PROJECT IDEA NOTE (PIN)

Description of size and quality expected of a PIN

Basically a PIN will consist of approximately 5 – 10 pages providing indicative information on:

- **A.** Project participants
- **B.** Project description, type, size, location and schedule
- **C.** Avoided / reduced GHG emissions
- **D.** Financial aspects
- **E.** Expected environmental and socio-economic benefits
- **F.** Risks
- **G.** Other relevant information

Project name	Biomass Energy Efficiency CDM Project in Southern Highland Tanzania (Mbeya, Iringa and Rukwa Regions)

A. Project participants

A.1 Name	Tanzania Specialist Organization on Natural Resources and Biodiversity Conservation (TASONABI)
A.2 Organizational category *(choose one or more)*	Non-Governmental Organization (NGO)
A.3 Other function(s) of the project developer in the project *(choose one or more)*	---
A.4 Summary of relevant experience	TASONABI has been at the forefront of most of the natural resources conservation and renewable energy (mainly biomass energy) projects and related activities. TASONABI has over 10 years of experience in advocacy and in the past 6 years has built capacity in expertise in the areas of CDM issues. TASONABI has also built a collaborative base with national and international institutions in the aspects of CDM.
A.5 Address	P.O. Box 40192, Dar es Salaam, Tanzania
A.6 Contact person	Mr. Bariki K. Kaale – Chairman
A.7 Telephone / fax	Tel: +255 754 286273/ Fax:+255 22 2667569
A.8 E-mail and web address	Email: bkkaale@yahoo.com
Sponsor(s) financing the project *(List and provide the following information for each project sponsor)*	
A.9 Name	To be identified
A.10 Organizational category *(choose one or more)*	
A.11 Address *(include web address)*	
A.12 Main activities	
A.13 Summary of the financials of the project sponsor *(total assets, revenues, profit, etc.)*. Please also refer to Annex 2 for a financial documentation checklist.	

B. Project description, type, size, location and schedule

Technical Summary of the Project

B.1 **Project objective**	The objective of the project is to install improved cooking stoves (ICS) in institutions and households in Mbeya, Iringa and Rukwa regions in Southern Highland Tanzania to reduce consumptions of fuelwood and eventually reduce emission of GHGs caused by the use of inefficient traditional cooking stoves.

B.2 **Project description**

A large number of institutions (i.e., schools, colleges, hotels, hospitals and prisons) in Mbeya, Rukwa and Iringa regions in Tanzania rely on fuelwood as the main source of energy for cooking and water heating purposes using inefficient traditional stoves resulting in various environmental and health problems. For example, it is estimated that a typical school using inefficient traditional stove consumes about 30 tonnes of fuelwood per month (or 270 tones/year), and thus, under conditions of unsustainable harvesting, would potentially clear approximately 3 hectares of forest cover annually

The proposed CDM project plans to distribute not less than 250,000 Improved Cooking Stoves (ICS) in a 10-year crediting period to various institutions and households located in Mbeya, Rukwa and Iringa regions. Initially, the project will focus on schools, colleges, households and prisons and then will be extended to cover the hospitals and hotels depending on the demand. The project will be implemented as a bundled CDM project, thus the project boundary will be these three regions.

Practically, the proposed stove technology was adopted from the tradition three stones model currently used in most part of Tanzania. In order to implement the project in Southern Highland regions key technical modifications has been made to a three stone model to address space heating requirements by improving its efficiency. The technology will be promoted through training of local manufactures and public awareness education to the institutions. In addition, there will be a regular monitoring and evaluation of the installed ICS to ensure their sustainability.

During the first phase of the project, 80 schools (primary and secondary schools), 5 colleges, 150,000 households and 2 prisons will be involved by installing approximately 150,275 ICS. The size of the stoves will be increased depending on the user's requirements. Basically, larger stove sizes will be installed in prisons, colleges, hotels, hospital and schools and smaller sizes in households. The number of stoves will be increased up to 250,000 in the second phase of the project depending on the availability of additional funding from the project sponsors and the demand for the stoves by the institutions and the households.

The proposed CDM project will have huge sustainable development impacts on the communities in the project boundary. Apart from reducing emissions of GHGs resulted from the use of inefficient traditional stoves, the project will reduce expenditure on fuelwood of about Tanzanian shillings 400 - 600USD per institution per year – this corresponds to 50% reduction in fuelwood consumption per institution per year. It is expected that during the project's crediting period, most of the targeted institutions will be self-sufficient in renewable biomass energy.

When all 250,000 stoves are installed, the project is expected to reduce the GHG emissions amounting to 382,000tCO_2 - equivalent during a 10-year crediting period or 38,200 tCO_2 - equivalent per year.

B.3 **Technology to be employed**

The ICS is a modified form of the traditional three stones stove model that is efficient and consumes less firewood. This type of stove is made with mud bricks and manufactured locally by local manufacturers using local equipments. Practically, the stove consumes about 50% less firewood compared to the traditional three stones stove. The chimney at the top allows smoke to go out of the

kitchen thus providing a better kitchen environment.

