

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

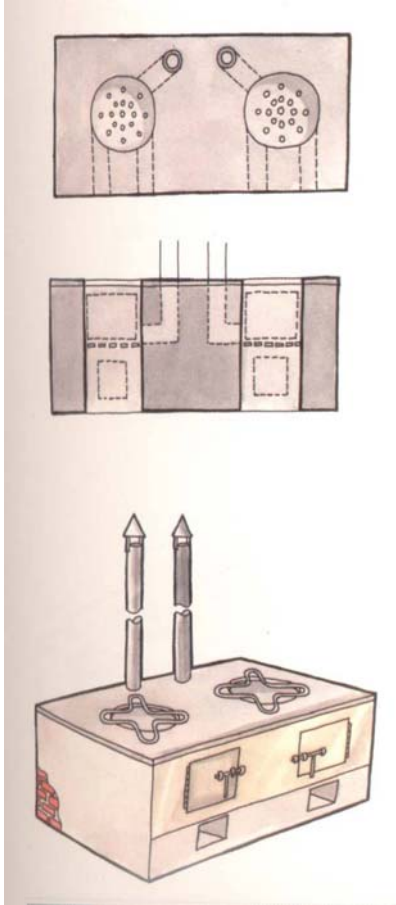


Stove type: Improved 2-pot
Construction material: Clay/Mud
Chimney: yes
Fuel type: Wood, straw
Country: Bangladesh

Source: FAO – Rural Wood Energy Development Program (RWEDP)

RE Practices in Bangladesh – Cook Stoves

Community/Cottage Industry Stoves - BANGLADESH



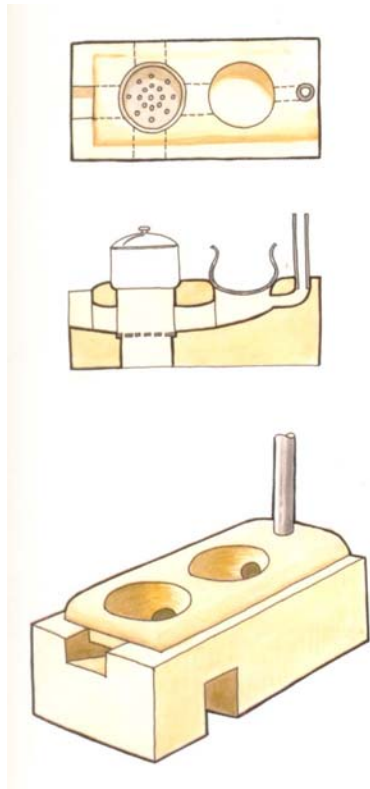
Biomass stove for Hostels

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

Source: Stove Compendium
ARECOP – RWEDP 2001

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Community/Cottage Industry Stoves - BANGLADESH



