CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-PDD)
Version 03 - in effect as of: 28 July 2006

CONTENTS

Annexes

SECTION A. General description of project activity

A.1. Title of the project activity:

>
Arusha Improved Cookstoves
12/8/2011
Version 0.1

A.2. Description of the project activity:

Biomass fuel accounts for approximately 96% of rural energy supply in Tanzania. With 87% of the Tanzania population living in rural communities and a population growth rate of 3% annum, there is an increasing pressure on the local biomass resources[1]. Estimates suggest that Tanzania lost 20% of its forests between 1990 and 2010, and is continuing to lose forest at a rate of 1.1%/year.[2] The remaining forests are expected to contain 2,019 Mt CO2e, so it is vital to reduce the rate of deforestation of non-renewable sources in order to minimize the release of this carbon into the atmosphere[3].

In addition to the environmental impacts, the burning of biomass fuels for cooking is known to have negative health impacts. Respiratory conditions account for 12% of mortality in Tanzania, with the most recent World Health Organization (WHO) data attributing 18,897 deaths a year to the incomplete combustion of solid fuels. The WHO highlights three particular epidemiological results of solid-fuel burning - respiratory infections in children, pulmonary disease in adults and lung cancer.[4]

The rural population in Tanzania predominantly use a three-stone fire, estimated to have an efficiency of just 10%[5]. Some 94% of the rural population burn wood for cooking and 6% use charcoal. In contrast urban regions have a much greater reliance on charcoal, with just 29% cooking with wood (*ibid* footnote 4). co2balance will be working in rural regions and hence have focused on maximizing the energy efficiency of a wood burning in a stove design. The increased efficiency of the stove will reduce carbon emissions to the atmosphere as well as reducing harmful emissions known to have negative health impacts.

An additional benefit of the project is the development of local human capacity, both through employment and knowledge transfer. The carbon financing will be used to educate and employ members of the local population to develop, distribute and maintain the cook stoves. Tanzania still remains one of the poorest countries in the world, listed at 148 out of 174 in the UNDP's human development index[6], thus highlighting the importance of investment in sustainable development within the region.

[1] http://www.fao.org/docrep/r5265e/r5265e05.htm

[2] ftp://ftp.fao.org/docrep/fao/011/i0350e/i0350e04b.pdf

[3] http://rainforests.mongabay.com/deforestation/2000/Tanzania.htm

[4] http://apps.who.int/ghodata/

[5] CDM Methodology AMS II.G
http://cdm.unfccc.int/methodologies/DB/6U8JYO9XTLVZ8LJ7GUBSZP145BIDG2/view.html

[6] http://hdrstats.undp.org/en/countries/profiles/TZA.html

Project Purpose and Contribution to Sustainable Development

On an international level, the burning of significant quantities of non-renewable biomass also gives rise to large quantities of greenhouse gasses, contributing to anthropogenic climate change. The Arusha Improved Cook Stove project will construct approximately 7000 energy efficient domestic wood-burning cookstoves within the project area which will avoid an estimated 60000 tonnes of wood from being combusted per annum. Recipients will receive stoves free of charge and be directed in correct use of the stove by local community groups engaging with the project developers.

As our stoves will be given out for free, the project can expect to achieve high levels of saturation in an area, allowing as many households as possible to benefit from the improved stove. As the way in which a cook uses the stove is a key influencing factor in the fuel savings made,[7] making improved stoves commonplace within a community will build a strong understanding of the technology and allow for greater fuel savings. This predicted benefit will be supported by proper training in stove usage and continuous liaison with the communities that own our stoves.

In addition to the global benefit of reducing greenhouse gas emissions, this project will deliver significant contributions to local sustainable development and toward achieving the Millennium Development Goals, including:

- Reduced deforestation and degradation of forests and associated impacts on biodiversity and ecosystem services
- Reduced soil erosion and nutrient loss
- Reduced risk of flooding
- Reduced poverty, as the efficient wood stove reduces annual expenditure on cooking fuels
- Reduced adverse health effects associated with indoor air pollution
- Reduced cooking and wood collection time; householders can spend more time on other household tasks, as well as schooling and supervising children
- Reduced exposure of firewood collectors (mainly women) to hazards in remote areas
- R educed burns and injuries from cooking
- Increased rate of technology transfer

A detailed discussion of the impact of the project on sustainable development can be found in the accompanying Gold Standard Passport.

A.3. Project participants:

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Name of Party involved (*) ((host) indicates a host Party)	Private entity project participants	Kindly indicate if the Party involved wishes to be considered as a project participant (Yes/No)
Republic of Tanzania (host)	N/A	No
United Kingdom	co2balance UK Ltd	No

[7] Page 10 “Solid fuel household cook stoves: characterisation of performance and emissions”, Biomass and bioenergy 33 (2009) 294-305. http://www.pciaonline.org/files/Stoves_Paper_Final_Color_2.26.09.pdf

A.4. Technical description of the project activity:

A.4.1. Location of the project activity:

>> The project activity will take place in the Republic of Tanzania

A.4.1.1. Host Party(ies):

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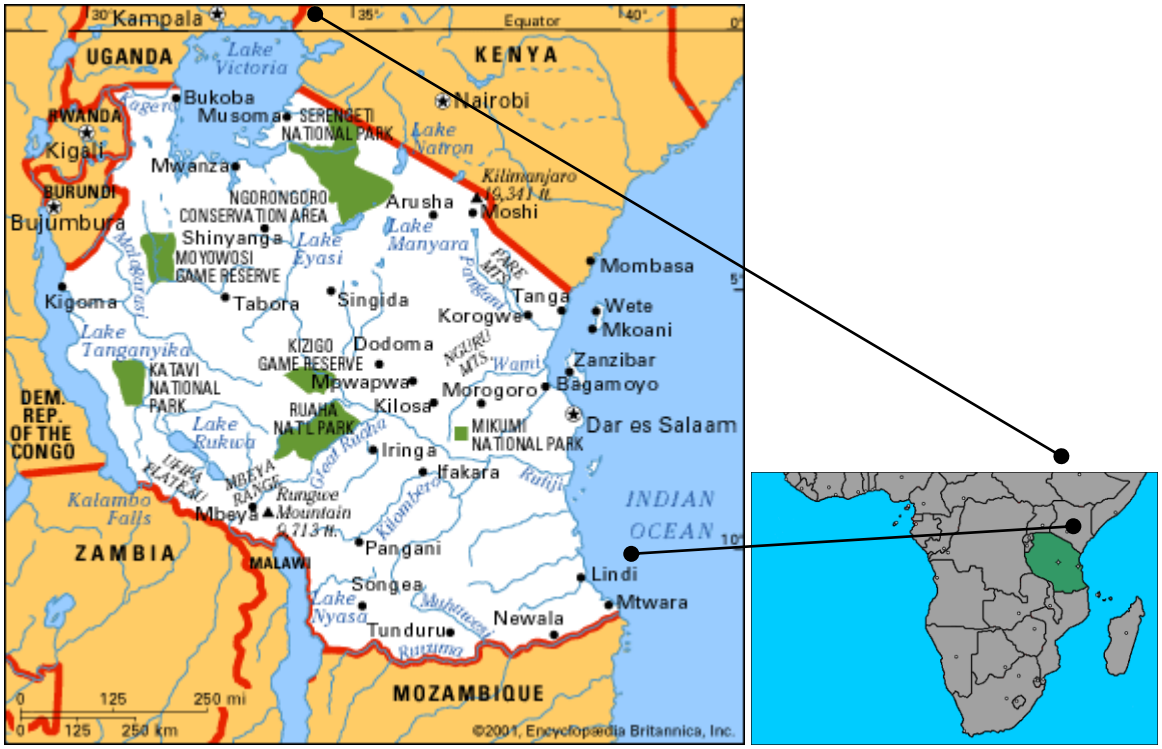

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A.4.1.2. Region/State/Province etc.:

>> The Project will take place in the following 17 wards within Meru District, Arusha Mkoa, Tanzania.[8]

