

## Improved Chulha (Cook-stove)

The **National Programme on Improved Chulha (NPIC)** was started in 1986-87 by Govt. of India as a programme for women, by women & through women.



### Cumulative Achievement:

- Over 350 Lakh Improved Chulhas (estimated potential of about 1200 Lakh) upto March 2003 have been installed in various states of India.
- NPIC is implemented with a multi-agency approach.
- Self Employed Workers", mainly women, from Rural & Semi urban area are trained hands on who are providing service for the proper construction and maintenance of the fixed type chulhas.

AIWC had been identified as one of the Nodal Agencies for NPIC by the Ministry of Non-Conventional Energy Sources since 1986 to implement this very important 20-point programme for women with direct funding from the Federal Ministry with a mandate to work in all the states of India. Now NPIC has been shifted to the states is no longer a Central programme.

### NATIONAL PROGRAMME ON IMPROVED CHULHAS (NPIC)



Wood, agricultural residues and cattle-dung cakes are the primary energy sources for cooking in rural areas. Traditional chulhas, commonly in use in rural areas, however, are inefficient and environmentally undesirable. In contrast, improved chulhas are scientifically designed for optimal regulation of heat flow and better fuel utilization. Improved chulhas have heat transfer efficiency of 20-35% as compared to 8-10% in case of traditional chulhas.

### The National Programme of Improved Chulha (NPIC):

- Caters to installation of improved chulhas in rural and semi-urban households.
- Started in 1986-87 with the following objectives:
  - i. Conservation of fuel wood and other biomass;
  - ii. Removal of smoke from kitchen;
  - iii. Check on deforestation and environmental up gradation;
  - iv. Reduction in the drudgery of women and girl children from cooking in smoky kitchen;
  - v. Reduction of health hazards and in cooking time; and
  - vi. Provides employment opportunities to rural people.

- More than 30 models of durable fixed with chimney and portable improved chulhas are available for family, community and commercial applications.
- Cumulative Achievement is over 350 lakh-improved chulhas up to 31st March, 2003 against an estimated **potential** of covering 1200 lakh households in the country.
- There are fifteen **manufacturers** of ISI marked portable metallic chulhas in the country.

## NATIONAL PROGRAMME ON IMPROVED CHULHAS (NPIC)

**Financial Incentives** given during the year 2001-2002 under NPIC

### Capital Subsidy

Type of Chulha	Amount of Central subsidy per chulha
Durable fixed type chulhas with chimneys (i) N.E. Region States & Sikkim (ii) Others	Rs. 270/- Rs. 80/-
Portable Chulha (i) N.E. Region States & Sikkim (ii) Islands and notified hilly and desert areas (iii) SC/ST beneficiary in other States / UTs	Rs. 135/- Rs. 75/- Rs. 50/-
High Altitude Chulha (i) N.E. States and Sikkim (ii) Jammu & Kashmir, Uttranchal, Himachal Pradesh and hilly districts of West Bengal	Rs. 450/- Maximum up to Rs. 250/-

- Self Employed Workers charges for construction & maintenance of improved chulhas  
Single pot fixed chulha with chimney: Rs. 30 per chulha  
Two/three pot fixed chulha with Chimney and community chulha: Rs. 40 per chulha
- Dealership support for fair price shops: Rs. 5 per chulha and co operative stores and private retailers
- Support for organisational infrastructure: Rs. 4 per chulha to State Government, Nodal Departments and Agencies.
- Support for State level publicity awareness: A minimum support of Rs. 30,000/- is given to the States and agencies having an annual target of upto 15,000 improved chulhas. The other States and agencies which have an annual target of more than 15,000 chulhas are entitled to receive funds @ Rs. 2/- per chulha, with an upper ceiling of Rs. 2.50 lakh.

- v. (v) Training support: at the rate of Rs. 16,000 per SEW course, Rs. 10,000 per Trainers Training Course, Rs. 27,000 per Entrepreneurship Development Course and Rs. 1,000 per Users Course.
- vi. Support for Technical Back Up Units: @ Rs 8 lakh to Rs 10 lakh per year
- vii. Support for Fixed Chulha Moulds: at the rate of Rs. 1,500 per village panchayat.

### **AIWC's role in promoting improved chulhas.**



**AIWC** has been promoting models of improved chulha's in India since 1984-85. AIWC was a nodal agency for National Program on Improved Chulhas since 1984-85. We promoted few models of improved chulha's – Sukhad, Sugam, Arravalli, Sohini, Mihini and Akash. The most popular were Sukhad and Sugam. AIWC provided trainings to women at the remotes on improved chulha's.

The materials needed for the chulha are: *sand, clay, organic material such as sawdust, pieces of straw or rice husks, ash, Bricks, Zinc, clay pipes, etc.*

The benefits of the improved chulha is to reduce fuel consumption leading to saving in fuel wood. It reduces the smoke so the women can save time & saving in time leading to more economic activity, employment generation, etc.

