

MANUAL FOR Rocket Stove Trainers

incorporating
Construction Training and
User Instruction Training



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Development in Agriculture (PSDA)

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The PSDA Stoves Programme is supported by



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About the PSDA

Promotion of Private Sector Development in Agriculture (PSDA) is a bilateral technical cooperation programme jointly implemented by the German Agency for International Cooperation (GIZ), on behalf of the Government of Germany, and the Ministry of Agriculture on behalf of the Government of Kenya. PSDA works closely with the other productive sector ministries, mainly the Ministry of Livestock Development, Ministry of Fisheries Development and the Ministry of Cooperatives Development and Marketing. The programme started in October 2003 and is expected to run for 12 years. It covers high and medium potential areas, with high population density and high levels of poverty.

The programme supports small and medium-scale enterprises in selected value chains in agriculture to increasingly use their market chances under an optimal farm economic and environmentally-friendly production method as well as improved framework conditions. One component of the programme additionally promotes resource-friendly technologies such as biogas plants and fuel-efficient cook stoves.

The PSDA Stoves Programme

The PSDA stoves project aims at marketing improved stoves as a commercial product. This is being addressed through capacity building of stove builders on stove building technology, business skills and organisational development, for which this training manual has been developed.

Since the project began in 2006, over one million energy-saving stoves have been marketed and installed, leading to annual firewood savings equivalent to over 50,000 ha. of forest, and creating over 5,000 new jobs.

About the manual

This manual gives experienced stove builders the tools and knowledge they need to teach others how to construct and market the rocket stove. The content and procedures are based on extensive field experience during the project's 3-year rocket stove promotion in Kenya and Tanzania.

The training is designed for implementation in 3 parts, with intervals between each part for the trainees to practise their skills before moving to the next stage.

Part A:

The first stage is purely technical training of 8 days on how to build a rocket stove. There are 6 training modules, A-1 to A-6, each an independent training session on the theory and construction of stoves. These should be implemented in the order shown in this manual. Each module begins with a brief overview giving targets, challenges, time frame, group size and materials needed. The focus is more on the teaching method than the content, since the content is the construction of the stove, with which trainers are already familiar. For consistency of building technique, a construction manual with illustrations is provided separately and this should be distributed to all trainees.

Part B:

After a break of 2 – 3 weeks, the second stage of training takes place, covering user instruction lessons with both theory and fieldwork. During the weeks in between, the trainees are expected to build a few stoves, which will be inspected during the second part of training. This gives the trainees an opportunity to practise and perfect their stove-building skills and any problems they have can be addressed during this stage.

Business skills:

After another 3 – 4 months, the one-week (5 days) business training module takes place. The basics of this training module are included as suggested background reading for stove trainers.

Note: Monitoring and networking among newly-trained stove builders play an important role in keeping construction standards high and thereby ensuring a growing market of satisfied customers. Suggestions for setting up monitoring networks are included as part of the training.

Selection of participants

Selection criteria for trainees

The pre-selection of trainees is one of the most important factors for a successful stove programme. Careful selection criteria will increase the likelihood that many trainees are keen on starting their own business after the training and not wait to be employed. However local circumstances should be considered when deciding on criteria.

Technical abilities/skills

In general, people who already work in a similar or related field (where possible) are more suitable than people without any technical knowledge or skills. Masons, bricklayers or other artisans are preferred while most farmers and women normally do not have this specific experience. However, motivation is also important. Experience has shown that people with no previous skills but who are willing to learn can also succeed.

Motivation-selection interviews

Selection interviews to determine the trainees' motivation is one of the most powerful tools for pre-selection. It is recommended that you have many applicants to select from, to keep the trainee quality high.

During each interview, focus on the trainee's expectations and plans for after the training. This is to verify that he is really motivated to start a business and not just curious about the technology. A sample questionnaire is found in Annex 1 on page 31.

Training principles

This part gives the trainers some basic organisational and teaching principles for the training which should be followed.

Number of trainers

This is a “hands on” training course conducted with groups of trainees working in different locations. Because it is not possible for one trainer to closely supervise all groups, 4 trainers work together to conduct each training course. One trainer should supervise no more than 10 participants. A typical course has 40 participants.

Formation of groups

During module 5, the trainer has to divide the class into smaller groups. The following aspects should be considered:

- Mix experienced and inexperienced trainees during construction of stoves.
- Mix men and women, since both genders focus on different details.
- People who might work together should be in one group, if possible.
- When working several days in small groups, mix the groups for each session. This way you can ensure that all trainees reach a common level of understanding.

Feedback and daily closing

To ensure that all trainees fulfil the targets of each module, a daily feedback session is recommended where trainees have an opportunity to discuss the difficulties and successes of the day and plan for the next day. Each trainer holds a closing session with his or her group of trainees.

Feedback sessions should include the following issues:

- Check that the trainees understand everything and how far the targets of the module were reached. Questions raised that will not be covered in any future module should be answered.
- Get some feedback concerning methods used. The trainees might have some ideas on how to restructure a particular module. It helps to constantly improve the training curriculum.

How to correct mistakes during field work

During field work mistakes happen quite frequently. The way these mistakes are corrected has an influence on how well the trainee remembers it.

It is important to discuss the mistake when the concerned person has finished their work to a certain level. At this point the person has the ability to step back and reflect on their work from a distance. ***If you interrupt somebody during the construction, they correct the mistake but do not really think about it.***

For brick laying, let the trainees finish one layer of bricks, after which they have to look at their work and reflect on their achievement. Ask questions so that they discover mistakes by themselves. If not, the trainer has to point out the mistake and discuss how it can be corrected. The trainee should make the correction before proceeding to the next stage.

Compulsory attendance and punctuality

It is a precondition for trainees to attend every session. This will enable them to understand fully all the necessary details for construction of the stove. To minimise a situation where people drop out half way, it is necessary to emphasise at the opening of the training course that full attendance and punctuality are expected and rules should be set and agreed upon.

