WB CU stove project 2012

Wood, financial and CO2 emmission 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 emmissions

Item	Unit	QTY	Day	Week	Month	Year
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
1 Family expenditure using 3 stone fire	Dalasi	21	21	147	637	7,644
1 Family creates CO2 emmissions using 3 stone fire	tonnes	0.011	0.011	0.078	0.3397	4.077
Potential saving using new fule efficient stoves						
Wood, money and CO2 emmissions saved using new stove 50 %						
1 Family saves wood using new stove	tonnes	0.004	0.004	0.025	0.106	1.274
1 Family saves money using new stove	Dalasi	10.5	10.5	73.5	318.5	3822
1 Family saves CO2 emmissions using new stove	tonnes	0.006	0.006	0.039	0.170	2.038
500 Families save wood using new stove	tonnes	1.75	1.75	12.25	53.083	637
500 Families save money using new stove	Dalasi	5,250	5,250	36,750	159,250	1,911,000
500 Families save CO2 emmissions using new stove	tonnes	2.800	2.800	19.600	84.933	1,019

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 cummulative 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**	
Wood saving achieved	tonnes		1,274	1,911	2,548	3,185	3,822	12,740
Dalasi saving achieved	Dalasi		3,822,000	5,733,000	7,644,000	9,555,000	11,466,000	38,220,000
CO2 emmission saving achieved	tonnes		2,038	3,057	4,076	5,095	6,114	20,380
Assume 75 Dalasi profit to pay for overheads / stove			**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	
Money available per month to pay for all overheads and business expenses			**3,125**	**3,125**	**3,125**	**3,125**	**3,125**	
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 cummulative 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**	
Wood saving achieved	tonnes		1,274	2,548	5,096	10,192	20,384	39,494
Dalasi saving achieved	Dalasi		3,822,000	7,644,000	15,288,000	30,576,000	61,152,000	118,482,000
CO2 emmission saving achieved	tonnes		2,038	4,076	8,152	16,304	32,608	63,178
Assume 75 Dalasi profit to pay for overheads / stove			**37,500**	**75,000**	**150,000**	**300,000**	**600,000**	
Money available per month to pay for all overheads and business expenses			**3,125**	**6,250**	**12,500**	**25,000**	**50,000**	

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 cummulative 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**	
Wood saving achieved	tonnes		1,911	4,459	9,555	19,747	40,131	75,803
Dalasi saving achieved	Dalasi		5,733,000	13,377,000	28,665,000	59,241,000	120,393,000	227,409,000
CO2 emmission saving achieved	tonnes		3,057	7,133	15,285	31,589	64,197	121,261
Assume 75 Dalasi profit to pay for overheads / stove		**-**	**75,000**	**150,000**	**300,000**	**600,000**	**1,200,000**	
Money available per month to pay for all overheads and business expenses			**6,250**	**12,500**	**25,000**	**50,000**	**100,000**	
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 cummulative 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**	
Wood saving achieved	tonnes		1,911	12,103	32,487	60,515	95,550	202,566
Dalasi saving achieved	Dalasi		5,733,000	36,309,000	97,461,000	181,545,000	286,650,000	607,698,000
CO2 emmission saving achieved	tonnes		3,057	19,361	51,969	96,805	152,850	324,042
Assume 75 Dalasi profit to pay for overheads / stove			**75,000**	**600,000**	**1,200,000**	**1,650,000**	**2,062,500**	
Money available per month to pay for all overheads and business expenses			**6,250**	**50,000**	**100,000**	**137,500**	**171,875**	