

**UNITE for the Environment**  
**2<sup>nd</sup> Term Training Fuel-efficient stoves**  
**Primary Five to Senior Six**  
**9<sup>th</sup> to 10<sup>th</sup> July 2016**

**Objectives of the training**

- To report out on the progress made in the fuel-efficient stove project
- To identify challenges encountered in the building of stoves and how they can be addressed
- To establish ways of integrating fuel efficient stoves in the classroom lessons

**Part 1: Reporting out**

**Procedure**

1. At the beginning of 2<sup>nd</sup> term, give each school a report out form and ask them to identify one person to present on their behalf at the training
2. Allocate each school representative 20 minutes to present and 5 minutes for questions and answers
3. After all schools have reported out, discuss the reports as stakeholders to address challenges encountered in the project implementation

**Name of the school**.....

1. Number of stoves built so far. ....

2. Average duration of the stove building activity .....

3. How many people were involved in the stove building activity? .....

4. Names of people involved in the stove building activity?

.....  
.....  
.....

5. Materials used in the stove construction .....

.....

6. Four major challenges encountered during the activity

a) .....

b) .....

c) .....

d) .....

7. Four major strong areas in building the stove

a) .....

b) .....

c) .....

d) .....

8. Number of stoves in use so far

.....

9. How many stoves do you intend to build in the community by the end of 2016? .....

10. What criteria are you following to select the homes where these stoves will be built?

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.....

.....

11. Which major four stakeholders are you planning to involve in implementing fuel-efficient stoves in the communities and what are the roles of each stakeholder?

Stake holder	Roles

13. How many tree seeds/seedlings did you ask for? .....

14. How many did you actually receive? .....

15. What is the success rate so far? .....

16. Do you need any more support in implementing the project?

Yes

No

17. If yes, what type of support do you need? .....

## Part 2: Preventative maintenance of Fuel efficient stoves (Rocket-Lorena stove)

It is important to note that maintaining a fuel-efficient stove is difficult. However if well built and used, a Rocket Lorena stove can last for 10 years or more.

To have a long lasting and efficient stove the following is important;

### When building

1. The materials used should be well mixed. The ratio of grass to soil should be 1:1, the soil should be fine and the mixture should not be too soft. The better the mixture the longer the stove will last.
2. The stove should have some substantial thickness especially the tunnel that connects the main cooking point to the subsidiary cooking point. The thickness around the chimney should also be strong enough to prevent the chimney from falling off. This also minimizes the chances of causing fire outbreak that might originate from the chimney area
3. The chimney should be in a corner position to gain some support. However the chimney should not touch the wall as this may burn the kitchen. Therefore ensure that it is given enough thickness.
4. It is important to scrape the wall such that mixed material gets attached to the kitchen wall. If the stove dries, most chimneys will get detached from the wall, ensure that the chimney is again fixed to the wall using sand and cow dung before using the stove.
5. The main saucepan supports should be re-enforced with iron bars to prevent the supports from getting spoilt in a short time. These iron bars should be covered with a thick mixture of materials used to build the stove to reduce wear on the saucepans. Note that the more mixture you use to cover the iron bars the longer the saucepan seats will last. It is also important to have most of the saucepan submerged in the cooking seat (Only less than 5 cms should extend out) to maximize heat transfer.
6. Ensure that there is space behind the sauce pan supports i.e the sauce pan supports should not be touching the stove body from behind because this will prevent the heat from circulating around the first sauce pan and hence prevent it from going to the second cooking point.
7. During construction, the fire wood shelf is made in more or less of a semi circular shape; this should be adjusted into a rectangular shape when you are removing the stems. If you leave it in a semi circular shape it will not take in enough firewood to generate the

- necessary heat. The firewood shelf should extend slightly outside to hold the burning firewood firmly.
8. The air passage's base should be slightly higher than the firewood shelf. This will prevent it from clogging with ash.
  9. The vertical hot air chamber should be open wide towards the first saucepan seats. This should be done when you are removing the banana stems.
  10. Removing the banana stems and all adjustments should be done during the second week and ensure that the stove is smoothened using a wet banana stem to avoid

### **During Usage**

1. Ensure that the stove is thoroughly dry before starting to use it. This will not only reduce on the risk of cracks but will also improve its effectiveness. Stoves built in mud kitchens tend to dry between three to four weeks while those built in cemented kitchens can take four to 5 weeks. To fasten the drying process, after removing banana stems, pour ash in the saucepan seats once in a while before using it.
2. When cleaning, the stove should not be in use and should be cold. Cleaning the stove when it is still hot will weaken it and hence reduce its life span. The outer surface should be cleaned atleast twice a week to remove the dust
3. Sweep out the soot and ash from the saucepan seats at least twice a week. This will reduce clogging and increase effectiveness of the stove. This should be done atleast twice a week
4. Twice in a month, clean the chimney. Bend a banana leaf mid rib at many points along its length to make it soft and insert it into the chimney from the top (outside the kitchen). Push it down the chimney and lift it out several times. This will remove the soot from the chimney. Collect the soot from the bottom of the chimney through the second pot seat and remove it from the stove.
5. It is advisable to perform regular stove inspection to identify faults and provide the necessary remedy to check further damage. In case the stove develops small cracks, immediately mix the cow dung with sand and fix the cracks before they enlarge.

## Part Three (Lesson Development)

### Background

Often times during classroom observations, it has been noted that some teachers either find it hard to integrate most conservation topics with ease while others in a bid to integrate conservation in the lesson divert from the topic they intend to teach.

This therefore is to find ways how teachers can integrate conservation education activities in lessons with ease while not diverting from the curriculum topic

### Procedure

1. Discuss with the teachers the main components of a lesson plan and together agree on the best design/format.
2. Divide teachers in groups of 5 and allocate each group a subject, topic and sub topic.
3. Allocate each group 40 minutes to develop a lesson plan that is in line with the given subject, class, topic and sub topic in the text book
4. In the lesson plan developed, each group should be able to share in summary how they can deliver the lesson in 40 minutes while integrating information about fuel-efficient stove.
5. Depending on time, have some groups present
6. Allow 5 minutes for comments and questions from other teachers

### Identified areas for integration (Primary Five to Primary Seven)

<b>Group 1 Primary 5</b> Subject: Science Topic: Energy	<b>Group 5: Primary 5</b> Subject: English Topic: Recording information
<b>Group 2: Primary 7</b> Subject: science Topic: Energy sources in the environment	<b>Group 6: Primary 6</b> Subject: Social Studies Topic: Major resources in East Africa
<b>Group 3: Primary 6</b> Subject: Mathematics Topic: Length mass and capacity	<b>Group 5: Senior Four</b> Topic: Statistics
<b>Group 4: Primary 6</b> Subject: Science Topic: Respiratory System	