

Step by step



MANUAL FOR CONSTRUCTION AND OPERATION OF  
**NEPALI STOVE**



# INTRODUCTION

Programs for introducing the Nepali stove in Nepal began in 1950 with Indian models. In 1966 specialists from the Agricultural Department suggested a number of stove models made from mud. In 1980, the national commission for planning with support from FAO and UNDP proposed a ceramic stove. In 1990, an organization called RECAST proposed a design for of new type of stove mostly made from local ma-

terials and resources. In 2000, another organization called AEPC within the frame of Energy Sector Assistance Program – succeeded in promoting Nepali stoves in Nepal. Currently, the program for promoting Nepali stoves covers all regions of Nepal.

The Nepali stove can be used in a number of regions in Tajikistan, where the climate and social environment is similar to that of Nepal.



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# 1. WHY NEPALI STOVE?

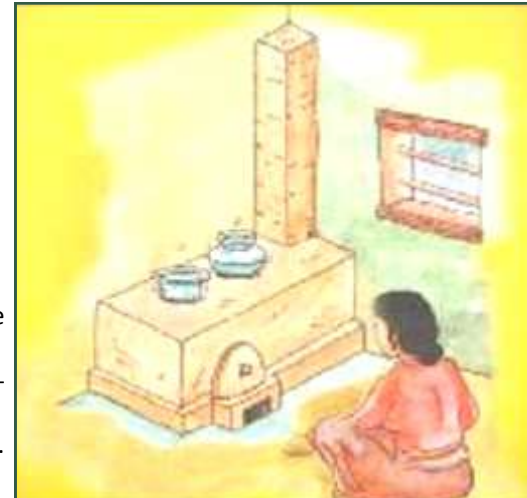
## NEPALI STOVE

The Nepali stove is made from the same materials that traditional stoves are made out of. However, the Nepali stove is safer and burns less fuel, thus benefiting people and the environment.

The Nepali stove must be cleaned of soot every three months because it is made out of mud bricks.

## ADVANTAGES

- Less wood is burnt;
- Less expensive;
- No smoke, clean air and house;
- No need for additional air for firing;
- Less time is spent for cooking;
- Improves social conditions;
- No soot on pots or other dishes;
- Improves sanitation conditions in the kitchen;
- It is made from local materials and resources;
- Design of the stove is not complicated. Anyone can construct it.



## 2. CONSTRUCTING A NEPALI STOVE

Constructing Nepali stove is not difficult due to its simple design. Both men and women can make it. Familiarize yourself with the following steps for building the stove.

- Step 1.** Prepare mud
- Step 2.** Method of molding bricks
- Step 3.** Selecting location in the kitchen
- Step 4.** Selecting type of stove
- Step 5.** Measurement and method of construction



## Step 1 2.1. PREPARING MUD

### ***How to prepare the mud for use with bricks***

- First of all, sift the soil you selected to use for molding bricks to free it from little stones and other elements;
- The proportion for making the brick mix is 5/2/1 (5 parts soil, 2 parts hay and one part fresh dung);
- Mix all the ingredients by adding water little by little and press it with your foot, in order to have sticky mud that is not too runny;
- To make the bricks, prepare the mud one day in advance and cover it with plastic sheet overnight. Take the leftover clay and add sugar water (proportion 4kg sugar in 2 liters of water), salt water (proportion 2gk of salt in 1 liter of water) and 1 kg of white cement. Make the consistency of the clay so that it is sticky and then plaster the entire outside and inside of the stove with it.



## 2.2. METHOD FOR MOLDING BRICKS

### Use the mold to shape the bricks:

- First of all, soak the mold with water;
- Sprinkle sand on the inside of the mold to keep clay from sticking.
- Fill the mold with the mud mixture;
- Cut the excess mud from the mold with thick thread;
- Gently shake the mold so that the clay settles down.
- Empty the brick into a sunny flat place;
- If the brick is not shaped well, then straighten it with the mold edges.
- Flip the bricks over to dry all sides

*Note: When the mud is dryer, it is easier to dry the bricks and take them out of the mold.*

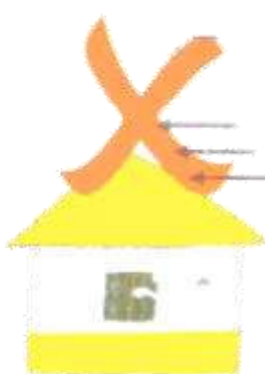


Step 3

## 2.3. SELECTING THE LOCATION FOR THE STOVE IN THE OUTDOOR KITCHEN



While selecting a place to attach the stove pipes, consider the direction of the wind.



