Appendix Table 7.1-3-8 Comparison of Grid Electrification and SHS

											ļ		l											
Variables		Units Unit	Unit cost L	Units	1	3	3 4	v	•	7	∞	6	10	=	12	13	14	15 1	17	7 18	19	20	residual	at 0 year
1														-					_					
	200																							
	M 009	Wp																						
	0.365	175	175200 kV	kWph/y	1	175,200 175,	175,200 175,200	00 175,200	002,271 00	175,200	175,200	175,200	175,200 1	175,200 17	175,200 1	175,200 1	175,200 17:	175,200 175,	175,200 175,200	200 175,200	00 175,200	00 175,200		1,085,930
	0 km	km																				_		(i = 0.15)
ı		8	96.3 P	P/Wp 11,	11,556,000																			10,048,696
ı		S	200	4			1,200,000	8		1,200,000			1,200,000		1,1	1,200,000		1,200	1,200,000		1,200,000	00	(400,000)	4,391,004
l		×	500 P/Vi	P/Village/m		900'9 000'9	000'9 000	000'9	000'9	9000	6,000	9000'9	000'9	9 000'9	9000'9	000'9	6,000	6,000 6,0	000'9 000'9	000'9 00	000'9 0	000'9		37,189
	-	0.0	Г	%		_	-	┢	₩	┖	57,600	┞-	┼─	+	S7,600 S	57,600	57,600 57	57,600 57,0	57,600 57,600	900 57,600	009'25 00	0 57,600		357,018
	276	2.	├	P/H/y				1	-	┖	-	<u> </u>	┿	-	_	╁╌╴	+	╙	-	200 55,200	00 55,200			14,833,908
ity			a a	P/kWh				+	-	<u> </u>	-	<u> </u>	┼─			-	-	_						
lacksquare	_							-								-								
Households	200		_													ļ		ļ 						
Annual consumption		175	175200 kV	kWph/y		175,200 175,200	,200 175,200	00 175,200	00 175,200	175,200	175,200	175,200	175,200 1	175,200 17	175,200 17	175,200 1	175,200 17	175,200 175,	175,200 175,200	200 175,200	00 175,200	00 175,200	1	1,085,930
Distance from Grid	291		<u> </u>													-	_							(i = 0.15)
Investment costs (A)		102	102816	16,	16,861,824							_											(3,372,365)	12,112,463
Connection costs		45	4500	5	000'006				_			_		_		L							(180,000)	646,503
								_					-	_										
Operation & maintenance	0.02				3	337,236 337,236	,236 337,236	36 337,236	337,236	337,236	337,236	337,236	337,236 3	337,236 33	337,236 3:	337,236 3:	337,236 33	337,236 337,	337,236 337,236	236 337,236	36 337,236	337,236		2,090,270
Power generation or import cost		0.0	0.075 P.	P/kWh		13,140 13,140	140 13,140	0 13,140	0 13,140	13,140	13,140	13,140	13,140	13,140	13,140	13,140 1	13,140 13	13,140 13,:	13,140 13,140	140 13,140	13,140	0 13,140		81,445
																								14,930,681
			P.	P/kWh																				
\dashv	+	\dashv					j	4										-	+	_		1		
Households(H)	+	+			+	+	+	+							1		-		+					
	+	Wp	+]	1	000 00					000	000	_	2000	- 1	\neg			\neg		000 00	98		1 679 905
Distance from Grid	0.305 250 km	707 L	7078707 X	K w pn/y	+	707,800 262,800	900,207	707,800	707,800	008,202	707,800	707,800	7 008,207	707,800	7 008,207	707,800	707,800 20	707 708,707	707,800	207,000	—	$\overline{}$		(i = 0.15)
Investment costs (A)	╁	╀	96.3 P	P/Wp 17,	17,334,000										<u> </u>	İ	\vdash		-		<u> </u>			15,073,043
Battery replace		55	H	t			1,800,000	9 9		1,800,000		Ē	1,800,000		1	1,800,000		1,800	1,800,000		1,800,000	000	(600,000)	6,586,507
Operation & maintenance: village		Š	Г	P/Village/m		6,000 6,0	000'9 000'9	000'9	000'9	900'9	6,000	90009	\vdash	9 000'9	9000'9	\vdash	9 000'9	6,000 6,0	6,000 6,000	000'9 00	000'9 0	000'9		37,189
Agent fee		0,	0.05	%		86,400 86,4	86,400 86,400	0 86,400	0 86,400	86,400	86,400	86,400	86,400	86,400 8	86,400 8	86,400 8	86,400 86	86,400 86,4	86,400 86,400	100 86,400		\dashv		535,527
:Head office	276	2	276 P	P/H/y		82,800 82,800	800 82,800	0 82,800	0 82,800	82,800	82,800	82,800	82,800	82,800 8:	82,800 8	82,800 8	82,800 82	82,800 82,8	82,800 82,800	800 82,800	90 82,800	0 82,800		513,214
-		-	+	+	1	-								\dashv	\dashv			1	-	1	4	-		22,745,480
+		+	<u>a</u>	P/kWh			-	-									+	+		+				+
+		+	+		1	+	+	\downarrow	1			\dagger	1	\dagger	+	\dagger	+	$\frac{1}{1}$	+	+	1	-		-
Households	200	-	╅	1	1			_	_	4		_	_		- 1	_	+	- [$^+$		-	_		
Annual consumption	 	797	262800 KV	kWph/y	+	262,800 262,	262,800 262,800	262,800	262,800	262,800	262,800	262,800	262,800 2	262,800 26	262,800 2	262,800 2	262,800 26	262,800 262,	262,800 262,800	800 262,800	00 262,800	70 262,800		1,028,892
Distance from Grid	250	15	 	1	90.75	1	$\frac{1}{1}$	+	\downarrow			+	\dagger	+	+	\dagger	+	+	+	\downarrow	\downarrow	\downarrow	(6 140 800)	(i = 0.15)
Investment costs (A)	+	701	102816	3 3	25,704,000	+	+	+	\downarrow		1	\dagger	†	\dagger	+	+	+	+	+	+	$\frac{1}{1}$	+	0,140,0vo	
Connection costs	+	7	4500	+	1,350,000	+	+	+	+		1	\dagger	+	+	+	\dagger	+	+	-	+	+	$\frac{1}{1}$	(270,000)	-
Operation & maintenance	0.02	$\frac{1}{1}$	+	+	1	514,080 514,080	.080 514.080	30 514,080	30 514,080	514,080	514,080	514,080	514.080 5	514,080 51	514,080 5	514,080 5	514,080 51	514,080 514,	514,080 514,080	080 514,080	80 514,080	30 514,080		3,186,387
Power generation or import cost		0.0	0.075 P.	P/kWh			ļ	Т		1		19,710	+		\bot	${}^{-}$		-	-					122,167
Н		Н					L	L		L.					_		-	-	-	L				22,742,429
_	-				1			+									+		1					

Appendix Table 7.1-4 Comparison of Grid Electrification and SHS (72 Village Electrification)

