

**ANNEX XIV: LIST OF INVESTMENTS NEEDS AND QUANTITIES FOR THE PROPOSED PHASES****1 GENERATION INVESTMENTS NEEDS AND QUANTITIES****Table 1.1 - Investment needs and quantities - Generation**

Implementation Phase	Project	Type	Installed Capacity (MW)	County	Estimated Investment (\$US)
Phase 1 (2015-2020)	Solumba Pilot Biomass	Biomass	0.035	Lofa	61 250
	Kwandin Pilot Biomass	Biomass	0.06	Nimba	105 000
	On-Grid Biomass Project	Biomass	5	Undefined	15 000 000
	B/D Pleebo	Hybrid Biomass/Diesel	4	Maryland	4 500 000
	B/D Voinjama	Hybrid Biomass/Diesel	6	Lofa	6 750 000
	9 Solar/Diesel Systems	Hybrid Solar/Diesel	17.4	Various	21 780 000
	SH Kaiha Hydro	Small Hydro	3	Lofa	14 000 000
	SH River Gee Hydro	Small Hydro	5.79	River Gee	21 080 000
	SH Mein River	Small Hydro	1	Bong	6 694 000
	30 Solar Villages Systems	Solar	1.14	Various	3 425 000
	463 Solar Community Services	Solar	0.94	Various	2 800 000
	On-Grid PV Project	Solar	20	Undefined	30 000 000
Phase 2 (2020-2025)	On-Grid Biomass Project	Biomass	5	Undefined	15 000 000
	B/D Foya Town	Hybrid Biomass/Diesel	8	Lofa	9 000 000
	B/D Zwedru	Hybrid Biomass/Diesel	8	Grand Gedeh	9 000 000
	B/D Harper City	Hybrid Biomass/Diesel	4	Maryland	4 500 000
	27 Solar/Diesel Systems	Hybrid Solar/Diesel	4.7	Various	5 925 000
	7 Micro Hydro Systems	Micro Hydro	0.42	Various	7 525 000
	SH Barclayville Hydro	Small Hydro	4.5	Grand Kru	18 498 000
	On-Grid Small Hydro Project	Small Hydro	15	Undefined	60 000 000
	30 Solar Villages Systems	Solar	0.71	Various	2 130 000
	124 Solar Community Services	Solar	0.24	Various	710 000
On-Grid PV Project	Solar	20	Undefined	30 000 000	
Phase 3 (2025-2030)	SH Greenville Hydro	Small Hydro	2	Sinoe	14 194 000
	15 Solar Villages Systems	Solar	0.3	Various	910 000
	124 Solar Community Services	Solar	0.166	Various	500 000
	B/D Fish Town	Hybrid Biomass/Diesel	1	River Gee	1 125 000
	29 Solar/Diesel Systems	Hybrid Solar/Diesel	2.98	Various	3 720 000
	2 Micro Hydro Systems	Micro Hydro	0.08	Various	1 840 000
	SH Woozi Creek Hydro	Small Hydro	5	Lofa	19 539 000
	On-Grid Small Hydro Project	Small Hydro	15	Undefined	60 000 000
On-Grid PV Project	Solar	20	Undefined	30 000 000	

## 2 SUBSTATIONS INVESTMENTS NEEDS AND QUANTITIES

**Table 2.1 - Investment needs and quantities - Substations**

Implementation Phase	Project	Voltage Levels (kV/kV)	Capacity (MVA)	County	Estimated Investment (USD)
Phase 1 (2015-2020)	Kakata	66/33	10	Margibi	2 800 000
	Kle	66/33	10	Bomi	2 600 000
	RIA	66/33	10	Margibi	2 600 000
	Virginia	66/22	10	Montserrado	2 600 000
	Schefflien	66/33	10	Margibi	2 600 000
Phase 2 (2020-2025)	Kakata (Reinforcement)	66/33	20	Margibi	200 000
	RIA (Reinforcement)	66/33	20	Margibi	200 000
	Bogota (Reinforcement)	225/66	40	Nimba	800 000
	Ganta	66/33	20	Nimba	2 800 000
	Gbarnga	66/33	20	Bong	2 800 000
	Tubmanburg	66/33	10	Bomi	2 600 000
	Virginia (Reinforcement)	66/22	20	Montserrado	200 000
	Schefflien (Reinforcement)	66/33	20	Margibi	200 000
Phase 3 (2025-2030)	Saclepea	66/33	10	Nimba	2 600 000
	Buchanan 66kV	66/33	20	Grand Bassa	2 800 000
	Bong Mine	66/33	10	Bong	2 600 000

