050	4,050	4,050	4,050	4,050	4,050	4,050	4,050	3,240	3,645	4,455	4,050
1000Wp BCS	87,885	87,885	87,885	87,885	87,885	87,885	87,885	87,885	70,308	79,097	96,674	87,885
PV demand by PV size												
IRR0I	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project	Dissem. Project
IRR0E	4.5%	4.9%	5.1%	4.7%	1.0%	2.9%	6.6%	8.4%	7.2%	5.8%	3.8%	5.5%
EIRR	17.9%	18.8%	19.1%	18.5%	14.8%	16.6%	20.3%	22.2%	24.1%	21.0%	16.4%	19.9%
Total Investment Cost in 20 years	123,270	179,041	206,926	151,155	151,155	151,155	151,155	151,155	132,363	141,759	160,552	239,616
SHS	52,322	87,204	104,644	69,763	69,763	69,763	69,763	69,763	55,810	62,787	76,739	125,090
Public PV	24,199	24,199	24,199	24,199	24,199	24,199	24,199	24,199	19,359	21,779	26,619	24,199
BCS	0	0	0	0	0	0	0	0	0	0	0	0
Battery and controller renewal	46,749	67,638	78,083	57,194	57,194	57,194	57,194	57,194	57,194	57,194	57,194	90,327
Subsidy for operation cost	0	0	0	0	0	0	0	0	0	0	0	0
Subsidy for investment cost	0	0	0	0	0	0	0	0	0	0	0	0
Subsidy rate for total investment cost	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Equity	83,803	120,979	139,566	102,391	102,391	102,391	102,391	102,391	84,503	93,447	111,335	161,357
Capital increase for previous deficit	1,247	1,032	997	1,140	1,535	1,233	1,047	953	1,140	1,140	1,140	799
Total government fund (subsidy, equity and capital increase)	85,050	122,011	140,563	103,530	103,926	103,624	103,437	103,344	85,642	94,586	112,475	162,155
Total government fund rate for investment investment	69.0%	68.1%	67.9%	68.5%	68.8%	68.6%	68.4%	68.4%	64.7%	66.7%	70.1%	67.7%
Cash generation except saleout of salvaged book value	88,664	128,779	150,132	108,109	109,510	108,705	127,514	146,918	109,013	108,561	107,657	178,019
Cash generation including saleout of salvaged book value	124,262	181,387	211,246	152,213	153,614	152,809	171,617	191,022	147,164	149,688	154,737	249,103