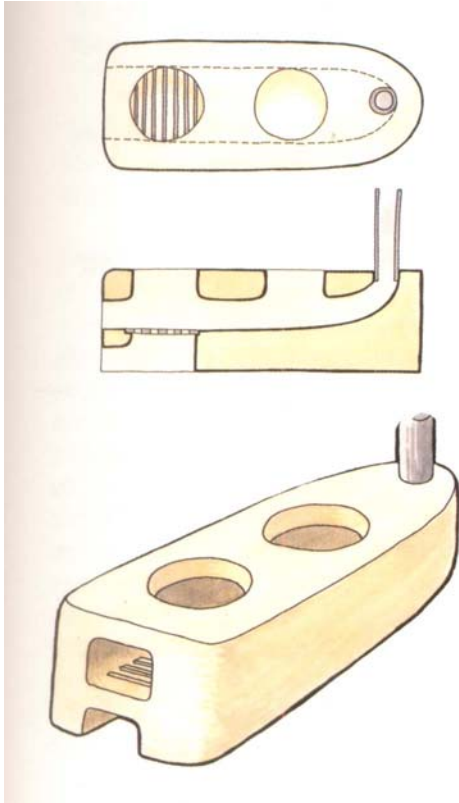
Biomass stove for Hostels

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

Source: Stove Compendium
ARECOP – RWEDP 2001

RE Practices in Bangladesh – Cook Stoves

Community/Cottage Industry Stoves - BANGLADESH



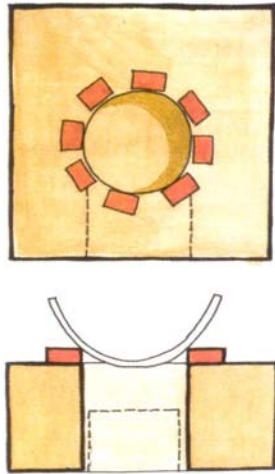
Biomass stove for Training Institutes

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

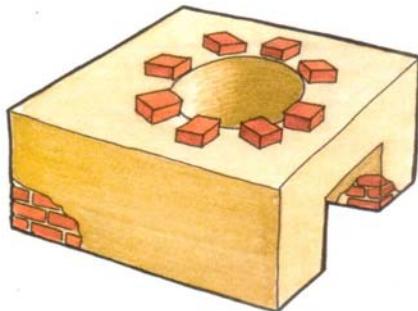
Source: Stove Compendium
ARECOP – RWEDP 2001

RE Practices in Bangladesh – Cook Stoves

Community/Cottage Industry Stoves - BANGLADESH



Biomass stove for Sweetmeat Industry

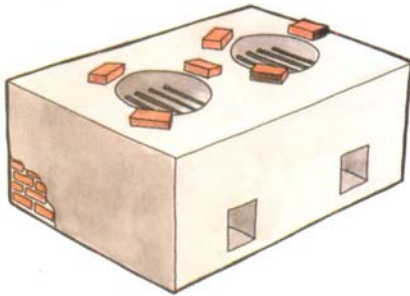
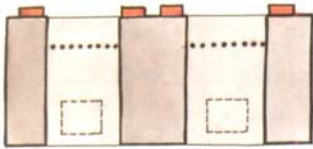
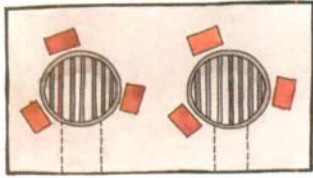


Name of the Stove:	Biomass stove for Sweetmeat Industry – a cottage industry
Type:	Fixed Single Pot Stove with grate
Size:	(140x120x60) cm
Chimney:	No
Materials:	Bricks, clay
Main fuel:	Fuelwood
Used in	In about 50,000 Sweetmeat shops
Dissemination:	Number not available
Developed by:	Not available
Estimated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

Source: Stove Compendium
ARECOP – RWEDP 2001

RE Practices in Bangladesh – Cook Stoves

Community/Cottage Industry Stoves - BANGLADESH



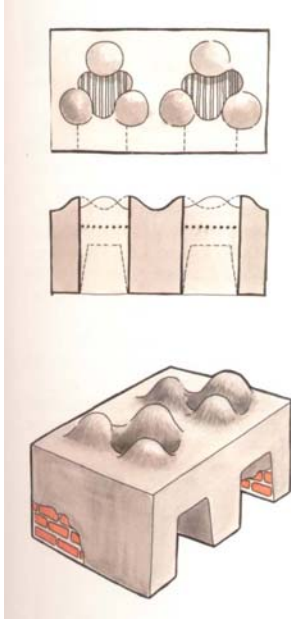
Typical stove used in a Tea Stall

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 every where
Dissemination:	Number not available
Developed by:	Not available
Estimated Cost:	Tk 750
Performance:	Not available

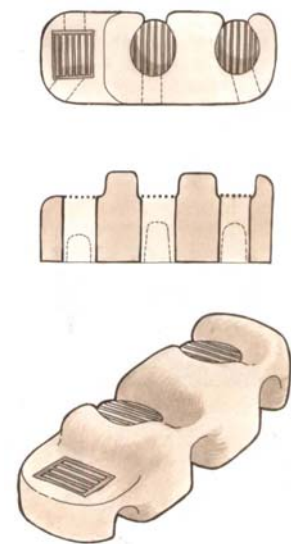
Source: Stove Compendium
ARECOP – RWEDP 2001