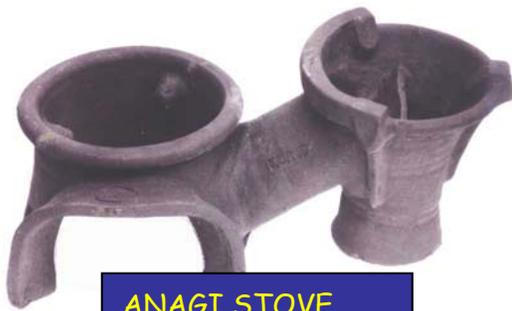
We realized that women are the most sufferers due to inadequate supply of energy. Our team consisting of IIT trained drafts man provided orientation on various models of improved chulhas and later provided the trainees to decide about the most suitable model.

Women prepared the chulhas themselves and then AIWC provided the certificate. Many trainees turned out to Self employed workers. The SEW earned Rs. 10/- initially and later it rose to Rs. 40/-. Our Women friends found an opportunity to make themselves economically empowered. Many women took it up as a livelihood option.

Improved chulhas are scientifically designed, environmental friendly cookstoves with a thermal efficiency of about 20 per cent or more as compared to 5% to 10% efficiency of traditional chulhas.

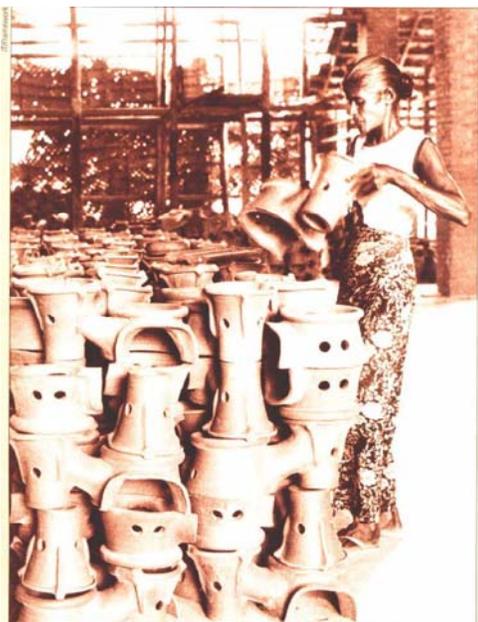
## Commercialised stove production in Sri Lanka 300000 stoves a year - A success story.

Since the inception of Improved Cook stove program in Sri Lanka in early 1970s it has gone through several stages during its long journey. The period can be broadly divided into three phases of development. (1) Design and testing phase 1970 – 1985 (2) Promotion & dissemination phase (partly subsidised) 1985- 1991 (3) Commercialisation phase 1991 – 2005. During this period of development several stakeholders from government and non government organisations participated, and the objectives changed from a narrow focus of firewood conservation to a more integrated development approach covering a broad



ANAGI STOVE

range of development issues. As a result several stove designs evolved ending up with the present design which is a one piece two pot clay stove which can be used as it is or with a mud insulated covering as desired by the user according to her needs. It can be estimated that a total of 750000 stoves have being disseminated during the subsidised phase from 1985 – 1991 with the support of the government and several donor agencies mainly the DGIS (Royal Netherlands Government). The stove promoted during this phase which is a two pot mud insulated with a pottery liner which requires a skilled stove installer was developed by the "Sarvodaya" a leading NGO. Due to the difficulties experienced in promoting a heavy mass stove as a marketable product in a commercialised effort, this model was later modified to a two pot single piece clay stove which is



the present stove called "Anagi". This is the model used in the commercialisation phase initiated in 1991 by the Integrated Development Association (IDEA) with technical assistance from the ITDG and funding from the ODA.

It can be estimated that over two million "Anagi" stoves have been commercially produced and marketed to date from 1991. The present annual production is 300000 stoves produced by about 120 rural potters trained by IDEA scattered in 14 districts of the country. Today "Anagi" ICS is one of the common items in most of the sales outlets that sell pottery items and in some village grocery stores. If the

Anagi stove is used without insulation the life time may be about 1 year and if insulated 3 years or more. In several district surveys carried out it is revealed that over 20% use Anagi stoves.

Sri Lanka's ICS promotion is now fully commercialised and the basic factors of demand, supply and profit making concepts determine the continuation of the commercialisation of ICS.

Training in stove production is provided by IDEA and a set of templates and moulds are given to the trained potters to maintain the correct dimensions and quality. Training manual has been prepared to cover all aspects of the stove construction viz clay mixing, throwing, assembling, drying and firing of stoves. The technical efficiency of the "Anagi" ICS is 21% and a large number of field tests performed records firewood savings ranging from 22% to 43% in addition average time saving of 30%. The wholesale price of the stove at the production centre ranges from RS 65 to Rs 95 while the retail price varies from about Rs 90 to Rs 200, (\* 1 Euro = Rs 120)



The stove is designed to cater for the cooking needs of an average family of 6 people.