If the stovepipe is installed against the wind, the smoke may re-enter the kitchen.



*If you use your attic for storing hay and wood, then you have to equip the stovepipe with stovepipe cap.*

Step 4

## 2.4. SELECTING TYPE OF STOVE

***There are several types of Nepali stoves which are adapted to conditions of Tajikistan. Select one type of stove in accordance with the size of your family:***

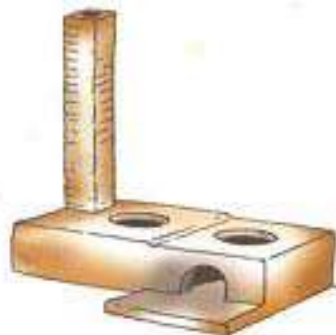
If you have 2 to 4 people in your family, then select a stove with 1 burner.



***One burner stove***



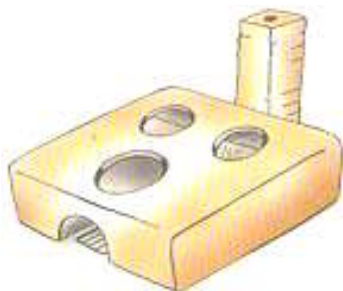
***One layer, two burner stove***



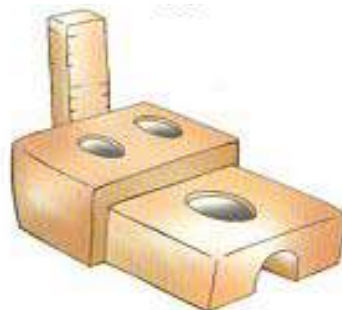
***Two layer, two burner stove***

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If you have 4 to 8 people in your family, select a one layer, two burner stove



***One layer, three burner stove***



***Two layer, two burner stove***

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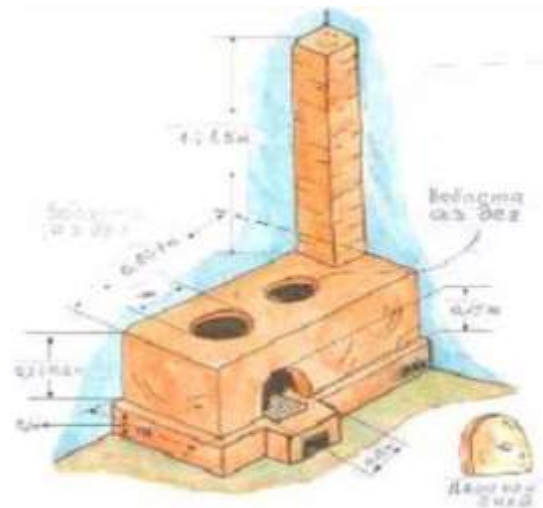
If you have more than 8 people in your family, select a one/two layer, three burner stove.

Step 5

## 2.5. MEASUREMENT AND METHOD OF CONSTRUCTION

***The size of stove depends on the size of your pot. Here is how you determine the size of your stove:***

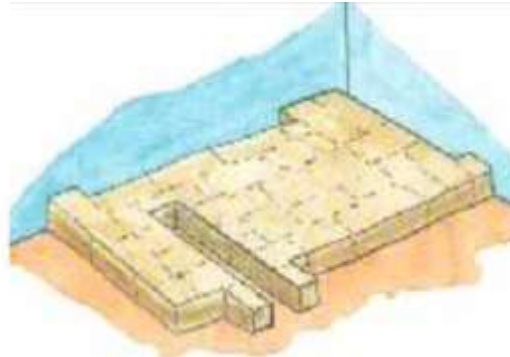
- *The diameter of stove burner must be equal to diameter of pot taken from 10 cm below the edge of pot. The diameter of the stove burner is not the same as the diameter of pot at the edges;*
- *The distance between the grate and the bottom of the pot should be 18 centimeters.*
- *To determine the width of the stove, add 10cm to the radius of the pot you use to cook with. 10cm will be the distance not to the corner, but to the edge of the stove.*
- *The length of the stove is also influenced by the size of the two pots used to cook with.*