			, , , , , , , , , , , , , , , , , , , 											(v mage L									
																								Sum of NPV
	Specific consump	Units	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	residual value	at 0 year
SHS Electrification																								
No. of Villages	72																							
Households	13,149	·																						
Capacity	100	Wp																						
Annual consumption	1,919,789	kWh		1,919,789	1,919,789	1,919,789	1,919,789	1,919,789	1,919,789	1,919,789	1 919,789	1,919,789	1,919,789	1,919,789	1,919,789	1,919,789	1,919,789	1,919,789	1,919,789	1,919,789	1,919,789	1,919,789	0	11,899,296
Distance from Grid	2,230	km																						(i = 0.15)
Investment costs (A)																								158,225,901
System	96.3	P/Wp	126,627,181																					110,110,592
Battery replace	500	P/piece				13,149,240			13,149,240			13,149,240			13,149,240			13,149,240			13,149,240		(4,383,080)	48,115,309
Operation & maintenance																								29,084,293
Village monitor		P/village/m		432,000		432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000		432,000	432,000	432,000			432,000	432,000		2,677,636
Agent fee		% of sales		631,164	631,164	631,164	631,164	631,164	631,164	631,164	631,164	631,164	631,164	631,164	631,164	631,164	631,164	631,164	631,164	631,164	631,164	631,164		3,912,097
BPC head office & local	276	P/house/y		3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190		22,494,560
Total costs																								187,310,195
Costs/kWh										-	·													15.7
Subsidy	80% of invest	P	101,301,745			10,519,392			10,519,392			10,519,392												108,973,813
Recovery of Costs														_										
Tariff (fixed)	40	P/50Wp/m		12,623,270	12,623,270	12,623,270	12,623,270	12,623,270	12,623,270	12,623,270	12,623,270	12,623,270	12,623,270	12,623,270	12,623,270	12,623,270	12,623,270	12,623,270	12,623,270	12,623,270	12,623,270	12,623,270		78,241,948
Tariff (variable)					ļ																			0
Total																								78,241,948
% of cost recovery																								41.8%
SHS Electrification																				-				
No. of Villages	72																							
Households	13,149																							
Capacity	200	Wp																-						
Annual consumption		kWh		3,839,578	3,839,578	3,839,578	3,839,578	3,839,578	3,839,578	3,839,578	3,839,578	3,839,578	3,839,578	3,839,578	3,839,578	3,839,578	3,839,578	3,839,578	3,839,578	3,839,578	3,839,578	3,839,578	0	23,798,593
Distance from Grid	2,230			.,,.					, ,					, ,			-,,-		-,,	-,,-	-,,			(i = 0.15)
Investment costs (A)	,																							316,451,803
System	96.3	P/Wp	253,254,362														i						_	220,221,185
Battery replace	500	P/piece				26,298,480			26,298,480			26,298,480			26,298,480			26,298,480			26,298,480		(8,766,160)	
Operation & maintenance		<u> </u>																						32,996,391
Village monitor	500	P/village/m		432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000	432,000		2,677,636
Agent fee	5.00%	% of sales		1,262,327	1,262,327	1,262,327	1,262,327	1,262,327	1,262,327	1,262,327	1,262,327	1,262,327	1,262,327	1,262,327	1,262,327	1,262,327	1,262,327	1,262,327	1,262,327	1,262,327	1,262,327	1,262,327		7,824,195
BPC head office & local	276	P/house/y		3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190	3,629,190		22,494,560
Total costs																								349,448,194
Costs/kWh																								14.7
Subsidy	80%of invest	P	202,603,490			21,038,784			21,038,784			21,038,784												217,947,626
Recovery of Costs																								
Tariff (fixed)		P/50Wp/m		25,246,541	25,246,541	25,246,541	25,246,541	25,246,541	25,246,541	25,246,541	25,246,541	25,246,541	25,246,541	25,246,541	25,246,541	25,246,541	25,246,541	25,246,541	25,246,541	25,246,541	25,246,541	25,246,541		156,483,897
Tariff (variable)																								0
Total					-																			156,483,897
% of cost recovery			l	L	<u> </u>			L				L												44.8%

Appendix Table 7.1-4 Comparison of Grid Electrification and SHS (72 Village Electrification)

			1	1	- 1				· · · · · · · · · · · · · · · · · · ·			1	and Si	· · · · · ·	·		1		τ	1	<u> </u>	<u> </u>		a cumu
	C!C																							Sum of NPV
	Specific consump	Units	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	residual value	at 0 year
	Сопоштр		<u> </u>																-					
Grid Electrification			 																					
Number of villages	72																							
Households																								
Annual consumption				1,925,049	1,925,049	1,925,049	1,925,049	1,925,049	1,925,049	1,925,049	1,925,049	1,925,049	1,925,049	1,925,049	1,925,049	1,925,049	1,925,049	1,925,049	1,925,049	1,925,049	1,925,049	1,925,049		11,931,897
Distance from Grid	2230 102816	km P/km	229,279,680																	-			(65,508,480)	(i = 0.15 149,839,812
Investment costs (A) Connection costs	3000		39,447,720																				(11,270,777)	25,780,038
Operation & maintenance	2.0%			4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	(11,210,711)	28,422,569
Power generation or import cost	0.075	P/kWh		144,379	144,379	144,379	144,379	144,379	144,379	144,379	144,379	144,379	144,379	144,379	144,379	144,379	144,379	144,379	144,379	144,379	144,379	144,379		894,892
Total costs																								204,937,313
Costs/kWh	100% of invest	P	229,279,680									 					-							17.2 199,373,635
Recovery of Costs	100%01 HIVEST	r	229,279,080	1					l		 -	 												199,373,633
Tariff (fixed)	0	P/House/m		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Tariff (variable)				485,690	485,690	485,690	485,690	485,690	485,690	485,690	485,690	485,690	485,690	485,690	485,690	485,690	485,690	485,690	485,690	485,690	485,690	485,690		3,010,418
Connection costs (RCS)			39,447,720																					34,302,365
Total	<u> </u>			<u> </u>	ļ			ļ				ļ												37,312,78
% of cost recovery			 																					18.29
Grid Electrification			<u> </u>																					
Number of villages	72																							
Households																								
Annual consumption	20			3,155,818	3,155,818	3,155,818	3,155,818	3,155,818	3,155,818	3,155,818	3,155,818	3,155,818	3,155,818	3,155,818	3,155,818	3,155,818	3,155,818	3,155,818	3,155,818	3,155,818	3,155,818	3,155,818		19,560,487
Distance from Grid	2230	km	229,279,680								<u>.</u>												(cd dog 100)	(i = 0.15
Investment costs (A) Connection costs	102816 3000		39,447,720																				(65,508,480) (11,270,777)	149,839,812 25,780,038
Operation & maintenance	2.0%	% of (A)	32,447,720	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	(11,270,777)	28,422,569
Power generation or import cost	0.075	P/kWh		236,686		236,686	236,686	236,686	236,686	236,686	236,686	236,686	236,686	236,686	236,686	236,686	236,686	236,686	236,686			236,686		1,467,037
Total costs		-,,																						205,509,457
Costs/kWh																								10.5
Recovery of Costs Tariff (fixed)		P/House/m											0	0										
Tariff (variable)	0.2523	P/kWh		796,213	796,213	796,213	796,213	796,213	796,213	796,213	796,213	796,213	796,213	796,213	796,213	796,213	796,213	796,213	796,213	796,213	796,213	796,213		4,935,111
Connection costs (RCS)		1/10.11	39,447,720	 	770,213	170,220	770,220	120,220	770,215	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	170,210	770,210	770,210	770,210	170,215	770,215	770,210	. ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	770,213	730,213	750,213	770,213		34,302,365
Total																								39,237,47
% of cost recovery														a										19.19
C. I. Fil				-																				
Grid Electrification Number of villages	72									-														
Households																								
Annual consumption	50	kWh/m		7,889,544	7,889,544	7,889,544	7,889,544	7,889,544	7,889,544	7,889,544	7,889,544	7,889,544	7,889,544	7,889,544	7,889,544	7,889,544	7,889,544	7,889,544	7,889,544	7,889,544	7,889,544	7,889,544		48,901,218
Distance from Grid																								(i = 0.15
Investment costs (A)	102816		229,279,680																				(65,508,480)	149,839,812
Connection costs Operation & maintenance		P/House % of (A)	39,447,720	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	(11,270,777)	25,780,038 28,422,569
Power generation or import cost				591,716		591,716	591,716	591,716	591,716		591,716			591,716		591,716	591,716	591,716	591,716			591,716		3,667,591
Total costs	 	,				.,												-,						207,710,012
Costs/kWh																								4,2
Recovery of Costs	ļ	D/II/	 	_				_																_
Tariff (fixed) Tariff (variable)		P/House/m P/kWh		1,990,532	1,990,532	1,990,532	1,990,532	1,990,532	1,990,532	1,990,532	1,990,532	1,990,532	1,990,532	1,990,532	1,990,532	1,990,532	1,990,532	1,990,532	1,990,532	1,990,532	1,990,532	1,990,532		12,337,777
Connection costs (RCS)			39,447,720													, , , -			, ,	,	7,	,,		34,302,365
Total % of cost recovery			 									-												46,640,14 22.59
Grid Electrification																								
Number of villages																								
Households Annual consumption				15,779.088	15,779,088	15,779.088	15,779,088	15,779,088	15,779.088	15,779,088	15,779.088	15,779,088	15,779.088	15,779.088	15,779.088	15,779.088	15,779,088	15,779,088	15,779,088	15,779,088	15,779,088	15,779,088		97,802,435
Distance from Grid	2230	km			,,,	, , , , , , , , , , , , , , , , , ,							,,	,,,			, ,	,.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,_,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	22,,,000	,.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	20,. 10,000		(i = 0.15
Investment costs (A) Connection costs		P/km P/House	229,279,680 39,447,720									-											(65,508,480) (11,270,777)	149,839,812 25,780,038
Operation & maintenance		% of (A)	39,447,720	4,585,594			4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594			4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	4,585,594	(11,4/0,///)	28,422,569
Power generation or import cost	0.075			1,183,432		1,183,432	1,183,432	1,183,432								1,183,432		1,183,432	1,183,432		1,183,432			7,335,183
Total costs Costs/kWh		ļ														-								211,377,603 2.2
Recovery of Costs				<u> </u>																				<i>L.L</i>
Tariff (fixed)		P/House/m		2.001.001	2 001 001	0	2.091.061	3 001 001	2.001.061	2.001.064	2.001.004	2 001 061	0 3,981,064	2,001,001	2.001.001	2.001.064	0	2 001 001	2 001 001	2.001.261	0	0		0
Tariff (variable) Connection costs (RCS)		P/kWh	39,447,720	3,981,064	3,981,064	3,981,064	3,981,064	3,981,064	3,981,064	3,981,064	3,981,064	3,981,064	3,981,064	3,981,064	3,981,064	3,981,064	3,981,064	3,981,064	3,981,064	3,981,064	3,981,064	3,981,064		24,675,554 34,302,365
Total			3.,,,20																					58,977,920
% of cost recovery	L		1	L	L			L	ll		L	L	·									7 21		27.99