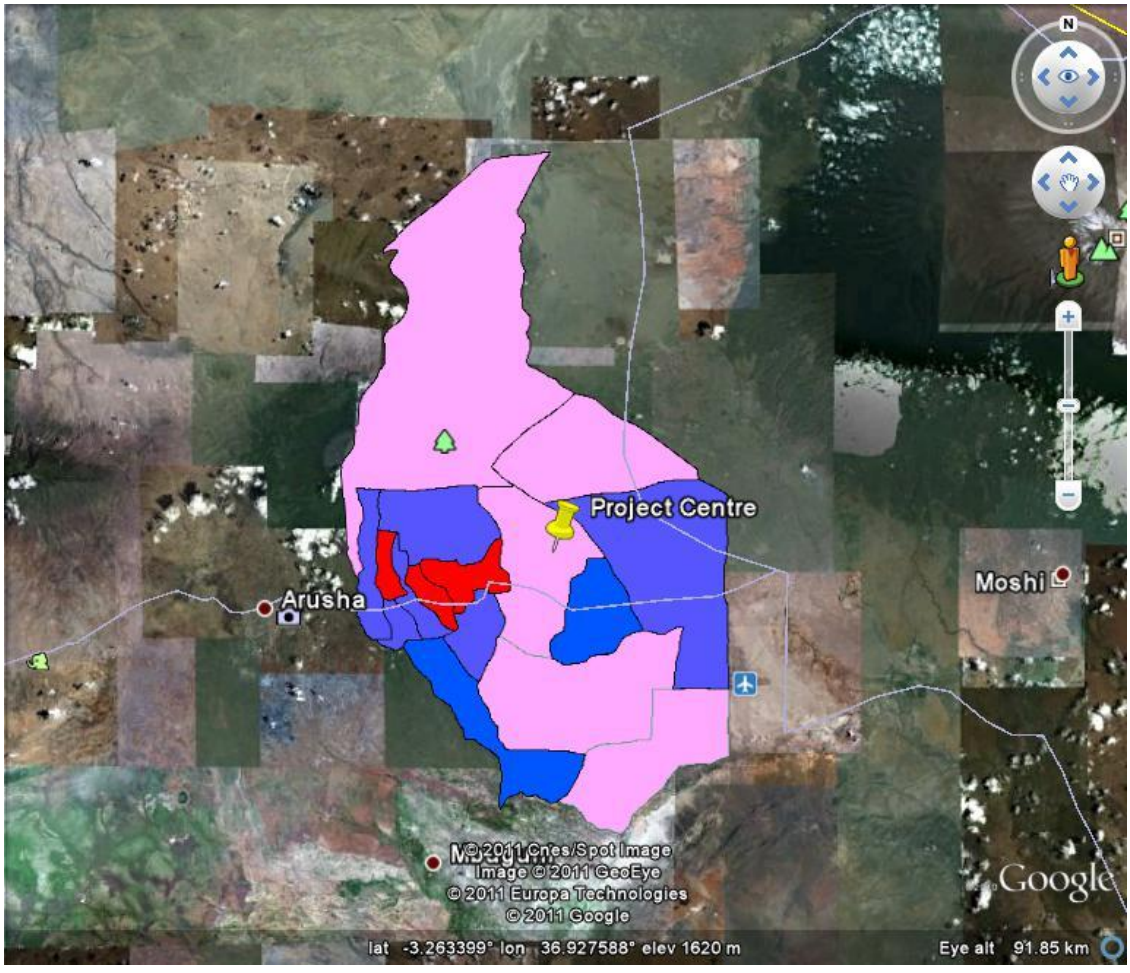
Akheri	Makiba	Nkoarisambu
Kikatiti	Maroroni	Poli
Kikwe	Mbuguni	Seela Sing'isi

[8] Note that the name of the district changed from Aru Meru to Meru during project development – it is also often known as Arusha District. For the purpose of this project the GPS co-ordinates given will allow exact identification regardless of any future changes in name.

King'ori	Ngarenanyuki	Songoro
Leguruki	Nkoanrua	Usa River
Maji ya Chai	Nkoaranga	

A.4.1.3. City/Town/Community etc.:

>> The project area is shown on the GoogleEarth image, showing the exact location of the three districts. A point showing the project centre is shown and has a GPS reference of -3.318294° Latitude, 36.914964° Longitude (decimal degrees being the same format as that required for registration as a Gold Standard Project on the Project Registry)



A.4.1.4. Details of physical location, including information allowing the unique identification of this project activity (maximum one page):

>> The GPS co-ordinates of each stove constructed will be recorded and tracked using an electronic database to ensure that they fall within the specified boundary based on political districts in Tanzania.

Each stove is marked with a unique identification number that will be uploaded and kept on our electronic database, including household occupants and GPS co-ordinates. This database does not allow duplicate records to be uploaded and hence accounts for any potential human error in reporting ID numbers and GPS data. This will allow transparent, individual tracking of each stove - avoiding double counting and administrational error.

Each household will be given the option of having the stove fixed within the home or in a covered cooking location outside - alternatively, stoves will not be fixed in one place. At the request of the household co2balance will prepare a safe level area inside and outside the home to allow stove position to be changed depending on the season. An unfixed stove is susceptible to damage and theft, and if a significant number of stoves are lost from within the project boundary this option will be reviewed.

A.4.2. Category(ies) of project activity:

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The project falls under the Energy Efficiency – Domestic (Improved Distributed Heating and Cooking Devices category) according to the GSV2.1 toolkit annex C.

The project technology of the generic 'rocket stove' type is well proven to be environmentally safe and sound in relation to the baseline 'three-stone' technology. [9] The rocket stove technology will be distributed to a number of households within the project area and households trained in efficient use of the stoves to ensure successful transfer of this technology type to the area in question.

A.4.3. Technology to be employed by the project activity:

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The project will employ improved stoves (known as the CarbonZero Stove or CZS) with a fixed construction of an inner ceramic liner surrounded by extruded clay components and mortar, using a 'rocket' style design. The stove consists of a horizontal (combined) fuel and air intake, terminating in a firebox with a vertical outlet on which the cooking pot rests. Relative to the three stone fire, this type of stove allows improved air/fuel mixing, which greatly increases combustion efficiency - this reduces the amount of smoke and other harmful products of incomplete combustion by 80%. There is no chimney as such, draft is created by the temperature difference between the low inlet and the outlet - the hot combustion gasses pass out of the top directly onto the cooking pot allowing high levels of heat transfer. Despite the combustion gasses remaining in the house, the improved combustion efficiencies mean that levels of indoor air pollution are dramatically reduced. It is a high performance, ergonomically designed cook stove that was designed with both the builder and the user in mind. The embodied energy – and greenhouse emissions - of the construction materials are insignificant in relation to the emissions reductions made over the lifespan of the stoves. A photo of the stove is provided overleaf.

[9] MacCarty, N., Ogle, D., Still, D., Bond, T. & Roden, C., (2008). '*A laboratory comparison of the global warming impact of five major types of biomass cooking stoves', Energy for Sustainable Development* 12 (2), pp. 5-14. Accessed from http://www.aprovecho.org/lab/pubs/researchlib/category/20/performance-studies