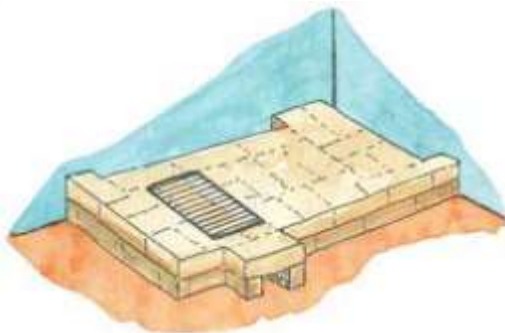
*Here is the construction a of two burner stove:*



**Measurement**



**First row of bricks**



**Second row with grate**



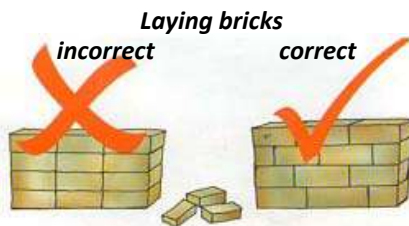
**Third row with shape of stove**

**1. Measurement.** After having determined the stove location (based on wind direction), start measuring the foundation and laying bricks. If the stove is situated against the wall, make sure to lay the first row of bricks 8 cm away from wall. You can then fill this space with insulation materials.

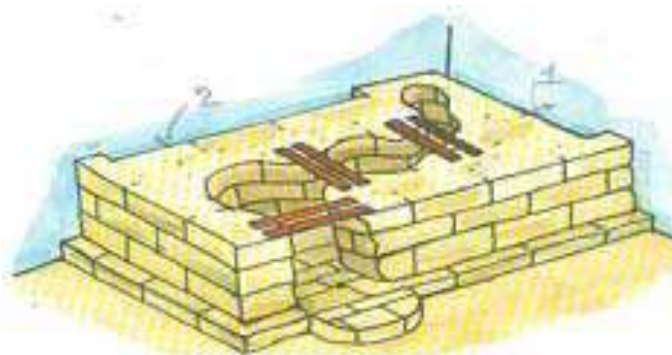
**2. Attaching the iron grates.** After laying the second row of bricks, attach the iron grate. Then lay the 3rd row of bricks in the same shape as the first row of bricks.

### 3. Laying bricks and installing iron pieces.

Use a plumb line to make sure the walls are straight and even. After laying the fourth row attach the upper doorframe iron pieces to fasten the stovepipe passage going from one burner to other. Plaster the top of stove and the burner. In order for the pot to sit correctly in the burner, put the pot on the burner then press and twist it to leave its impression.



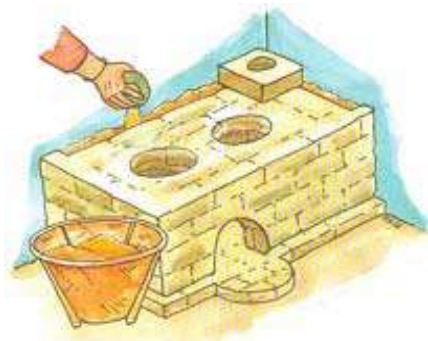
*Connecting the cracks between bricks*



*Attaching upper doorframe iron pieces*

### 4. Insulation and plastering

After the fifth row, fill in the space between the wall and stove with local insulation materials (mixture of dry mud and hay), and plaster the surface of the stove with special clay.