RE Practices in Bangladesh – Cook Stoves

Community/Cottage Industry Stoves - BANGLADESH



Other stove used in a Tea Stall



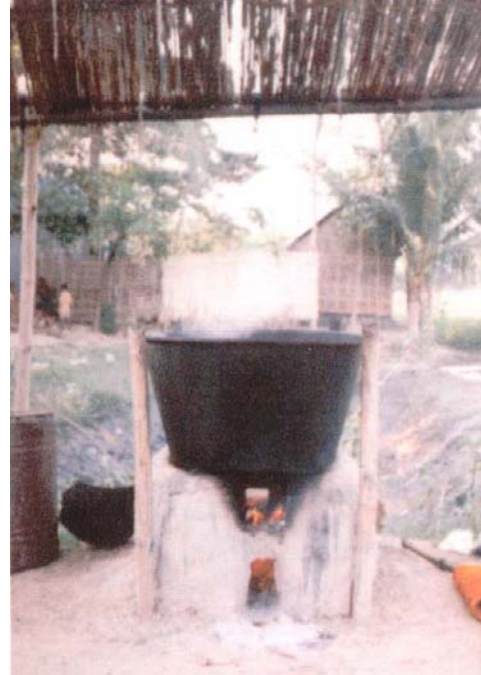
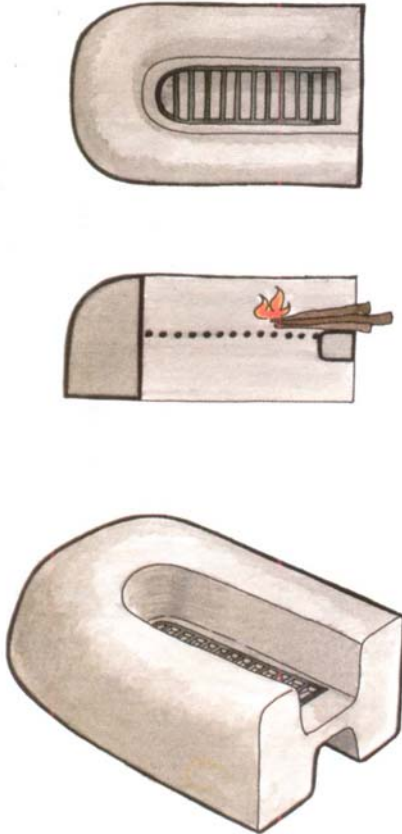
Other stove in a Tea Stall

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



Typical stove used in Yarn Twisting & Dyeing Industry

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

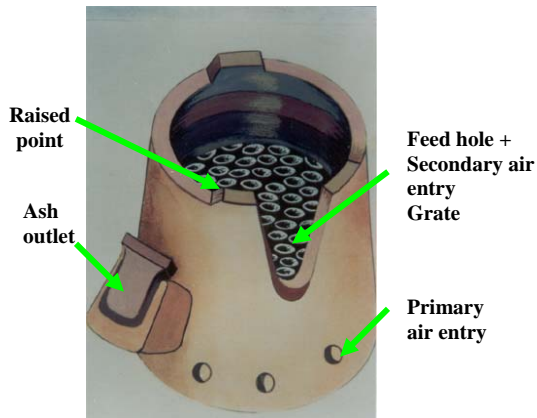
RE Practices in Bangladesh – Cook Stoves

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*.

S.No	Name of the ICS Models	Reasons for Users Preference
1	Model No.1 Improved Single Mouth Cooking Stove (<i>Portable</i>)	<ul style="list-style-type: none"> • Portable • Saves fuel • Can be used indoor-outdoor • Low cost
2.	Model No.2 Improved Single Mouth Cooking Stove (<i>Half underground</i>)	<ul style="list-style-type: none"> • All types of traditional fuels can be used • Save fuels • Low cost
3.	Model No.3 Improved Double Mouth Cooking Stove with Chimney (<i>on the floor</i>)	<ul style="list-style-type: none"> • 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
4.	Model No.4 Improved Double Mouth Cooking Stove with Chimney (<i>Half underground</i>)	<ul style="list-style-type: none"> • All types of traditional fuels can be used • Saves fuels • Saves cooking time • Reduces IAP in the kitchen environment
5.	Model No.5 Improved Single Mouth Cooking Stove with Chimney(<i>Portable</i>)	<ul style="list-style-type: none"> • Portable • Saves fuel • Can be used indoor/outdoor • Low cost • Reduces IAP at cooking place partially
6	Model No.6 Improved Double Mouth Cooking Stove Couple with Single Mouth Cooking Stove having one common Chimney	<ul style="list-style-type: none"> • 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
7	Model No.7 Improved Double Mouth Cooking Stove with Chimney for Large Scale Cooking and Semi Industrial Purposes	<ul style="list-style-type: none"> • Most suitable for cooking in hotels, restaurants, hostels etc. • Saves fuels • Saves cooking time • Reduces IAP in the kitchen environment