#### Marketing of Stoves

In general distributors (Wholesale buyers) visit the production centres to buy stoves in bulk. Producers have their regular buyers. A lorry can accommodate about 400 stoves at a time. Some time the buyers transport both pottery products and stoves

together. Stoves purchased are distributed to retail shops spread over a distance of about 200 km. Small producers living in isolated areas sell their products

directly in the village fair at prices much higher than the normal selling price of Rs 120.

#### Simple cost- benefit analysis

Assumptions:

An average family of 6 persons use 200 kg/month

Price of firewood: Rs 3/kg Average cooking time 6 hrs/day

Average firewood savings and time savings 30%

Average stove price: Rs 120

(Note: Majority of rural users collect their own firewood at no cost)

**Financial benefit:** Rs 60/month. Pay back period 2 months  
Time savings: 2 hrs/day

**Environmental Benefits:** In a study done by the Centre of Environmental strategy, University of Surrey, it is estimated that considering 4 scenarios, the Anagi Stove has the potential to reduce CO<sub>2</sub> emissions within a range of of 111 kg/ CO<sub>2</sub>/capita/year to 266 CO<sub>2</sub>/capita/year. (Initial Evaluation of CDM type projects in Developing Countries. Dr K.G. Begg et al. Centre for Environmental Strategy, University of Surrey)

### **Employment & Income Generation/ 1000 stoves/month**

Assumption: Wholesale price Rs 65/stove and Retail Price Rs 120/stove  
Production Turnover: Rs 65000. Employment: 1 potter and 3 unskilled persons.  
Sales turnover: Rs 55000

### **Profile of a stove production village**

Kumbukgete is the main stove production village situated in the North Central province in Sri Lanka. In the year 1985 one family in this village was trained to produce the "Sarvodaya" stove under the National Fuelwood Conservation Programme implemented by the Ceylon Electricity Board. The monthly production of 300 stoves was sold at Rs 25/stove to the programme. This was the beginning of stove production in this village. In 1991 when the commercial programme was initiated by the Integrated Development Association (IDEA) with the support from ITDG to commercialise the "Anagi" Stove (improvement of Sarvodaya stove) five families in the village was trained to produce 500 stoves a month. At the end of 1996 when the programme was terminated the production has increased to 1500 with 10 families involved in production.

With the continuation of the programme by IDEA after 1996 with partial support from the ARECOP (Asian Regional Cookstove Programme) and many other donors the monthly production in the village gradually increased to 15000 stoves at present which is almost 60% of the total stove production in Sri Lanka.

Out of the 39 potter families, 29 families are engaged in stove production deriving unskilled labour from the neighbouring villages. Out of the 171 engaged in production activities 80 are women, 122 are from the families within the village and the rest, mainly for unskilled labour are from the neighbouring villages. Twelve



producers have obtained bank loans ranging from Rs 75000 to Rs 200000 to be invested in stove production.

The following data will provide evidence of the substantial improvement in the socio-economic status accrued as a result of the stove production activities within the village.

#### Production and Income

No: of Families	No: stoves/month	Income Rs
13	100 – 300	6500 – 19500
11	301 – 600	19500 – 39000
05	701 - 1000	45500 - 65000

#### Material Acquisitions before and after commencing stove production

Item	Before	After
Colour TV	1	19
Cassette Radio	1	19
Sewing Machines		12
Refrigerators		8
Electric fans		14
Rice Cookers		4
Gas Cookers		2
Blenders		3
Heaters		1
Bicycles	3	3
Motor Cycles		10
Hand Tractors		9
Lorries		9
Vans		1
Cars		1

## Improvement in Houses

Item	Before	After
Roof		
(a) Tiles	3	22
(b) GI Sheets		4
(c) Thatched	12	3
Walls		
(a) Brick	3	26
(b) Mud	9	3
(c) Cadjan	3	
Floor		
(a) Cement	3	28
(b) Cow dung	12	1
Electricity	2	29
Permanent Toilets	4	29

**R.M.Amerasekera**  
**Executive Director**  
**IDEA**

## GOOD PRACTICES ON IMPROVED CHULLHAS

### All India Women's Conference (AIWC), New Delhi

In Andhra Pradesh, AIWC branches have constructed a large number of improved chullhas.

In Valada Panchayat in Amala puram Taluq (*in one district there could be 8-10 Taluks, and one Taluk has between 80 to 100 villages*) AIWC Kakinada branch had constructed 300 improved chullhas. This place is called Konaseema and one has to cross river Godavari by hiring a *punt* to take the vehicle across.

