



Cambodia Fuelwood Saving Project

Set-up by



Ministry of
Industry,
Mines & Energy
MIME



Groupe Energies
Renouvelables
et Environnement
GERES



Development and
Appropriate Technology

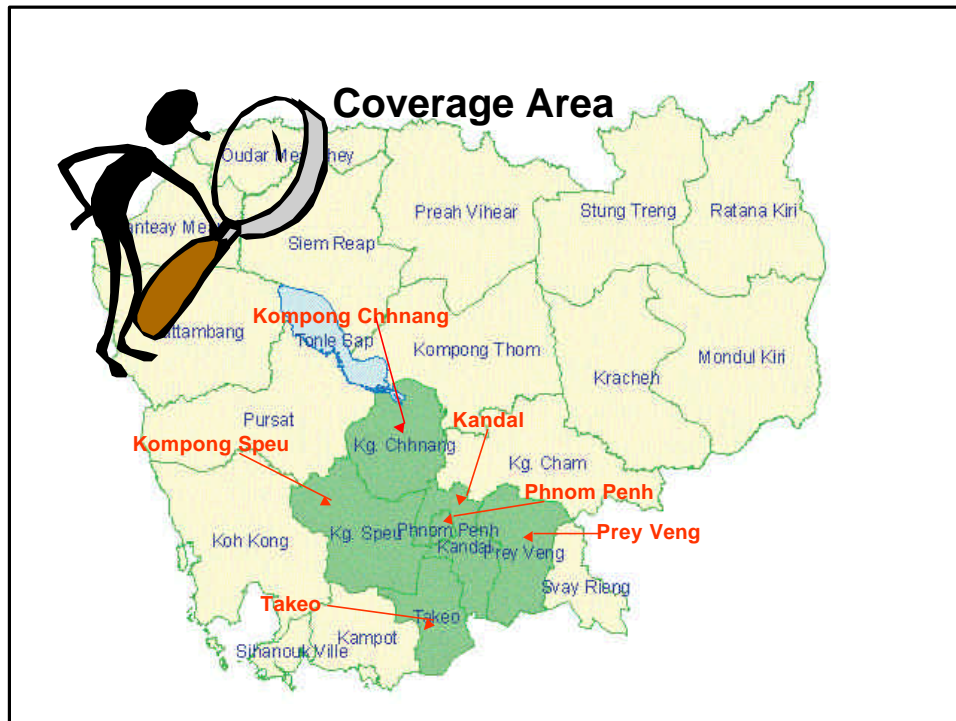


1



Signing the MOU with the Government of Cambodia

2



Porvince	Households	Male	Female	Total Population
Kg. Chhnang	82,638	197,691	220,002	417,693
Kg. Speu	115,728	287,392	311,490	598,882
Kandal	206,189	515,996	559,129	1,075,125
Phnom Penh	173,678	481,911	517,893	999,804
Takeo	155,030	376,911	413,257	790,168
Prey Veng	194,185	445,140	500,902	946,042
Total	927,448	2,305,041	2,522,673	4,827,714

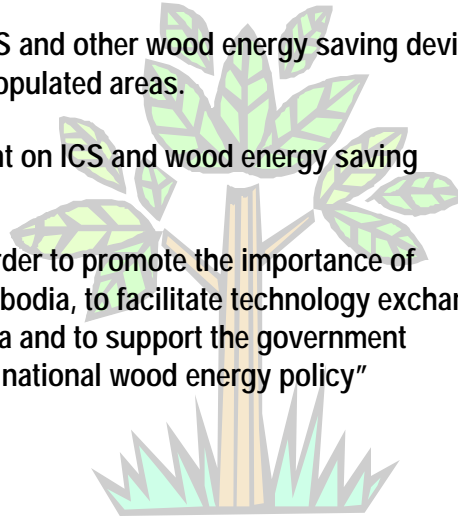
42.37% of households in Cambodia live in the covered provinces

Objectives

Broad dissemination of ICS and other wood energy saving devices to the critical and highly populated areas.