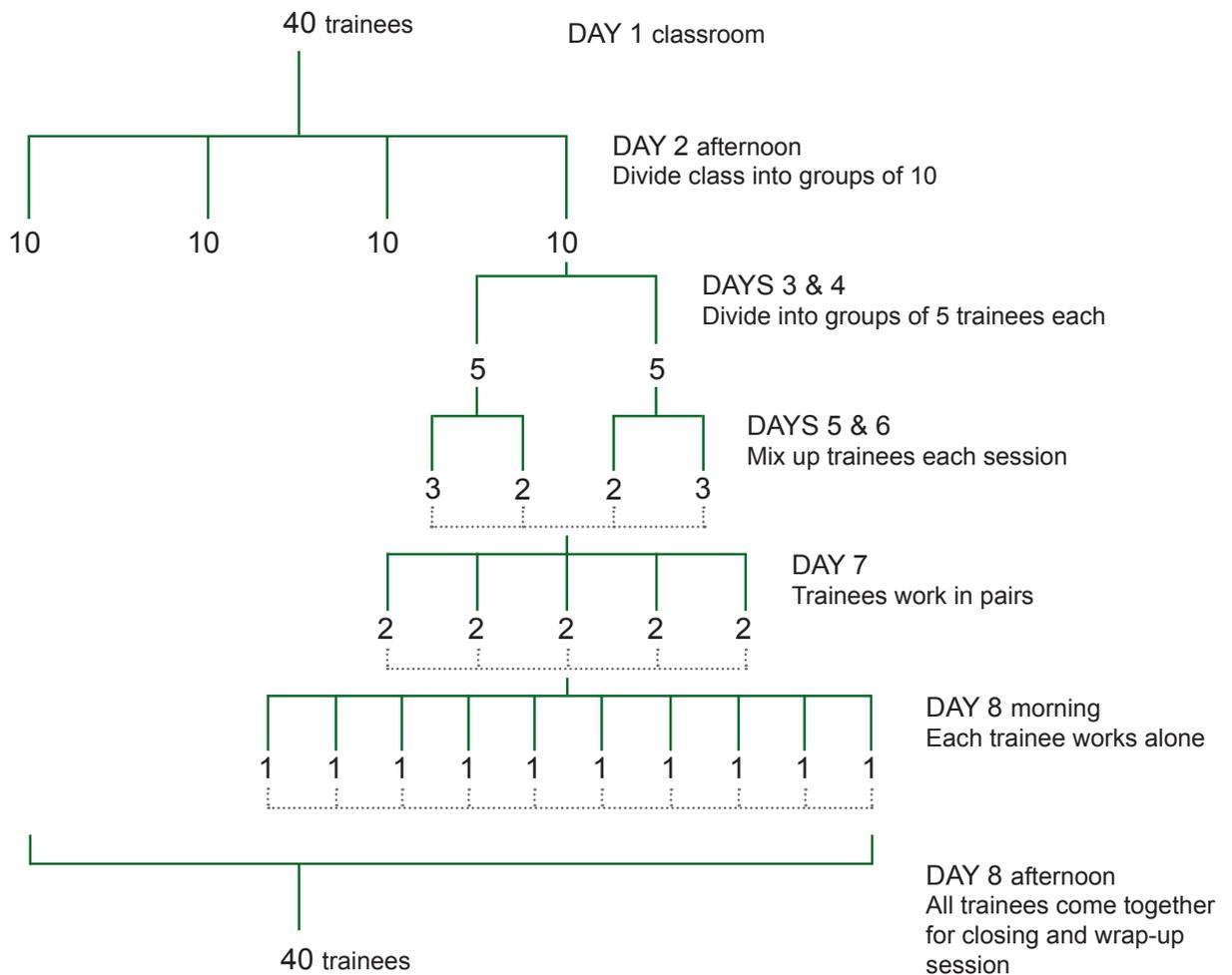
It is recommended to keep a daily attendance list.

Timetable for Part A Training Modules 1 – 6

DAYS	TIME	ACTIVITY	VENUE	KEY ACTORS
Day 1	8.30 - 10.00	Module A-1: Registration and general introduction followed by official opening	Classroom venue	1 supervisor 4 trainers 40 trainees
	10.00 - 10.30 am	Tea break		
	10.30 am - 1.00 pm	Module A-2: What is a rocket stove? Comparison of 3-stone fire and a rocket stove		
	1.00 - 2.00 pm	Lunch break		
	2.00 - 4.00 pm	The rocket principle		
	4.00 - 4.30 pm	Tea break		
	4.30 - 5.30 pm	Lighting of pre-built stove and demonstration of principles		
Day 2	8.30 - 10.00 am	Module A-3: Demonstration of stove building	Classroom venue	1 supervisor 4 trainers 40 trainees
	10.00 -10.30 am	Tea break	Classroom venue	
	10.30 -1.00 pm	Module A-4: Introduction to the construction manual		
	1.00 - 2.00 pm	Lunch break	Selected households	
	2.00 - 4.00 pm	Module A-5: Construction in small groups*		
	4.00 - 4.30 pm	Tea break		
	4.30 - 5.30 pm	Continuation of construction in small groups		
Day 3 Day 4 Day 5 Day 6 Day 7	8.30 - 10.00 am	Module A-5: Construction in small groups		Selected households
	10.00 -10.30 am	Tea break		
	10.30 -1.00 pm	Construction in small groups		
	1.00 - 2.00 pm	Lunch break		
	2.00 - 4.00 pm	Construction in small groups		
	4.00 - 4.30 pm	Tea break		
	4.30 - 5.30 pm	Continuation of construction in small groups		
Day 8	8.00 am - 1.00 pm	Construction of own stove	Own household	1 supervisor 4 trainers 40 trainees
	2.00 pm - 5.00 pm	Module A-6: Closing session: Review of construction manual and way forward Closing remarks	Classroom venue	

* See next page for how to divide trainees into groups

How to divide trainees into groups



1. PART A

Training modules for stove construction

Module A-1 General introduction and opening

Module A-2 What is a rocket stove?

Module A-3 Demonstration of stove building

Module A-4 Introduction to the Builder's Manual

Module A-5 Construction in small groups

Module A-6 Closing session: Review the Builder's Manual
manual and chart the way forward

Module A-1

General introduction and opening



TARGET: The team of trainers introduce themselves, present the objectives of the seminar and set the organisational principles (registration, compulsory attendance, punctuality etc). All participants should introduce themselves by name and place.



CHALLENGES: The opening and organisational topics are straight-forward. It is important to have all the training materials at the venue in good time. The venue also has to be set up prior to the training. Make sure all participants know the starting time and the importance of being punctual.



TIME FRAME: 1.5 hours



GROUP SIZE: Max 40 trainees

MATERIALS: Flipchart, marker pen

OPENING

Details have to be determined for every training session. The following points should be included:

- Presentation of the organisation
- Introduction of the trainers
- Objective of the seminar and stove project

ORGANISATIONAL ISSUES

The following points should be covered:

- Registration
- Compulsory attendance
- Emphasise how important punctuality is
- Give an overview of how the training sessions are structured and agree on timing (start /finish) according to participants' need

(Official opening speeches follow)

Module A-2

What is a rocket stove?



TARGET: The trainees should understand what a rocket stove is and why the rocket stove is built as it is. By analysing the 3-stone fire and doing some experiments, they should conclude independently with the gained knowledge of basic stove design principles. The ready-laid stove can be fired during the afternoon tea break.



CHALLENGES: Analysing and doing the experiment is the easy part of this module. In many cases the transfer of the gained knowledge is the challenging part. To avoid problems, do the conclusion with the trainees together. Take care not to go too fast. After each transfer, ask questions to check whether the participants have understood.



TIME FRAME: 2.5 hours — What is a rocket stove / analysis of 3-stone fire
2 hours — The rocket principle
1 hour — Lighting and demonstration of the rocket stove



GROUP SIZE: Max 40 trainees

MATERIALS: Flipchart, marker pens, candles, matches, saucer, ready-laid stove with firewood

WHY DO WE BUILD A ROCKET STOVE?

Rocket stoves are a tool for improved cooking.

For the introduction first ask the trainees why they want to build improved stoves, aiming to get the answer: ***To improve cooking.***

Next, ask the trainees: ***What is cooking all about?***

Collect the answers and if necessary, help them get the intended answer.