Appendix Table 7.1-5-1 Comparison of PV Mini-Grid Electrification and SHS

50 Way Library 1 2 3 4 5 6 7 8 9 10 11 50 Way 360 Library 360 150 35				C of MDV
Number of the part of the pa		,	Ş	
Houseble-ble-fifty State	8 9 10	13 14 15 16	17 18 19 20	at U year
Part of Part				
Second Columniation				
Chapted Chap	3,650 3,650	3650 3650 3650	0 3650 3650 3650	22.624
record (A) 86.3 PVNp 24,0750 5.00 6,000	מרסיים מרסיים	0000		(i = 0.15)
Part				209,348
roce village 360 PyVillagenia 6,080 6,080 6,080 6,080 6,080 6,080 6,080 6,090 9,090 1,390 1,390 1,390 1,390 1,390 1,390 1,390 1,390 1,390 1,390 1,390 1,390 1,390 1,390 1,390 1,390 1,390 1,390 1,390		25,000 25,000	00 25,000 (8,333)	3) 91,479
Again feet 75 1200	000'9 000'9 000'9	+	000'9 000'9 000'9 0	37,189
Page office 276 Phily	1.200 1.200 1.200	1,200 1,200 1,200	1,200 1,200 1,200	7,438
Capacity So Way So So So So So So So S	13.800 13.800 13.800	13,800 13,800 13,800	13,800 13,800 13,800	85,536
Capacity S0 Wp S650				430,990
Chaperly SO Wp So So So So So So So S				19.05
Capacity 50 Wp 3650 3,650				
Capacity 50 Wp 3650				
Second content of the content of t				
Sument const (A) Some const (3,650 3,650 3,650	0 3,650 3,650 3,650 3,650	0 3,650 3,650 3,650 3,650	22,624
Battery peplace 375 P. Mp 180,500 18,0				(i = 0.15)
Battery replace 4500 P P 18,570 18,750 18,750 18,750 18,750 18,750 18,750 18,750 18,750 18,750 18,000 <td></td> <td></td> <td></td> <td>156,957</td>				156,957
Connection cosis 4500 PAVIllage-in 225,000 18,0		18,750	50 18,750 (6,250)	0) 68,609
Agent fee				195,652
Agent fee 0.05 % 1,200	18,000 18,000 18,000 18,000	00 18,000 18,000 18,000 18,000	00 18,000 18,000 18,000 18,000	111,568
Householdschild 376 PyWpy 13,800 13,80	1,200 1,200 1,200	0 1,200 1,200 1,200 1,200	1,200 1,200	7,438
Householde(H) 50 km km km/ky	13,800 13,800 13,800	00 13,800 13,800 13,800 13,800	00 13,800 13,800 13,800 13,800	85,536
Households(H) 50 Wp				625,760
Householde(II) 50 Wp 1,300 7,300				27.66
Capacity 100 Wp 1300				
Capacity 100 Wp RAPply 7,300				
Property				1
From Grid O km Sec. 3 P/Wp 481,500 Sec. 30	7,300 7,300 7,300	0 7,300 7,300 7,300 7,300	0 7,300 7,300 7,300 7,300	45,247
Figure F				(i = 0.15)
Solution			000 01	┸
Age	20,000	000,05	000 6 000 6 000 6 000 6 000	
Agentice	0,000 0,000 0,000	0,000 0,000 0,000	2,400	11.876
cost 276 P/Hy 13,800	2,400 2,400 2,400 2,400	2,400 2,400 2,400	2,400 2,400 2,400	0/0/1
Copposition	13,800 13,800 13,800	70 13,800 13,800 13,800	0,000,01	739.255
Households 50 Capacity 100 Wp T300 T300 T300 T300 T300 T300 T300 T300				16.34
Capacity 100 Wp T300 T,300 7,300				
100 Wp 7300 7,300				
7300 7,300				
72.2 P/Wp 361,000 37,500 37,500 37,500 37,500	7,300 7,300 7,300	0 7,300 7,300 7,300 7,300	00 7,300 7,300 7,300 7,300	45,247
72.2 P/Wp 361,000 37,500 37,500 37,500 37,500 4500 4500 225,000 37,500 37,500 37,500				(i = 0.15)
375 P 37,500 37,500 37,500 37,500 4500 225,000			000	1
450W 450W		37,500	00(21)	105,652
18 000 18 000 18 000 18 000 18 000 18 000	18 000 18 000 18 000 18 000	0 18 000 18 000 18 000 18 000	000 18 000 18 000 18 000	111.568
0.05 % 2.400	2,400 2,400 2,400 2,400 2,400	2,400 2,400 2,400	2,400 2,400 2,400	14,876
276 P/Wp/y 13,800 13,800 13,800 13,800 13,800 13,800 13,800 13,800 13,800 13,800	13,800 13,800 13,800 13,800 13,800	13,800 13,800 13,800	13,800 13,800 13,800	85,536
				858,764