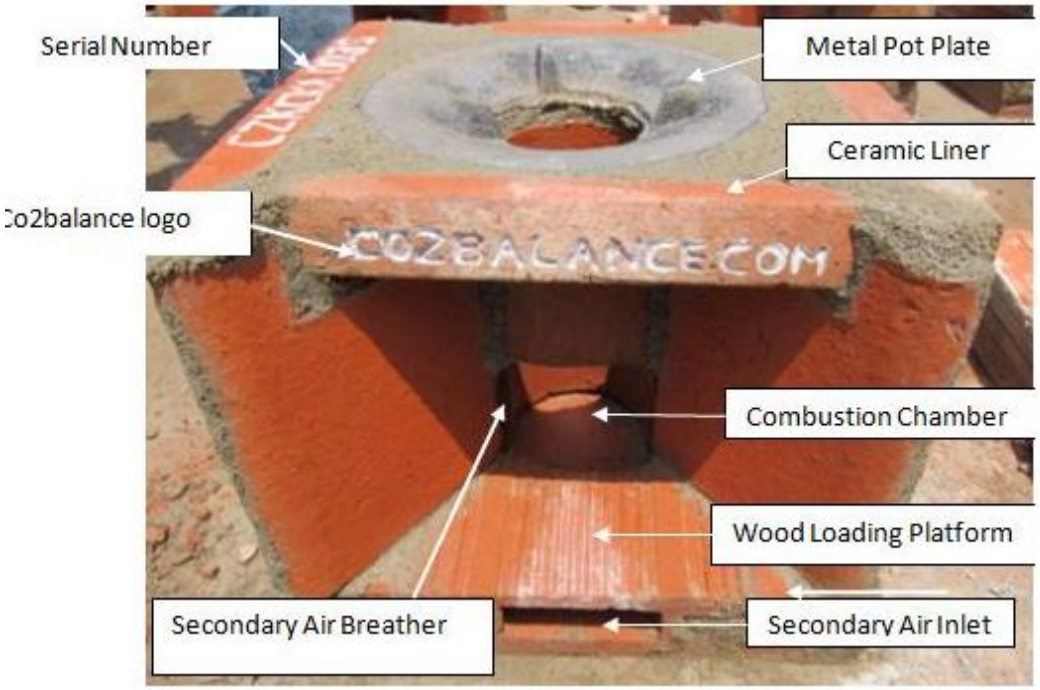

Image 1. Photo of a CZStove

A.4.4. Estimated amount of emission reductions over the chosen crediting period:

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Year	ER - Estimation of annual emissions reductions in tonnes CO_2e
2012	59,878
2013	67,986
2014	67,986
2015	67,986
2016	67,986
2017	67,986
2018	67,986
2019	67,986
Total estimated reductions (tonnes CO_2e)	475,902
Total number of crediting years	7
Annual average of the estimated reductions over the crediting period	67,986

A.4.5. Public funding of the project activity:

>> There is no public or ODA funding for this project activity, all revenue for the project will be derived from the sales of VERs. Please see annex 1 in the passport document of this project.

SECTION B. Application of a baseline and monitoring methodology

B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity:

>> The project activity falls within the Gold Standard Methodology *'Technologies and Practices to Displace Decentralized Thermal Energy Consumption'* Version 1. This was the most up to date methodology at the time of submission.

Additionality is demonstrated using the UNFCCC Tool for the demonstration and assessment of additionality (Version 05.2) which shows that the project would not be possible without VER revenues.

B.2. Justification of the choice of the methodology and why it is applicable to the project activity:

>> The project will be classified as small scale in accordance with the Gold Standard rules. Small scale energy efficiency projects are defined by the Gold Standard/CDM EB as projects involving energy improvement of less than 60GWh (180Gwth) per year. Details of these calculations are available at validation in the supplementary information excel file sent with this PDD.

The justification of the choice of the methodology is addressed in sections below to show that it is fully applicable the proposed project activity. Sections in *italics* represent the criteria specified by the methodology in Section B.1 above; body text indicates the response of the project proponent.

1. 'The project boundary can be clearly identified, and the technologies counted in the project are not included in another voluntary market or CDM project activity

The project boundary has been clearly demarcated using political divisions recognised in Tanzania. The stoves counted are individually marked with a project specific identification code that is referenced in all records relating to the stove, stored in the project proponent's database. This ensures that the stoves are not accidentally counted in other project activities by the project proponent. Kitchen Surveys will be used to eliminate the potential for double counting from other voluntary market or CDM activity within the project area.

2. Technologies have a continuous useful energy output of less than 150kW per unit (defined as total energy delivered usefully from start to end of operation of a unit divided by time of operation). For technologies or practices that do not deliver thermal energy in the project scenario but only displace thermal energy supplied in the baseline scenario, the 150kW threshold applies to the displaced baseline technology.

As this project technology primarily delivers thermal energy (some displacement will occur as a result of improved cooking practices), the 150kW threshold does not apply to the baseline technology. A single stove only will be introduced into each kitchen counted by the proposed project activity. Using the

results of the baseline study, the continuous useful energy output delivered has been estimated at 5.27kW[10], which is well within the limit imposed by the methodology of 150kW.

3. The use of the baseline technology as a backup or auxiliary technology in parallel with the improved technology introduced by the project activity is permitted as long as a mechanism is put into place to encourage the removal of the old technologyand the definitive discontinuity of its use.

As referenced in the methodology 'the removal and continued non-use of three stone fires and other easily constructed traditional devices (the baseline technology replaced by this project activity) is in many cases unlikely and impractical to monitor[11]. We therefore do not plan to offer any incentive to encourage removal of traditional devices. It is hoped that the positive benefits our stove offers for local people will act as the incentive for discontinuity of traditional device use.

a) The project documentation must provide a clear description of the approach chosen and the monitoring plan must allow for a good understanding of the extent to which the baseline technology is still in use after the introduction of the improved technology, whether the existing baseline technology is not surrendered at the time of the introduction of the improved technology, or whether a new baseline technology is acquired and put to use by targeted end users during the project crediting period.

Overall use of the baseline technology will be monitored in conjunction with that of the project technology, as will the emergence of any other baseline technology by targeted end users. This information will also ensure that requirement 1 (above) of the methodology is also met.

b)''The success of the mechanism put into place must therefore be monitored, and the approach must be adjusted if proven unsuccessful. If an old technology remains in use in parallel with the improved technology, corresponding emissions must of course be accounted for as part of the project emissions.''

Parallel baseline technology use (viz three stone fires or traditional equivalent) will be revealed during monitoring and it effect on emissions reductions be captured using the equation 6 of the methodology $Bp,y = Np,y * ((Pp,y * Up,y) + (Pb,y * (1 – Up,y))$. The uptake rate U will be determined by surveys and hence used to account for parallel baseline and project technology use.

4. The project proponent must clearly communicate to all project participants the entity that is claiming ownership rights of and selling the emission reductions resulting from the project activity. This must be communicated to the technology producers and the retailers of the improved technology or the renewable fuel in use in the project situation by contract or clear written assertions in the transaction paperwork, If the claimants are not the project technology end users, the end users should be notified that they cannot claim for emission reductions from the project

A full explanation will be given to all household stove recipients, or end users, that co2balance have provided them with a stove for free on the basis that the emissions reductions will be transferred to co2balance. This will be recorded using a Carbon Rights Form, which stove owners will sign to confirm they understand and voluntarily enter the agreement in which they cannot claim emissions reductions from the project.

[10] See Supplementary Data Sheet Arusha

[11] http://www.cdmgoldstandard.org/fileadmin/editors/files/6_GS_technical_docs/manuals_and_methodolgies/110411_TPDDTEC_Methodology.pdf p4

5. Project activities making use of a new biomass feedstock in the project situation (e.g. shift from non-renewable to green charcoal, plant oil or renewable biomass briquettes) must comply with relevant Gold Standard specific requirements for biomass related project activities, as defined in the latest version of the Gold Standard rules.

As the technology used in this project has been specifically designed to make use of baseline feedstock viz fuelwood, rather than a new biomass feedstock, this criterion is not applicable to this project. The emission reductions from this project will result from a change in quantity of fuel *consumed*, rather than change of fuel *type.*

B.3. Description of the sources and gases included in the project boundary:

>> T he project boundary is specified in the methodology as follows:

a) The project boundary is the physical, geographical sites of the project technologies and potentially of the baseline and project fuel collection and production (e.g. charcoal, plant oil), as well as solid waste and effluents disposal or treatment facilities associated with fuel processing.

The project boundary is therefore defined as the domestic kitchens in which each project technology is installed. Each stove is GPS tagged and individually identified by a reference number ensuring that project technologies are easily distinguishable.

b*) The target area is defined by the regions or towns within a single country, or across multiple adjacent countries, where the considered baseline scenario(s) is(are) assessed to be uniform across political borders. The target area provides an outer limit to the project boundary in which the project has a target population.*

The target area is defined by the image in A3.1.2

c) *In cases where woody biomass (including charcoal) is the baseline fuel, the fuel production and collection area is the area within which this woody biomass can reasonably be expected to be produced, collected and supplied.*

The fuel production and collection area has been defined by Kitchen Surveys which show that the majority of households collect their fuel from the local area on foot.

Emission sources within the project boundary

Greenhouse gasses included in the project and baseline scenarios are tabulated below.

