

WB CU stove project 2012								
Wood, financial and CO2 emission saving calculations								
Assumptions:								
1 kg of firewood retails at 3 Dalasi								
1 person uses 1 kg of firewood/day or its energy equivalent								
Average statistical family in urban/peri-urban area of Greater Banjul / WD has 7 members								
Around 700,000 people live in this area								
The stove saves an average of 50 % of firewood								
1 kg of firewood creates 1.6 kg of CO2 emissions								
Item	Unit	QTY	Day	Week	Month	Year	Over 3 yrs stove life	
Current usage and expenditure per family								
1 Family uses wood on 3 stone fire	tonnes	0.007	0.007	0.049	0.212	2.548	7.644	
1 Family expenditure using 3 stone fire	Dalasi	21	21	147	637	7,644	22,932	
1 Family creates CO2 emissions using 3 stone fire	tonnes	0.011	0.011	0.078	0.3397	4.077	12.230	
Potential saving using new fule efficient stoves								
Wood, money and CO2 emissions saved using new stove 50 %								
1 Family saves wood using new stove	tonnes	0.004	0.004	0.025	0.106	1.274	3.822	
1 Family saves money using new stove	Dalasi	10.5	10.5	73.5	318.5	3822	11,466	
1 Family saves CO2 emissions using new stove	tonnes	0.006	0.006	0.039	0.170	2.038	6.115	
500 Families save wood using new stove	tonnes	1.75	1.75	12.25	53.083	637	1,911	
500 Families save money using new stove	Dalasi	5,250	5,250	36,750	159,250	1,911,000	5,733,000	
500 Families save CO2 emissions using new stove	tonnes	2.800	2.800	19.600	84.933	1,019	3,058	

Assumption:								
New stoves need to be replaced after 3 years								
Model 1:								
Introduce 500 stoves / year over 5 years in addition to "project stoves"	Unit	QTY	Yr 1	Yr 2	Y2 3	Yr 4	Yr 5	Total
Project stoves	stoves		500	500	500	500	500	
New stoves introduced yearly in addition	stoves		500	500	500	500	500	2,500
New stoves cumulative over 5 year period	stoves		500	1,000	1,500	2,000	2,500	
New stoves in use total			1,000	1,500	2,000	2,500	3,000	
Additional stoves to replace broken ones after 3 yrs	stoves					1,000	1,000	2,000
Total stoves to be build including replacements	stoves		500	500	500	1,500	1,500	4,500
Assume 75 Dalasi profit to pay for overheads / stove			37,500	37,500	37,500	112,500	112,500	
Money available per month to pay for all overheads and business expenses			3,125	3,125	3,125	9,375	9,375	
Model 3:								
Introduce 500 stoves 1st year, double introduction per year from year 2 in addition to "project stoves"	Unit	QTY	Yr 1	Yr 2	Y2 3	Yr 4	Yr 5	Total
Project stoves	stoves		500	500	500	500	500	
New stoves introduced yearly in addition	stoves		500	1,000	2,000	4,000	8,000	15,500
New stoves cumulative over 5 year period	stoves		500	1,500	3,500	7,500	15,500	
New stoves in use total			1,000	2,000	4,000	8,000	16,000	
Additional stoves to replace broken ones after 3 yrs	stoves					1,000	1,500	2,500
Total stoves to be build including replacements	stoves		500	1,000	2,000	5,000	9,500	18,000
Assume 75 Dalasi profit to pay for overheads / stove			37,500	75,000	150,000	375,000	712,500	
Money available per month to pay for all overheads and business expenses			3,125	6,250	12,500	31,250	59,375	
Model 4:								
Introduce 1000 stoves 1st year, double introduction per year from year 2 in addition to "project stoves"	Unit	QTY	Yr 1	Yr 2	Y2 3	Yr 4	Yr 5	Total
Project stoves	stoves		500	500	500	500	500	
New stoves introduced yearly in addition	stoves		1,000	2,000	4,000	8,000	16,000	31,000
New stoves cumulative over 5 year period	stoves		1,000	3,000	7,000	15,000	31,000	
New stoves in use total			1,500	3,500	7,500	15,500	31,500	
Additional stoves to replace broken ones after 3 yrs	stoves					1,500	2,500	4,000
Total stoves to be build including replacements	stoves		1,000	2,000	4,000	9,500	18,500	35,000
Assume 75 Dalasi profit to pay for overheads / stove		-	75,000	150,000	300,000	712,500	1,387,500	
Money available per month to pay for all overheads and business expenses			6,250	12,500	25,000	59,375	115,625	

Assumption:								
75 % of 100,000 households in the Greater Banjul / WD area (75,000) will have a new stove at end of Year 5								
Model 5:								
Introduce 1000 stoves 1st year, increase introduction until 75 % of target market has been reached including "project stoves"								
	Unit	QTY	Yr 1	Yr 2	Y2 3	Yr 4	Yr 5	Total
Project stoves	stoves		500	500	500	500	500	
New stoves introduced yearly in addition	stoves		1,000	8,000	16,000	22,000	27,500	74,500
New stoves cumulative over 5 year period	stoves		1,000	9,000	25,000	47,000	74,500	
New stoves in use total			1,500	9,500	25,500	47,500	75,000	
Additional stoves to replace broken ones after 3 yrs	stoves					1,500	8,500	10,000
Total stoves to be build including replacements	stoves		1,000	8,000	16,000	23,500	36,000	84,500
Assume 75 Dalasi profit to pay for overheads / stove			75,000	600,000	1,200,000	1,762,500	2,700,000	
Money available per month to pay for all overheads and business expenses			6,250	50,000	100,000	146,875	225,000	
Model 5 expanded to 10 years								
As per Model 5 for first 5 years. Then double market over next 5 years to spread stove across country								
	Unit	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Total
Project stoves	stoves	500	500	500	500	500	500	
New stoves introduced yearly in addition	stoves	27500	15,000	15,000	15,000	15,000	15,000	75,000
New stoves cumulative over 10 year period	stoves	74500	89,500	104,500	119,500	134,500	149,500	
New stoves in use total		75000	90,000	105,000	120,000	135,000	150,000	
Additional stoves to replace broken ones after 3 yrs	stoves	8500	16,500	22,500	28,000	32,000	38,000	
Total stoves to be build including replacements	stoves	36,000	31,500	37,500	43,000	47,000	53,000	248,000
Assume 75 Dalasi profit to pay for overheads / stove		2,700,000	2,362,500	2,812,500	3,225,000	3,525,000	3,975,000	
Money available per month to pay for all overheads and business expenses		225,000	196,875	234,375	268,750	293,750	331,250	