Here the trained women (who are called self employed workers) had used their own imagination and evolved a way of constructing the permanent chullhas (*Improved Cook Stoves-ICS*) *in the beneficiaries houses by using cement & brick as building materials*. They constructed the chullhas outside the houses, and were there (*stayed at the sites*) for 30 to 40 days by covering them with the straw and pouring water every day to cure the same. They have also found the correct mix of cement, clay and chuna (*Lime*) and with added aspect of perfect curing these chullhas do not develop cracks. They make the basic structure on a wooden plank, after proper curing they take it into the kitchen and their (*then*) fix up the AC pipe for taking the smoke out through the roof. Though till this point women SEWs are doing all the construction. The final finish is done only by the male mason since the beneficiaries insist on that! The inspecting team found that all these chullhas were being used and were all happy with the stove which saves cooking time.

In Nalla Jarla, the women from Self Help Groups have integrated the improved chullha construction with Micro Credit Program. One particular group had saved 10 lakhs in the bank and they borrow money from their group for paying their share towards the cost of chullhas which is between Rs. 250/- to Rs. 300/- which they are easily spending and they are very happy that they are not only saving the environment but also helping their families to have better food and nutrition and save them from smoke related diseases.

The inspector team which included Dr. Dhamija, Director MNES, and two senior members of the AIWC (Ms. Kalpakam Yechury & Ms. Bina Jain) visited a number of villages in this area and found that chullhas constructed years back were being used regularly & the housewives were happy. In almost all the villages, there are many way side eating places who were using the large size improved chullhas and all of them were very happy.

The Guntur Mahila Samajam, AIWC branch headed by Ms. Vijaya Ramanujan has constructed around 1 lakh improved chullhas in and around Guntur Distt. And Bhadrachalam forest areas etc. Even after the NPICC National Project of improved chullhas has been discontinued as a central project by the Ministry of Non-Conventional Energy sources they are continuing till today the awareness creation, training & construction of improved chullhas with the help of the state Government (AP) and in collaboration with the state local forest deptt. Who identified the beneficiaries and also paid their share of chullhas Rs.100/-.

The members of this branch have become such experts that they are often invited from other places also for giving training/demonstration etc. In fact last year two of them went to Tamil Nadu and imparted demonstration in the construction of improved chullhas for over 100 employees of Tamil Nadu Forest Deptt.

The local potter who regularly supplied the pottery living for the improved chullhas had very steady income & in due course of time he bought two trucks and diversified his business. Of course he's still supply good quality liner's even today.

Improved chullhas as a social transformer :

In Kollam Distt. Demo and training were conducted by Kerala Iykea Mahila Samajam when 20 plus two passed girls and made them S.W.E.S. Some of these women were having lot of problems & financial worries because of the drinking habits of their husbands when these women started constructing improved chullhas (after the training) in other peoples houses and earned descent amount as fees , the husbands felt ashamed and gave up their bad wraps and stopped drinking. They also started helping their wives in carrying the AC pipes and other raw materials along with them.

## Improved Cook Stove (ICS) Development: A Case from Nepal

### **Background:**

In Nepal, biomass energy: fuelwood, agri-residue and animal dung is used for cooking and heating purposes. Use of traditional stoves such as "*agenu*" (*open fireplace*) and "*chulo*" (*rudimentary stoves*) consumes more fuel wood increasing the burden on women. Women are mainly responsible for cooking and collection of biomass, mainly fuelwood from the forest. Use of biomass energy and low-grade biomass fuels lead to excessive levels of indoor smoke/air pollution. Women and children in particular are exposed to the smoke emission. This is one of the reasons for higher rates of infant mortality and morbidity and other unhealthy living conditions. Release of incomplete carbon gas and other harmful particles in the atmosphere due to poor combustion of biomass fuels in rudimentary stoves results in the emission of Green House Gas (GHG). More than 80% of the energy needs are met by fuelwood thus exerting immense pressure on the forest resources of the country with negative impacts on environment.

In order to achieve reduction in indoor smoke / air pollution and increased fuel efficiency and protect the forest resources and environment, Improved Cook Stove (ICS) development and dissemination activities were initiated in Nepal from early 1950s with the introduction of some Indian models *Hyderabad* and *Magan* stoves. Since then, a number of Improved Cooking Stove Programs (ICSPs) have been promoted in rural communities of Nepal. In early 1970s, the focus was on improving the fuel efficiency of stoves. During 1980s, interest and efforts were revived when the National Planning Commission (NPC) included ICS in its development plan as an attempt to address the pressing fuelwood problem. The government's concern for fuelwood conservation was also reflected with the inclusion of ICS dissemination efforts as an important component of Food and Agriculture Organization (FAO) of the United Nations assisted Community Forestry Development Project (CFDP) in 1981. Besides other donor organizations as well as International Non-Government Organizations (INGOs) initiated promotion and dissemination of ICS in various regions of Nepal with a top down and supply driven approach.

With the combined effort of the government semi-government and INGOs, basically through the community forestry development project, about 57000 Ceramic prefabricated models of ICS were disseminated in different parts of the country. However, the prefabricated model turned out to be not as appropriate as substantial breakage occurred during the prolonged and difficult transportation process in hills and mountain areas. Thus, ICS efforts in Nepal during 1980s delivered mixed results and limited successes.