Research and Development on ICS and wood energy saving related matters

Set-up an institutions in order to promote the importance of wood energy issue in Cambodia, to facilitate technology exchange with other countries in Asia and to support the government of Cambodia to establish "national wood energy policy"



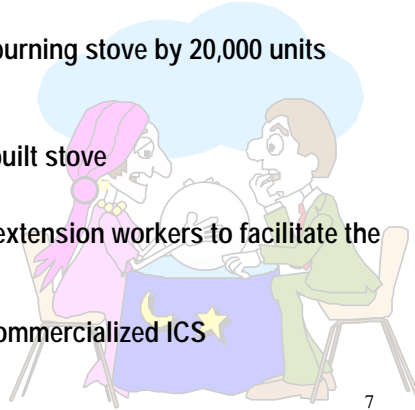
5



6

Expected Output

- Selling rate of charcoal burning stove by 15,000 unit per year
- Selling rate of charcoal & wood burning stove by 20,000 units per year
- Disseminate 5,000 units of own built stove
- Train 30 ICS technicians and 50 extension workers to facilitate the dissemination of own built stove
- Train 90 producers to produce commercialized ICS



8

Taking account the monthly dissemination (selling) rate of ICS at the end of 2006; ~ 5,000 units of commercialized ICS

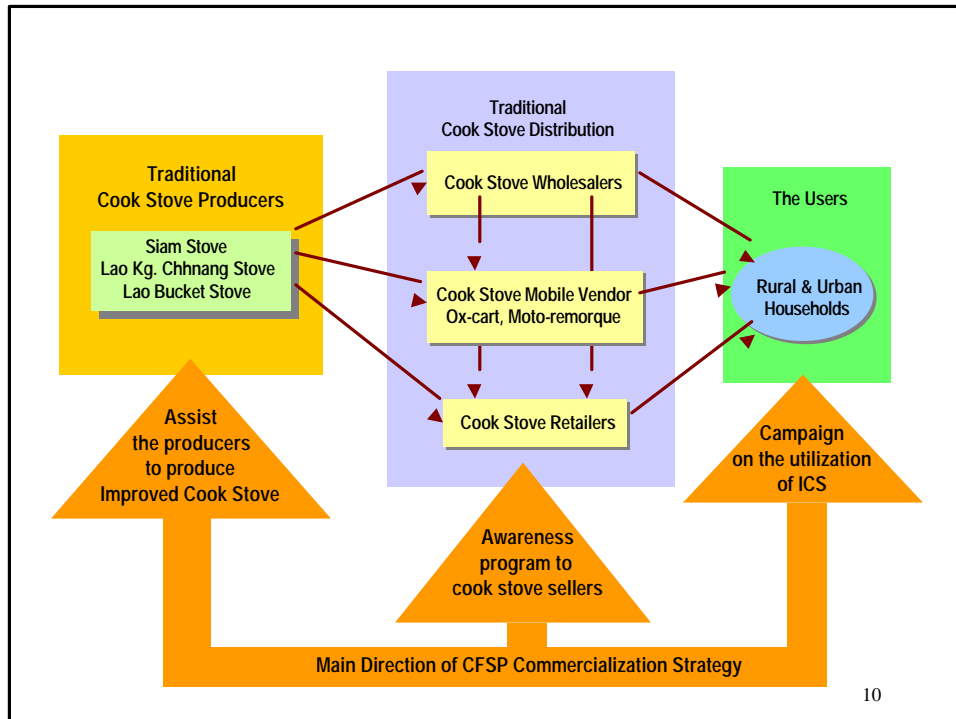
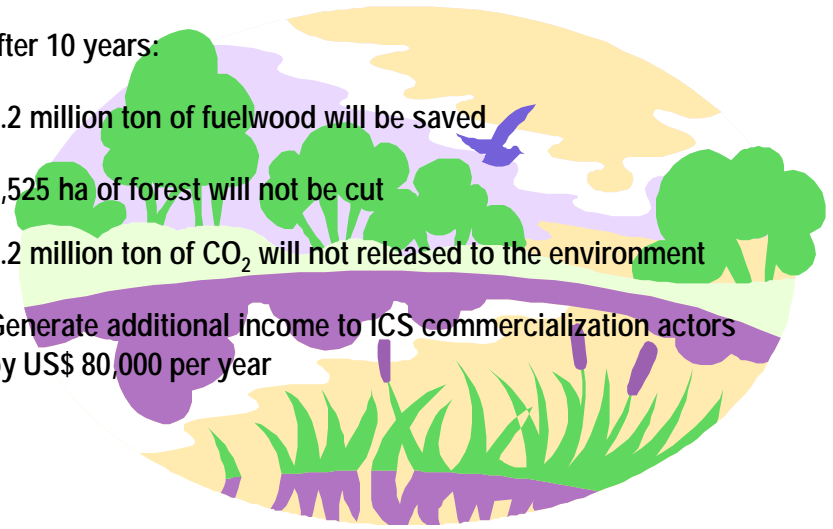
After 10 years:

