RE Practices in Bangladesh – Cook Stoves

Domestic Stoves

Solid Stoves With or Without Chimney

Stove type: Improved 3-pot
Construction material: Clay/Mud
Chimney: yes
Fuel type: Wood, straw
Country: Bangladesh

Stove type: Improved 2-pot
Construction material: Clay/Mud
Chimney: yes
Fuel type: Wood, straw
Country: Bangladesh

Source: FAO – Rural Wood Energy Development Program (RWEDP)
### Biomass stove for Hostels

<table>
<thead>
<tr>
<th>Name of the Stove:</th>
<th>Biomass stove for Hostels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type:</td>
<td>Fixed Two Pot Stove with grate</td>
</tr>
<tr>
<td>Size:</td>
<td>(6x2.5)feet</td>
</tr>
<tr>
<td>Chimney:</td>
<td>Yes</td>
</tr>
<tr>
<td>Materials:</td>
<td>Bricks, clay, cement, iron sheets &amp; rods</td>
</tr>
<tr>
<td>Main fuel:</td>
<td>Fuelwood</td>
</tr>
<tr>
<td>Used in States of:</td>
<td>In students’ hostels</td>
</tr>
<tr>
<td>Dissemination:</td>
<td>Number not available</td>
</tr>
<tr>
<td>Developed by:</td>
<td>Not available</td>
</tr>
<tr>
<td>Estimated Cost:</td>
<td>Tk 2210</td>
</tr>
<tr>
<td>Performance:</td>
<td>Not available</td>
</tr>
</tbody>
</table>

Source: Stove Compendium  
ARECOP – RWEDP 2001
### RE Practices in Bangladesh – Cook Stoves

**Community/Cottage Industry Stoves - BANGLADESH**

#### Biomass stove for Hostels

<table>
<thead>
<tr>
<th>Name of the Stove:</th>
<th>Biomass stove for Hostels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type:</td>
<td>Fixed Two Pot Stove with grate</td>
</tr>
<tr>
<td>Size:</td>
<td>(5x3x2.5)feet</td>
</tr>
<tr>
<td>Chimney:</td>
<td>Yes</td>
</tr>
<tr>
<td>Materials:</td>
<td>Bricks, clay, cement, iron sheets &amp; rods</td>
</tr>
<tr>
<td>Main fuel:</td>
<td>Fuelwood</td>
</tr>
<tr>
<td>Used in States of:</td>
<td>In students’ hostels</td>
</tr>
<tr>
<td>Dissemination:</td>
<td>Number not available</td>
</tr>
<tr>
<td>Developed by:</td>
<td>Not available</td>
</tr>
<tr>
<td>Estimated Cost:</td>
<td>Tk 5000</td>
</tr>
<tr>
<td>Performance:</td>
<td>Not available</td>
</tr>
</tbody>
</table>

Source: Stove Compendium  
ARECOP – RWEDP 2001
Biomass stove for Training Institutes

Name of the Stove: Biomass stove for Training Institutes
Type: Fixed Two Pot Stove with grate
Size: (6x2.5) feet
Chimney: Yes
Materials: Bricks, clay, iron sheets
Main fuel: Fuelwood
Used in: Training Institutes
Dissemination: Number not available
Developed by: Not available
Estimated Cost: Tk 700
Performance: Not available

Source: Stove Compendium
ARECOP – RWEDP 2001
RE Practices in Bangladesh – Cook Stoves

Community/Cottage Industry Stoves - BANGLADESH

Name of the Stove: Biomass stove for Sweetmeat Industry – a cottage industry
Type: Fixed Single Pot Stove with grate
Size: (140x120x60) cm
Chimney: No
Materials: Bricks, clay
Main fuel: Fuelwood
Used in: In about 50,000 Sweetmeat shops
Dissemination: Number not available
Developed by: Not available
Estimated Cost: Not available
Performance: Not available

Source: Stove Compendium
ARECOP – RWEDP 2001
RE Practices in Bangladesh – Cook Stoves

Community/Cottage Industry Stoves - BANGLADESH

Typical stove used in a Tea Stall

Name of the Stove: Biomass stove for Tea Stalls – widely available
Type: Fixed Two Pot Stove with grate
Size: (6x2.5) feet
Chimney: No
Materials: Bricks, clay, iron grate
Main fuel: Briquette made from rice husk
Used in In tea stalls, which are everywhere
Dissemination: Number not available
Developed by: Not available
Estimated Cost: Tk 750
Performance: Not available