Appendix Table 7.1-5-2 Comparison of PV Mini-Grid Electrification and SHS

National Electrification National Function National Function National Functional National Electrification National Construction National Electrification National Elect	9 00 14,600 00 6,000 00 4,800 00 13,800 00 14,600	10 14,600 100,000 6,000 4,800 13,800 13,800 13,800	11 14,600 6,000 4,800 13,800 14,600 14,600 1,800 1,800 1,800 1,800 1,800 1,800	11,600 11,600 11,800 11,600 11,800 11,600	13 14,600 11,600 13,800 13,800 11,600 11,600 11,600	14,600 12 13,600	 	16 17	18	19	20	residual	at 0 year
30 Wp 14600 kWphy 14,600		 	14,600 6,000 6,000 13,800 114,600 18,000 18,000 1,800		<u> </u>								•
50 NA NA 14,600			14,600 6,000 11,800 11,600 11,800 11,800 11,800						-	_			
200 Wp 14600 kWplky 14,600			14,600 6,000 13,800 11,600 18,000 18,000 11,800					\rightarrow					
0.0365 Name 14600 14,600 10,000 <td></td> <td></td> <td>14,600 6,000 13,800 14,600 18,000 1,800 13,800</td> <td></td> <td></td> <td></td> <td></td> <td>\rightarrow</td> <td></td> <td>4</td> <td></td> <td></td> <td></td>			14,600 6,000 13,800 14,600 18,000 1,800 13,800					\rightarrow		4			
0 km 96.3 PWP 963.000 PMP 964.300 6,000 </td <td>╒╃╃╃╃╃╫╫┼┼┼</td> <td></td> <td>6,000 4,800 13,800 14,600 14,600 18,000 18,000</td> <td></td> <td></td> <td></td> <td>- - - - </td> <td></td> <td>00 14,600</td> <td>009'41</td> <td>14,600</td> <td></td> <td>90,494</td>	╒╃╃╃╃╃ ╫╫┼┼┼		6,000 4,800 13,800 14,600 14,600 18,000 18,000				- - - - 		00 14,600	009'41	14,600		90,494
100,000 100,			6,000 4,800 13,800 14,600 14,600 18,000 13,800										(i = 0.15)
2.00 2.00 P 2.00 2.00 5.00			6,000 13,800 14,800 14,600 18,000 18,000 13,800				- + +						837,391
2506 PyVIllage/m 6,000			4,800 13,800 14,600 18,000 18,000 19,800 19,800 19,800				+	100,000		100,000		(33,333)	365,917
276 Q.65 % 4,800 4,800 4,800 4,800 4,800 4,800 1,800 13,800 14,600			13,800 14,600 18,000 18,000 19,800 13,800				H	6,000 6,000	000'9 00	000'9	6,000		37,189
276 276 P/Hy 113,800 14,600 14,600			13,800 14,600 18,000 4,800 13,800				4,800 4,8	4,800 4,800	008'4	4,800	4,800		29,752
50 200 Wp 14600			14,600 18,000 4,800 13,800				13,800 13,	13,800 13,800	00 13,800	0 13,800	13,800		85,536
50 30 30 30 30 30 30 30 30 30			14,600 18,000 4,800 13,800										1,355,785
200 Wp			14,600 18,000 13,800										14.98
50 Wp 14600 14,600			14,600 18,000 4,800 13,800										
200 Wp 14,600 18,000			14,600 18,000 4,800 13,800										
14,600 1			14,600 18,000 4,800 13,800			\rightarrow							
50 P/Wp 722,000 15,000 15,000 15,000 15,000 15,000 15,000 15,000 15,000 15,000 18,000			18,000 4,800 13,800		75,000	1	14,600 14,	14,600 14,600	00 14,600	0 14,600	14,600		90,494
372 P/Wp 722,000 R 75,000			18,000 4,800 13,800		75,000								(i = 0.15)
375 P 75,000 75,000 75,000 75,000 75,000 75,000 75,000 18,000			18,000 4,800 13,800		75,000	4							627,826
4500 4500 18,000			18,000 4,800 13,800				75.	75,000		75,000		(25,000)	274,438
1500 P/Village/m 18,000 18,000 18,000 18,000 18,000 18,000 18,000 18,000 18,000 18,000 18,000 18,000 18,000 18,000 13,800			18,000 4,800 13,800	_	_	\rightarrow	_	_	_	\rightarrow	-		195,652
50 9.05 % 4,800 4,800 4,800 4,800 4,800 4,800 4,800 4,800 4,800 4,800 4,800 4,800 4,800 4,800 4,800 4,800 4,800 4,800 4,800 13,800	_		4,800		-+	18,000 18	18,000 18,	18,000 18,000	000 18,000	0 18,000	-		111,568
Head office 276 P/Wp/y 13,800	\rightarrow		13,800	4,800		-	\rightarrow						29,752
Capacity Storon Capa	00 13,800			13,800	13,800	13,800 13	13,800 13,	13,800 13,800	00 13,800	0 13,800	13,800		85,536
Seebolds(H) 50 Seebolds(H)						1		1					1,324,771
Capacity SO Wp Capacity SO Wp Capacity SO Capacity SO Capacity SO Wp Capacity SO Capacity SO Capacity SO Capacity SO Capacity SO Capacity SO Capacity Capacity SO Capacity Capacity SO Capacity SO Capacity Capacity SO Capac						+	+						14.64
Capacity 300 Wp 21,900				1		+		-		\downarrow			
Capacity 300 Wp Long Capacity Applied 21,900 21,9					\dagger	+	+	+	\downarrow				
onsumption 0.303				300	_	_	_		_	_	-		135 741
tey rom Orda In costs (A) 10 96.3 P/Wp 1,444,500 tey replace 10 500 P/Village/m 6,000 6,000 6,000 6,000 6,000 6,000 Agent fee 0.05 % 7,200 7,200 7,200 7,200 7,200 Cost Cost Connective 300 Wn	00 21,900	21,900	21,900	21,900	21,900 2	21,900 2	21,900 21,	21,900 21,900	71,900	21,900	71,900		147,001
Technic Tech				\downarrow		+		-	-				1.256.087
Agent fee 500 P/Village/m 6,000 6,000 6,000 6,000 6,000 6,000 6,000 6,000 6,000 7,20		150,000		Ī	150,000	\vdash	150	150,000	_	150,000		(50,000)	548,876
Agent fee 0.05 % 7,200 7	000'9	+	000'9	000'9	1	9 000'9	6,000 6,	000'9 000'9	000'9 00	000'9	6,000		37,189
Head office 276 276 P/Hy 13,800 13,80	┼	⊢	7,200	⊢	⊢	⊢	⊢	\vdash	\vdash	7,200	7,200		44,627
cost Households 50 Canacity 300	00 13,800	13,800	13,800	13,800	13,800	13,800 1.	13,800 13,	13,800 13,800	00 13,800	0 13,800	13,800		85,536
Households 50						\dashv			-				1,972,315
Households 50				†		+	+	+	+				14.53
30 50				1	\dagger	+	$\frac{1}{1}$	+	+				
					\dagger	\dagger		+	1	-		+	
21900 21,900 21,900 21,900 21,900 21,900 21,900	00 21,900	21,900	21,900	21,900	21,900 2	21,900 2	21,900 21.	21,900 21,900	00 21,900	0 21,900	21,900		135,741
		-	-	-	-	_	-	ш	ш	Н	Н		(i = 0.15)
72.2 P/Wp 1,083,000													941,739
375 P		112,500			112,500	+	11	112,500	1	112,500		(37,500)	411,657
4500 225,000	-	-	_	-	-	-	-		900	9	1000		195,652
Operation & maintenance vising 1500 I/Village/m I/Village/m 18,000 1	7,200	18,000	18,000	7 200	7 200	7 200	7 200 7	7 200 7 200	+-	-	_		44.627
276 P/Wei/v 13.800 13.800 13.800 13.800 13.800 13.800		_		+-	+	+-	+-	+	+-	-	4		85,536
	_	-	_	-	_		-	-	-	-			1,790,779
Average electricity cost								H					13.19