### **Improved Cook Stoves Development in Nepal during 1990s:**

The development of mud brick stove by Research Center for Applied Science and Technology, Nepal (RECAST) in early nineties, which could be built on site in users households, by trained self employed workers (Promoters) with locally available materials gave the stove program a new look. Since early 1990s, new initiatives for ICS dissemination have been underway with new stoves design that can be built completely from cheap readily available local materials and changed approaches from top down, target oriented, subsidized approach to bottom up demand driven, self-construction approach. ICS was promoted and disseminated by various organizations with different financial arrangements such as with and without subsidies, equity

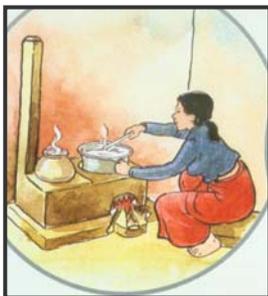
participation by users etc. Resultantly, ICS became an important and integral component of development initiatives with these being supported by quite a number of programs, donor agencies and promoting/disseminating organizations. The collective efforts of over 25 such organizations together promoted about 40,000 improved stoves of various types (mud, metallic) in different districts of Nepal<sup>1</sup>.

In 1995, ICS Network supported by Asia Regional Cookstove Program (ARECOP) and managed by Centre for Rural Technology, Nepal (CRT/N) was established bringing together various organizations working in ICS promotion and dissemination and facilitating further sustainable promotion and dissemination of ICS. The network has concentrated its effort in bringing uniformity among approaches of various organizations involved in ICS promotion and dissemination mainly promoting bottom up and subsidiless approach.

His Majesty's government of Nepal (HMG/N) is realizing the need to alleviate the pressure from the forest, provided policy guidelines to encourage development and application of energy saving devices as well as promotion and dissemination of alternate energy technologies from 9th Plan (1997–2002). HMG/N set a target of promoting 250,000 ICS during the plan period through the collective efforts of government, non-government organizations and the private sectors. However very little of the target was achieved. Within the present 10th five-year plan (2003-2007) HMG/N has further emphasized ICS dissemination with target to install 250,000 ICS. Besides emphasis has also been given to Research and Development activities. (*Tenth Five-Year Plan*)

#### **Initiation of the National ICS Program:**

In relation to the high priority accorded by HMG/N to increase ICS installation in the country in the 9<sup>th</sup> plan the National ICS program has been initiated in Nepal from early 1999 with the support from Energy Sector Assistance Program (ESAP) of DANIDA and Alternative Energy Promotion Center (AEPC) of the HMG/N. The program is implemented through various implementing partners like Department of Women Development (DWD), Centre for Rural Technology, Nepal (CRT/N) and other district level NGOs and CBOs.



The general objective of this program is to establish a sustainable framework and strategy for making available technically and socially appropriate ICS in rural communities based on local capacity building and income generation. This program has been currently promoting ICS in 33 mid-hill districts of the country. The type of ICS promoted is made up of 3-part mud/earth, 2 parts straw/husk and 1 part animal dung. The whole structure is plastered smooth with the same mud mortar. ICS has two fire openings for cooking pots, one behind the other.

There is no need to blow the fire. It utilizes the heat, generated by burning fuelwood, more by the deflection of the flames and heated air inside it which travel to the second opening with the help of an in-built baffle located just below the second opening, before the hot air exits out of the chimney, which is made of un-burnt clay bricks that can be made



<sup>1</sup> *Inventory of ICS in Nepal 2000, CRT/N*

in the village. The iron plates are fitted on the potholes for pots. The potholes are round in shape; the pot bottom fits tight on them. It can be made in different sizes and capacities to suit the family size and pot size. It can have one or more openings for pots/pans.

ICS can even be used for space heating by adding a cast iron/mild steel plate put tight over the pot holes for the pots or by putting a metal pipe around the space/room to make the pots or by putting a metal pipe around the space/room to make the hot air pass around the room through the pipe before going out through the chimney. Nowadays, use of ICS for water heating by attaching a back boiler on the side or around the chimney pipe is increasing in the midhills and mountain regions of Nepal. The materials required for the construction of ICS are locally available and includes stones/bricks, mud/earth, straw/rice husk, iron plates/ rebar/sheet, animal dung. In addition to the domestic ICS, promotion of institutional improved cookstoves in hotels, teashops, schools, hostels, and barracks is being carried out.