Source: Stove Compendium
ARECOP – RWEDP 2001
RE Practices in Bangladesh – Cook Stoves

Community/Cottage Industry Stoves - BANGLADESH

Name of the Stove: Biomass stoves for Tea Stalls – widely available
Type: Fixed Two Pot Stove with grate
Chimney: No

Source: Stove Compendium
ARECOP – RWEDP 2001
RE Practices in Bangladesh – Cook Stoves

Community/Cottage Industry Stoves - BANGLADESH

Name of the Stove: Biomass stove for Yarn Twisting & Dyeing Industry – a traditional industry
Type: Fixed Single Pot Stove with grate
Size: (130x75x40) cm
Chimney: No
Materials: Bricks, Mud, iron grate
Main fuel: Fuelwood
Used in: Yarn Twisting & dyeing industry
Dissemination: Number not available
Developed by: Not available
Estimated Cost: Tk 750
Performance: Not available

Source: Stove Compendium
ARECOP – RWEDP 2001
RE Practices in Bangladesh – Cook Stoves

Following models have gained popularity among the users in different parts of the country because, they save fuel and cooking time, reduce IAP in the kitchen environment, easy and comfortable to use and the construction costs of different models are reasonable. The advantages and disadvantages of different types of ICS models are given in Table No: 2.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name of the ICS Models</th>
<th>Reasons for Users Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Model No.1</td>
<td>• Portable • Saves fuel • Can be used indoor-outdoor • Low cost</td>
</tr>
<tr>
<td></td>
<td>Improved Single Mouth Cooking Stove (<em>Portable</em>)</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Model No.2</td>
<td>• All types of traditional fuels can be used • Save fuels • Low cost</td>
</tr>
<tr>
<td></td>
<td>Improved Single Mouth Cooking Stove (<em>Half underground</em>)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Model No.3</td>
<td>• Most suitable for rich and middle class families who use fuel wood, briquettes etc. solid fuels • Saves fuels • Saves cooking time • Reduces IAP in the kitchen environment</td>
</tr>
<tr>
<td></td>
<td>Improved Double Mouth Cooking Stove with Chimney (<em>on the floor</em>)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Model No.4</td>
<td>• All types of traditional fuels can be used • Saves fuels • Saves cooking time • Reduces IAP in the kitchen environment</td>
</tr>
<tr>
<td></td>
<td>Improved Double Mouth Cooking Stove with Chimney (<em>Half underground</em>)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Model No.5</td>
<td>• Portable • Saves fuel • Can be used indoor/outdoor • Low cost • Reduces IAP at cooking place partially</td>
</tr>
<tr>
<td></td>
<td>Improved Single Mouth Cooking Stove with Chimney (<em>Portable</em>)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Model No.6</td>
<td>• Most suitable for rich and middle class families who use fuel wood, briquettes etc. solid fuels • Saves fuels • Saves cooking time • Reduces IAP in the kitchen environment • In times of need, either of the stoves can be used</td>
</tr>
<tr>
<td></td>
<td>Improved Double Mouth Cooking Stove Couple with Single Mouth Cooking Stove having one common Chimney</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Model No.7</td>
<td>• Most suitable for cooking in hotels, restaurants, hostels etc. • Saves fuels • Saves cooking time • Reduces IAP in the kitchen environment</td>
</tr>
<tr>
<td></td>
<td>Improved Double Mouth Cooking Stove with Chimney for Large Scale Cooking and Semi Industrial Purposes</td>
<td></td>
</tr>
</tbody>
</table>
Model No.1: Improved Single Mouth Cooking Stove (*Portable*)

- **MODEL DEVELOPED BY**: BCSIR, DECEMBER 1982
- **TYPE OF FUEL USED**: Suitable for burning fuel wood, branches, cow dung cake, briquettes etc.
- **PRICE**: TK.200.00
- **FUEL SAVING**: 50% as compared with traditional stove.
- **EFFICIENCY**: 25%
- **SEASONALITY**: Round the year

A. Model

B. Model on use

1) **Different Parts of the model:**
   a) Structure  
   b) Grate  
   c) Lid for covering the ash outlet.