Appendix Table 7.1-5-3 Comparison of PV Mini-Grid Electrification and SHS

Sum of NPV	at 0 year				45,247	(i = 0.15)	418,696	182,959	37,189	14,876	171,071	824,790	18.23				45,247	(i = 0.15)	313,913	137,219	391,304	111,568	14,876	171,071	1,139,951	25.19				90,494	(i = 0.15)	837,391	365,917	37,189	29,752	1.441.320	15.93				90,494	(1 = 0.15)	274 438	391,304	111,568	29,752	171,071	1,605,959		
S	residual							(16,667)										Ì	1	(12,500)													(33,333)									T	(000 30)	, m					T	
	20				7,300				9,000	2,400	27,600				ĺ		7,300					18,000	2,400	27,600						14,600			\neg	9,000	4,800	000,72					14,600		Ì		18,000	4,800	27,600			1
	19				7,300			50,000	000'9	2,400	27,600						7,300			37,500		18,000	2,400	27,600						14,600			100,000	000'9	4,800	000,12					14,600	Ì	000 37	000,07	18,000	4,800	27,600		Ī	1
	18				7,300				9,000	2,400	27,600						7,300					18,000	2,400	27,600						14,600				9000	4,800	7,000					14,600				18,000	4,800	27,600			
	17				7,300				9,000	2,400	27,600						7,300					18,000	2,400	27,600						14,600				9000	4,800	7,600					14,600	Ī			18,000	4,800	27,600		Ī	
	16				7,300			50,000	9,000	2,400	27,600						7,300			37,500		18,000	2,400	27,600						14,600			100,000	9,000	4,800	7/,000					14,600		25 000	000,57	18,000	4,800	27,600		Ī	1
	15				7,300				9,000	2,400	27,600						7,300					18,000	2,400	27,600						14,600				9,000	4,800	27,600					14,600				18,000	4,800	27,600		T	
	14				7,300				9,000	2,400	27,600						7,300					18,000	2,400	27,600						14,600				6,000	4,800	2/,600					14,600			Ì	18,000	4,800	27,600	1	T	1
	13				7,300			50,000	6,000	2,400	27,600						7,300			37,500		18,000	2,400	27,600						14,600			100,000	9,000	4,800	27,600					14,600		000	000,67	18,000	4,800	27,600		T	
	12				7,300				9,000	2,400	27,600						7,300					18,000	2,400	27,600						14,600				9000'9	4,800	27,600					14,600				18,000	4,800	27,600		Ī	Ī
	11				7,300				000'9	2,400	27,600						7,300					18,000	2,400	27,600						14,600				9,000	4,800	27,600					14,600				18,000	4,800	II			
	10				7,300			50,000	000'9	2,400	27,600						7,300			37,500		18,000	2,400	27,600						14,600			100,000	9,000	4,800	27,600		i			14,600		000	000,6/	18.000	4,800	27,600			
	6				7,300				9,000	2,400	27,600						7,300					18,000	2,400	27,600						14,600				90009	4,800	27,600					14,600				18.000	4,800	27,600		I	
	80				7,300				9,000	2,400	27,600						7,300					18,000	2,400	27,600						14,600				90009	4,800	27,600					14,600				18.000	4,800	27,600			
	7				7,300			50,000	6,000	2,400	27,600						7,300			37,500		18,000	2,400	27,600						14,600			100,000	6,000	4,800	27,600					14,600		2000	000,57	18.000	4,800	27,600			
	9				7,300				9,000	2,400	27,600						7,300					18,000	2,400	27,600						14,600				6,000	4,800	27,600					14,600				18.000	4,800	27,600			
ſ					7,300				9,000	2,400	27,600						7,300					18,000	2,400	27,600						14,600				900'9	4,800	27,600					14,600				18.000	4,800	27,600			
	4				7,300			50,000	9,000	2,400	27,600						7,300			37,500		18,000	2,400	27,600						14,600			100,000	9,000	4,800	27,600					14,600		300	000,57	18,000	4,800	27,600			
	ю				7,300				000'9	2,400	27,600						7,300					18,000	2,400	27,600						14,600				9,000	4,800	27,600					14,600			Ī	+	4,800	Н		1	
	2				7,300				9,000	2,400	27,600						7,300					18,000	2,400	27,600						14,600				9000,9	4,800	27,600					14,600				18.000	4,800	27,600		Ì	
	ı						481,500												361,000		450,000											963,000										000	722,000	450 000	200,000					
	Units				kWph/y		P/Wp	_	P/Village/m	%	P/H/y								P/Wp	<u> </u>		P/Village/m	%	P/Wp/y						kWph/y		P/Wp	Ь	P/Village/m	%	P/H/y							P/WP	,	P/Village/m	%	P/Wp/y	1	1	
	Unit Cost				7300		96.3	200	Τ	Г	276						7300		72.2	375	4500	1500	0.05	276						14600		96.3	200	\neg	0.05	276	T	T			14600		72.2	375	Т	0.05	276			
-	Units			Wp		kш			T							Wp													Wp		km									Wp					I	İ			İ	
	Variable		100	50	0.365	0					276				100	50												100	100	0.365	0					276			100	100								Ī		
		SHS Electrification	(H)scholds(H)	Capacity	Annual consumption	┖	Investment costs (A)	Battery replace	Operation & maintenance: village	Agent fee	:Head office	Total	Average electricity cost	Mini-Grid Electrification	Households	Capacity	Annual consumption	Distance from Grid	Investment costs (A)	Battery replace	Connection costs	Operation & maintenance: village	Agent fee	:Head office	Total	Average electricity cost	SHS Electrification	Households(H)	Capacity	Annual consumption	Distance from Grid	Investment costs (A)	Battery replace	Operation & maintenance: village	Agent fee	:Head office	Average electricity cost	Mini-Grid Electrification	Households	Capacity	Annual consumption	Distance from Grid	Investment costs (A)	Battery replace	Operation & maintenance: village	Agent fee	Ξ	Total	Average electricity cost	10101