*Insulation*

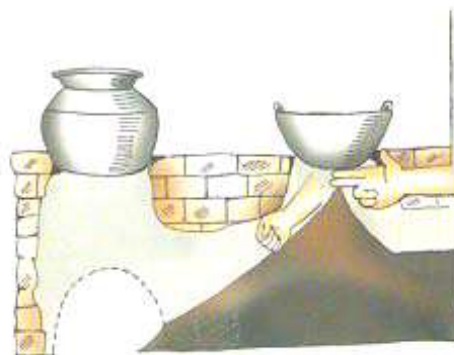


*Plastering walls*



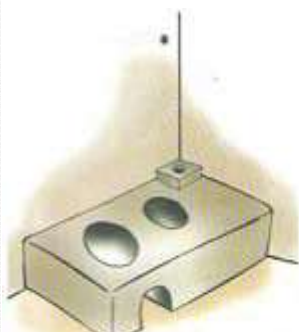


*Shaping burner in the form of pot bottom*

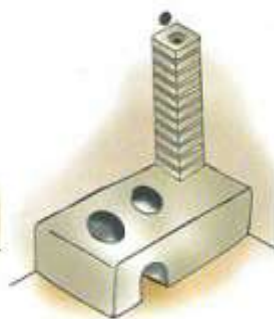


*Size of passage and deflector*

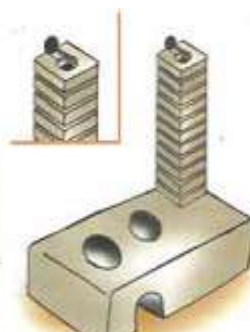
Following the design, build a heat tunnel, deflector to direct heat to the second burner, and a chimney. The heat tunnel should narrow towards the second burner, narrowing to the width of a fist at the tip of the deflector. The top part of the deflector should be 2 fingers or 3cm away from the bottom of the pot. The diameter of the chimney should be 10 cm.



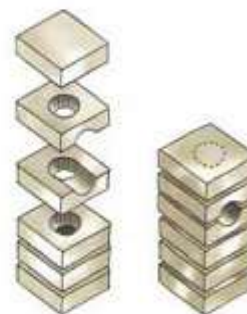
*Determining stovepipe location*



*Laying stovepipe bricks*



*Method of attaching stovepipe through the hole on the wall hole*



*Method of assembling stovepipe bricks*

### 5. Constructing the stovepipe

Bricks containing hay should be used to make the chimney, and the chimney should be in the corner of the kitchen. The stove pipe must be 10 bricks high. Make a hole in the wall 10cm in diameter 2 meters above the floor where the stovepipe will go.

After laying bricks of stovepipe, plaster it. After the first plastered layer dries up, plaster one layer with a thin solution of cement.



*Plastering the stovepipe*



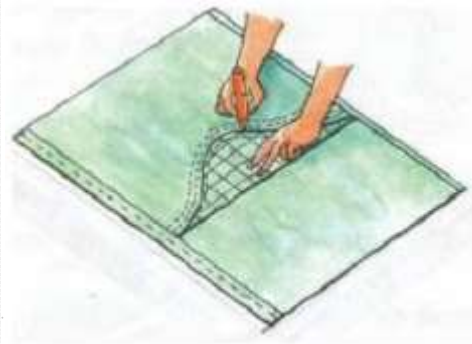
*Plastering the outside surface of stove*

## 6. Preparing stovepipe and stovepipe cap.

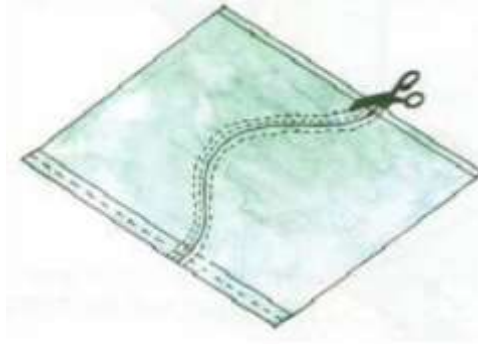
Attach the stovepipe from the outside of the wall to let the smoke blow the smoke away. For this reason, build it away from windows. If the roof is plastered with hay, then the stovepipe must be placed at least 2 cm below the roof. The stovepipe can be built from clay or tinfoil in different shapes: L shaped, T-shaped and H-shaped. At the top end of stovepipe, place the cap to keep sparks from escaping. It is important to place the stovepipe in a place where the wind will