	Source	Gas	Included?	Justification/Explanation
Baseline	Cooking, production of fuel, and transport of fuel	CO_2	Yes	Important source of emissions
		CH_4	Yes	Important source of emissions
		N_2O	Yes	Can be significant in some fuels

	Source	Gas	Included?	Justification/Explanation
Project	Cooking, production of fuel, and transport of fuel	CO_2	Yes	Important source of emissions
		CH_4	Yes	Important source of emissions
		N_2O	Yes	Can be significant in some fuels

B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario:

>> **A. Baseline Non-Renewable Biomass Assessment**

The baseline Non renewable biomass assessment was conducted by an independent consultant C4Eco Solutions based in South Africa. Approach A1.3 - similar to the approach of CDM AMS-II.G - was followed (refer to attached co2balance fNRB report). All variables, data sources and parameters used to determine the baseline are listed in the report.

B. Baseline Survey

Personal interviews, or Kitchen Surveys, were carried out in June and as described in the baseline report. A representative sample size of targeted end users was interviewed to capture the following demographic, cooking preference and fuel choice variables:

- Their address and telephone number (mobile or landline where possible)
- The number of people served by the baseline technology and typical usage patterns and tasks (e.g. domestic/commercial cooking)
- The types and estimated frequency of baseline technologies used and estimated frequency
- The types of fuels used and estimated quantities
- Seasonal variations in baseline technology and fuel use
- Sources of fuels and prices paid (if purchase is the source) or effort made (if collection is the source)
- Woody biomass renewability and non renewability indicators as indicated in Annex 1 of the methodology

The information from the baseline survey was used to choose the most representative households in terms of the above stated variables for the baseline performance test. This process was carried out by an independent consultant.

C. Baseline Performance Field Test

The baseline performance field test follows the guidance in annex 4 of the methodology – the Kitchen Performance Test. The Kitchen performance test was used to measure a range of targeted end user wood use from which a statistically confident estimate of the mean was taken. The KPTs were conducted at an appropriate time of year ensuring that no festival or other unusual cooking events were planned during the measurement period.

The key variables that were measured during the KPT and used in producing a confident estimate of the mean baseline wood use (in conjunction with the variables in baseline survey listed above) were:

Variable	**Unit**	**Source**
Children age 0 – 14 years	-	Household KPT Survey
Females over 14 years	-	Household KPT Survey
Males 15 – 59 years	-	Household KPT Survey
Males over 59 years	-	Household KPT Survey
Weight of wood used in 24hrs	Kg	Weight of used wood during Household KPT Survey (over 4 days)

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality):

The project activity is financed upfront based on the projected revenues from future Gold Standard VERs as the sole source of funding; therefore the project activity could not go ahead without the prospect of VER credits.

Additionality is demonstrated using the UNFCCC Tool for the demonstration and assessment of additionality (Version 05.2) which shows that the project would not be possible without VER revenues.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations.

Sub-step 1a: define alternatives to the project activity:

Alternative 1: Stoves are designed, marketed, built and distributed by a stove builder without registering as a Gold Standard VER project.

Under this alternative scenario the project would proceed as laid out in this document. This would provide the same energy output, result in the biomass savings, improved livelihoods and other contributions to sustainable development identified.

Alternative 2: Continuation of the current situation – use of traditional cooking with 3-stone fireplaces.

Without the intervention of the project and use of carbon finance it is unlikely that the status quo will change.

Outcome of sub-step 1a: Two realistic and credible alternatives to the project activity have been identified.

Sub-step 1b: Consistency with mandatory laws and regulatory

The alternatives identified in Sub-step 1a above are in compliance with the mandatory laws and regulations in Tanzania.

Outcome of sub-step 1b: Two realistic and credible alternative scenarios to the project activity that are in compliance with mandatory legislation and regulations taking into account the enforcement in the region and EB decisions on national and/or sectoral policies and regulations have been identified.

Step 2: Investment Analysis

Sub-step 2a: Determine appropriate analysis method

As the proposed project activity generates no financial or economic benefits other than the VER revenues, the simple cost analysis (option I) will be applied, as suggested by the additionality tool.

Sub-step 2b: Option I. Apply simple cost analysis

The costs associated with the proposed activity and alternatives identified in Step 1 are documented here which will demonstrate that at least one alternative is less costly than the proposed activity.

Proposed activity

Despite the development of a number of improved stoves within Tanzania over the last 20 years, there has been very low penetration of the technology in rural wood-burning households, as the technologies have focussed on charcoal as the fuel source. (referenced in barrier analysis). The rocket-stove cost price is €28 (supporting evidence available to DOE).

In line with the estimated distribution potential of 6322 improved cook stoves in the defined project area, this would require funding of €178,783. In this scenario a proposed total of 1,006,478 VERS will be issued to the proponent over the first 7 years of the project (after GS deductions). Retailing the VERs at €8 each would provide a surplus of €7712005 sufficient to cover the additional burden of putting the project through the Gold Standard as well as making the project an investment opportunity for financiers.

Alternative 1

Under this alternative scenario the project would be implemented as per the proposed activity and thus would incur the same build costs of €178,783. However, without registration through the Gold Standard or other carbon financing mechanism this would have to be funded in another manner, either by sales or charitable donations.

This alternative is likely to be more costly than the proposed activity.

Alternative 2

There are no costs associated with the continuation of cooking on a 3 stone fire, thus this alternative is clearly less costly than the proposed activity.

It is concluded that the proposed activity is more costly than at least one alternative (Alternative 2), so the assessment can proceed to Step 4 (Common practice analysis). The proponent has opted to apply Step 3: Barrier Analysis also.

Step 3: Barrier Analysis

Sub-step 3a: Identify barriers that would prevent the implementation of the proposed GS VER project activity:

(a) Investment barriers

Private funding

Though the country is doing better than a couple of decades ago the statistics show that the political and economic environment is not ideal for foreign investment – according to a World Bank Study, Tanzania is rated 130 out of 178 (up from 142 out of 175) in terms of doing business[12] The country's sovereign credit ratings as measured by the three major credit measuring agencies, Standard and Poors, Fitch and Moodys was B in January 2011. A credit rating of 'B' is classified as a junk bond (or non investment value) characterised by a higher likelihood of default or other adverse credit events.

The real or perceived risk associated with investment in Tanzania is high. There are examples of large-scale implementations of fuel-efficient cooking stove projects in Tanzania. These projects have all received either grant/donor funding, or carbon finance through the voluntary carbon market, under the Gold Standard scheme. The investment barrier for these projects is the same as for the proposed project.

The up-front costs required to develop distribute and promote efficient wood fuel cook stoves are significant (as demonstrated in substep 2b, in which the only the production expenditure is considered) without guarantee of a market and therefore a proven return on this investment. Given this financial case, a prospective stove business would have to source a large amount of funding in a highly risky environment from a lender point of view. A study by the World Bank found that 40% of small business in Tanzania identified access to finance as a major business constraint and 84.68% of small businesses rely on internal funding/returns for investment.[13] A typical company has to put up on average 124% of the loan amount as collateral, so it is clear that access to private capital due to the actual or perceived risk of conducting business in Tanzania presents a serious barrier to this type of project.

[12] http://www.oecd.org/dataoecd/12/25/40578365.pdf

[13] http://www.enterprisesurveys.org/CustomQuery/country.aspx?economyid=185&year=2006&characteristic=size

(b) Technological barriers *Inter alia*

Although the *generic* 'rocket stove' technology is not new, significant funding has been required to overcome the numerous technological barriers to implementation of the specific technology. Investment is required in: researching, developing and testing the design; financing construction materials; transportation of materials; education programme, amongst other things. Getting all of thes

Skilled labour: In addition there is a lack of an adequately trained local workforce capable of constructing and maintaining stoves at present, specific training in construction is required for the technology to be utilised. There is no clear development of a market that would drive such capacity to be built due to the financial barriers stated above.

(c) Barriers due to prevailing practice *inter alia*

Habitual use of traditional stoves imposes a very strong influence on the baseline scenario (Solid fuel meets the cooking needs of more than 95% of Tanzanian households[14]), resulting in continuation of use of traditional three stone fires. There have been some efforts to introduce improved cook-stoves in Tanzania but, as for many other countries, mainly limited to urban dwelling charcoal users as implementation is always easier than in rural communities. Households in rural Tanzania do not have access to the market to obtain information about the existence and effectiveness of fuel-efficient cooking stoves. The proposed project will see the widespread education of households to the benefits of using the stoves: wood fuel savings, reduction in indoor smoke pollution, reduced wood collection time etc.