## 3 HV POWER LINES INVESTMENTS NEEDS AND QUANTITIES

**Table 3.1 - Investment needs and quantities – HV Power Lines**

Implementation Phase	Project	Length (km)	Voltage Level (kV)	Estimated Investment (\$US)
Phase 1 (2015-2020)	Paynesville - Schefflien	21.68	66	1 730 000
	Schefflien - RIA	17.16	66	1 370 000
	Paynesville - Kataka	50.91	66	4 070 000
	Virginia - Kle	33.67	66	2 700 000
	Bushrod Island - Virginia	6.23	66	800 000
Phase 2 (2020-2025)	Paynesville - Schefflien (Reinforcement)	21.68	66	1 050 000
	Schefflien - RIA (Reinforcement)	17.16	66	830 000
	Paynesville - Kataka (Reinforcement)	50.91	66	2 450 000
	Virginia - Kle (Reinforcement)	33.67	66	1 620 000
	Gbarnga - Ganta	64.61	66	8 280 000
	Gbarnga - Bogota	47.16	66	6 040 000
	Kle - Tubmanburg	25.58	66	3 280 000
	RIA - Kakata	36.90	66	4 730 000
Phase 3 (2025-2030)	RIA - Buchanan	70.44	66	9 020 000
	Kakata - Bong Mines	37.04	66	4 750 000
	Ganta - Saclepea	37.07	66	2 970 000
	Kakata - Gbarnga	123.89	66	15 860 000

## 4 RURAL EXTENSION MV POWER LINES INVESTMENTS NEEDS AND QUANTITIES

**Table 4.1 - Investment needs and quantities – Rural Extension MV Power Lines**

County	Length Phase 1 (km)	Length Phase 2 (km)	Length Phase 3 (km)	Voltage Level (kV)	Estimated Investment Phase 1 (USD)	Estimated Investment Phase 2 (USD)	Estimated Investment Phase 3 (USD)
Bomi	43.5	12.3	77.1	33	1 580 000	450 000	2 790 000
Bong	109.6	192.7	2.6	33	3 960 000	6 960 000	100 000
Gbarpolu	0.0	63.5	0.0	33	0	2 300 000	0
Grand Bassa	17.0	36.4	0.0	33	620 000	1 320 000	0
Grand Cape Mount	129.8	14.0	73.5	33	4 690 000	510 000	2 660 000
Grand Gedeh	94.2	11.4	0.0	33	10 000	420 000	0
Grand Kru	0.0	98.6	0.0	33	0	3 560 000	0
Lofa	114.2	0.0	258.4	33	4 130 000	0	9 330 000
Margibi	2.7	0.5	0.0	22	80 000	20 000	0
Margibi	62.9	196.4	9.6	33	2 280 000	7 100 000	350 000
Maryland	124.3	87.1	75.8	33	1 470 000	3 150 000	2 740 000
Montserrado	89.3	44.0	0.0	22	870 000	1 320 000	0
Montserrado	27.3	21.2	16.1	33	990 000	770 000	590 000
Nimba	242.0	295.7	462.1	33	3 400 000	10 680 000	16 690 000
River Gee	61.0	36.4	12.6	33	2 210 000	1 320 000	460 000
Sinoe	0.0	0.0	12.8	33	0	0	470 000

## 5 DISTRIBUTION INVESTMENTS NEEDS AND QUANTITIES

**Table 5.1 - Investment needs and quantities – Distribution**

County	Benefited People - Phase 1	Benefited People - Phase 2	Benefited People - Phase 3	Number of Connections - Phase 1	Number of Connections - Phase 2	Number of Connections - Phase 3	Estimated Investment Phase 1 (\$US)	Estimated Investment Phase 2 (\$US)	Estimated Investment Phase 3 (\$US)
Bomi	8 275	8 530	20 573	1 680	1 707	4 021	1 191 822	1 284 578	4 044 141
Bong	32 752	50 785	53 863	6 682	10 196	10 610	4 705 168	9 700 940	8 778 775
Gbarpolu	2 165	10 831	8 531	410	2 059	1 609	132 360	1 940 293	1 440 358
Grand Bassa	37 242	39 328	40 680	7 595	7 941	8 180	5 121 171	6 366 510	6 153 826
Grand Cape M.	3 281	7 094	25 687	630	1 348	4 859	588 412	1 215 706	4 981 845
Grand Gedeh	23 871	19 318	23 171	4 852	3 829	4 553	3 760 871	3 128 617	3 756 640
Grand Kru	1 919	8 207	9 229	363	1 562	1 742	168 432	1 566 880	1 633 469
Lofa	51 772	6 155	70 205	10 505	1 202	13 724	8 285 983	1 090 131	13 481 945
Margibi	44 093	62 523	62 198	8 990	12 498	12 313	6 204 044	11 082 604	9 811 303
Maryland	25 577	32 487	54 795	5 206	6 489	10 677	3 587 550	5 482 368	9 345 027
Montserrado	25 682	41 403	45 560	5 181	8 138	8 889	3 668 930	6 824 076	7 192 194
Nimba	41 175	74 365	199 900	8 370	14 671	38 619	6 633 929	13 839 881	37 692 728
River Gee	3 204	10 786	13 628	624	2 079	2 628	507 455	2 040 769	2 522 320
Rivercess	3 004	3 655	2 507	568	692	476	250 304	567 117	409 040
Sinoe	19 557	5 686	3 644	3 980	1 075	691	2 223 240	895 600	1 100 936