This type of stove is similar to the Indian/Nepalese efficient cooking stove famously known as "Megan Chula" but it has been slightly modified to meet local needs and also the availability of equipments – sandy for muddy making.

Basically, the stove is made from pottery and is surrounded with mud when installed. The sizes differ but a typical small size stove is approximately 70cm x 35cm x 20cm, this size doubles in the case of larger sizes stoves. A small-sized stove weighs 10kg and the bigger size can reach up to 25kg. The mud surround may weigh up to 60kg. There are two pot-holes on household models. The chimneys are either made of 30 cm long, 10 cm diameter pottery sections or asbestos cement pipe with cap. There is a sheet-metal grate but there is no door or dampers and a baffle beneath the second pot-hole.

The stove is complex and its construction requires considerable pottery skills. Normally, the clay mixing and processing is carried out meticulously. The raw clay is dug from near-by tanks and allowed to dry in the sun. This is later crushed and mixed with water in purpose-built tanks to form slurry, which is allowed to settle so that the sand and stones may separate from the clay. The clay is then scooped out of the tank and mixed with finer sand in an adjoining tank. Then, the slurry is removed and placed on to hessian cloth to dry out to a plastic-type consistency. Before forming, the clay is extensively wedged, using a traditional technique with the feet.

All the stove components are thrown on potters' wheels with the help of measuring sticks to check the diameters and heights of cylinders. The next day that the component cylinders are joined together using a slip. Where components are prone to slumping they are supported underneath with bricks and the drying process take about a week during which time shrinking causes many cracks. These are filled with a special paste made up of slip and paper, to form a type of papier mache with clay. After further drying the stoves are fired in an open bonfire using firewood as fuel.

Normally, stove's installation takes approximately one hour, after which it is placed on the flat ground. Fired bricks are then built up in a rectangle around the stove, using mud and sand as mortar. The gaps around the stove are then filled in with sand. The mud and sand mixture is then used to render over the bricks and across the top of the stove in order to avoid the blockage of the primary air and fuel entrances. The same mixture is also used to build up the baffle inside the second pot position.

The stove's chimney consists of pottery tubes with a cap at one end so that it makes fitting easier. They are joined together and to the stove with sand and cement mixture. The number of chimney sections required often depends on the position of the roof but normally a minimum of eight is used. The chimney is then taken through the roof of the building. The gap between the roof and chimney is filled properly with sand and cement to avoid water leakage. Finally a cap is fitted to the chimney to reduce the effect from down drafts caused by wind turbulence.

Type of project	
B.4 Greenhouse gases targeted	Carbon dioxide (CO_2)
B.5 Type of activities	Energy Efficiency Improvement
B.6 Field of activities (*Select code(s) of project category(ies) from the list in Annex 1*)	Demand-side energy efficiency programs for specific technologies (Type II. G)
Location of the project	
B.7 Country	United Republic of Tanzania

B.8 Nearest city	Ruvuma, Morogoro and Tabora
B.9 Precise location. For multiple sites, include a list in Annex 6 (*Include latitude and longitude if known*).	Project location is in Southern Highland of Tanzania, in three regions namely Mbeya, Iringa and Rukwa. Mbeya: Lat. 8° 0' 0" S, Long. 33° 30' 0" E Iringa: Lat. 9o 0' 0" S, Long. 35° 0' 0" E Rukwa: Lat. 7o 0' 0" S, Long. 31° 30' 0" E
Expected schedule	
B.10 Earliest project start date *(Year in which the project will be operational).*	January 2010
B.11 Estimate of time required before becoming operational after approval of the CFD	Time required for financial commitments: 6 months Time required for legal matters: 3 months Time required for negotiations: 3 months Time required for establishment: 18 months
B.12 Year of the first expected CER/ERU/lCER/tCER/RMU/VER delivery.	2012
B.13 Project lifetime *(Number of years).*	20 years
B.14 Current status of the acceptance of the project by the Host Country	The DNA Office has guaranteed issuance of a letter of No Objection upon submission of this PIN.
B.15 Position of the Host Country on the project	The project fulfils the national sustainable development requirements, thus the DNA Office has guaranteed the approval of the project upon submission of the PDD.
B.16 Position of the Host Country with regard to the Kyoto Protocol *(choose one)*	Tanzania has signed and ratified the Kyoto Protocol

C. Avoided / reduced GHG emissions

C.1 **Selected Crediting Period**	10 - year non-renewable crediting period
C.2 **Estimated Avoidance/Reduction of emissions in accordance with the Kyoto Protocol**	
▫ Carbon Dioxide(CO_2)	38,200 tCO_2 - equivalent per year
▫ Methane (CH_4)	N/A
▫ Nitrous Oxide (N_2O)	N/A
▫ Hydrofluorocarbons (HFCs)	N/A
▫ Perfluorocarbons (PFCs)	N/A