### *Methods of constructing stovepipe and its cap*



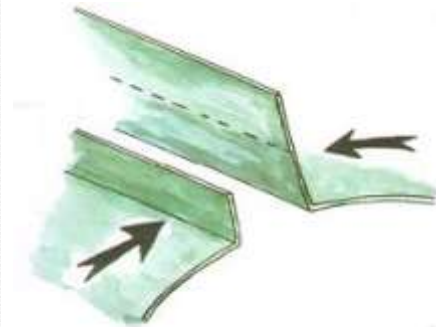
**1. Measurement**



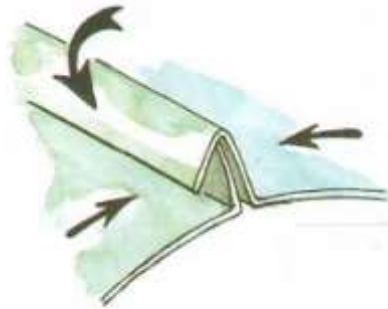
**2. Cut in accordance with measurement**



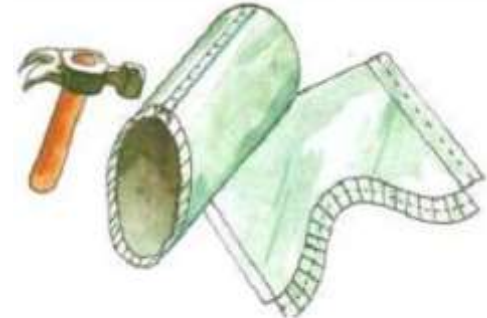
**3. Preparing location of pipe joint**



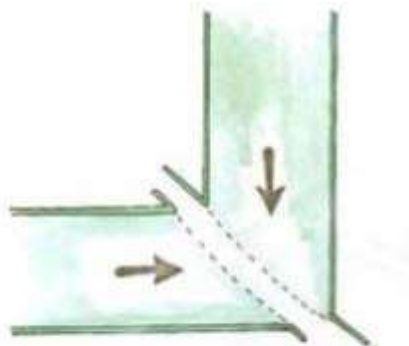
**4. Preparing support for pipes**



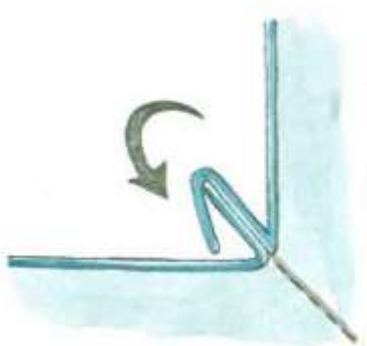
**5. Benching and making lock for support**



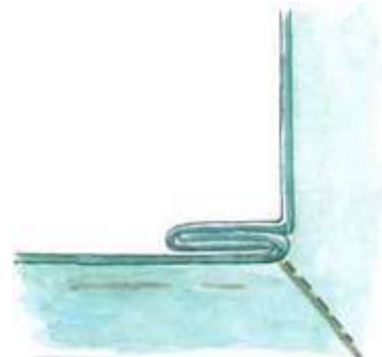
**6. Preparing the pipe**



**7. Attaching two pipes at 90° angle**



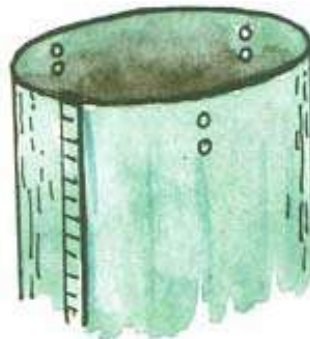
**8. Put the pipe ends together**



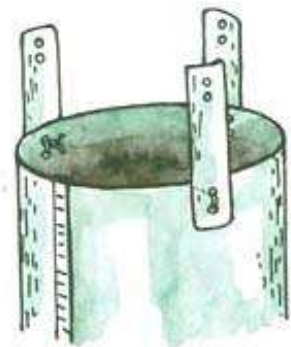
**9. Bend the pipe ends together to link them**