Answer:

Cooking aims to prepare food. For the task of cooking you need

- 1) ingredients — vegetables, meat, spices, etc; and
- 2) heat — in most cases, from firewood or charcoal

Thus the task of cooking is about getting heat energy into the pot in the most efficient way to cook the food.

Analysis – the 3-stone fire

Ask the trainees what cooking with a 3-stone fire is like — draw a 3-stone fire so trainees try to visualise all the answers as shown below. Advantages and disadvantages should be identified.

Advantages:

- Free of cost
- Adjusts to any size of pot

Disadvantages:

- It produces a lot of smoke
- You need a lot of firewood
- You need a lot of time or money to get firewood
- Cooking is slow and time consuming
- It is dangerous for children playing close by
- It leads to environmental degradation and deforestation



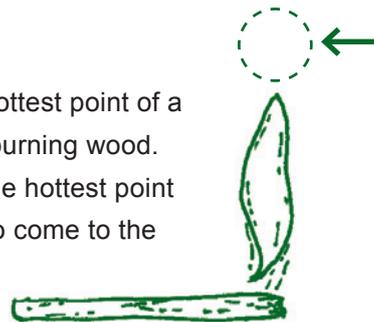
Ask the trainees — how shall we build a better cooking fire?

In order to build a better fire, trainees must know the properties of fire that are important for cooking. Demonstrate this with a series of 3 small experiments.

Experiment 1: The hottest part of a fire

This experiment shows the trainees where the hottest point of a fire is found. First the trainer draws a picture of burning wood. Every participant has to tick where he expects the hottest point is. Everybody who ticked at a wrong place has to come to the front and do the following experiment.

1. Light a match
2. Try to feel with your finger where the hottest point is
3. Describe your observation



➡ Over the flame is the hottest point of the fire

Compare to a 3-stone fire — the pot sits touching the flame, which is not the hottest part of the fire, therefore energy is being wasted.

Experiment 2: Why smoke develops

The following experiment has to be done by the trainer.

1. Light a candle
2. Hold a white saucer or plate slightly above the flame
3. Show the bottom of the plate — no soot, no smoke
4. Hold the saucer or plate in the flame — black spot of soot



Smoke develops when the flame does not have enough air or oxygen to burn properly

Compare to a 3-stone fire — it produces a lot of smoke and pots turn black.

Experiment 3: Firewood position

This experiment shows the importance of a good air supply.

1. Light a match
2. Wait a second or two until the flame is quite big
3. Lay the match slowly in the saucer (the flame will go out)



A flame needs access to a steady air supply

Compare to a 3-stone fire — firewood lying flat on the floor lacks air so it does not burn well, therefore more firewood is needed.

Knowledge transfer of basic design principles

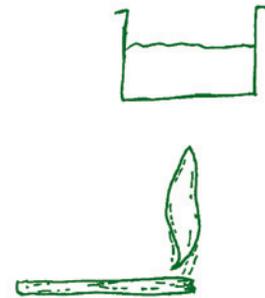
Step by step the trainer helps the trainees to transfer their knowledge. Together the class will try and develop a new stove that is better than the 3-stone fire, considering the above experiments.

Step by step the trainer asks the participants for the suitable conclusion of an experiment/ analysis of the 3-stone fire and then transfers the knowledge to develop a better type of stove. This has the advantage of making the trainees recall the experiments. The trainer helps them to visualise by drawing a picture and then modifying it as shown on the next page.

Draw the first picture as in step 1 and then add to the picture step by step until your picture looks like step 6. The added parts in each step are marked here in green. Practise the drawings until you can do them comfortably — the steps are more important than your drawing ability!

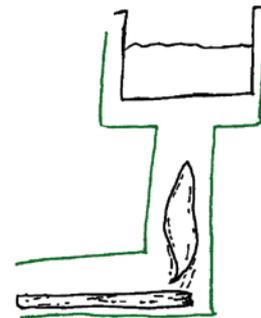
Step 1: In **experiment 1** we learned that the hottest point of a flame is well above the visible flame. In **experiment 2** we learned that if the flame has not enough space, smoke develops. Thus we must put the pot at a certain height above the flame.

(Draw the burning wood and the pot)



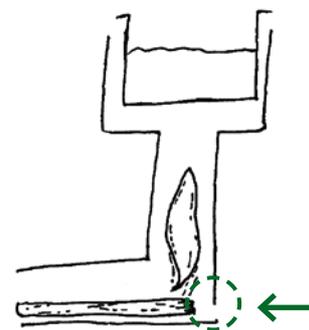
Step 2: If you cook with a 3-stone fire, you lose heat (energy) to the air, the stones and the floor. Thus we need walls around the fire and the pot to retain the heat, and protect the flame from wind.

(Draw the walls)

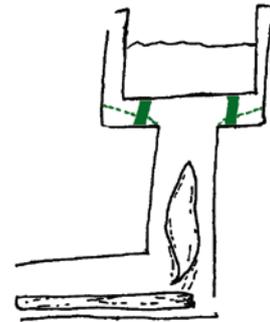


Step 3: **Experiment 3** showed us that the flame dies when you put the match down. Thus we need to bring air to the firewood so it can burn properly. The air inlet on the back wall does this job for us.

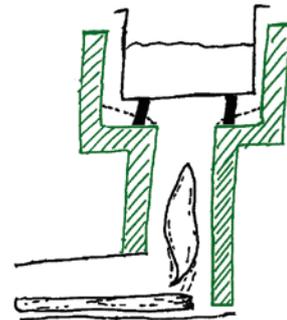
(Erase part of the back wall to show where the air inlet is placed)



Step 4: Between the stove and the pot there must be a small gap (1-1.5 cm) for the hot air to rise. Three pot rests will be fixed on which the pot will stand.
(Draw the pot rests)

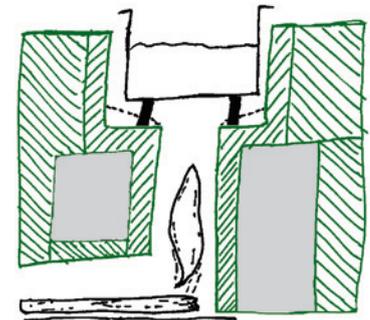


Step 5: The inner wall will be built of bricks.
(Draw and colour the inner wall)



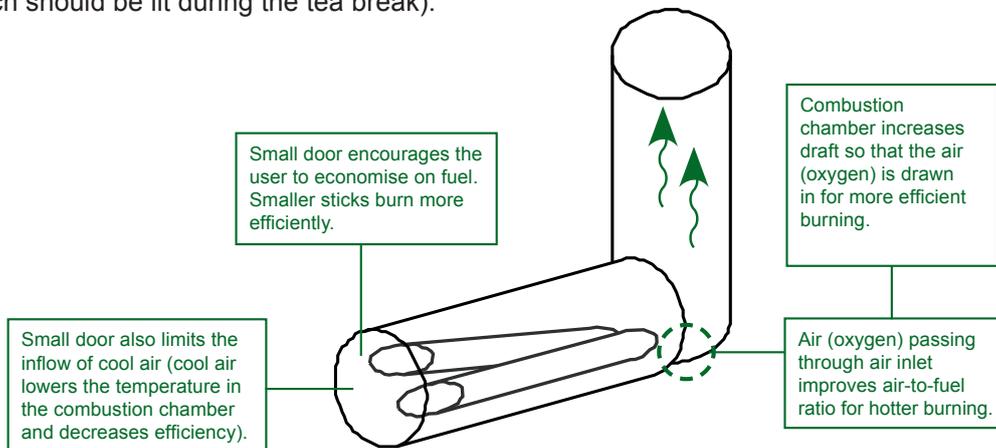
Step 6: The inner wall will be supported by outer walls which will be built of bricks as well.
(Draw and colour the outer walls)

The grey space in between is air. Air does not become hot (good insulation). Thus more heat goes into the pot and the stove body stays cool.