In Nepal, women are mainly responsible for cooking activities and collecting firewood. With the decrease in the availability of fuelwood, drudgery of women is increasing and they have to spend more time collecting fuelwood. Studies have shown that ICS has efficiency of 15-25% and fuelwood saving is 30-35% thus contributing in the drudgery reduction of women reducing their cooking time and hardship in collection of scarce fuelwood. Women are generally accompanied by their children in the kitchen and are exposed to indoor air pollution. The indoor air pollution due to the combustion of biomass fuel is the main cause of Acute Respiratory Infection (ARI), Chronic Obstructive Lung Diseases (COLD), eye infection and pneumonia in women and children. Studies have shown that with the use of ICS human exposure to pollutants in the kitchen environment has been reduced by an average of 69% carbon monoxide concentration, 53% Total Suspended Particle (TSP) Concentration and 63% HCHO (formaldehyde) concentration<sup>2</sup>. In a simpler term, most of the women using ICS have responded that they had asthma and eye burning due to traditional stoves but the situation has improved after installation of ICS and they have no complain of burning eyes and breathing problem.

The materials required for the ICS construction are locally available and the users have to bear the cost of iron rod and installation charge only. The cost varies depending upon the place but in general it is approximately 300-400 Nepali rupees. There has always been difference in approaches among various organizations involved in ICS promotion and dissemination. Some organizations provide direct subsidy for ICS installation. The National ICS Program has avoided 'direct end user subsidy'. The total cost of the stove installation is borne by the users themselves. There are other indirect subsidies in the form of awareness campaign, trainings, monitoring and evaluation, human resource development etc which has been very crucial for ICS demand generation in the community.

### **ICS Program Implementation Strategies:**

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<sup>2</sup> *Status of Improved Cookstove Technology in Nepal, ITDG 2000*

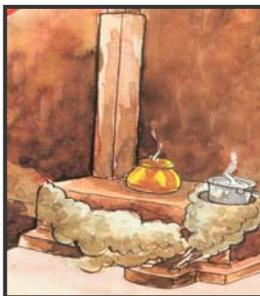
### **ICS - Source of Self Employment**

*Basanta Thapa is one of the very successful self-employed ICS Promoters of Arghakhanchi district. He had to leave his studies due to poor financial conditions of his family and look for sustaining his and his family's livelihood. He received the Promoter's training under the support of National ICS Program. Till date, he has installed 302 ICS and has earned NRs 69,000 equivalent to about US \$ 985 (1US\$ NRs 70). In addition to the ICS he has been promoting ICS with fan and back boiler, which has been well appreciated by the community. He has been traveling outside his villages to install ICS and aware people on its benefits. He says he will continue installing ICS as an important source of his livelihood. Seeing his enthusiasm and motivation other Promoters are also following in his footsteps. (Source: Centre for Rural Technology, Nepal 2005)*

The success of the National ICS program has been achieved due to its proactive and flexible implementation strategy. Some of the major program implementation strategy has been as follows:

- The major thrust of the program is on information dissemination and awareness raising through activities such as initiation workshops, orientation and demonstration, school orientation activities and campaigns such as poetry, debate and song competition. This has been instrumental in demand creation of ICS from the communities and willingness to pay for the ICS installation.
- The program is implemented through network of local partner organizations that facilitate ICS promotion and dissemination through trained promoters. The involvement of local organization in dissemination process is ensured from the very beginning in decision-making, monitoring and implementation of ICS program.
- Local community members are trained as self-employed Promoters for ICS installation. Emphasis is given to women and people from disadvantaged group and financially weak background to be trained as Promoters. The Promoters are trained in all the aspects of ICS installation and monitoring the stove performance. This has contributed in enhancing economic opportunities for these promoters. In some of the cases, ICS construction has been the major source of income generation for these Promoters and they have been traveling to other villages outside the program area to install ICS.
- Due to the presence of local Promoters from within their villages, the sustainability of ICS has also been enhanced as the Promoters are responsible for regular monitoring of the performance of the stove.
- The other approach of the program such as avoiding direct end user subsidy, quality stove delivery with emphasis on monitoring and evaluation has been very crucial for the sustainability and success of the program.
- In addition to ICS installation, the National ICS Program has been promoting the concept of kitchen management. Improving the overall kitchen environment is very essential to have a broader impact on the life especially of women. The concept of kitchen management includes improved kitchen ventilation, overall management of kitchen wares, appliances, utensils, maintaining cleanliness and hygiene, waste water drainage systems, waste management etc which is contributing to increasing the kitchen efficiency as well as reducing hardship of women

### **Problems and Solutions:**



ICS is a simple technology based on scientific concept and easy to operate. Users do not face any severe technical problems during its operation. The problems may arise when ICS Promoters do not adhere to the technical specification during installation and due to negligence of users during regular maintenance. In the Nepali context, users clean the cookstove and plaster with the mud daily. This tends to change the pothole size and decrease the efficiency of stoves. Some of the typical problems encountered in the stoves are smoke backfiring which is a very common problem that occurs due to wrong placement of chimney outlet and lack of regular cleaning of the chimney and slow

cooking in the second pothole due to less heat. However, the Promoters always provide orientation to the users on probable problems and their solution to the users. Users are also provided with the manual on operation and maintenance of the stove. Moreover, Promoters regularly visit for monitoring the operation and efficiency of stoves and solve any problem that exists.