2.2 million ton of fuelwood will be saved

5,525 ha of forest will not be cut

3.2 million ton of CO₂ will not be released to the environment

Generate additional income to ICS commercialization actors by US\$ 80,000 per year



The role of CFSP is divided into

Technical

Design development, Technology transfer, Quality Control,
Testing Facilities (stove efficiency & clay mixture),

Dissemination

Create awareness on wood energy efficiency, Promotion to create demand
on ICS,

Financial Assistance

Provide credit to encourage ICS producers to produce more ICS and stock
the ICS (to sell in rainy season)

Institutional

Establish ICS producers (& distributors) association to ensure the quality
control

11

Technical Assistance

**Develop the ICS design by adopting the design from
other countries (Twin Stove & NLBS) and modify the
popular traditional cook stove (NLKCS)**

Train producers to produce ICS

Follow-up in the pilot production stage

Monitor and improve the quality of the ICS

...the aim...

**all producers can produce high quality ICS and sell it through
the existing commercialization channel.....**

12



13

Dissemination

Create the awareness of target users on ICS

Promote ICS and its advantages through public media

Increase the distribution by introducing the ICS to middlemen and retailers (give sample of ICS)

Provide sample of ICS to road side restaurant

Promote wood energy efficiency and ICS into secondary school curriculum

...the aim..

more and more families switch from traditional to improved cook stove

14



Major cooking – NLBS, minor cooking – LPG stove

15

Financial Assistance

Provide credit to encourage the producers to produce more ICS

More production will create demand

Unsold product will be stocked to sell in dry season when production lessened due to slow drying

To stock raw material (clay) for some producers where clay is difficult to quarry in rainy season



16

Institutional

Establish ICS producers (& distributors) association to ensure the quality control

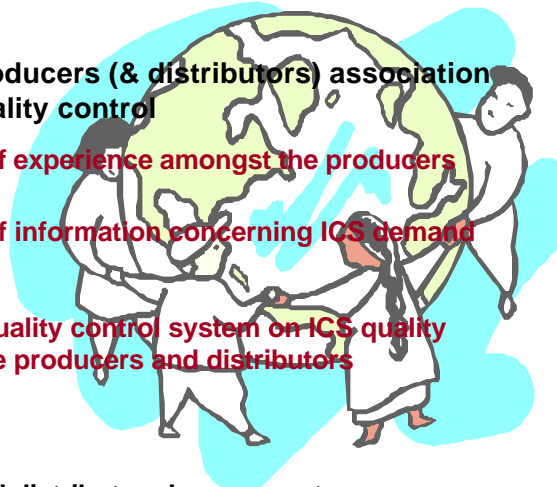
Exchange of experience amongst the producers

