

# VALIDATION OF A PROJECT CONCEPT PROPOSAL

**Project Name:** Households Efficient Stone Made Woodstoves in Northern part of Kilimanjaro, Tanzania

**Submitting organisation:** TaTEDO

Having read the document and examined calculations, I hereby submit my comments on the project concept note. My comments are divided in two parts: part A contains general comments on whole document, part B contains specific comments for individual sections.

## A: GENERAL COMMENTS

- The proposal is a viable one and if implemented will result in emission reduction of greenhouse gases, particularly CO<sub>2</sub>;
- Section 1.2: **Background of the project area** needs a major improvement as indicated in part B below;
- Section 2: **Project description** needs improvement. In fact section 5 could be part of section 2. For specific comments see part B below;
- The following Proposed project activities: Feasibility study, CDM process and Project monitoring and quality management are not detailed in the main text. The activities are very important; Feasibility study will indicate if the project is feasible before spending much money and Project monitoring and quality management will ensure all activities are executed as planned.
- A section on risk which could be a part of feasibility study will be useful; OK
- Emission calculations should be revised; estimated CO<sub>2</sub> emission reduction is on the high side. Suggested new calculations are shown in part B below; OK
- Budget should include a feasibility study item; see above
- It is not clear how loan and payment arrangement (in section 10) will work, especially with financial institutions of Tanzania who always ask for collateral before offering a loan; OK
- The proposal should have a tentative time-frame for implementation of activities; OK
- The project plans to use CDM (Hivos Climate Fund money) money as a revolving fund. It should be indicated in the proposal if such project can be funded through a CDM process, and give an estimate for the amount of money that can be realised through CDM and decide whether such amount is enough to be used as a revolving fund; The money that will be received is approximately € 8.70/ton CO<sub>2</sub>e
- Tables are not referred to in the text.

**Opmerking [h1]:** This a project for the voluntary market, for the Hivos Climate Fund, so the CDM process is not applicable here)

## **B: SPECIFIC COMMENTS**

### **Section 1.0: Project Objectives and Background**

#### **1.2 Background of the project area**

- Details do not point precisely to the project area. Description of the project area should begin with Tanzania followed by Kilimanjaro region, northern Kilimanjaro, districts, wards and villages; Could be, not necessary
- Two or three maps should be used to show the country and highlighted region, and within the region a section of the map should be extracted and expanded to show the exact location of the project area. Values of latitudes and longitudes bordering the project area will be useful; Could be, not necessary
- Figure 1 is not cited/mentioned anywhere in the section;

### **Section 2: Project description**

- The details of districts and villages should be moved to section 1.2.
- Technical description of the technology (efficient stoves) needs improvement. More details are needed to show why the stoves are efficient. Furthermore, if there are places where the stoves have been used before, they should be mentioned. Details in Section 5 should be improved and moved to this section. OK

#### **Other minor comments**

- **Para 1, Sentence 3:** “Design of the stoves will be adapted considering preferences ....” Is the design available or a project will come up with a new one? Also adapting the design in consideration of women is not clear enough, more information is needed to clarify what adaptation means; OK
- Caption “**Figure 2: Efficient stone made stove technology**” should be placed under the Figure, and a second caption without the word “Figure” under the Figure should be deleted.
- **Section 3.0: Calculations on amount of fuelwood served by proposed stoves**
- Values of household consumption of firewood using open fire place is within the range of literature values, **hence accepted**. Studies made in Brasil reports 2.53 kg/person/day and study in Nepal reports 0.8-2.6 kg/Capita/day. **NOTE**, Kilimanjaro has an average of 4.6 persons per household; OK
- The calorific value of firewood, 15 GJ/ton **is accepted**. It is below IPCC value of 15.5 GJ/ton for air dried wood.

### **Section 4: Emissions Calculations**

- **Para 1, Sentence 2 & 3:** Estimation of maximum emission for a small scale CDM project was estimated as 15 MWh and the amount used to estimate total number of stoves is based on Karatu stoves of 1.2 kW capacity. First, the MWh unit is used for electricity and cannot be used for fire wood. The minimum number of stoves should be estimated from 15 kton of CO<sub>2</sub> reduced; could be, not necessarily

- Mentioning Karatu stoves indicates project stoves will be the same or very similar to the Karatu ones. If so, please indicate in the text; OK

#### **4.1 Project Baseline**

The methodology selected is not clear, if it is a CDM approved methodology a methodology number should be mentioned. OK

The calculation results in higher emission reduction value. New Emission reduction calculations are suggested below:

#### **Assumptions**

The wood fuel is air dry with 20% moisture content, so the energy content is 15GJ/t.

$$\begin{aligned} \text{Daily fuel consumption per household is} &= 15\text{GJ/t} \times 7.89 \text{ kg} / 1000 \\ &= \mathbf{0.11835 \text{ GJ/household/day}} \end{aligned}$$

$$\begin{aligned} \text{The annual energy baseline will be} &= 0.11835 \text{ GJ/household/day} \times 365 \text{ days/year} \\ &= \mathbf{43.198 \text{ GJ/household/year}} \\ &= \mathbf{0.043 \text{ TJ/household/year}} \end{aligned}$$

#### **Greenhouse gas emissions by the baseline scenario**

##### **(a) Carbon dioxide**

CO<sub>2</sub> emission factor for wood is 78.4 ton of CO<sub>2</sub> per Tera Joule (IPCCC)

CO<sub>2</sub> Quantity (Tonnes) = annual fuel consumption (Tera Joules) x CO<sub>2</sub> emission factor

$$\begin{aligned} \text{CO}_2 \text{ Gas Quantity (Tonnes)} &= 0.043 \text{ TJ/household/year} \times 78.4 \text{ tCO}_2/\text{TJ} \\ &= \mathbf{3.384 \text{ tonne CO}_2/\text{household/year}} \end{aligned}$$

##### **(b) Methane and Nitrous**

- **Tera** is a prefix in the SI system of units denoting 10<sup>12</sup> and not 10<sup>6</sup> used in the calculation. This will make CH<sub>4</sub> and NO<sub>2</sub> negligible; OK
- Calculations should be repeated in a same way as for CO<sub>2</sub> above, using appropriate emission factor; OK
- New emission values should replace old values in Table 1. OK

#### **4.2 Emission under project activity**

- Useful energy extracted using 60% efficient stoves is 4 times the useful energy extracted using 15% efficient. Therefore, firewood needed is  $7.89/4 = 2 \text{ kg}$  per household; OK
- The baseline is what is happening now and not what will be after installing efficient stoves. “The annual energy baseline will be” should be changed to “Emission under project activity will be” OK

Therefore,

$$\begin{aligned} \text{O}_2 \text{ Gas Quantity (Tonnes)} &= 3.384 \text{ tonne CO}_2/\text{household/year} /4 \\ &= \underline{\underline{0.85 \text{ tonne CO}_2/\text{household/year}}} \end{aligned}$$

#### ***4.3. Avoided emission due to the project activity***

$$\begin{aligned} \text{Avoided emission} &= \text{Baseline emission (Traditional three stone)} - \text{Emission under} \\ &\quad \text{project activity} \\ &= 3.384 - 0.85 = \underline{\underline{2.53 \text{ tonne CO}_2/\text{household/year} \text{ OK}}} \end{aligned}$$

From here, the number of stoves for small CDM project can be estimated as

$$15,000 \text{ t CO}_2/2.53 = \underline{\underline{5,919 \text{ stoves}}}$$

**Prepared by Dr. Oscar Kibazohi**