### **Progress Status:**

From its initiation in May 1999 to the end of June 2005, the National ICS Program has disseminated about 125,000 ICS serving the same number of households in 33 mid-hill districts. The combined effort of national ICS Program and other organizations so far have disseminated more than 200,000 ICS in the country by the end of June 2005 which is still a meager number in terms of the potential installation of ICS in more than 2 million wood burning households mostly in the rural areas.

### **Lessons Learned:**

The National ICS Program is one of the examples of a very successful ICS dissemination program. The lessons learned from this program as mentioned below can be incorporated in other programs for effective and successful program delivery.

- Demand generation from the community members themselves is very important for acceptance of the technology and its sustainability. This can only be achieved through effective information dissemination and awareness development activities, which should be an integral program component.
- Involvement of local organizations in ICS dissemination and their capacity building is essential for mass scale up of ICS without too much external supports.
- Development of technical service providers or promoters at local level create an opportunity for self employment at local level and will continue to provide monitoring and technical backstopping which is essential for mass distribution of ICS.
- A flexible, pro-active and effective implementation approach such as focus on awareness campaign, skill and transfer of ICS making know-how to local Promoters, subsidy less ICS dissemination, integration with kitchen improvement and other rural development activities and emphasis on follow up and monitoring process is essential for sustainable ICS dissemination.

### **Contact:**

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URL: [www.crtnepal.org](http://www.crtnepal.org)

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## KITCHEN MANAGEMENT FOR THE VILLAGE HOME SRI LANKAN EXPERIENCE

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Women's Action For Development (WAFD), New Delhi, India

Young or old, rich or poor, rural woman or urban woman, what is it that women want and need in their kitchens?

All that they need are light and ventilation, no smoke or soot, easy storage of dry food ingredients, and a hygienic place to keep their washed utensils. This can be provided in the most stylish and expensive manner. But the same basic needs can also be fulfilled in a village kitchen using your imagination and innovativeness.

It is just such an improved kitchen for the village woman that has been designed and is being promoted by "Integrated Development Agency- IDEA" a Sri Lankan NGO based in Kandy.

By doing this they have thrown out the myth that the poor need just to put three bricks or stones together in a sheltered place, light a fire and their kitchen is ready! Unfortunately this is a myth prevalent even today among the so called educated people. I found this out recently while talking to a retired woman Vice Chancellor of a good University from Tamil Nadu in India.

She very airily dismissed the very idea of kitchen management for the poor by saying "oh! The poor do not need kitchen management! It is the rich who need it and can afford it" So much for education I thought.

As I entered the kitchen designed and planned by IDEA in Kandy, I looked around in pleasant surprise. It was very well planned and had all the features needed for a good kitchen, using material easily available locally in all villages.



The improved earthen cook stove or "chullha" was not on the ground as is customary. It had been put on a platform at a convenient working height. What was even more interesting was that instead of the usual thin pipe chimney, it had been given a wide brick chimney, the dimensions of the cooking platform. For optimum utilization of space simple shelves using rods were built above the stove at least two and half to three feet above the stoves. These were used for either drying fire wood, or even food stuff. Underneath the platform too a similar shelve had been made for storing firewood and other materials.



Ventilation was provided very cleverly, by leaving a gap of at least 12 inches above the wall and the roof. Bamboo pieces formed a grill, while letting in both air and light. Small holes in the wall did the same work, and a window near the work place ensured fresh air.



For light the first thing I noticed on roof was the piece of glass fitted on the roof where a rectangle of the thatch had been cut out of the roof. This provided overhead light! One wall

too had a piece of glass fitted in for light. No electric bulbs but letting in as much natural light as possible.



A work surface has been built along one wall, using old bricks plastered with mud. Shelves made from the wood taken from old crates, provided excellent storage. To make sure that small bottles and tins would not fall off, a thin strip of wood was nailed across for safety.



The grinding stone, a must in any home in the South Asian region, was also fixed on a small stand made from bricks plastered with mud. This eliminated sitting on the ground for grinding, and ensured cleanliness, apart from keeping the woman's clothes clean.

An innovative utensil basket/rack has been designed using old pipes and chicken wire mesh. This helped the water to drain out and keep the cleaned utensils dry and off the ground.

In the corner even a small sink has been provided with a pipe for waste water leading out into the greenery. This pipe was at least 6-8 feet long which meant no puddle of water near the kitchen.



Specially thoughtful was the small space provided in front of the kitchen door, with a small earthen wall wide enough to sit on. This space was meant to be used by the children while the mother worked inside the kitchen. This way the mother could keep an eye on them, yet they would be away from the kitchen.



As I stood in the center of this kitchen, looking critically in all directions, I could not find anything missing which a good kitchen needs.