2) **Dimensions of the model:**
   a) Mouth diameter : 9 inches  
   b) Feed hole : U type, 4.6X4.0 inches  
   c) Distance between grate and raised points : 6 inches  
   d) Height of the raised points : 0.5 inches  
   e) Ash outlet : 3X3 inches  
   f) Entry of primary air hole diameter : 0.5 inches (7-8 nos. holes)  
   g) Height of the stove : 12 inches
Model No.2: Improved Single Mouth Cooking Stove (*Half underground*)

- **MODEL DEVELOPED BY**: BCSIR 1983
- **TYPE OF FUEL USED**: Suitable for burning fuel wood, branches, cow dung, briquettes and fluffy fuel viz, straw, leaves, bagasse etc.
- **PRICE**: TK.200.00
- **FUEL SAVING**: 45-50% as compared with traditional stoves.
- **EFFICIENCY**: 22%
- **SEASONALITY**: If the model is installed outside, then also it is suitable for use only in the dry season
- **LIFE TIME**: 1 years

![A. Model](image1.png) ![B. Model on use](image2.png)

**Improved Single Mouth Cooking Stove (*Half underground*)**

1) **Different parts of the model:**
   - d) Structure
   - e) Grate
   - f) Two perforated lids for covering the ash outlets.

2) **Dimension of the model:**
   - a) Mouth diameter : 9 inches
   - b) Feed hole : 5X5 inches
   - c) Distance between grate and raised points : 9.5 inches
   - d) Height of the raised points : 0.5 inch
   - e) Ash outlet and primary air entry way : 5 inches
   - f) Height of the stove from the G.L : 9 inches
Model No. 3: Improved Double Mouth Cooking Stove with Chimney (on the floor)

- **MODEL DEVELOPED BY**: BCSIR 1984
- **TYPE OF FUEL USED**: Suitable for burning fuel wood, branches, cow dung cake, briquettes etc.
- **PRICE**: TK. 600.00
- **FUEL SAVING**: 60% as compared with traditional stove.
- **EFFICIENCY**: 28-30%
- **SEASONALITY**: Round the year
- **LIFE TIME**: 2-3 years

![Diagram of the Double Mouth Cooking Stove with Chimney](image)

**A. Model**

**B. Model on use**

### Double Mouth Cooking Stove with Chimney (on the floor)

1) **Different parts of the model**
   a) Structure
   b) Grate
   c) Chimney
   d) Cap
   e) Lid for covering the ash outlet.

2) **Dimension of the model:**
   a) Mouths (diameter): First mouth: 9” and second mouth: 8 “.
   b) Distance between two mouths: 3 “
   c) Feed hole
   d) Distance between grate and the top of the mouth: 8.5 “
   e) Ash outlets/primary air entry passage: Length 5 “ x width 5 “
   f) Entry way from first mouth to second mouth: 7.0X4.5 “
   g) Open space left after placing the utensil on the second mouth: 2.5 “
   h) Diameter of the flue gases exit in the second mouth: 2 “
   i) Tunnel from second mouth to chimney holder: Length 6.0 “ x width 3 “ x height 3 “
   j) Chimney holder: Length 5 “ x width 5 “ x height 10 “
   k) Height and diameter of the chimney: 6-9 ft and 3 “
   l) The distance between the chimney and cap: 4 “
   m) Soot removal outlet at the bottom of the chimney: Length 3 “ x width 3 “
   n) Height of the stove: 15 “
Model No.4 Improved Double Mouth Cooking Stove with Chimney (Half underground)

• MODEL DEVELOPED BY : BCSIR 1984
• TYPE OF FUEL USED : Suitable for burning fuel wood, branches, cow dung cake, briquettes and fluffy fuel viz, straw, leaves, bagasse, etc.
• PRICE : TK.600.00
• FUEL SAVING : 55-60% as compared with traditional stoves.
• EFFICIENCY : 22-25%
• SEASONALITY : Round the year

1) Different parts of the model
   a) Structure
   b) Grate
   c) Chimney
   d) Cap
   e) Lid for covering the ash outlet.