Exchange of information concerning ICS demand and pricing

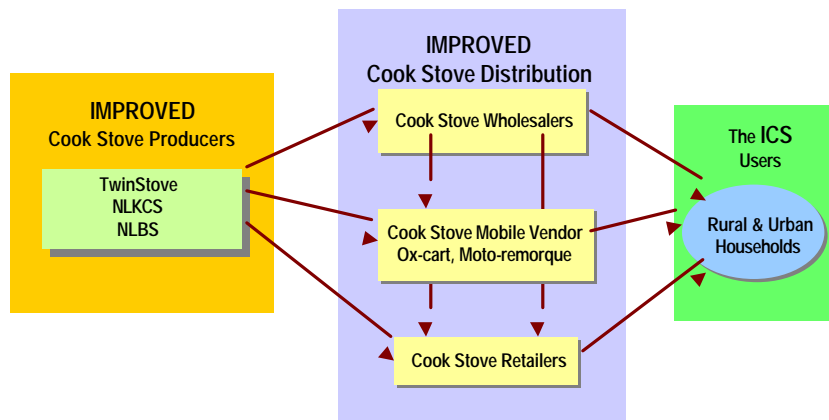
Fostering quality control system on ICS quality amongst the producers and distributors

... the aim ...

ICS producers and distributors become a strong and independent network in ICS commercialization



17



...probably it is called sustainable ICS commercialization...

18

Type of fuel used by households in Cambodia

No.	Type of cooking fuel	Cambodia	Phnom Penh	Other Urban	Rural
		in percent (column)			
1	Fuelwood	91.20	39.00	86.00	97.20
2	Charcoal	5.10	38.80	11.30	0.90
3	LPG	1.70	18.20	1.70	0.10
4	Kerosene	1.30	3.40	0.50	1.10
5	Public Electricity	-	0.50	-	
6	Private Electricity	0.20	0.10	0.20	0.20
7	None	-		-	-
8	Other	0.50	0.20	0.30	0.60
Number of HH (000)		2,093	2,093	2,093	2,093

Social Economic Survey 1999

19

5.1% of households (~107,000 households) in Cambodia burning charcoal

3.23% or 67,600 are in Phnom Penh urban area

1.16% or 24,280 are in other urban areas of Cambodia


0.73% or 15,280 are in rural areas

80.7% of households (~1.67 million households) in rural Cambodia burning fuelwood and use the commercialized cook stove

67,860 households in Phnom Penh .. and ...

184,000 households in other urban areas are also burning fuelwood and use commercialized cook stove

20



Traditional Cook Stove

Siam Stove

Material : Baked Clay
 Production : Manual
 Size : Multi size
 Specification : Portable (weight 1.5 – 4 kg)
 Price : 800 – 3,000 riels (US\$ 0.2 – 0.75)
 Usage rate : 70%
 Main users : Rural households
 Fuel : Fuelwood and biomass
 Efficiency : 15%
 Dissemination : Commercialization

21



Traditional Cook Stove

Lao Kompong Chhnang Stove – TLKCS

Material : Baked Clay
 Production : Manual
 Size : Multi size
 Specification : Portable (weight 2 – 4 kg)
 Price : 500 – 2,000 riels (US\$ 0.125 – 0.5)
 Usage rate : 40%
 Main users : Rural and peri-urban households
 Fuel : Fuelwood and charcoal
 Efficiency : 23%
 Dissemination : Commercialization



Traditional Cook Stove



Lao Bucket Stove – TLBS

Material : Metal covered baked clay
 Production : Semi manual
 Size : Multi size
 Specification : Portable (weight 3 – 8 kg)
 Price : 2,000 – 8,000 riels (US\$ 0.5 –2)
 Usage rate : 40%
 Main users : Urban and peri-urban households
 Fuel : Charcoal
 Efficiency : 25%
 Dissemination : Commercialization




Traditional Cook Stove





NO COMMENT...!