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

Improved Single Mouth Cooking Stove (*Portable*)

1) Different Parts of the model:

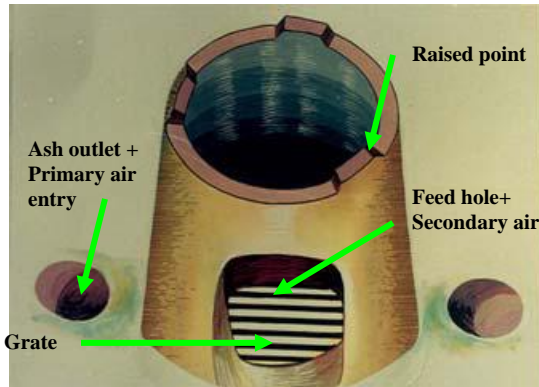
- a) Structure
- b) Grate
- c) Lid for covering the ash outlet.

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



B. Model on use

Improved Single Mouth Cooking Stove (*Half underground*)

1) Different parts of the model:

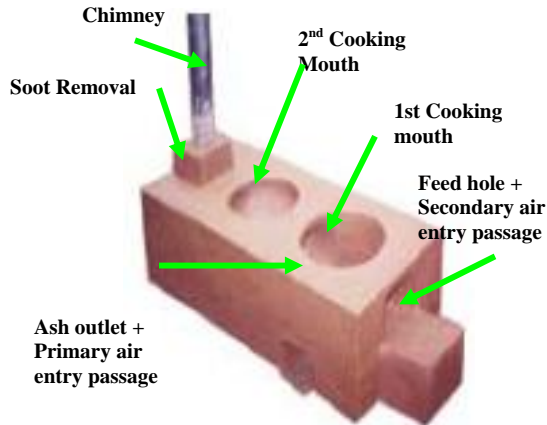
- d) Structure
- e) Grate
- f) Two perforated lids for covering the ash outlets.

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



A. Model



B. Model on use

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

1) Different parts of the model

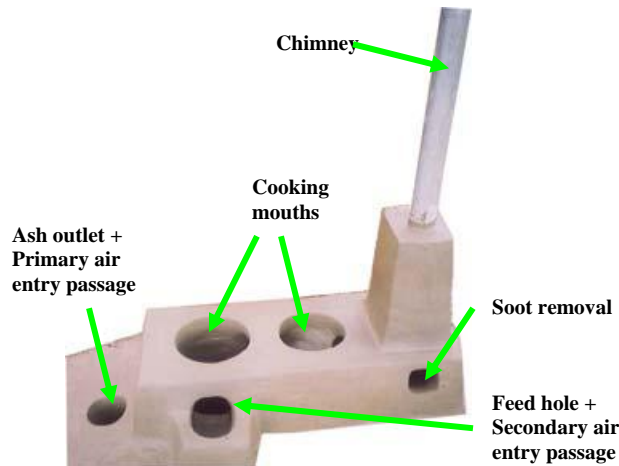
- | | |
|--------------|-------------------------------------|
| a) Structure | d) Cap |
| b) Grate | e) Lid for covering the ash outlet. |
| c) Chimney | |

2) Dimension of the model:

- | | |
|--|---|
| a) Mouths (diameter) | : First mouth: 9" and second mouth: 8 " |
| b) Distance between two mouths | : 3 " |
| c) Feed hole | : Length 5 " x width 5 " |
| 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



A. Model



B. Model on Use

Improved Double Mouth Cooking Stove with Chimney (*Half underground*)