(d) Financial barriers

d.1 Lack of Household Income

According to the World Bank 33.4% (2007 est.) of Tanzania's rural population live below the poverty line.[15] The average household income per capita in 2007 was $215 and the average household size was 4.785 meaning a total household income of $1028[16]. A recent study suggests that 71pc of private expenditure in Tanzania went on food – the highest expenditure percentage of 51 countries studied[17].

In terms of consumption, households are major consumers of wood fuel in Tanzania with 94% of the rural population using wood as their main cooking fuel.[18] Studies have shown that outside of urban areas woodfuel is not a commodity the average household would consider buying, therefore the relative expense of other fuel options makes them financially unviable. Kerosene is used to some extent in urban

[14] http://www.who.int/indoorair/publications/indoor_air_national_burden_estimate_revised.pdf

[15] http://data.worldbank.org/country/tanzania

[16] http://www.csae.ox.ac.uk/conferences/2011-EDiA/papers/490-Teal.pdf

[17] http://www.ers.usda.gov/Publications/FoodReview/Sep1996/Sept96h.pdf

[18] http://apps.who.int/ghodata/?vid=34000

areas but has been subsidized by the government meaning a switch to kerosene would be detrimental to the state's finances. Biogas options were also investigated but the cost was found to be a barrier to uptake by the majority of the population. [19]

Calculations have been made to assess the ability of households in the target area to purchase a Carbonzero Stove at the cost price of 28euro ($40) based on the data tabulated in the table below:

Household cash flow available

Household Income	
Average income ($ /year)	1028
Average income ($ /month)	86
Household expenses	
Proportion of income spent on food (%)	71%
Annual Income remaining after food	298
Monthly Income remaining after food	25
Cost of Carbonzero Stove	40
Stove as % of remaining annual income (conservatively assuming no fuel is purchased)	13%
Stove as % of remaining monthly income (conservatively assuming no fuel is purchased)	-160%

Therefore, the remaining annual household cash available after the basic food and fuel expenditure will be $298. This is the most conservative scenario possible for an average Tanzanian family. The significance of purchasing the improved stove at the cost noted above with respect to the remaining household cash represent about the 13% of the annual savings. Note this does not take into account any of the other costs of living such as clothing and schooling, it seems most likely then that the majority of households would not be able to independently purchase an efficient stove.

This situation is reinforced if the cost of the Carbonzero is considered as a percentage of the monthly income which clearly shows the stove is beyond the reach of ordinary rural citizens. Furthermore, the project will be promoted in rural and disadvantaged areas where population remain far from the national average statistics showed in this report. Therefore, as suggested in previous studies[20], country conditions suggest that the purchase of the stove is unaffordable to the majority of Tanzanians, accounting for several percent of annual incomes, particularly from the targeted communities approached by the project.

d.2 Lack of financial incentive

Rural households that collect local wood to use as cooking fuel have no financial incentive to invest in a cooking stove, even if they could set aside enough household income to afford one. For these households

[19] FH Johnsen - Forum for Development Studies, 1999 - se2.isn.ch

[20] Munslow, B., Y. Katerere, A. Ferf and P. O´Keefe, 1988, The fuelwood trap. A study of the SADCC region, London: Earthscan Publications Ltd.

the costs of cooking with an inefficient stove are externalized so there is no motivation to purchase an efficient stove even if one was available via the market *and* affordable. [1920]

It is universally acknowledged that wood fuel use in Tanzania is associated primarily with rural populations and that the wood fuel under these conditions is not normally bought but collected. As rural populations, by definition, are the target population for this improved woodfuel cookstoves programme, it is clear the lack of financial incentive is applicable to each stove recipient.

Sub-step 3b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity)

None of the identified barriers discussed above prevent alternative 2, continuation of cooking on freely available three stone fires, from occurring.

Step 4: Common Practice Analysis

Sub-step 4a: ***Analyse other activities similar to the proposed project activity***

There has been little market-based stove implementation in Tanzania and those that are recorded have been limited to charcoal stoves – for which users have a clear incentive for efficiency based on the cost savings offered by using less fuel. Wood fuel stoves present a contrast scenario in which stove users commonly collect their fuel for free, removing this incentive for efficiency.

Morogoro Stoves

The Morogoro Fuelwood Stove Project was launched in 1985 with support from NORAD. Two stoves were developed, one for charcoal and one for wood. Shortly after launching it was discovered that 60pc of the stoves cracked at first use. The design was altered but cracking was only reduced by 25pc.[21] In addition the developers found that the local population had little motivation to pay for a stove given that firewood was free. To date only 2500 stoves have been sold.

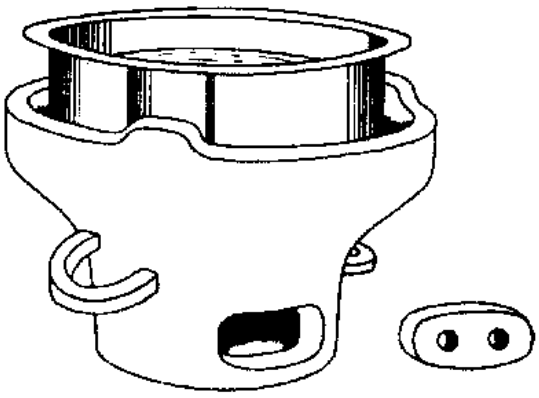

Figure 1 Morogoro Stove

Jiko la Dodoma Stoves

[21] "Improved Stoves in Tanzania" *Tom Otiti*, Stove Notes No. 6, published by FOOD, Nairobi, Kenya 1991

The Jiko la Dodoma Stove was developed by UNICEF and originally implemented in Kenya. The stove design requires 4/5 times the volume of materials as the traditional cook stove as well as five times the volume of labour - for the price of one Dodoma stove a householder could purchase four traditional stoves making the product financially unattractive.[22] As is commonly seen other cookstove projects that offer a fixed price per stove produced by decentralised artisanal constructors[23], the temptation for fabricators to reduce labour and material input (to maximise their profit) is high. The inevitable reduction in quality was the main contributory factor in the failure of the Dodoma stove project, demonstrating that quality control is necessary throughout the lifetime of the project. Interestingly, this can be a functionality that is supplied successfully by carbon finance, e.g. Gyapa Charcoal Stoves, Ghana (CDM Gold Standard)

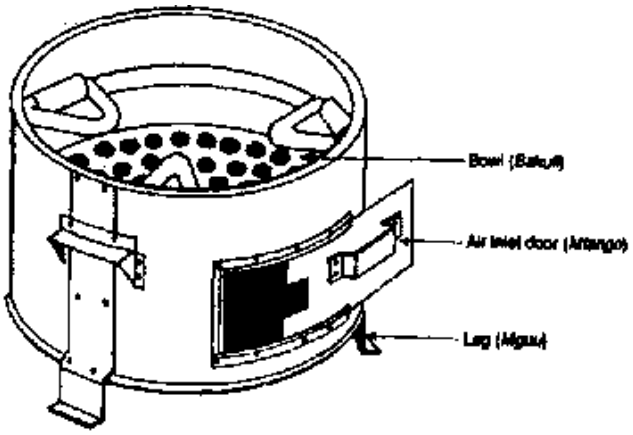

Figure 2 Jiko la Dodoma

Jiko Bora Charcoal Stove

The Jiko Bora stove was launched by the Ministry of Energy and Minerals' Renewable Energy Development Project Unit (REDPU). The stove focused on charcoal burning in Dar es Salaam with relative success, but relies on the population having capital to buy the stove. Financial barriers and the charcoal-based design make the stove unsuitable for the more rural regions of Tanzania where co2 balance will be operating.