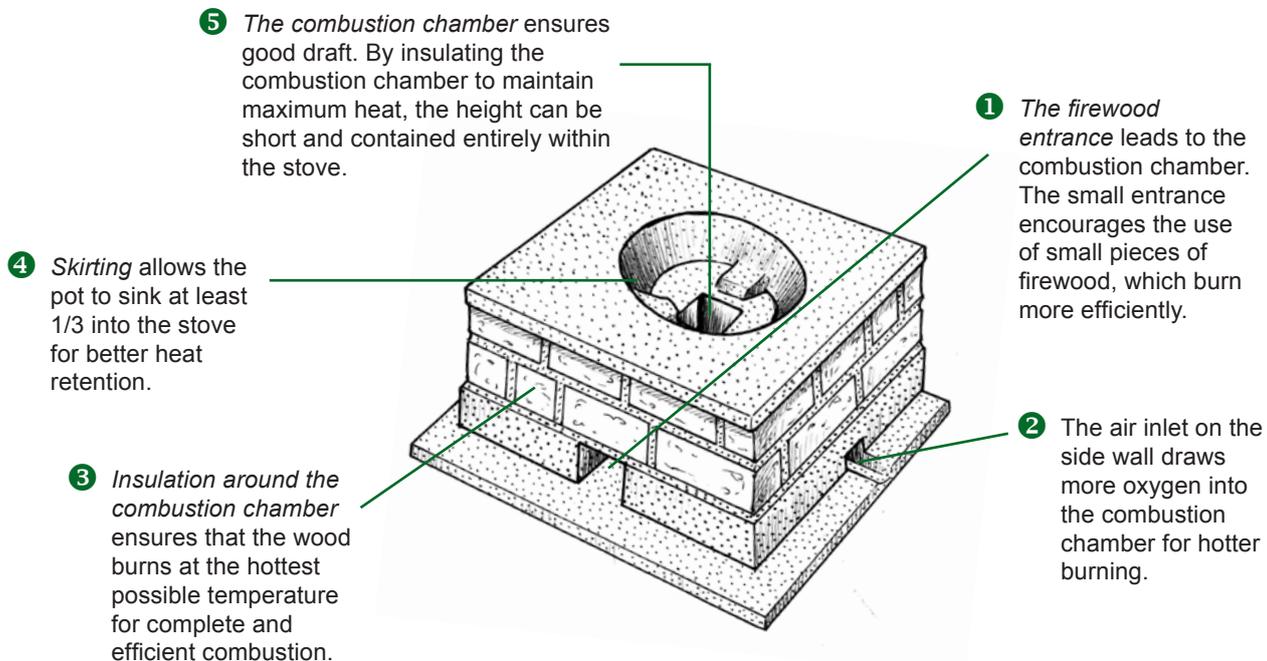
The rocket principle

Explain the rocket principle and then show the correlating features on the laid stove (which should be lit during the tea break).



Parts of the rocket stove

Light the pre-built stove and point out how the rocket principle works in practice.



The combustion chamber of the rocket stove increases draft to enable almost complete burning, hence higher temperatures up to 600°C. This leads to faster cooking, with less firewood and less smoke.

Module A-3

Demonstration of stove building



TARGET: With the knowledge of basic principles, the trainees will learn how these are incorporated in the rocket stove design. By seeing how the stove is laid with bricks, the trainees will understand the basic design before they lay out the stove themselves.



CHALLENGES: This is the first time the trainees get in contact with the actual construction of the rocket stove so it is important not to rush. Take time for each layer. Make sure that everybody has understood the layer before continuing. Do not confuse them with technical details or measurements.



TIME FRAME: 1.5 hours



GROUP SIZE: All participants

MATERIALS: 80 bricks

METHOD

Before starting, make sure that there are enough bricks, enough space for this exercise and a good view of your model. Follow the steps in the construction manual and tell the trainees they will get their own copy later.

Show one step at a time how the stove is built. Keep in mind the following issues:

- At this stage, do not confuse the participants with too many details.
- Measurements are not yet considered in the construction.
- Show the basic layout by raising the combustion chamber and outside wall.
- Emphasize that the combustion chamber needs fire cement for mortar.
- Explain that standard size bricks should be used throughout, as it makes measuring easy.
- Do not build a foundation and do not use mortar.
- Do not cut bricks for the pot rests. Normal bricks are enough for demonstration. Mention that later on they will learn how to cut and fix the bricks properly.

Module A-4

Introduction to the Builder's Manual



TARGET: The participants now start to use the Builder's Manual as a guide for construction. To do this, they must understand the entire manual.

Hand out the Builder's Manuals, discuss the details step by step and clarify open questions.



CHALLENGES: The main challenge for this module is not to confuse the participants by telling them things that differ from the Builder's Manual.

Though they may be correct, it is not recommended. From this point on, the trainer should also refer to the Builder's Manual if questions arise.



TIME FRAME: 2.5 hours



GROUP SIZE: All participants

MATERIALS: 1 Builder's Manual per trainee

METHOD

Distribute the Builder's Manuals to the trainees and let them read it page by page. They need about 3 minutes to read and understand a page. Afterwards you go step by step through the content before proceeding to the next page. Ask for questions.

Module A-5

Construction in small groups



TARGET: This module continues for 5-1/2 days and by the end (day 8) each trainee should be able to construct the rocket stove on his own.

Construction takes place in private homes where owners wish to have the stove installed. Depending on the technical skill of each group of trainees, the trainer may need to spend extra time on the basic techniques of brick laying.



CHALLENGES: Ensure that every participant takes part. Often some people take a leadership role and others are thus excluded. One trainer takes care of 10 trainees, dividing them into smaller and smaller groups as training progresses (see chart on the next page). To give all groups adequate support, organise construction places close to each other. Be present when groups have to manage critical steps (air inlet, pot rests, etc).



TIME FRAME: 5.5 days



GROUP SIZE(S): See chart on the next page. One trainer per 10 trainees

MATERIALS: Materials should be ready in each location where stoves are to be built.