**10. fastening the corner brace with short beam (log)**

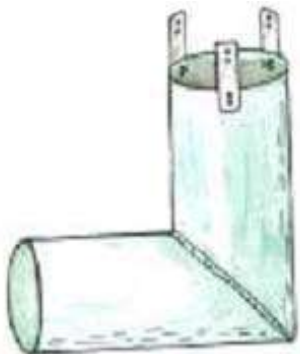


**11. Holes for cap foot**

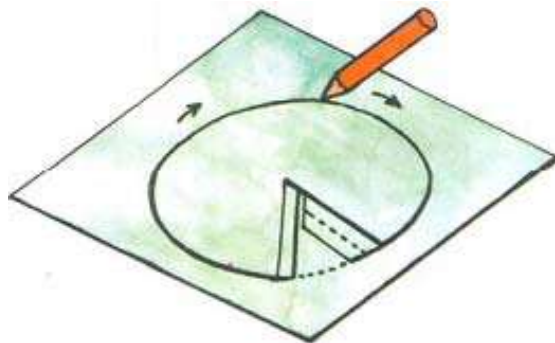


**12. fastening the foot of the cap**

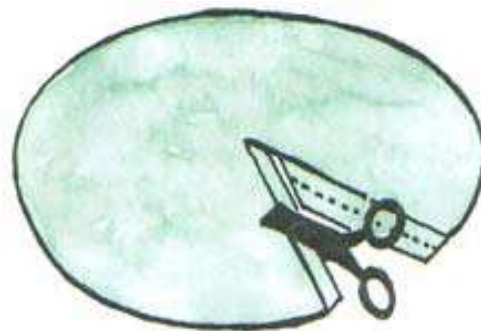
### *Methods of constructing stove pipe and its cap*



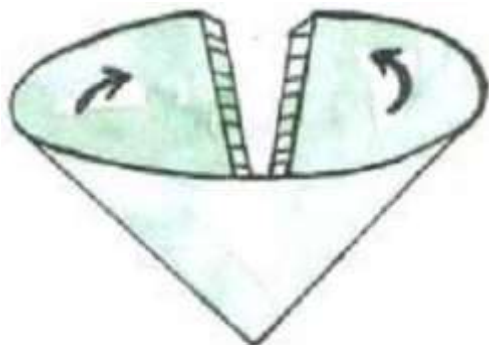
**13. Prepared corner brace**



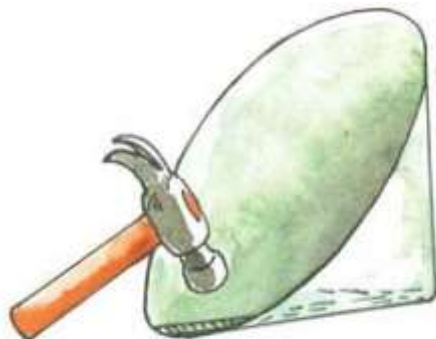
**14. Measurement of cap**



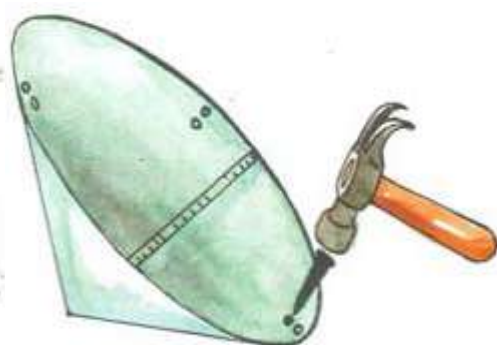
**15. Cut in accordance with measurement**