2) Dimensions of the model:
   a) Mouths diameters : First mouth: 9 “ and second mouth: 8 “.
   b) Distance between two mouths : 3 “
   c) Feed hole : Length 5 “ x width 5 “
   d) Distance between the grate and the top of the mouth : 9.5 “
   e) Ash outlets/primary air entry passage : Length 5 “ x width 5 “
   f) Entry way from first mouth to the second : (7.0X4.5) “
   g) Open space left after placing the utensil in the second mouth : 2 “
   h) Diameter of the flue gases exit in the second mouth : 2.0 “
   i) Tunnel from second mouth to the chimney holder : Length 6 “ x width 3 “ x height 3 “
   j) Chimney holder : Length 5 “ x width 5 “ x height 10 “
   k) Height and diameter of the chimney : 6-9 ft and 3 “
   l) Distance between the chimney and its cap : 4 “
   m) Soot removal outlet at the bottom of the chimney : Length 3 “ x width 3 “
   n) Height of the stove from G.L : 9 “

A. Model

B. Model on Use

Improved Double Mouth Cooking Stove with Chimney (Half underground)
Model No.5 Improved Single Mouth Cooking Stove with Chimney (Portable)

- **MODEL DEVELOPED BY**: BCSIR 1984
- **TYPE OF FUEL USED**: Suitable for burning fuel wood branches, cow dung cake, briquettes etc.
- **PRICE**: TK.400.00
- **FUEL SAVING**: 60% as compared with traditional stoves.
- **EFFICIENCY**: 28-30%
- **SEASONALITY**: Round the year

![A. Model](image1)

![B. Model on Use](image2)

**Improved Single Mouth Cooking Stove with Chimney (Portable)**

1) **Different parts of the model**
   - a) Structure
   - b) Grate
   - c) Chimney
   - d) Cap
   - e) Lid for covering the ash outlet.

2) **Dimension of the model**:
   - a) Mouth diameter : 9 inches
   - b) Feed hole : (4.5X4.5) inches
   - c) Distance between the grate and the top of the mouth : 8.0 inches
   - d) Exit for flue gases : 1.5 inches (diameter)
Model No.6: Improved Double Mouth Cooking Stove Coupled with Single Mouth Cooking Stove having a common chimney.

- MODEL DEVELOPED BY: BCSIR (Supervisors of ICS Project, Phase-II 1998)
- TYPE OF FUEL USED: Suitable for burning fuel wood, branches, cow dung cake, briquettes and fluffy fuel viz, straw-leaves bagasse etc
- PRICE: TK. 750.00
- FUEL SAVING: As per models 3 and 5.
- EFFICIENCY: Do
- SEASONALITY: Round the year
- LIFE TIME: 2-3 years

1) Different parts of the model
   a) Structure
   b) Grate
   c) Chimney
   d) Cap
   e) Lid for covering the ash outlet.

2) Dimension of the model:
   - Double Mouth Cooking Stove:
     a) Mouths diameters: First mouth: 9 “and second mouth: 8 “.
     b) Distance between two mouths: 3 inches
     c) Feed hole: Length 5 “x width 5 “
     d) Distance between the grate & the top of the mouth: 8.5 inches
     e) Ash outlets/primary air entry passage: Length 5 “x width 5 “

Improved Double Mouth Cooking Stove Coupled with Single Mouth Cooking Stove having a common chimney.
f) Entry passage from the first mouth to the second : 7.0 “x 4.5 “
g) Open space left after placing the utensil on the second mouth : 2.5 “
h) Diameter of the flue gases exit on the second mouth : 2 “
i) Tunnel from the second mouth to the chimney holder : Length 6 “x width 3 “x height 3 “
j) Damper : 4 “x 4 “
k) Height of the stove : 15 “

- **Single Mouth Cooking Stove**
  a) Mouth diameter : 9 “
  b) Feed hole : 4.5 “x 4.5 “
  c) Distance between the grate to the top of the mouth : 8.5 “
  d) Flue gases exit diameter : 1.5 “
  f) Ash outlets/primary air entry passage : Length 3”x width 3 “

- **Common Chimney:**
  a) Chimney holder : Length 5 “x width 5 “x height 10 “
  b) Height and diameter of the chimney : 6-9 ft and 3 “
  c) Distance between the chimney and cap : 4 “
  d) Soot removal outlet at the bottom of the chimney : Length 3 “x width 3 “
  e) Damper : 4 “x 4 “
Model No.7: Improved Double Mouth Cooking Stove with Chimney, suitable for Large Scale Cooking and Semi Industrial Purposes.