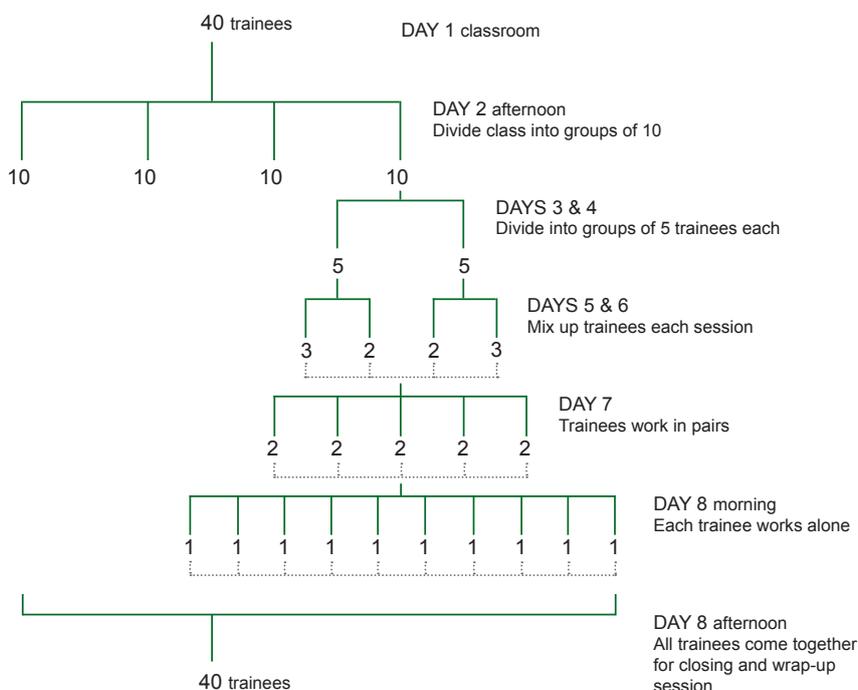
- For the cement stove: per group 80 bricks, 1/2 bag of cement, 1 bag of lime, sand, 2kg fire cement, water.
- For the clay stove: per group 80 bricks, 2 wheelbarrows clay or anthill soil, 2 wheelbarrows chopped dry grass or 1 wheelbarrow sawdust, water.

METHOD

While the content of this module is based on the construction manual, this is what the trainer should keep in mind while instructing:

- The trainees already know the basic stove layout, so focus now on construction fundamentals such as preparing mortar, using tools properly, and making the correct measurements.
- Make sure every trainee understands and masters the technical details e.g. making the air inlet, pot rests, etc.
- Groups should build as independently as possible. When asked, give support. Otherwise, correct the trainees only after they finish a layer.

- After each layer, make a short construction stop for the trainees to reflect on their work and sum up the important details.
- Remember to put away materials and clean up after construction each day. If necessary, extend the time.



DAILY CLOSING SESSION

At the end of each day doing construction in customers' homes, each trainer holds a closing session for their own group of 10 trainees.

Closing session exercise:

1. Each trainee should write down the personal challenges (most complicated and challenging steps) they faced during construction.
2. Each trainee should note how they can solve or manage the identified challenges and complicated steps.
3. All challenges and problems should be collected from the group. If questions show that something is unclear, answer the questions.

Day 7 closing:

At the last closing session before re-joining the main group, the trainer and trainees should agree when and where to hold Part B — user instruction training.

Note: If you intend to promote the rocket stove built with clay mortar, you should extend the training and do this module twice. The first time the trainees should build with cement, the second time with clay mortar.

Module A-6

Closing session: Review the Builder's Manual and chart the way forward

 **TARGET:** On the last afternoon, everyone meets back in the classroom to review the Builder's Manual and chart the way forward. The goal is to decide on a practical scheme for monitoring and networking, which should be worked out together with the trainees.



CHALLENGES: It can be quite tough to make decisions together in a group, especially concerning monitoring and networking. Present your proposal then ask for feedback on which things should be changed. Otherwise a lot of time is wasted and the outcome can be altogether unsatisfactory.

Due to cultural behaviour, it may be difficult to get realistic feedback on the seminar. Therefore each trainee should fill in a feedback form (see Annex 2) without giving their name. Thus you can consider all opinions and people are more willing to express their true opinion.



TIME FRAME: 3 hours



GROUP SIZE: All participants

MATERIAL: Construction manual, flip chart, marker pens

1. REVIEW THE BUILDER'S MANUAL

This is a repeat of the content of module 4, to ensure that all participants understand the theory as well as the practical aspects of building a stove.

2. THE WAY FORWARD — MONITORING AND NETWORKING

- a) Among the participants, identify the groups of people who will be building stoves together (based on locality). Each group elects a monitor as head of their group.
- b) Each group proposes someone as coordinator, and a vote is held. The coordinator liaises with the monitors.

- c) Now present the proposed monitoring system, and discuss it afterwards with the participants. For each group of trainees, you will have to adapt your system considering the expectations and abilities of the group.

An example of a monitoring system is discussed in the box below.

Suggested monitoring system

Once a month the coordinator conducts a meeting with all stove builders in the locality. During this meeting general issues are discussed e.g. setbacks and successes, the number of stoves built, planned promotion activities, etc.

Every stove builder has to deliver a monitoring sheet (Annex 4), where they fill in details of each stove they build and sell. Group monitors summarise the information and deliver a report to the coordinator at the monthly meeting. These monitoring sheets and a written report concerning general development of the stove project should be kept by the coordinator as records.

You should also decide how to carry out quality control. A sample checklist for quality control is included in Annex 4.

Networking

The issue of networking is a very variable topic, which should be decided independently by the stove builders or the project. The possibilities can vary between joint promotion to a group that build all stoves together.

Keeping standards high

To keep standards high, a stove builder should only receive a certificate *after* he has proven that he can build quality stoves on his own. He will also receive a special ID badge to prove that he is a certified stove builder. It is suggested that a builder must build a minimum of 100 stoves to qualify for a badge and a further 50 to get his certificate. The badge is renewed annually.

Feedback

To get accurate feedback on the proceeding of the seminar, it is recommended to use feedback forms (see Annex 2), which are filled by each trainee anonymously. Otherwise you will not get proper and realistic feedback, as trainees may be afraid of consequences.

2. PART B

Training module for user education

Module B-1 User education – Fieldwork

One day programme

Module B-2

User instruction – Fieldwork



TARGET: This fieldwork is carried out by each trainer with his/her group of 10 trainees. On completion of this module the trainees are able to instruct customers in their homes. They should be aware of the most common mistakes and challenges.



CHALLENGES: During field work it can be tough to assure that everyone listens and concentrates on the lesson. Make sure there is a concentrated atmosphere. During role plays and instruction, ensure that everyone participates, since in each group some members are over-motivated and thus shy people fear to come forward.



TIME FRAME: One full day



GROUP SIZE: Group of 10 trainees

MATERIALS: Flipchart, marker pens, user instruction sheet (annex 7) for each trainee

CONTENT

During the module you will visit some households where stoves were built during the first stage of training. The first user instruction should be done by the trainer as an example, while the trainees observe how it is done.

For training content, follow the information in the user instruction sheet in Annex 5. Remember to give the customer the sheet afterwards to keep.