[22] http://www.nzdl.org/gsdlmod?e=d-00000-00---off-0fnl2.2--00-0----0-10-0---0---0direct-10---4-------0-1l--11-en-50---20-about---00-0-1-00---4----0-0-11-1-0utfZz-8-00&a=d&cl=CL3.24&d=HASH0192c9c0e72d8780bd25f6ed.4.5

[23] This approach attempts to provide maximum employment opportunities and create completion early on generating a market for efficient devices. The downfall of this approach is mirrored in the early work on the Gyapa stove Ghana, by VITA/Enterprise works see http://www.bioenergylists.org/en/taxonomy/term/1677

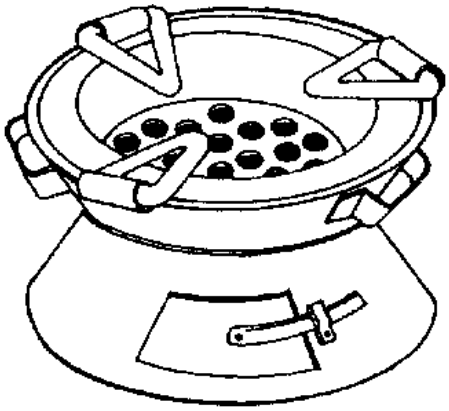

Figure 3 Jiko Bora stove

Duma Stove

The Duma stove is designed for institutions such as prisons, hospitals and restaurants. It is produced in range of sizes to suit its designated organization. However, this stove is not designed for household use and would again be costly for Tanzania's rural population - the target population for this project.

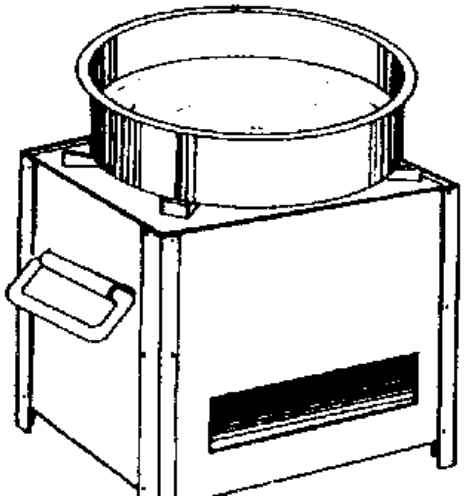

Figure 4 Duma Instituitional Stove

Envirofit Stove

One stove project is currently listed on the Gold Standard website by E+Carbon Inc, which utilises the Envirofit stove, shown in the picture below. The Envirofit stove is considered by E+Carbon Inc to be too expensive to sustain a market and is heavily subsidised by the developer using carbon finance, supporting the assertion that improved cookstoves projects in Tanzania are both additional and require carbon finance to achieve impact at scale.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

>> **Application of methodological procedures:**

The project proponent has opted to carry out a single sample test of baseline fuel use and use an independently verified assessment of the thermal efficiency of the improved project stove in estimating the project scenario and hence emission reductions. The procedures used are described below:

Procedures used to calculate baseline emissions:

The non renewable biomass fraction was calculated according to substep A1.3 provided by the methodology (that similar to that of CDM AMS II G). This study was carried out by an independent consultant. A baseline survey was used to assess target population characteristics of randomly selected households using traditional 3 stone fires. Of those interviewed, the most representative end users (by demographic indicators and cooking preferences) was selected for the baseline KPT study using a documented random selection technique for transparency.

The standard approach to a Kitchen Performance Test listed in the methodology was followed and the results of the KPT were then statistically analysed according to the 90/10 rule to determine a representative figure for baseline emissions. The 90% confidence interval was within 10% of the estimated mean, therefore it is deemed by the methodology to be a reliable estimate of the true mean.

Procedures used to calculate the project emissions:

An independent laboratory test of the thermal efficiency of the project technology was used to estimate the project fuel use in relation to the baseline technology. A default efficiency of 10% of the baseline technology was applied in accordance with the rules of the methodology. Measured baseline fuel use from the statistically representative KPT studies (shown in the prior section) was used to predict savings as a result of the improvement in efficiency of the project technology. These calculations were carried out by an independent consultant and are made available for validation.

The proponent will carry out KPTs for the project scenario in time for verification; project tests will be independent of the baseline tests. This option allows a proper development of the project and hence accurate assessment of emissions reductions - this process is fully described in the monitoring plan.

Procedures used to calculate leakage:

Leakage within this project will only occur during the construction phase of the project, the first crediting year, but will be monitored biennially. The potential for leakage from other sources will be monitored during the project. An assessment of the emissions factors for each stove component was carried out using independent, recognised sources and used to calculate the total emissions per manufactured stove. The transport emissions of the fully constructed stoves, including embodied emissions of materials, were calculated using conservative estimates (i.e. overestimates) of distances travelled. The detail of these calculations is supplied in the accompanying excel spreadsheet.

Equations used in estimated emissions reductions:

Baseline Emissions

$$BE_{b,y} = B_{b,y} * \left(\left(fNRB_y * EF_{b,fuel,co2} \right) + EF_{b,fuel,nonco2} \right) * NCV_{b,fuel} \quad \textbf{(equation 3)}$$

Where:

$$B_{b,y} = N_{p,y} * \boldsymbol{P_{p,y}} \quad \textbf{(equation 4)}$$

Project Emissions

$$PE_{p,y} = B_{p,y} * \left(\left(fNRB_y * EF_{p,fuel,co2} \right) + EF_{p,fuel,nonco2} \right) * NCV_{p,fuel} \quad \textbf{(equation 5)}$$

Where: $B_{p,y} = N_{p,y} * ((P_{p,y} * U_{p,y}) + (P_{b,y} * (1 - U_{p,y}))$ **(equation 6)**

In which $P_{p,y} = B_{b,y} * (\eta Baseline / \eta Project)$

Where η is the thermal efficiency of the device in either scenario (using equation 3 derived from AMS II.G, option 2).[24]

Overall Emissions

[24] http://cdm.unfccc.int/methodologies/DB/6U8JYO9XTLVZ8LJ7GUBSZP145BIDG2/view.html

$$ER_y = \Sigma BE_{b,y} - \Sigma PE_{p,y} - \Sigma LE_{p,y}$$ **(equation 7)**

B.6.2. Data and parameters that are available at validation:

(Copy this table for each data and parameter)

Data / Parameter:	$P_{b,y}$
Data unit:	kg/household-day
Description:	Quantity of fuel that is consumed in baseline scenario b during year y
Source of data to be used:	Baseline FT, baseline FT updates, and any applicable adjustment factors
Value of data	25.3
Description of measurement methods and procedures to be applied, inc. frequency:	Baseline FT Updated minimum every two years over project lifetime.
QA/QC procedures to be applied:	FT will be carried out by independent staff trained by co2balance
Any comment:	

Data / Parameter:	$EF_{b,CO2}$
Data unit:	tCO_2/TJ
Description:	CO_2 emission factor arising from use of wood-fuel in baseline scenario (includes production, transport and use)
Source of data used:	Calculated from IPCC defaults
Value applied:	112
Justification of the choice of data or description of measurement methods and procedures actually applied :	Deemed valid by methodology.
Any comment:	Details of calculations available to validator.

Data / Parameter:	$EF_{b,CH4}$
Data unit:	tCO_2/TJ
Description:	CO_2 emission factor arising from use of wood-fuel in baseline scenario (includes production, transport and use)
Source of data used:	Calculated from IPCC defaults
Value applied:	0.63
Justification of the choice of data or description of	Deemed valid by methodology.

measurement methods and procedures actually applied :	
Any comment:	Details of calculations available to validator.

Data / Parameter:	$EF_{b,N2O}$
Data unit:	tCO_2/TJ
Description:	CO_2 emission factor arising from use of wood-fuel in baseline scenario (includes production, transport and use)
Source of data used:	Calculated from IPCC defaults
Value applied:	1.24
Justification of the choice of data or description of measurement methods and procedures actually applied :	Deemed valid by methodology.
Any comment:	Details of calculations available to validator.

Data / Parameter:	$EF_{p,CO2}$
Data unit:	tCO_2/TJ
Description:	CO_2 emission factor arising from use of wood-fuel in Project scenario (includes production, transport and use)
Source of data used:	Calculated from IPCC defaults
Value applied:	112
Justification of the choice of data or description of measurement methods and procedures actually applied :	Deemed valid by methodology.
Any comment:	Details of calculations available to validator.