- **MODEL DEVELOPED BY**: BCSIR 1985
- **TYPE OF FUEL USED**: Suitable for burning fuel wood, branches, cow dung cake, briquettes and fluffy fuel viz, straw, leaves, bagasse, etc.
- **PRICE**: TK.2500.00 - 3000.00
- **FUEL SAVING**: 60% as compared with traditional stoves.
- **EFFICIENCY**: 29-31%
- **SEASONALITY**: Round the year

1) Raw materials for construction:

<table>
<thead>
<tr>
<th>SL.No</th>
<th>Nature of the Materials</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mud/clay (adhesive)</td>
<td>200 kg</td>
</tr>
<tr>
<td>2.</td>
<td>Bricks</td>
<td>210</td>
</tr>
<tr>
<td>3.</td>
<td>0.7 inch thick ring of 18 inches diameter</td>
<td>2</td>
</tr>
<tr>
<td>4.</td>
<td>Rods 14 inches long, 0.7 inch thick</td>
<td>26</td>
</tr>
<tr>
<td>5.</td>
<td>Rods 8 inches long, 0.7 inch thick</td>
<td>14</td>
</tr>
<tr>
<td>6.</td>
<td>“U” shaped iron rods 4 inches long, 0.7 inch thick</td>
<td>4</td>
</tr>
<tr>
<td>7.</td>
<td>Cement</td>
<td>1 bag</td>
</tr>
<tr>
<td>8.</td>
<td>Sand</td>
<td>5 bag</td>
</tr>
<tr>
<td>9.</td>
<td>Red oxide</td>
<td>250 gm</td>
</tr>
<tr>
<td>10.</td>
<td>Cast iron grate: 17 inches diameter, hole diameter 0.5 inch</td>
<td>1</td>
</tr>
<tr>
<td>11.</td>
<td>Chimney, 4 inches diameter, 9-10 feet high</td>
<td>1</td>
</tr>
<tr>
<td>12.</td>
<td>Cap</td>
<td>1</td>
</tr>
</tbody>
</table>

2) Different parts of the model
   a) Structure
   b) Grate
   c) Chimney
   d) Cap
   e) Lid for covering the ash outlet.

![Improved Double Mouth Cooking Stove with Chimney, Suitable for Large Scale Cooking and Semi Industrial purposes.](image)
### Dimensions of the model:

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>a)</strong> Mouths diameters</td>
<td>First mouth: 18 “and Second mouth 17 “</td>
</tr>
<tr>
<td><strong>b)</strong> Distance between two mouths</td>
<td>6 “</td>
</tr>
<tr>
<td><strong>c)</strong> Feed hole</td>
<td>Length 10 “x width 10 “</td>
</tr>
<tr>
<td><strong>d)</strong> Distance between the grate &amp; the top of the mouth</td>
<td>12 inches</td>
</tr>
<tr>
<td><strong>e)</strong> Ash outlets/primary air entry passage</td>
<td>Length 10 “x width 10 “</td>
</tr>
<tr>
<td><strong>f)</strong> Entry passage from first mouth to the second mouth</td>
<td>10 “</td>
</tr>
<tr>
<td><strong>g)</strong> Open space left after placing the utensil on the second mouth</td>
<td>3 “</td>
</tr>
<tr>
<td><strong>h)</strong> Diameter of the flue gases exit in the second mouth</td>
<td>4 “</td>
</tr>
<tr>
<td><strong>i)</strong> Flue gases tunnel reaching from the second mouth up to the chimney holder</td>
<td>Length 6 “x width 5 “x height 5 “</td>
</tr>
<tr>
<td><strong>j)</strong> Chimney holder</td>
<td>Length 10 “x width 10 ”x height 15 “</td>
</tr>
<tr>
<td><strong>k)</strong> Height and diameter of the chimney</td>
<td>8-9 ft and 4-5 “</td>
</tr>
<tr>
<td><strong>l)</strong> The distance between the chimney and the cap</td>
<td>4 “</td>
</tr>
<tr>
<td><strong>m)</strong> Soot removal outlet at the bottom of the chimney</td>
<td>Length 4 “x width 4 “</td>
</tr>
<tr>
<td><strong>n)</strong> Height of the stove</td>
<td>22 inches</td>
</tr>
</tbody>
</table>

**Source:**

Technical Manual of Improved Cooking Stoves 2008

‘Bangladesh: Addressing Indoor Air Pollution (IAP),

Renewable Energy & Environmental Information Network (REEIN)

E-mail: reein@dhaka.net, myreein@yahoo.com, reeinorg@hotmail.com, reeinorg@gmail.com; **Website:** [http://www.reein.org](http://www.reein.org)