**16. Folding the cap**



**17. Fastening the joints**



**18. Holes for attaching foot**

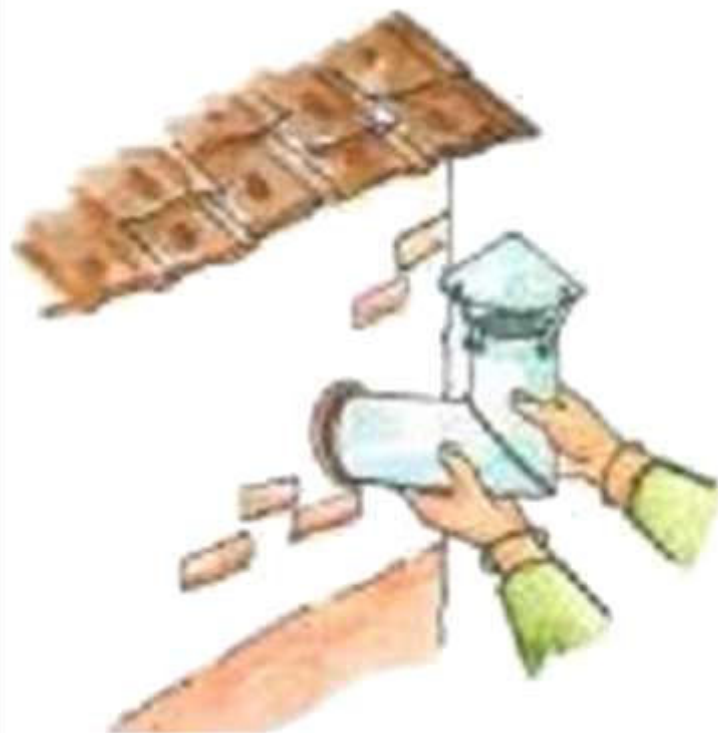


**19. Fastening the cap**



**20. Prepared corner brace with cap**

You can find already made corner braces and caps in construction stores for a relatively low price. Make sure to purchase a corner brace and cap made from zinc tinsplate which will last longer.



**21. Attaching corner brace to the hole on the wall**

### 3. MAINTENANCE AND OPERATION OF NEPALI STOVE

#### *Durability and available system of repair*

If the stove is constructed correctly and in accordance with these technical recommendation, it will last for up to 5 years. Every owner of the stove can get a free user's manual.

In case the stove breaks or cracks, the manual shows the owner how to glue or plaster the cracks step by

step. The owner should clean the stovepipe often so that smoke can escape through it.



***Plastering  
the walls of  
stove***



***Cleaning the  
stovepipe***

***Incorrect utilization and poor maintenance are the main reasons for inefficient operation of the stove.***

There are many stove artisans in rural areas making it easy for an owner to find a person to repair the stove in case it breaks.. If an owner can't fix the stove, she can find an artisan to fix the stove.

**Combustion Chamber** - is a chamber directly under the first burner and has three sides. It is constructed in a way so that the

bottom of the main kitchen pot matches its size. This way, in an indoor kitchen, you can reduce energy waste and cook your meal faster.

**Burners** - Make sure the size of the burners correctly matches the size of the pot when building the stove.

**Heat Deflector** - building the tip of the deflector too far from the pot will waste heat. Building it too close to the pot will cause smoke to enter the room. The deflector tip must be 3 cm from the pot.

## 4. CONTACT INFORMATION OF PROMOTERS AND MASTERS

	Ayni district	Дар ноҳияи Ашт
For construction of improved stove, please contact:	<b>Mirova Karomat.</b> Address: Rabot village, jamoat Anzob Phone: 92 759 95 72	<b>Nazarova Kholbibi.</b> Address: Upponi Bolo village, Jamoat Oshoba. Phone: 92 704 31 23
For construction materials, please go to:	<b>Sarvoda Construction Store</b> Address: Sarvoda town, near the hospital.	<b>Uppon village market</b> Address: Upponi Bolo village, jamoat Oshoba
For more information and consultation, please contact:	<b>Sirojiddinov Asliddin.</b> Address: jamoat Fondaryo, Phone: 92-764-20-52.	<b>Abdullov Faizullo,</b> jamoat Oshoba, Phone: 92-727-06-51.



European Union



French Development Agency



Women in Europe for a Common Future



German cooperation



Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ) GmbH



UKAID



Abbé Pierre Foundation



Groupe Energies Renouvelables, Environnement et Solidarités



Agency for Support Development Process Nau

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