1) Different parts of the model

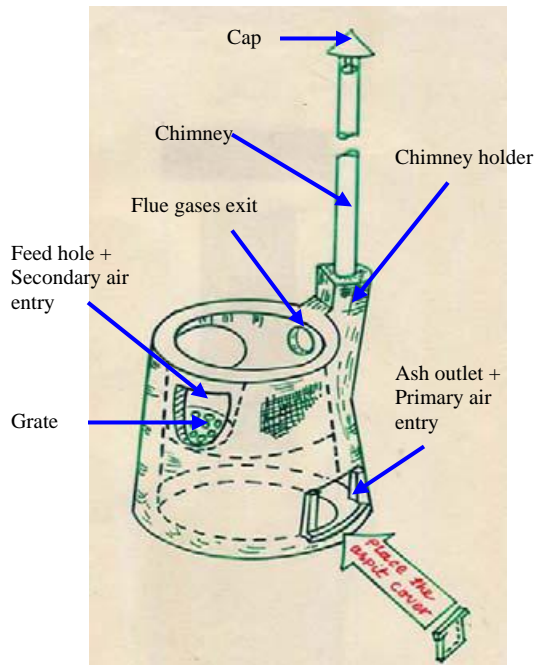
- a) Structure
- b) Grate
- c) Chimney
- d) Cap
- e) Lid for covering the ash outlet.

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 “

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



B. Model on Use

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

1) Different parts of the model

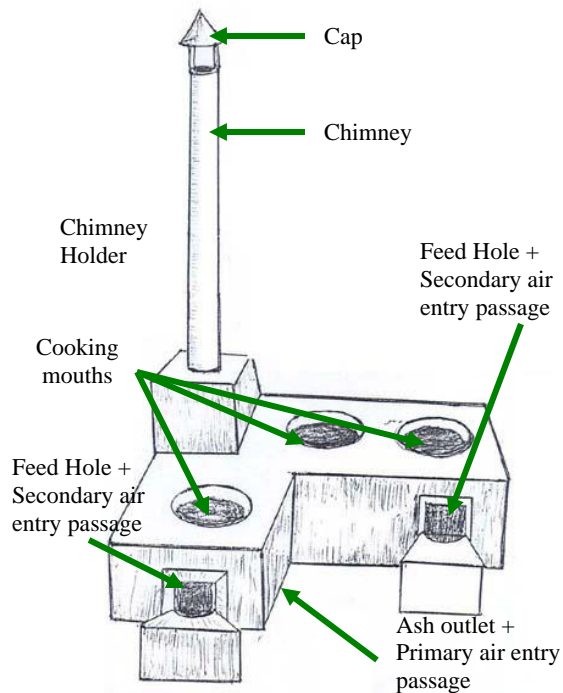
- a) Structure
- b) Grate
- c) Chimney
- d) Cap
- e) Lid for covering the ash outlet.

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



Improved Double Mouth Cooking Stove Coupled with Single Mouth Cooking Stove having a common chimney.

1) Different parts of the model

- a) Structure
- b) Grate
- c) Chimney
- d) Cap
- e) Lid for covering the ash outlet.

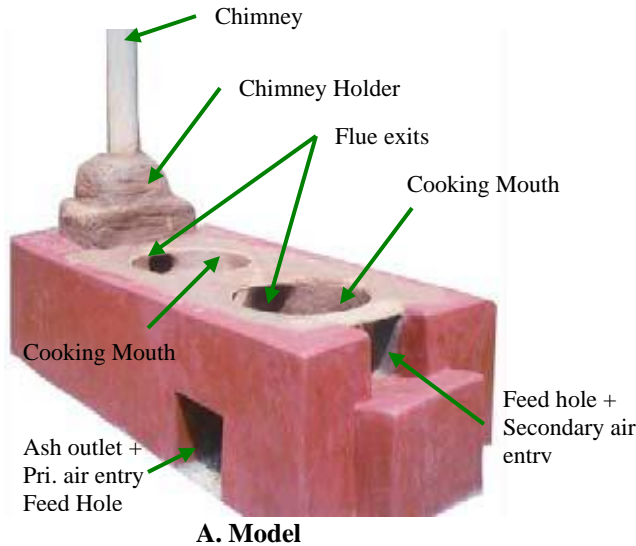
2) Dimension of the model:

- **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 “

- 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



Improved Double Mouth Cooking Stove with Chimney, Suitable for Large Scale Cooking and Semi Industrial purposes.

1) Raw materials for construction:

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

2) Different parts of the model

- a) Structure
- b) Grate
- c) Chimney
- d) Cap
- e) Lid for covering the ash outlet.

3) Dimensions of the model:

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

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>**