Data / Parameter:	$EF_{p,CH4}$
Data unit:	tCO_2/TJ
Description:	CO_2 emission factor arising from use of wood-fuel in Project scenario (includes production, transport and use)
Source of data used:	Calculated from IPCC defaults
Value applied:	0.63
Justification of the choice of data or description of measurement methods and procedures	Deemed valid by methodology.

actually applied :	
Any comment:	Details of calculations available to validator.

Data / Parameter:	$EF_{p,N2O}$
Data unit:	tCO_2/TJ
Description:	CO_2 emission factor arising from use of wood-fuel in Project scenario (includes production, transport and use)
Source of data used:	Calculated from IPCC defaults
Value applied:	1.24
Justification of the choice of data or description of measurement methods and procedures actually applied :	Deemed valid by methodology.
Any comment:	Details of calculations available to validator.

Data / Parameter:	NCV_b
Data unit:	TJ/ton
Description:	Net calorific value of the fuels used in the baseline
Source of data used:	IPCC defaults
Value applied:	0.0156
Justification of the choice of data or description of measurement methods and procedures actually applied :	Deemed valid by methodology.
Any comment:	Details of calculations available to validator.

Data / Parameter:	NCV_b
Data unit:	TJ/ton
Description:	Net calorific value of the fuels used in the Project
Source of data used:	IPCC defaults
Value applied:	0.0156
Justification of the choice of data or description of measurement methods and procedures actually applied :	Deemed valid by methodology.
Any comment:	Details of calculations available to validator.

Data / Parameter:	fNRB
Data unit:	Non Renewability Fraction
Description:	Non-renewability status of woody biomass fuel in scenario i during year y
Source of data used:	Independent study (C4Ecosolutions)
Value applied:	0.92
Justification of the choice of data or description of measurement methods and procedures actually applied :	Approach A1.1 Quantitative NRB assessment was used in accordance with the methodology
Any comment:	Details of calculations available to validator.

B.6.3. Ex-ante calculation of emission reductions:

>> All the calculations performed in this section are further developed and available in the supplementary excel info sheet sent with this document.
Equations 3,4,5,6,& 7 were applied as shown in B6.

As discussed in section B.6 and the attached report, the results of the KPT were analysed to provide the average fuel saving per stove per year according to 90/10 precision. This was then used to calculate the ex-ante emissions reductions per stove-year.

	kg/HH/day	
Average Meeting 90/10 precision	**25.30**	>> All data, including rounded.

Therefore,

	t/HH/year	
Average Meeting 90/10 precision	**9.23**	>> from the baseline monitoring report by third party.
Tonnes Saved per Stove	**6.57**	>> calculated from the ratio of efficiency improvements

The figure adjusted for 90% confidence was used to work out the tonnes used per stove per day and the estimated tonnes saved per stove P (b,y - p,y) T/HH/yr were calculated using the relative improvement in efficiency of the CarbonZero stove. This ratio is the old thermal efficiency divided by the new thermal efficiency – similar to the equation used in AMS IIG (equation 6 in B6.1).

P (b,y) T/HH/day	0.03
P (p,y) T/HH/day	0.0072974
P (b,y - p,y) T/HH/yr	0.02

This figure was multiplied by the number of project technology days (the number of stoves multiplied by days – an uptake rate of 1 was assumed for simplicity) to determine the predicted wood saved as a result of the project.

N (p,y) stoves*days	2307355.9
B (b,y - p,y)	**41538.462**

In line with the methodology this was multiplied by the emissions factors for co2 (incorporating the non-renewability fraction of 1), methane and nitrogen dioxide and the Net Calorific Value for wood (0.0156) to give the emissions reduction before leakage.

fNRB,y	0.92
EF CO2 (b, wood tco2/t)	112
EF CH4 (b, wood tco2/t)	0.63
EF N2O (b, wood tco2/t)	1.24
NCV (wood)	0.0156

Hence: 41538*1.71 (all emission factors plus NCV) =

ER_1 (tCO2e/year)	**67,870**

Leakage per stove has been assessed as one-off source identified that will be written off in the first crediting year following stove construction, following this zero leakage is anticipated. Leakage per stove (footprint in tco2eq) was multiplied by the number of stoves to give the total project leakage

Footprint (tCO2e/stove/year)	0.0169802
N,y	6,322

Hence: 0.0169802*6322 = 73 tco2

B.6.4 Summary of the ex-ante estimation of emission reductions:

>> Baseline and Project Emission shave been omitted for clarity, full details of the calculations are supplied in Supplementary Data.

Year	PE - Estimation of project activity emissions (tCO_2e)	BE - Estimation of baseline emissions (tCO_2e)	LE - Estimation of leakage (tCO_2e)	ER - Estimation of overall emission reductions (tCO_2e)	
2012	-	-	73	59,878	*2011/12 leakage applied here*
2013	-	-	0	67,986	
2014	-	-	0	67,986	
2015	-	-	0	67,986	
2016	-	-	0	67,986	
2017	-	-	0	67,986	
2018	-	-	0	67,986	
Total (tCO_2e)	-	-	**73**	**475,902**	

B.7. Application of the monitoring methodology and description of the monitoring plan:

B.7.1 Data and parameters monitored:

Data / Parameter:	$f_{NRB,i,y}$
Data unit:	Fractional non-renewability
Description:	Non-renewability status of woody biomass fuel in scenario i during year y
Source of data to be used:	Applicable NRB assessment
Value of data	0.92
Description of measurement methods and procedures to be applied, inc. frequency:	Quarterly Monitoring Kitchen Survey will determine any change in the indicators of non-renewability as described in the methodology
QA/QC procedures to be applied:	
Any comment:	

Data / Parameter:	$P_{b,y}$
Data unit:	kg/household-day
Description:	Quantity of fuel that is consumed in baseline scenario b during year y
Source of data to be used:	Baseline FT, baseline FT updates, and any applicable adjustment factors
Value of data	
Description of measurement methods and procedures to be	Baseline FT Updated minimum every two years over project lifetime.

applied, inc. frequency:	
QA/QC procedures to be applied:	
Any comment:	

Data / Parameter:	$P_{p,y}$
Data unit:	kg/household-day
Description:	Quantity of fuel that is consumed in project scenario p during year y
Source of data to be used:	Project FT, Project FT updates, and any applicable adjustment factors
Value of data	To be measured
Description of measurement methods and procedures to be applied, inc. frequency:	Project FT Updated minimum every two years.
QA/QC procedures to be applied:	
Any comment:	Thermal efficiency of device was used to calculate an estimate of P p,y for validation and ex ante calculations

Data / Parameter:	$U_{p,y}$
Data unit:	Percentage
Description:	Usage rate in project scenario p during year y
Source of data to be used:	Own survey of end users
Value of data	To be measured in first year
Description of measurement methods and procedures to be applied, inc. frequency:	Annual usage survey completed for each crediting year
QA/QC procedures to be applied:	Random selection will controlled by a computer using unique IDs. Locations of stove owners are defined by GPS co-ordinates, as well as address allowing ease of identification. Assumed to be 1 in absence of any data for validation
Any comment:	

Data / Parameter:	$N_{p,y}$
Data unit:	Project technologies credited (units)
Description:	Technologies in the project database for project scenario p through year y
Source of data to be used:	Total sales record
Value of data	Continuous
Description of measurement methods and procedures to be applied, inc. frequency:	Project technologies days will be monitored continuously using an electronic database derived from the sales record
QA/QC procedures to be applied:	Quality of data uploaded will be assured by computer using unique IDs to ensure no duplication of records resulting from human error

Any comment:	

Data / Parameter:	$LE_{p,y}$
Data unit:	t_CO_2e per year
Description:	Leakage in project scenario p during year y
Source of data to be used:	Baseline and monitoring surveys
Value of data	0.0169 per stove
Description of measurement methods and procedures to be applied, inc. frequency:	Kitchen Surveys supported by desk-based research.
QA/QC procedures to be applied:	Kitchen Surveys are used and will be carried out by trained staff.
Any comment:	Value stated is to be applied in year one only, no further leakage is anticipated, however this will be reviewed biennially. Value multiplied by number of stoves installed.