It was a simple kitchen. It was an inexpensive kitchen. But it was an efficient kitchen, which surely helped the woman to have an improved work environment, and take out some of the drudgery she has to undergo daily.

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## **Training Methodologies adopted in Improved Stoves and Kitchen Improvement Programmes in Sri Lanka.**

The ongoing Kitchen Improvement Programme implemented by the Integrated Development Association (IDEA) targets to improve 1000 rural kitchens with the support of the ARECOP and UNDP/GEF. The methodology adopted is to strengthen and empower the network member organizations to carry out these activities in their areas of operation. There are nearly 30 NGOs who participate in the kitchen improvement programme.

Basically the improvements to kitchens incorporate modification of certain features in the existing kitchen structure for better air circulation, ventilation and lighting and the installation of improved stoves and chimney hoods and provision of shelves to store food items and cooking utensils and arranging the interior to facilitate kitchen operations to be performed more ergonomically, hygienically and economically. The methodology of training therefore does not favour or adopt a standard models of the kitchen but promote and



facilitate the traditional kitchen to be modified to incorporate features which make the above improvements to be achieved. The cost of modifying a kitchen to meet the above standards is quite high and therefore certain amount of voluntary work (shramadana) is required from the users and neighbors and also whatever materials that can be secured free such as clay, forest timber, roof thatching material, bricks, sand etc has to be provided by the user. The training methodology therefore has to impart not only technical skills in the construction but also to facilitate social mobilization.



The training is done by the IDEA staff which covers

Training of potters to make the improved stoves

Training of stove installers

Training of masons/carpenters to make necessary improvements in the kitchen

Training of social mobilisers to sensitise and promote improvements in kitchens

Several training modules are used in this training exercise.

(1) Training manual on Improved Cookstove Selection and Dissemination which has been developed by Asian Region Cookstove Programme (ARECOP). This manual consist of 122 pages divided into seven chapters. The training manual is designed to transfer skills so that the trainees are able:

- (a) to evaluate stove designs based on combustion and heat transfer concepts, knowledge of material and stove components.
- (b) to determine an appropriate modification/improved stove design based on the needs, wants and conditions of the target group in addition to technical knowledge.
- (c) to become familiar with stove construction techniques
- (d) to determine the appropriate dissemination strategy based on existing technology dissemination channels and the improved stove design to be disseminated.
- (e) to incorporate gender analysis into stove design, dissemination and introduction.
- (f) to monitor the progress of stove programmes and trouble shoot where necessary.

The chapters deal with the following topics.

1. Some Issues- An overview of biomass use
2. Assessment – Community context, the kitchen, user and gender analysis
3. Stove Design- Combustion, heat transfer and heat loss, raw materials and stove parts.
4. Stove installation- Mud stoves, pottery stoves, metal stoves and brick stoves.
5. Stove Dissemination- Local systems of technology dissemination, local systems and improved stoves, which system is best, what to do to support the dissemination system.
6. Monitoring and evaluation- Benefits, monitoring, indicators, trouble shooting, evaluation.
7. Stove selection as a process- Why use a process, reviewing a process.

(2) Training Manual on Kitchen Improvement based on the workshop held in Nepal in May 1996 organised by ARECOP. The workshops conducted in Sri Lanka has a duration of 7 days . The participants selected for the workshop are expected to have basic masonry or carpentry skills so that after the training they are expected to take up kitchen improvement as an income earning activity. The objectives of the programme are:

- (a) to sensitise the participants of the importance and role played by the kitchen in poverty alleviation and holistic development covering energy, health, economics, gender and environment aspects.
- (b) to impart technical skills and knowledge to improve the kitchen atmosphere to overcome the adverse effects of using a traditional kitchen .

The workshop agenda is designed to achieve the above objectives through lectures, dialogue, practicals, field trips and field exercises

Ist Day.

#### Lectures and discussions

The role of kitchen in development: Why improve the kitchen

Kitchen realities. Kitchen functions and layout.

Introduction to combustion principles, stove components and technical aspects of kitchen improvements

Comparative Cooking Tests by participants in groups



2<sup>nd</sup> Day

Introduction to guidelines for observing the kitchen based on four different steps.

(1) Discover the kitchen (2) Reading the kitchen (3) Measuring the kitchen (4) Design applications based on the above observations

Introduction to basic features of improving a kitchen  
Field Visit to Improved kitchens.



3<sup>rd</sup> Day

Practical exercise of domestic stove installation

Field Visit to traditional kitchens proposed to be improved. Application of guide lines

Observing the kitchens according to guide lines provided.

Planning of improvements to be made.

Preparation of materials and Practical exercise of improving selected kitchens; Stove installation,

Chimney hood Installation and improvements in

ventilation and lighting

4<sup>th</sup> Day

Continuation of the kitchen improvements



5<sup>th</sup> Day



Continuation and testing

Discussion. Kitchen improvement as an incoming generation activity. Financial models that can be adopted. Organising a campaign and Plan of action