You should also do role plays where trainees instruct another “user”. Afterwards problems, mistakes and positive aspects should be discussed together with the group.

NOTE: Depending on the number of stoves you can fire during this module, you have to calculate in advance how many proper instructions and role plays you need so that every trainee has instructed at least 1 other person.

3. BUSINESS SKILLS

Background reading for stove trainers

Stove trainers should be aware of the business environment in which stove builders operate, therefore it is recommended that they familiarise themselves with the contents of the business training course.

Business training is necessary because technicians who have been trained in building stoves often lack the skills needed to successfully start up and run a micro enterprise. The business training course takes 5 days and is usually carried out 3 – 4 months after the technical training, in order to be able to discuss concrete challenges experienced.



TARGET: The most important output of this training is a simple business plan in which each participant set a price for his services and notes down basic sales strategies for possible challenges, finally setting a target of how many stoves he/she is planning to build per month.

1. The entrepreneurial attitude



TARGET: Participants are aware of the advantages of self-employment, the meaning of entrepreneurship and the importance of becoming business-oriented technicians.

The trainer starts the session with a request:

Please tell stories about people in your environment who have become rich or succeeded in their lives.

Typically, a majority of participants will name people who used their money to invest in renting plots, buying machinery etc, then using the revenues to make bigger investments and so on. *The advantage of having a proper income should be stressed.*

The trainer should then, using the stories told, go on to work out characteristics of business / rich people with the participants:

- Hard work
- Self employment (the reason for this should be discussed — if self-employed, you do not lose time on someone else's work and all profit your success creates go to you, not to your employer. Further advantages of self-employment might be collected as well).
- Being an entrepreneur i.e. a person who dares to place his capital at risk in order to increase it (the capital).
- To dare should be defined as
 - willing to TRY
 - SELF- CONFIDENT
 - wiling to COMMIT oneself
- The work of an entrepreneur should be described as being a seeker — someone who looks for business opportunities in his environment.
- The traits of an entrepreneur should be linked to the situation the stove builders are in — they are trying a new product, have to trust in it, commit themselves and find a suitable environment.
- The skills of planning should be added as a characteristic trait of businesspeople. The importance of planning should be discussed.

2. The nature and role of marketing



TARGET: Participants are aware of their product and how to sell it. A price will be set, and the participants know the cost of the stove. Promotion strategies are discussed. Salesmanship is covered as well.

A business person needs to know about the **4 Ps of marketing** - his or her **PRODUCT**, the **PLACEMENT** (in the sense of what customers require the product to do), the **PRICE** that fits both with the product and the environment, and a **PROMOTION** strategy that connects the product to its market.

2.1 Product

The trainer should start by showing (best theatrically) that a businessman cannot sell by talking about technical aspects / characteristics of his product, but rather by stressing its advantages.

The participants should then be paired up to collect advantages of their stove. The advantages will then be discussed in the group and written down on a flip chart. Usually, participants mention advantages such as the following — less firewood use, less cooking time, protection of the environment, health (no smoke, no chance to burn oneself). The trainer should provoke and criticise the advantages from a macho point of view (“Why should I get a stove while my wife does the work? I can’t be bothered”).

Then participants should, in groups, work out how even a family father who is reluctant to buy a stove understands the benefits of the stove:

- If firewood is bought, money is saved
- His wife will have more time for other work
- Health expenses will decrease
- His food is ready faster, and the taste improves as it is not spoiled by smoke

As a transition to the next topic, the trainer should point out that not all advantages matter for all people, for example many do not care about the environment, some are extremely concerned about health, others not at all, etc.

2.2 Placement (customers)

The trainer asks — what kind of people can benefit from the stove? i.e. who are the customers? If participants find it hard to understand this question, they can be helped by an example — for instance, someone owning an electric stove is not a typical customer. It should soon become clear that *almost everyone is a potential customer* (because in rural settings close to everybody uses firewood as cooking fuel) especially:

- People who buy firewood
- People who have problems collecting firewood (distance, area, age, work)
- People who care about their health

The fact that the market potential is huge must be stressed in order to motivate participants. In this context, competition can be discussed — what share of the (huge) market can we get? Are there other stoves available? What are the comparative advantages of the rocket stove? If competition is severe, tactics to compete successfully should be discussed, but this is usually not the case.

During the early phase, often somewhat wealthier people are more willing to buy an unknown product — the poor can afford a stove but might be less willing to take a risk while the stove is not yet established. As a transition to the next topic, it should be discussed how many (at the moment) are ready to pay for a stove.

2.3 Pricing

Participants need to discuss

- **What raw materials are required/available and at what price**
- **The value of their stove-building service**

The following questions can give you a guideline:

- What raw materials are required?
- What materials are available, and at what price?
- Are there transport costs involved? (Should participants even be *slightly* hesitant about the availability of a particular material, all should be asked to bring one unit of this material the next day to ensure that everyone knows where to access their raw materials).

The participants fill out their business plans in the respective fields.

- What can be done in order to get materials at a cheaper price?
E.g. using materials which the customer provides or buying jointly at wholesale prices
- How much work is required to build one stove?

Digression: Quality vs fast money

People will usually mention the time they need to build a stove. The trainer should point out that time is also needed for things like getting materials and educating the customer. *Building hastily to save time is not advantageous.*

Do the following calculation: Technician A works 20 days a month on stoves and one of the stoves takes him a day. He earns X shillings per stove. At the end of the month, people who received bad service in the beginning will start to complain and the technician will not find more new customers. Technician B works 20 days a month as well but spends 2 days on one stove. He also earns X shillings per stove. People like the stoves and after one month he can raise the price to Y shillings.

Stove Builder A	Stove Builder B
Month 1: $20 \times 6,000 = 120,000$	Month 1: $10 \times 6,000 = 60,000$
Month 2: —	Month 2: $10 \times 10,000 = 100,000$
Month 3: —	Month 3: $10 \times 10,000 = 100,000$
Total: 120,000/=	Total: 260,000/=



The second technician thus gets a monthly income of 100,000 whereas the first one receives a one-time 120,000 and then remains jobless.

Technician A might also harm the business of his fellow stove builders.

- ***Finally, the most important question follows — what is the value of this work?*** How much are people willing to pay for the stove building service, without materials?

Participants must agree that during the startup phase, promotional prices need to be used. Nevertheless, it should be stressed that promotional prices must not be so low that there is no incentive to work. Possible prices for the phase after promotion should also be discussed.

After this part, some calculation should be done:

- How much is a stove if everything needs to be bought?
- If bricks are provided?
- If instead of cement, clay is used as mortar?
- If everything is provided by the customer? (which also lessens the workload of the builder!) And so on.

2.4 Promotion

Promotion is the act of informing people about a specific product with the target to increase sales.

The most important form of promoting the stove is by talking to customers on a household / single customer basis. Therefore, a small salesmanship exercise should be inserted here.

Note: there is no substitute for personal contact with the customer!

Digression: Salesmanship

Salesmanship is introduced as the art of convincing a particular customer of the advantages of a product. This means that the customer needs to be made aware of the advantages that are relevant to him.