Appendix Table 7.1-5-4 Comparison of PV Mini-Grid Electrification and SHS

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Control Cont	Varia			Units	-	2	ъ	4	'n		-		10	11	12	13				18	19	50	residual value	at 0 year
Contact Cont	tion																H							
This part This		0																	_					
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1 1 1 1 1 1 1 1 1 1		+	29200	kWph/y		29,200	29,200		_		_	_	_	_	-	_	_	_	_	_	-			180,9
1	┙	\dagger							+	+	+	+			1		+	+	+	1	\downarrow			(1 = 0.15
Appendix Appendix	Investment costs (A)	4	96.3	P/Wp	1,926,000				\dashv	+	$\frac{1}{1}$	$\frac{1}{1}$					+	+	+	+	_			1,674,7
Approximate 150 15	Battery replace	-	200	۵				200,000		20C	000,0	\dashv	200,000		-	_	-+	\rightarrow	_		200,000	1	(66,667)	731,8
Application Control	maintenance: village		200	P/Village/m		6,000	900,9	000'9	_	_	_	-		-		\dashv	\rightarrow	-	-	-		-		37,1
	Agent fee		0.05	%		009'6	009'6	Н	H	-	-		\vdash		-		\dashv	-	-	_	_	_		59,5
1 1 1 1 1 1 1 1 1 1	L.	9	276	P/H/y		27,600	27,600	-	⊢-	-	_	⊢-	_	-	-	-	-		-	-		_		171,0
1 1 1 1 1 1 1 1 1 1																								2,674,
Campulation Campulation	electricity cost																_							14
Particularies 10 10 11 12 12 13 14 14 14 14 14 14 14	trification									-									_					
State Stat	Households	9															_	_						
State Stat	Ļ	+																						
Control cont	L	+	┞-			29,200	29,200	┰	-	_		_	_	₩	-	—	₩	_	_	_	_	-		180,9
1.25 1.25	Distance from Grid							-	+	-	-	_	_	-	┺-	-	_					_		(i = 0.15
Participation Participatio	Investment costs (A)	_	72.2	P/Wp	1.444.000																	_		1,255,6
State Stat	Battery renlace		37.5					150.000		150	000		150.000			50.000		150	000		150,00	9	(50,000)	548,8
Marie Mari	Connection costs		4500		450.000					1							\vdash							391,3
Appendiciation Control	z maintenance: village	-	1500	P/Village/m		18,000	18,000	+-	-	-	-	_	-		-		-	_		-	-	_		111,5
State of time State Stat	Agent fee		0.05	18		0096	0096	┿	-	+-	+	_	-		-	-	-	_	↓	⊢	⊢	⊢		59,5
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State Stat	Agent fee		0.05	%		14,400	14,400	_	-	_	\rightarrow		_	\rightarrow	_	_	_	_	_	_		-		89,2
Capacity Capacity		9,	276	P/H/y		27,600	27,600	-	_	_	\rightarrow	_	_	\rightarrow		-	_	_	_	_	_	_		171,0
Capacity Capacity	Total	-								-			_				1		-		4			3,907,
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72.2 P/Wp 2166,000 C25,000 LS C25,000 LS C25,000 LS C25,000 LS C25,000 LS C35,000	Distance from Grid							+	-	-	-	_	-		-		-			-	-	-		(i = 0.15
375 P 4500 C 225,000 18,000 <	Investment costs (A)		72.2	P/Wp	2,166,000													H						1,883,4
4500 4500 18,000	Battery replace		375	Ь				225,000		22.	2,000		225,000		, 4	225,000		225	000		225,00	00	(75,000)	823,3
1500 P/Village/m 18,000	Connection costs		4500		1 1					H	H						_	_	_	-	_			391,3
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office 27,600 27	Agent fee	+	0.05	%		14,400	14,400	-	_	_	-	_	-		14,400	_		_	_	-				89,2
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Appendix Table 7.15-5 Comparison of PV Mini-Grid Electrification and SHS

Sum of NPV	at 0 year				90,494	(i = 0.15)	837,391	365,917	37,189	29,752	342,142	1,612,392	17.82				90,494	(i = 0.15)	627,826	274,438	782,609	111,568	29,752	342,142	2,168,335	23.96				180,988	(i = 0.15)	1,674,783	731,834	37,189	342.142	2,845,451	15.72				(i = 0.15)	1,255,652	548,876	782,609	111,568	59,503	342,142	17.13	
	residual							(33,333)												(25,000)													(66,667)										(50,000)						
	20				14,600				9000	4,800	55,200						14,600					18,000	4,800	55,200						29,200				000,9	55 200						29,200				18,000	009'6	55,200		
	19				14,600			100,000	9000	4,800	55,200						14,600			75,000		18,000	4,800	55,200						29,200			200,000	000,9	55 200						29,200		150,000		18,000	9,600	55,200		
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	15				14,600				9,000	4,800	55,200						14,600					18,000	4,800	55,200						29,200			\neg	000'9	35 200	203,00					29,200	T	Ī		18,000	009'6	55,200	Ť	Г
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	6				14,600				6,000	4,800	55,200						14,600					18,000	4,800	55,200						29,200				000'9	9,600	007,00					29,200				18,000	9,600	55,200		
	80				14,600				6,000	4,800	55,200						14,600					18,000	4,800	55,200						29,200				9,000	000,6	00%,00					29,200	Ī			18,000	009'6	55,200		
	7				14,600			100,000	9,000	4,800	55,200						14,600			75,000		18,000	4,800	55,200						29,200			200,000	6,000	9,600	207,00					29,200		150,000		18,000	9,600	55,200		
	9				14,600				6,000	4,800	55,200						14,600					18,000	4,800	55,200						29,200				9,000	000,5	207,00					29,200				18,000	009'6	55,200		
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	-						963,000												722,000		000,000	-										1,926,000										1 444 000	1,777,000	900,000					
	Units				kWph/y		P/Wp	Ъ	P/Villagc/m	%	P/H/y								P/Wp	Д.		P/Villagc/m	%	P/Wp/y						kWph/y		P/Wp	۵	P/Village/m	% 0.17.	1/11/3						p/Wn	4		P/Villagc/m	%	P/Wp/y		
	Unit Cost				14600		96.3	200	200	0.05	276						14600		72.2	375	4500	1500	0.05	276						29200		96.3	200	500	0.00	0/7					29200	72.2	375	4500	1500	0.05	276		
	Units			Wp		km										Wp													Wp		km									Μp		I	I						I
	Variable		200	50	0.365	0					276				200	50		2.9										200	100	0.365					27.0	0/3			200	100									
		SHS Electrification	(H)seholds(H)	Capacity	Annual consumption	Distance from Grid	Investment costs (A)	Battery replace	Operation & maintenance: village	Agent fee	:Head office	Total	Average electricity cost	Mini-Grid Electrification	Households	Capacity	Annual consumption	Distance from Grid	Investment costs (A)	Battery replace	Connection costs	Operation & maintenance: village	Agent fee	:Head office	Total	Average electricity cost	SHS Electrification	(H)seholds(H)	Capacity	Annual consumption	Distance from Grid	Investment costs (A)	Battery replace	Operation & maintenance: village	Agent fee	Total	Average electricity cost	Mini-Grid Electrification	Households	Capacity	Annual consumption	Investment costs (A)	Battery replace	Connection costs	Operation & maintenance: village	Agent fee	:Head office	Average electricity cost	Total