▫ Sulphur Hexafluoride SF_6	N/A

Reference Scenario or Baseline

C.3 **Baseline Methodology to be used**

The proposed small scale project will use the baseline methodology, **TYPE II - Energy Efficiency Improvement Projects (Type II.G. Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass Technology/measure) -** This category comprises small appliances involving the efficiency improvements in the thermal applications of non-renewable biomass. Examples of these technologies and measures include the introduction of high efficiency biomass fired cooking stoves or ovens or dryers and/or improvement of energy efficiency of existing biomass fired cook stoves or ovens or dryers

C.4 **What modifications the project would induce?**

The project would enhance sustainable use of forest due to reduction in the use of firewood as fuel in cooking in institutions in the Southern Highland regions of Tanzania. As a result the project would reduce emissions of CO_2 resulting from the use of inefficient traditional three stones cooking stoves by replacing them with more efficient stoves. In general, the project would completely modify the cooking habits through the technology that is friendly to the environment and human health.

C.5 **What would be the situation in the absence of the project activity?**

In the absence of the project, the institutions will continue to use traditional three stones stoves, which are inefficient and consume much firewood. As a result the destruction of forests will continue and emissions of CO2 will continue "business as usual" scenario.

Expected Emission Reductions during the Crediting Period

C.6 **Total Certified Emission Reductions per year**

38,200 tCO_2 equivalent per year.

C.7 **Total Certified Emission Reductions for the crediting period**:

382,000 tCO_2 equivalent for 10 years

D. Financial aspects

Project costs:	
D.1 Preparation costs (*feasibility studies, monitoring plan, PDD, etc.)*	US$ 0.2 M
D.2 Establishment costs	US$ 0.8 M
D.3 Operating costs	US$ 1.0 M
D.4 Other costs *(explain)*	US$ 0.1 M

D.5 Total project costs	US$ 2.1 M
Sources of finance to be sought or already identified	
D.6 Equity *(Include names)*	US$ … M
D.7 Debt – Long-term *(Include names of lenders*	US$ … M
D.8 Debt – Short term *(Include names of lenders)*	US$ … M
D.9 Not identified	US$ … M
D.10 Sources of carbon finance *(Has this project been submitted to other carbon buyers? If so, say which ones?)*	No
D.11 Indicative CER price	US$ 15
D.12 Emission Reductions Value *(= price per tCO_2e * number of tCO_2e)*	US$ 0.573 M per year US$ 5.73 M for 10 years

E. Expected environmental and social benefits and risks

Specific global & local environmental benefits	*(In total about ¼ page)*
E.1 Which guidelines will be applied?	Tanzania environmental and social guidelines for sustainable development as identified in the CDM national investor's Guide of 2004
E.2 Local benefits	- Contribution to improved health of the rural population, especially women and children by decreasing indoor air pollution and the risk of smoke induced diseases. - Reduce pressure on forests through reduced firewood consumption.
E.3 Global benefits	Globally, the project will contribute in preventing the anthropogenic GHG emissions by reducing emissions of CH_4 from burning of biomass in cooking in institutions.
E.4 Socio-economic aspects What social and economic effects can be attributed to the project and which would not have occurred in a comparable situation without that project? Explain the relationship between the project and the benefiting community.	- Substantial reduction of indoor air pollution in kitchens, faster cooking time, better hygienic standards and an improvement in the overall working and learning environment. - Trained local promoters will have income generating opportunities - The project will provide income generating opportunities for local people since improved cooking stoves are made by locally trained promoters.
E.5 Which guidelines will be applied?	Tanzania environmental and social guidelines for sustainable development as identified in the CDM national investor's Guide of 2004
E.6 What are the possible direct effects (e.g., employment creation, capital required, foreign exchange effects)?	Creation of new employments to local stoves manufactures and therefore enhancement of the income level within the community.

E.7 What are the possible other effects? For example: - training/education associated with the introduction of new processes, technologies and products and/or - the effects of a project on other industries	Training is provided to a large number of local promoters, and women to construct stoves. This creates an opportunity for institutions to get knowledge and local women to be self employed and also ensures that the stoves will be maintained and rebuilt in the future.
E.8 Environmental strategy/ priorities of the Host Country	Tanzania prioritizes environmental protection and its well-being. The sustainable use of biomass resources will contribute to a sustainable environmental and eventually help the country in achieving the sustainable development.

F. Risks

Risks in the Project	Please describe the factors that may cause delays in, or prevent implementation of the project
Estimate the Degree of Risk	
F.1 Technical risk	Low technical risk since the technology to be employed has been tested in a pilot cases in the project areas. In addition, any technological modifications to be introduced will be proven accordingly before being implemented.
F.2 Timing risk	High timing risk since project implementation depends very much on the finalization of the CDM legal processes and also the availability of fund. All of which have not happened yet.
F.3 Budget risk	High budget risk as the project implementation costs may have been underestimated.

G. Other Relevant Information

Please mention any additional information or precisions to justify the project under CDM -