In order to practice salesmanship and to get aware of basic challenges, two participants should improvise a sales dialogue, one becoming the customer, the other one the salesperson. The other participants shall note down what the salesperson did well, and what mistakes he made.

The following things should be mentioned:

- Greeting — before starting to talk about stoves, greet the customer politely and start a talk about certain problems that can be solved with the stove (much smoke, much work etc)
- Talk about advantages that matter to the customer, not merely about characteristics
- Give time for questions, no arguments — *the customer is king!*
- No lying, half-truths or implying certainty where there is none.
- When leaving, thank him or her, leave them with a flyer or contact information.
- Plan a date for follow up if he is unsure whether to buy the product.

The exercise can be repeated once or twice, giving the customer certain tasks e.g. you are someone who buys firewood, you suffer from coughs etc.

Participants should note how many people they will talk to on a monthly basis in an attempt to sell the stove. They need to be aware that most attempts do not lead to sales.

Next, participants pair up and think of what else can be done in order to promote the stoves. Ideas should include:

- Promotional prices, trying to build stoves in different parts of the village so that many people can see it.
- Building stoves in public places (schools, restaurants, churches) or in the homes of community leaders in order to get support. For such stoves, the price can be lowered, but technicians must avoid making a loss.
- Distributing flyers
- Promoting the stoves in meetings, church meetings, mosque meetings etc.
- Putting up advertising posters (such posters can even be written during the seminar if time is available)
- Using a bonus programme: Stove owners get the builder's fee back if they bring 5 new customers.

3. The business game

THE TASK

The participants get the task to build and sell a paper house in groups of 4 – 6 participants each. They get no further clues or instructions, only that after 45 minutes no further work or discussion is allowed and the houses and their advantages are to be presented to people who are not involved. This group then picks the winners. Materials are provided.

The task of the trainer

The trainer observes how the groups work and notes down what problems they encounter / how they collaborate / how and if they plan. *He pays special attention to how communication within the groups works.* Usually, each participant takes up a certain role. Some might design and draw and then discuss their ideas with the group (or fail to do so). Others start by trying with cardboard and paper. Often one person takes up leadership, a process that happens spontaneously. The trainer must observe such processes carefully.

The presentation

After the groups complete building the house, they now have to present / sell it to a group of people previously not involved. *Usually participants completely forget to plan this.* The jurors decide which house is best and the trainer discusses briefly what was done well during the presentation itself, stressing the importance of talking about advantages when selling.

Evaluation

Participants then sit down and discuss how the work went.

- Everybody explains how he sees his own work and the work of the group
- What were the problems encountered?
- What was planned/what was not planned?
- How was collaboration organised?

Finally, the exercise should be linked to the stoves:

- Stress the importance of planning: Business plans, stove building theory
- Stress the importance of regarding the stove as a product, selling it by its advantages (if presentations were held)
- Discuss areas in which stove technicians can cooperate and the limits of cooperation

4. Start-up, tackling challenges and problems



TARGET: Participants receive guidance for the start-up phase and discuss strategies to handle the challenges and problems that may arise.

Start-up

The trainer asks what is required in order to start a stove business:

The most pressing issues usually are tools. What tools are required? How much do they cost? Can everybody (by borrowing) get hold of all tools? Usually participants find it necessary to own all tools themselves. A sensible strategy is to buy one tool after each stove is built. The promotional prices discussed in module C-2 need to support this.

Discuss problems the technicians have encountered so far:

A typical problem during the start-up phase is that neither the stove nor the technicians are known. The importance of promotion should be re-emphasised and it might be added that by appearing as a group, the technicians gain integrity.

Challenges

The questions dealt with are: What challenges might arise in the future? What problems might occur? What can be harmful to business?

The biggest challenge usually is assurance of quality — if one technician builds bad stoves, it can destroy the reputation of the stove and thus the business of all technicians. *Therefore a system for quality assurance and monitoring needs to be put in place.* If the training has been organised by an institution (church, NGO, village, government) a responsible person from this institution should coordinate this effort — how can it work and how to finance quality controls?

A sensible approach is the payment of a small fee for each stove checked. Concerning how to handle stove builders who build bad quality stoves, a good approach is that such stoves are re-built for free in collaboration with a peer. Should a technician fail to do this, the institution takes his certificate back. It is recommended to award the technicians a certificate *after* the technical follow up.

If there is no institution in place, or if the institution is unwilling or unable to commit itself, a *peer review process* should be put in place, including a time schedule for the first month.

No matter which approach is chosen, the importance of regular stove builders meetings (for quality checks, reporting and discussion of challenges) must be stressed.

Conclusion

To conclude the seminar, the trainer asks trainees to estimate how many stoves they will be able to build per month and calculate how much income this would mean. Stress that the aim a technician sets himself is achievable as long as he follows his business plan, which gives him the road to success. Only by following the plan daily can the business be successful.

The trainer can also mention that a business plan may change over time as the business situation changes. For example, as a builder grows more successful, he should set himself new targets. Therefore it is wise to review a business plan once a year.

My business plan (business training handout)

Name _____

Location _____

Advantages of the rocket stove

What kind of people will like the stove/ can benefit from the stove and why?

Raw materials and prices

RAW MATERIAL	AVAILABILITY	PRICE

How long will I work on one stove? _____

How much will I charge to build the stove (labour costs)? _____

How many people will I talk to about the stove per month /per day?

At what meetings will I present the stove? (when?)

What else will I do concerning promotion?

What problems and challenges have I encountered up to now? How shall I tackle them?

What challenges might arise?

MY BUSINESS GOAL

I expect to sell _____ stoves each month

This will generate me an income of Ksh _____

ANNEXES

- 1 Selection interview questionnaire
- 2 Seminar feedback form
- 3 Reporting sheet for rocket stove builders
- 4 Quality control sheet
- 5 User instruction sheet in English and Swahili

Selection interview questionnaire

Place _____ Date _____ Number _____

Name _____	Age _____
Occupation _____	Male / Female
Contact _____	

What is your education level?

Do you have any experience with stove or brick laying?

Other technical skills? _____

Why do you want to attend this seminar?

What will you do with the knowledge you acquire during the seminar?

Accepted

Rejected

Name and signature of interviewer _____

Seminar feedback form

Beginning/ closing time: Nice OK Bad Very Bad

What did you like during the training?

What did you *not* like?

What did you miss? — What would you like to know additionally?

Which part was too long?

Which part was too short?