Appendix Table 7.1-5-6 Comparison of PV Mini-Grid Electrification and SHS

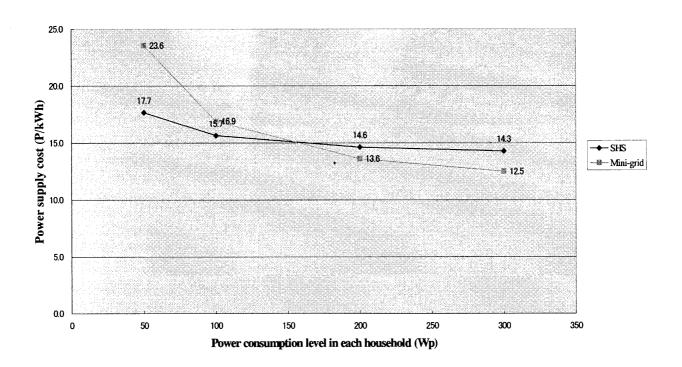
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Appendix Table 7.1-5-7 Comparison of PV Mini-Grid Electrification and SHS

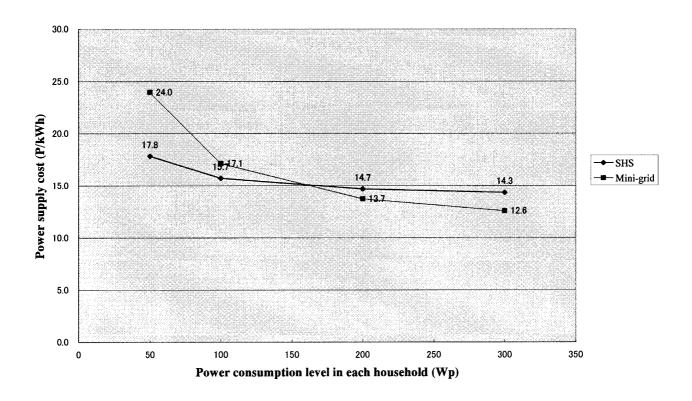
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Households(H)	300																					-	<u> </u>
Capacity	50 Wp	_	_		_														1	+	1		_
Annual consumption	0.365	21900	0 kWph/y	/y	21,900	0 21,900	21,900	21,900	21,900	21,900 2	21,900 21,9	21,900 21,900	21,900	21,900	21,900	21,900	21,900	21,900	21,900 2	21,900 2	21,900 21	21,900	135,741
Distance from Grid	km									_										-	-		(i = 0.15)
Investment costs (A)		96.3	P/Wp	1,444,500	8																_		1,256,087
Battery replace		200	a -				150,000		-	150,000		150,000	00		150,000			150,000		15	150,000	(50,000)	00) 548,876
Operation & maintenance: village		200	P/Village/m	c/m	9,000	900'9	H	9,000	000'9		0,000,9	000'9 000'9	000'9	9,000	000'9	9000	9000'9	900,9	000'9	9 000'9	9 000'9	9000	37,189
Agent fee		0.05	T		7,200	⊢	-	┢	-	₩	⊢	7,200 7,200	0 7,200	⊢	⊢	7,200	7,200	7,200	7,200	7,200 7	7,200 7,	7,200	44,627
:Head office	276	276	_	_	82,800	┡	┢	H		-	╁╾	82,800 82,800	90 82,800	82,800	82,800	82,800	82,800	82,800 8	82,800 8	82,800 8	82,800 82	82,800	513,214
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Households	300																						
Capacity	50 Wp	<u> </u>									_												
Annual consumption	_	21900	9		21,900	0 21,900	21,900	21,900	21,900	21,900 2	21,900 21,9	21,900 21,900	21,900	21,900	21,900	21,900	21,900	21,900	21,900 2	21,900 2	21,900 21	21,900	135,741
Distance from Grid	_					H	├	┪	-	-	-												(i = 0.15)
Investment costs (A)		72.2	P/Wp	1,083,000	8						-												941,739
Battery replace		375	\vdash	H			112,500			112,500		112,500	8		112,500			112,500		1	112,500	(37,500)	759,114 (00
Connection costs		4500		1.350.000	8								L										1,173,913
Operation & maintenance: village		1500	0 P/Village/m	-	18.000	0 18.000	18,000	18.000	18.000	18.000	18,000 18,0	18,000 18,000	000 18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000 1	18,000 18	18,000	111,568
Agent fee		0.05	T		7,200	╀	⊢	⊢	7,200	7,200	7,200 7,2	7,200 7,200	0 7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200 7,	7,200	44,627
:Head office		276	Ā		82,800	╀	╀	+	+	╌	+	Η.	-	_	_	Ļ	_	-		82,800 8	82,800 82	82,800	513,214
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Average electricity cost			-																_				
							_							_									
Households(H)	300									_													
Capacity	100 Wp	_ d																		_	_		
Annual consumption	0.365	43800	00 kWph/y	/y	43,800	0 43,800	43,800	43,800	43,800	43,800 4	43,800 43,8	43,800 43,800	00 43,800	43,800	43,800	43,800	43,800	43,800	43,800 4	43,800 4	43,800 43	43,800	271,483
Distance from Grid	km	u																				-	(i = 0.15)
Investment costs (A)		96.3	3 P/Wp	р 2,889,000	000																		4
Battery replace		200) P				300,000		.,	300,000		300,000	00		300,000			300,000		3(300,000	(100,000)	-,
Operation & maintenance: village		200	P/Villagc/m	:c/m	9000'9	000'9	90009	90009	000'9	9 000'9	0,000,	6,000 6,000	000'9 0	6,000	6,000	6,000	9,000	9,000	900,9	9 000'9	6,000 6,	9000'9	37,189
Agent fee		0.05	2 6%		14,400	0 14,400	14,400	14,400	14,400	14,400	14,400 14,	14,400 14,400	00 14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	_	14,400	89,255
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Households	300																						-
Capacity	100 Wp	\dashv				Н	Н	\dashv				\rightarrow	_	\rightarrow		_	\rightarrow	\rightarrow	_	\rightarrow	_		
Annual consumption	-	43800	او	+	43,800	0 43,800	43,800	43,800	43,800	43,800 4	43,800 43,	43,800 43,800	00 43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800 4	43,800 43	43,800	271,483
Distance from Grid	+		+	+		-	-				+	1	+					T		l			1 002 470
Investment costs (A)	+	777	+	2,166,000	3	$\frac{1}{1}$		1		000		300	- 6		000]	000 366	t	,	000 200	0.367	+
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Appendix Table 7.1-5-8 Comparison of PV Mini-Grid Electrification and SHS

