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 a new type of stove mostly made from local materials 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.
# TABLE OF CONTENTS

1. Why Nepali stove? .......................................................... 5
2. Construction of Nepali stove ............................................ 6
   2.1. Preparing mud .......................................................... 7
   2.2. Method of molding bricks ....................................... 8
   2.3. Selecting location for stove in kitchen ......................... 9
   2.4. Selecting type of stove ............................................ 10
   2.5. Measurement and method of construction .................... 12
3. Maintenance and operation of stove .................................. 21
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
2.1. PREPARING MUD

How to prepare the mud for use with bricks

a) First of all, sift the soil you selected to use for molding bricks to free it from little stones and other elements;

b) The proportion for making the brick mix is 5/2/1 (5 parts soil, 2 parts hay and one part fresh dung);

c) 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;

d) 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.
Step 2

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

Step 3

If you use your attic for storing hay and wood, then you have to equip the stove-pipe with stove-pipe cap.

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

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

Here is the construction a of two burner stove:
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.

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.
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.

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.

6. Preparing stovepipe and stovepipe cap.

Attach the stovepipe from the outside of the wall to let the smoke out through the hole in the wall. The stovepipe can be built from clay or tinplate in different shapes: L shaped, T-shaped and H-shaped. It is important to place the stovepipe in a place where the wind will 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. At the top end of stovepipe, place the cap to keep sparks from escaping.
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 $90^\circ$ 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 tinplate 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.
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.

Incorrect utilization and poor maintenance are the main reasons for inefficient operation of the stove.
4. CONTACT INFORMATION OF PROMOTERS AND MASTERS

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<th>Ayni district</th>
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<td><strong>For construction of improved stove, please contact:</strong></td>
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| **Sarvoda Construction Store**  
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