The level of the technical training was:

Too complicated Just OK Too easy

The level of the business training was:

Too complicated Just OK Too easy

Do you feel prepared to start your own business with stoves? (1 YES — 5 NO)

1 2 3 4 5

Quality Control sheet

Name of the controller _____

Date of the quality control visit _____

Village _____ Customer's Name _____

Name of the stove builder _____

Date of the construction _____

Technical details

SIZE OF STOVE LARGE

SMALL

Height of the firewood entrance _____ cm

Width of the firewood entrance _____ cm

Width of the combustion chamber _____ cm

Depth of the combustion chamber _____ cm

Height of the combustion chamber _____ cm

Finishing of the stove none

joints

plaster

Air inlet properly made yes

no

Cracks yes

no

General condition poor

good

very good

User instruction and follow up

Follow-up visit made yes

no

If yes, how many days after construction? _____

Repair necessary yes

no

If yes, what has to be repaired? _____

User instruction given yes

no

User instruction sheet received yes

no

Signature Controller

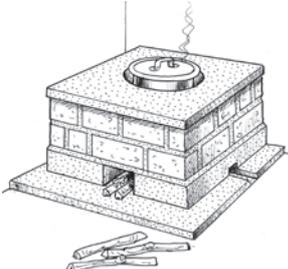
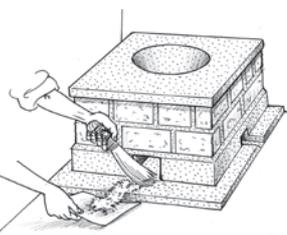
Signature Customer

How to use the new Rocket Stove

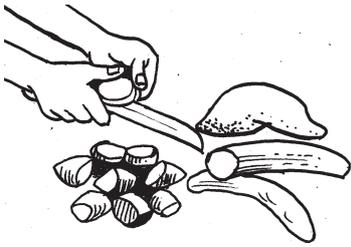
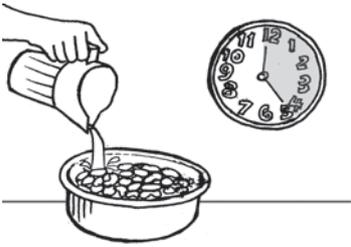
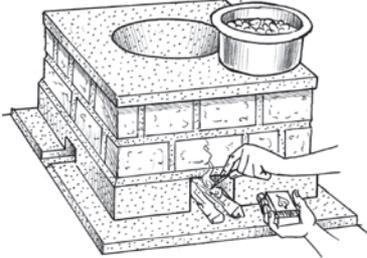
REMEMBER

- a) Allow the stove to dry before first use.
For the cement stove: sprinkle with water once a day for 2–3 weeks to prevent cracking.
For the clay stove: keep covered with plastic for 3 weeks until dry.
- b) Be patient. Until the new stove is 100% dry, it can be difficult to get a fire started.
- c) In the beginning the stove needs more firewood. After 2–3 weeks, consumption will be less.

HOW TO USE FIREWOOD MORE EFFICIENTLY

 <p>1. Store firewood indoors to dry. Wet firewood gives little heat so you need to use more. It also creates smoke.</p>	 <p>2. Cut the firewood into small sticks. They burn better than bigger ones.</p>	 <p>3. Use only 2 – 3 sticks of firewood. Otherwise you waste firewood and create a lot of smoke.</p>	 <p>4. Clean the stove each time before use. Remove all ashes. Do not use water.</p>
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WAYS TO SPEED UP COOKING TIME AND SAVE FUEL

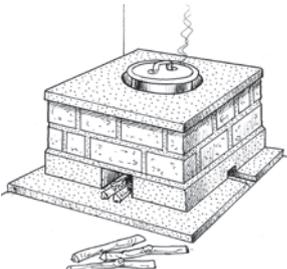
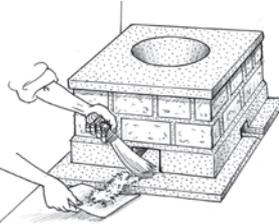
 <p>1. Cut all food into small pieces. The food will cook much faster.</p>	 <p>2. Soak beans, maize etc for 5 hrs beforehand. Cooking time will be considerably shorter.</p>	 <p>3. Start the fire <u>after</u> you have prepared all the food to be cooked.</p>
 <p>4. Always use a lid — even for boiling water.</p>	 <p>Follow these easy rules and your firewood consumption will be massively reduced. Happy cooking with your Rocket Stove!</p> <p>Your stove builder is:</p>	

Jinsi ya kutumia jiko lako jipya

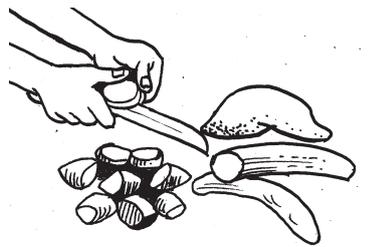
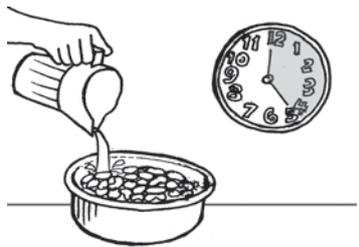
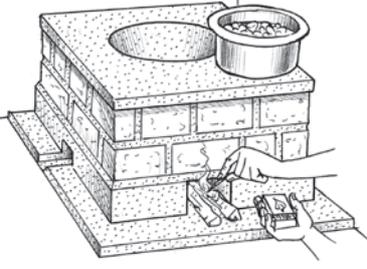
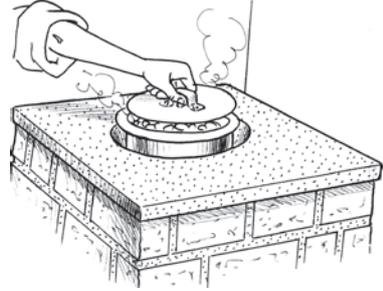
KUMBUKA

- Wacha jiko likauke vizuri kabla ya kulitumia, uwe unasiriba au kunyunyuzia maji ili lisipate kupasuka
- Jiko lako likiwa limejengwa na tope, usilinyunyuzie maji. Lifunike kwa kutamia karatasi lisilingiza maji(polythene)
- Ngoja hadi jiko likauke kabisa, la sivyo litakuwa na shida kuwaka
- Wakati wa mwanzoni, jiko litatumia kuni nyingi kuliko kiasi hadi lizoee moto. Baada ya wiki 2-3 matumizi ya kuni yatakuwa madogo

JINSI YA KUTUMIA KUNI VYEMA

 <p>1. Weka kuni mahali pakavu. Kuni zenye maji zinatoa moto kidogo na matumizi kuwa juu. Pia hutoa moshi.</p>	 <p>2. Kata kuni vipande vidogo vidogo. Huwaka vizuri kuliko kuni hubwa.</p>	 <p>3. Tumia vipande 2-3 tu. Vinginevyo unaharibu kuni na kuleta moshi mwingi.</p>	 <p>4. Fanya usafi wa jiko lako kila mara kabla ya kutumia, toa majivu na usitumie maji.</p>
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JIA ZA KUPIKA NA KUPUNGUZA MUDA

 <p>1. Kata chakula kwavipande vidogo vidogo. Chakula kitaiva haraka.</p>	 <p>2. Loweka mahindi/ maharagwe kwa masaa 5 kabla ya kupika. Muda wa kupika utapungua.</p>	 <p>3. Washa moto baada ya kutayarisha chakula unatochotaka kupika.</p>
 <p>4. Funika sufuria ikiwa jikoni hata kama unachemsha maji.</p>	 <p>Fuata hayo maagizo na matumizi yako ya kuni yatapungua kwa kiasi kikubwa Furahia upishi wako katika jiko la Rocket!</p> <p>Fundi wako ni:</p>	



Promoting Private Sector
Development in Agriculture

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