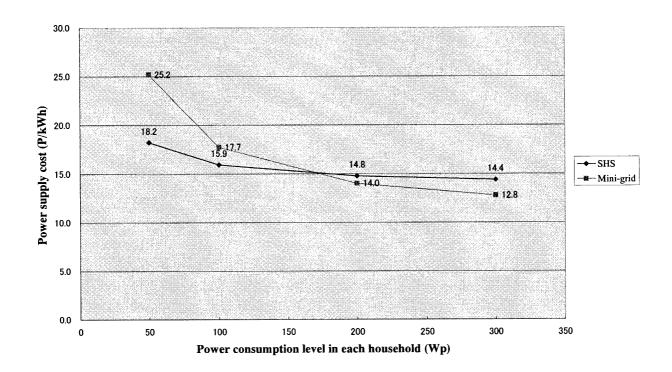
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	Variable	Units	Unit Cost	Units	-	7	т	4	'n	9	7	8	10	=	12	13	41	15	91	17	18	19 20	residual value		at 0 year
SHS Electrification																			Н	H					
(H)splouseholds(H)	300									Н										_		+	-		
Capacity	200	Wp									\exists									1	_	-	4		
Annual consumption	0.365		87600	kWph/y		87,600	87,600	87,600	87,600 8	87,600 87,	87,600 87,	87,600 87,600	0 87,600	87,600	87,600	87,600	87,600	87,600 8	87,600 8	87,600 87	87,600 87	87,600 87,600	8	Ÿ	542,965
Distance from Grid		km																				1	1	(i,	(i = 0.15)
Investment costs (A)			6.3	P/Wp	5,778,000																			5,0	5,024,348
Battery replace			200	a				000'009		900	000,009		600,000	0		000,009		9	000,009		900	000,009	(200,000)	2,	2,195,502
Operation & maintenance: village		r	Т	P/Village/m		9000'9	900'9	9000	9 000'9	6,000	0,000,9	000'9 000'9	000'9	9,000	9,000	9000	000'9	000'9	9 000'9	9 000'9	6,000 6,	6,000 6,000	00		37,189
Agent fee	Γ	T	Г	%		28,800	28,800	1	28,800 2	28,800 28	28,800 28,	28,800 28,800	0 28,800	28,800	28,800	28,800	28,800	28,800 2	28,800 23	28,800 28	28,800 28	28,800 28,800	008	1	178,509
:Head office	276		276	P/H/v		82.800	82.800	+	-	-	-		_	_	-	_	-	-	-	┺	82,800 82	82,800 82,800	000	5	513,214
Total				Ì				t	-	+	-	-	_		_	_	_							7,5	7,948,762
Average electricity cost									\mid					L			T								14.64
Mini-Grid Electrification	Ť	1							$\frac{1}{1}$												-				
Households	300																								
Capacity	200	Wp																					_		
Annual consumption		T	87600			87,600	87,600	87,600	87,600 8	87,600 87	87,600 87,	87,600 87,600	0 87,600	87,600	87,600	87,600	87,600	87,600	87,600 8	87,600 87	87,600 87	87,600 87,600	009	5	542,965
Distance from Grid								H	-	-	-	_	-	_										= j)	(i = 0.15)
Investment costs (A)			72.2	P/Wp	4,332,000				H		\mid													3,7	3,766,957
Battery replace			375	_				450.000		45(450.000		450.000			450,000		4	450,000		450	450,000	(150,000)		1,646,627
Connection costs			4500		1.350,000					!		-							-			-		<u> </u>	1,173,913
Operation & maintenance: village			T	P/Villagc/m		18,000	18,000	18,000	18,000	18,000 18	18,000 18,	18,000 18,000	0 18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000 18	18,000 18	18,000 18,000	000	-	111,568
Agent fee				%		28,800	28,800	_	-	28,800 28	-	28,800 28,800	0 28,800	28,800	28,800	28,800	28,800	28,800 2	28,800 2	28,800 28	28,800 28	28,800 28,800	300	_	178,509
:Head office			276	P/Wp/y		82,800	82,800		82,800 8	82,800 82	82,800 82,	82,800 82,800	0 82,800	82,800	82,800	82,800	82,800	82,800 8	82,800 8:	82,800 82	82,800 82	82,800 82,800	300	2	513,214
Total											Н											1		7,	7,390,787
Average electricity cost																							1	_	13.61
SHS Electrification																			1	1	1		!	1	
(H)splodseholds(H)	300									-									+			1	-	+	
Capacity	300	Wp							+	-	-	 	-										+	+	
Annual consumption	0.365		131400	kWph/y		131,400	131,400	131,400	131,400 13	131,400 131	131,400 131,400	,400 131,4	131,400 131,400	0 131,400	131,400	131,400	131,400	131,400	131,400 13	131,400 13	131,400 13	131,400 131,400	\$	*	814,448
Distance from Grid		Km.							+									1		+	1	+	+	[j]	(i = 0.15)
Investment costs (A)		\uparrow	96.3	P/Wp	8,667,000				\dagger	+		+	-	1		300			000	+	1		3000	1	22.000.00
Battery replace	1	1	T	d		,	900	000,000	+	\dashv	_	+	+	0	8	900,000	8	6	000,000	9	000 9	900,000	(000,000)	1	37 189
Operation & maintenance: village	Ì	İ	1	r/vulage/m		0,000	0000	+	_	_	_	-		_	-	_	+-	+	+	+	┿	+	3 8	\ -	267 764
Agent Ice	37.6	\dagger	0.05	% %/H/d		82 800	82 800	82 800	82 800 8	82 800 82	82 800 82	82.800 82.800	82,800	82,800	45,200	82.800	_	-	+	+	_	+	8 8	1	513,214
Total		T		(27)		200(20	2004	+		-		-	-	-		+-	-	-	+-	+	_	-		ĮĮ.	11,647,942
Average electricity cost		r								H			-												14.30
Mini-Grid Electrification		П							H	H											H				
Households	300	1								+	1	1	1				Ì		\dagger	\dagger	1	1	+		
Capacity	300	ď,	1			1		_		_		1	3	13	10,	007 101	9					121 400	2	ľ	814 448
Annual consumption		1	131400			131,400	131,400	131,400	131,400 13	131,400 13	131,400 131	131,400 131,400	131,400	0 131,400	131,400	131,400	131,400	131,400 1	131,400	131,400	131,400	101,404,101	3	9	(i = 0.15)
Investment costs (A)		t	72.2	p/Wn	6 498 000				\dagger	+	1	$\frac{1}{1}$	1	-	L		Ì		-	-	ł			5,6	5,650,435
Battery replace		+	375	d d	0,477C)			675,000	T	67.	675,000	<u> </u>	675,000	ļ		675,000		9	675,000		.29	675,000	(225,000)	Ш	2,469,940
Connection costs			4500		1,350,000				H	H		-	-	-	_	_	$\boldsymbol{\vdash}$	$\boldsymbol{\vdash}$	\rightarrow	_	_		${} \mapsto$		1,173,913
Operation & maintenance: village			1500	P/Villagc/m		18,000	18,000	\rightarrow	-		_		_	_		_	\rightarrow	-	_	-+	_	_	900	+	111,568
Agent fee		\dagger	0.05	%		43,200	43,200	43,200	43,200 4	43,200 43	43,200 43,	43,200 43,200	43,200	43,200	43,200	43,200	43,200	43,200	43,200 4 82,800 8	82 800 8	82 800 83	82 800 83,200 82 800 82 800	8 8	100	513.214
Total			9/7	r/wp/y		82,800	82,800	-+-	_	_		_		_				_	-		+	-	2	10,	10,186,833
Average electricity cost		T							-	+	1		Ļ	L	L		T				H	H	Ц	Н	12.51
																									ĺ



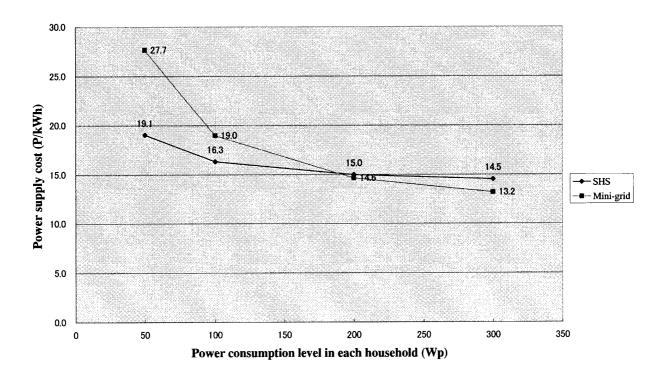
Appendix Figure 7.1-5 PV-minigrid Versus SHS (300 Households)



Appendix Figure 7.1-6 PV-minigrid Versus SHS (200 Households)



Appendix Figure 7.1-7 PV-minigrid Versus SHS (100 Households)



Appendix Figure 7.1-8 PV-minigrid Versus SHS (50 Households)