B.7.2. Description of the monitoring plan:

>> A. Installation record

A comprehensive installation record will record the following information in electronic and paper format; the original documentation will be stored in co2balance Tanzania office. Paper records will be filled out by stove builder; co2balance Tanzania Ltd will supervise and assist stove contractors in generating the appropriate records during the construction phase of the project. (See Annex 4 for further details)

- the date of installation
- GPS location of the installed stove (not on paper)
- The date of the installation of the stove will be used to incorporate a week's lead in time before usage is assumed of the stove to begin. This will ensure a conservative assessment of project technology days and hence overall emission reductions.
- The model of the stove (also indicated on each stove)
- The total number of stoves installed
- Address and telephone number of all stove end users
- Whether the stove will be used for commercial or domestic purposes

B. Project Database

The project database will consist of the Installation record divided according to new project scenarios as and when they occur. The project proponent expects that any improvements to the current design will not involve significant changes in combustion technology or changes in thermal efficiency of +/- 5% and hence will not entail a new project scenario. Any such changes to the current design will however be recorded in the project database. The useful life of the stove technology is estimated to be at least 7 seven years and therefore extends the crediting period chosen of 7 seven years. (See Annex 4 for further details)

C. Ongoing Monitoring

Usage Survey – an annual usage survey determine the drop off rate of the project technology with the assumption that end users fall back to using the baseline technology as indicated in the methodology. As all stoves will be installed within 0.5 years of the start of the crediting period and are expected to last the lifetime of the project, minimum samples of 30 for different aged technologies will not be necessary. Therefore the annual usage survey will be conducted using a minimum sample size of 100.

The usage survey will be conducted by or under the supervision of co2balance Tanzania Ltd with guidance on the sampling strategy supplied by co2balance UK Ltd. Paper and electronic copies of the surveys will be retained. (See Annex 4 for further details)

Project KPT (FT) Update

Although the stove remains materially the same each year, an age test will not be applied to the initial project KPT as the project proponent believes this will maintain a more realistic assessment of the project scenario (and also contribute to a conservative result) -. Updated project KPTs will be completed biennially and will be conducted in the same manner (i.e. to capture seasonal variations) as the original project KPTs. The project KPT update will be carried out or supervised by the co2balance Tanzania Ltd monitoring team with guidance on the sampling strategy supplied by co2balance UK Ltd. Paper and electronic copies of the surveys will be retained. (See Annex 4 for further details)

Baseline KPT (FT) Update

A fixed baseline will be adopted by the project proponent following a more seasonally representative baseline KPT conducted during the first year's monitoring period. The KPTs performed during the first year's monitoring period will be carried out or supervised by the co2balance Tanzania Ltd monitoring team with guidance on the sampling strategy supplied by co2balance UK Ltd. (See Annex 4 for further details)

Leakage Assessment

As the primary leakage in this project occurs during the manufacture and distribution of the stove, it is not expected to feature during any year other than the first. However the potential for leakage from other sources (e.g. the rebound effect – end users responding to potential reduced expenditure under the project scenario adopt more GHG intensive fuels to supply thermal energy) will be captured by the usage survey completed annually. These surveys will be carried out or supervised by co2balance Tanzania Uk Ltd with guidance from co2balance UK Ltd. (See Annex 4 for further details)

Non-renewable Biomass Assessment update

Under the rules of the methodology, the NRB assessment will remain fixed for the entire crediting period, although the project proponent may choose to update the assessment at a later date.

B.8. Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies):

>>

>> The application of the methodology to the project activity to report the baseline was completed by Robert Linham (co2balance UK Ltd) on the 5/8/11. The monitoring methodology was carried out by Richard Iliffe (co2balance UK Ltd) on 5/8/11.

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SECTION C. Duration of the project activity / crediting period

C.1. Duration of the project activity:

C.1.1. Starting date of the project activity:

>> 01/02/2012

C.1.2. Expected operational lifetime of the project activity:

>> The initial operational lifespan of the improved stoves is expected to be 7 years 0 months, following this a review will be carried out to assess the feasibility of refurbishment in order to achieve another 7 years 0 months of operational life.

C.2. Choice of the crediting period and related information:

C.2.1. Renewable crediting period:

C.2.1.1. Starting date of the first crediting period:

>> 01/03/2012

C.2.1.2. Length of the first crediting period:

>> 7 years 0 months

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

>> N/A

C.2.2.2. Length:

>> N/A

SECTION D. Environmental impacts

>>

D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts:

>>

The Designated National Authority of the host party has provided confirmation that the project does not require an Environmental Impact Assessment to be carried out. Please see letter provided together with this document.

D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

>> N/A

SECTION E. Stakeholders' comments

>>

E.1. Brief description how comments by local stakeholders have been invited and compiled:

>>

Local stakeholders were identified by our project partner TAWIRI by word of mouth, relevant NGOs and the Gold Standard were invited by email and a public invitation was placed in The Daily Nation Newspaper. All stakeholders receiving a personal invitation were provided with a brief summary of the project as well.

When inviting organisations and individuals to attend the stakeholder meeting, best efforts were made to expand the selection in order to avoid missing out any organisations or individuals that could have a key interest in the activity. A small group of diverse participants were chosen by their location, need, how affected they were by the traditional cooking methods and its consequences, their capacity to help participate and their motivation to make the project work. The main priority was to make certain that it was not only the visible, voluble and easy to access that were invited.

The meeting took place on the 16th May 2011 at the Usa River Rehabilitation and Training Centre, Usa River Township, Meru District. It was attended by co2balance staff, local and international NGOs and individuals, a total of 105 people were present.

E.2. Summary of the comments received:

>>

Name	**Feedback form no. 3**
What is your impression of the meeting?	The project is good because we are going to spend less on buying firewood. Save our valuable time during collecting firewood
What do you like about the project?	Targets women
What do you not like about the project?	Nothing
Signature	See Appendix 2

Name	**Feedback form no. 6**
What is your impression of the meeting?	• The meeting was very important for environment around our wards

	• The project will help to protect our water catchment areas which are drying up now • This is a good beginning for conservation of our environment and also to women • It is a very important education
What do you like about the project?	• Attendance was fairly good • Workshop organizers responded very well to our questions • Workshop organizers tried very well to teach us • Workshop organizers used time very well • Workshop organizers gave us hope to get the stove
What do you not like about the project?	• The number of stoves is low compare to demand and environmental problem addressed • There should be a means to enable more people to see them so they can understand well
Signature	See Appendix 2

Name	**Feedback form no. 8**
What is your impression of the meeting?	• I have been sensitized about conserving environment • The project will help to protect our environment and water sources • To enable future generation to enjoy nature as well
What do you like about the project?	• Women will benefit more because they will stop using three stone stove (3SS) • I will have more time to do other activities
What do you not like about the project?	This education did not reach every one
Signature	See Appendix 2

Name	**Feedback form no. 18**
What is your impression of the meeting?	The meeting was so good but we suggest more time to be dedicated for training Our thanks to founders of this project
What do you like about the project?	The stove will use less firewood

What do you not like about the project?	Still waiting to see the project being implemented in the village
Signature	See Appendix 2

Name	**Feedback form no. 61**
What is your impression of the meeting?	Project will protect environment
What do you like about the project?	There will be employment opportunities for us Less use of firewood
What do you not like about the project?	nothing
Signature	See Appendix 2

In summary, most feedback forms reflected on the aspect of environmental conservation. Most people were happy with the meeting and they are waiting for the project to be implemented on the ground. The issues that were reflected in the feedback forms reduced poverty, improved health, protection of water catchment areas and improved social welfare.

E.3. Report on how due account was taken of any comments received:

>>

No true negative comments about the project were expressed during the meeting showing that the project design was acceptable to local stakeholders; no changes therefore are necessary. This situation will be monitored and any issues that are feasible to resolve will be monitored in accordance with all reasonable local requests.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

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URL:	
Represented by:	
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Salutation:	Mr
Last name:	Iliffe
Middle name:	Barry
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Direct FAX:	
Direct tel:	
Personal e-mail:	richard.iliffe@co2balance.com

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

See attached ODA declaration

Annex 3

BASELINE INFORMATION

See attached Baseline Report

Annex 4

MONITORING INFORMATION

See attached GS Passport

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