24

Improved Cook Stove




Twin Stove – TS

Material : Baked clay
 Production : Manual
 Size : 70 X 20 X 24 cm
 Specification : Portable (weight ~ 9 kg)
 Price : 5,000 – 8,000 riels (US\$ 1.25 –2)
 Usage rate : Approx 4,000 household (Feb '02)
 Main users : Rural households
 Fuel : Fuelwood & Biomass
 Efficiency : 25 - 30%
 Dissemination : Commercialization



Improved Cook Stove




New Lao Kompong Chhnang Stove – NLKCS

Material : Baked clay
 Production : Manual
 Size : height 21.7 cm, diameter 26 cm
 Pot size : 21 – 24 cm pot diameter
 Specification : Portable (weight ~ 5 kg)
 Price : 3,000 riels (US\$ 0.75)
 Usage rate : Launched by January 2003
 Main users : Urban & Peri-urban households
 Fuel : Commercial Fuelwood & Charcoal
 Efficiency : 22% (with fuelwood)
 Dissemination : Commercialization

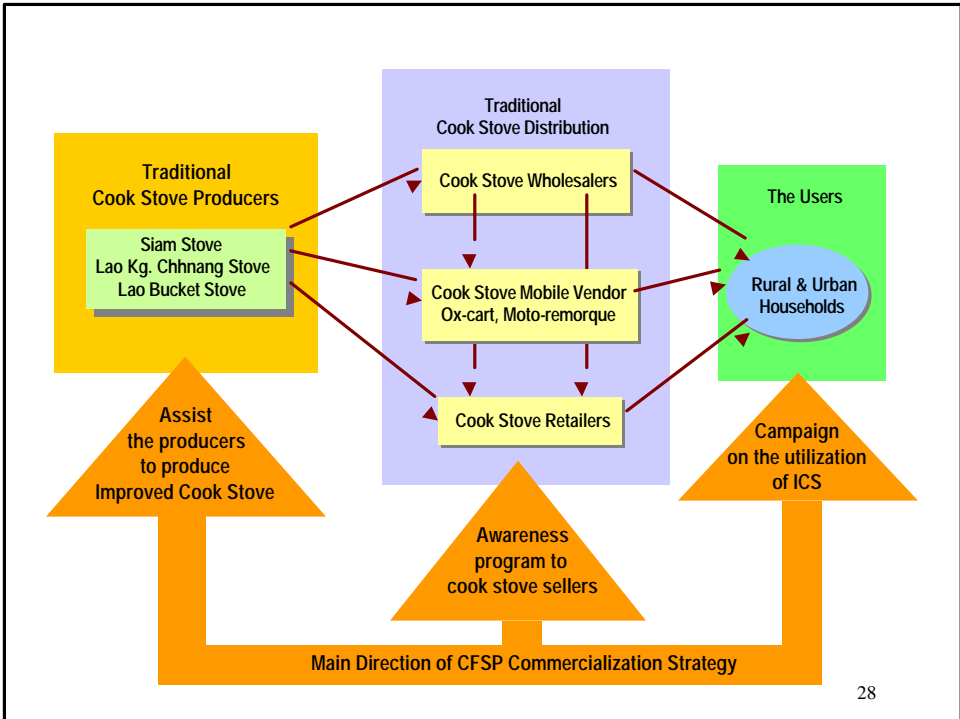


Improved Cook Stove




New Lao Bucket Stove – NLBS

- Material : Metal covered baked clay
- Production : Manual
- Size : height 25.4 cm, diameter 30 cm
- Pot size : 18 – 28 cm pot diameter
- Specification : Portable (weight ~ 12 kg)
- Price : 12,000 riels (US\$ 3)
- Selling rate : ~ 2,200 units/month (by producers)
- Main users : Urban households
- Fuel : Commercial Charcoal
- Efficiency : 29% (average)
- Dissemination : Commercialization

Design Development

CFSP Develops ICS based on the aspects of

Fit to the users' needs – **plug and play**

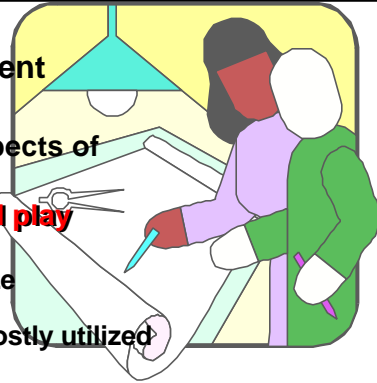
Fit to the cooking fuel used to utilize

The design almost similar to the mostly utilized commercialized cook stove

Fit to the existing production procedure and equipment

Fit to the commercialization (distribution) aspects

Production cost is similar to the traditional one or just slightly higher



29

Technology Transfer

Addressed to traditional cook stove producers and they should:

Have strong enthusiasm

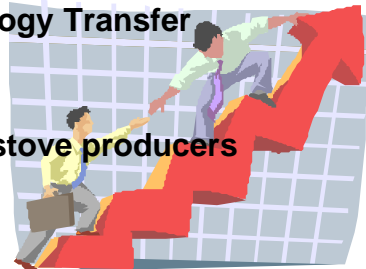
Have strong entrepreneurship

Have good craftsmanship

Large capacity of production

Wide outreach and network

... then followed by training or other technology transfer..... including the introduction of new equipment when necessary..



30

Pilot Production

Pilot production is part of learning process.....

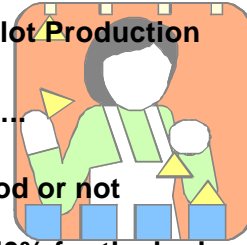
1st batch, pay all in full price, no matter good or not

2nd batch, pay full price for the good one, 50% for the bad one and demolish

3rd batch, pay full price for the good one, 25% for the bad one and demolish

4th batch, pay full price for the good one, 0% for the bad one and demolish

.....in this stage CFSP provides technical assistance



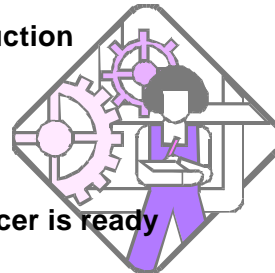
31

Production

When CFSP considers a certain producer is ready for production,

Continue quality control

Assist in marketing and promotion through various media



32

Quality Control

To assure the quality of ICS, CFSP performs:



Assigns a technician to monitor the quality and provide additional technology

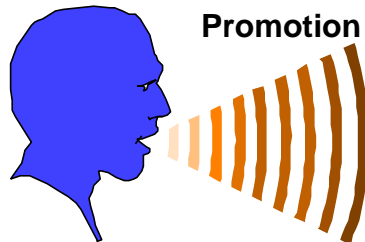
Conduct regular clay testing to make sure the quality of clay mixture and tolerable shrinkage

Develop moulds to ensure uniform and standard ICS

Develop appropriate kiln to facilitate better firing process

33

Promotion and Campaign

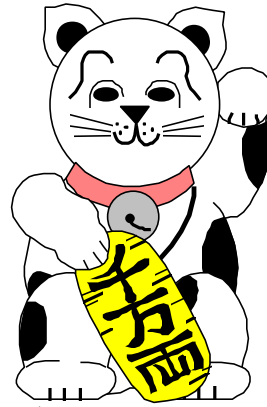


CFSP develops a number of media to promote the ICS this promotion is addressed to the users and to the distribution channel

TV Spot, Radio spot, Poster, Booklet, Banner, Public meeting, Cooking Demonstration, etc...

34

The rest....



LUCK factor