

# IMPROVING KITCHENS, MAINTAINING HEALTH

## Project Brief

### What is replicable/ where

#### CHALLENGE

In Sri Lanka, about 80% of energy for domestic cooking is obtained from firewood. The vast majority of households cannot afford LPG, which is the form of household energy that is being increasingly used, particularly in urban areas. The high use of firewood for cooking has implications for the environment as well as households. People cook on poorly designed stoves that emit smoke damaging to human health, in kitchens that have no proper ventilation. The impact on the family's health is both negative and significant. Children who spend time with their mothers in the kitchen are also at great risk.

According to the WHO, indoor air pollution is a major cause of death and illness in developing countries, with related respiratory diseases estimated to cause up to two million deaths each year. The majority of these deaths are in poor households, and approximately one million are children.

#### Development problems of the inefficient use of biomass:

- Waste of a valuable renewable energy resource
- Deforestation and land degradation and associated problems
- Indoor air pollution and related health hazards
- Increases in green house gas emissions
- Burdens on households, particularly women

#### PROJECT

The Integrated Development Association (IDEA) worked with the Community Development Centre (CDC) of Aranyaka on a project that focused on conserving biomass energy,

decreasing smoke emissions and reducing associated health risks – factors that have a particular bearing on women who often walk long distances to collect firewood and spend long hours cooking meals in small, ill-ventilated spaces.

The project, supported by UNDP's Global Environmental Facility Small Grants Programme, worked with families, the women in particular, to improve the kitchen environment through the introduction of more efficient stoves and the more rational organization of the space available. The initiative, covered eight villages, with more than a hundred families benefiting. Both CDC and its target beneficiaries comprised a large number of women.

IDEA's kitchen improvement work in Sri Lanka is also supported by the Asian Region Cookstove Programme (ARECOP). A national network comprising 35 NGOs/CBOs has been strengthened to integrate kitchen improvement activities and indoor air pollution monitoring. At present about 350? kitchens have been improved with the participation of ARECOP members throughout the country.

## **TECHNOLOGY**

Since the 1980s, Sri Lanka has seen several stove development programmes. In 1984 the National Fuelwood Conservation Programme was implemented by the Alternative Energy Development Division of the Ceylon Electricity Board, mainly as a response to the domestic energy situation. The programme attempted to coordinate the efforts of several organizations involved in fuel-efficient stove development activities in the country. In 1991, Integrated Development Association (IDEA), a nonprofit non-governmental organization, was established to promote the production and commercialization of improved stoves and build the capacity of grassroots organizations to implement stove programmes at the household level.

IDEA changed from a narrow focus on firewood conservation to a more integrated-development approach. The organization, through an entirely participatory process with users and potters, designed a one-piece two-pot clay stove, which can be used alone or with a mud-insulated covering. It is estimated that over two million 'Anagi' stoves have been commercially produced and marketed since 1991. IDEA adopts two routes to promote fuel-efficient stoves: (1) making links between producers, distributors, retailers and users; and 2) providing revolving funds and credit facilities for poor users.

Today, about 300,000 (120,000?) stoves are produced every year by 120 (400?) potters trained by IDEA scattered in 14 districts of the country. **Since 1996, the programme was extended to cover kitchen improvement, with the stove being one of its important components.**

The 'Anagi' stove is designed to meet the cooking needs of a six-member family. It can use hard or soft wood and other loose biomass residues like coconut shells. The stove design has been carefully developed to suit the cooking habits and the types of food cooked in Sri Lanka and to be energy efficient. For example, water can be boiled on the side burner while the food is being cooked on the main burner.

If the Anagi stove is used without insulation, its lifetime may be about one year and if insulated, three years or more. Several district surveys revealed that over 20% of households use the stoves.

Stove-making needs special training to ensure quality and standardize the dimensions. A training manual titled 'How to make the Anagi Stove' provides production guidelines. The manual, produced by IDEA and ITDG (now Practical Action) provides detailed illustrations and describes all the steps of the construction process.

Apart from the type of stove used there are several other factors related to kitchen improvement that influence efficiency, convenience, safety and comfort: the type of biomass used, the kitchen arrangement, location of the stove, cooking patterns, ventilation levels and indeed, the location of the kitchen itself.

A group of trained personnel from IDEA worked closely with women to improve the kitchen environments. Discussions were held both with individual households as well as groups of women on subjects ranging from fuel, stove and cooking efficiency to smoke extraction, lighting and ventilation principles. **A key aspect of the project has been building the capacity of the local partner to introduce new technologies and management skills through a participatory process.**

## Aspects of Kitchen Improvement

- More efficient stoves
- Lighting, air circulation and smoke extraction
- Kitchen plan for efficiency of cooking activities
- Storage and preservation of food and spices
- Storage of utensils, plates, fuel and water
- Kitchen management including waste disposal
- Safety from food contamination

*The kitchen improvement programme has no particular model, it is based on setting up the kitchen with user participation, addressing concerns like light and ventilation. Awareness programmes are absolutely necessary. People often convert their kitchens into bedrooms, store rooms or shrines. They sometimes make unsafe kitchens out of cadjan. But once the kitchens are improved they are maintained because people see the benefits.*

R.M. Amarasekera, IDEA

## IMPACTS

### ANAGI STOVE

#### **Simple cost benefit analysis** (Might need to update figures)

An average family of six persons uses 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. Payback period two months

Time savings: 2 hrs/day

## Comparison of Improved Stoves and Traditional Stoves

	Traditional Stove	Anagi Stove	% Reduction
Firewood	1.65 Kg	0.82 Kg	50
Methane(CH <sub>4</sub> )	12.54 g/Kg	7.12	42
Total Suspended Particles(TSP)	12.54 g/Kg	7.21	42.5
Sulphur Dioxides(SO <sub>x</sub> )	726 g/Kg	36	50
Oxides of Nitrogen(NO <sub>x</sub> )	2.13 g/Kg	1.02	52.6
Carbon Dioxides	1901.37 g/Kg	905.28	52.4
Carbon Monoxide(CO)	76.95 g/Kg	61.36	20.4

Source: University of Moratuwa/ AIT(Bangkok)

The housewives involved in the project activities say that they now use less firewood and that both smoke emissions and physical exhaustion is reduced. They also state that they now take less time to cook and the actual process of food preparation is easier.

## The project has

- Created awareness on both the wider **energy and environment** picture and the closer to home issues related to **kitchen efficiency and health**.
- Focused on the kitchen as an important area for improvement, resulting in changed and positive perceptions of this household space.
- Provided families, particularly women, with the knowledge and tools to improve their well-being. Knowledge, for example, about the dangers of smoke emissions in their kitchens and ways to minimize it.
- Reduced the level of smoke in the kitchen, making women and children less vulnerable to respiratory diseases.
- Introduced more light and ventilation to the kitchens
- Reduced drudgery, providing time for more productive activities or rest.

Key to the project's success has been the process of empowering women to find different ways to address a crucial household problem. (This can go to the top of page blurb)

(includes the above)

BOX on essential elements that made the project successful

And on elements that need to be in place for successful replication

## Contact Information and Services Offered

<b>Primary Contact</b>	Mr. Rajapaksa Amerasekera amare@sltnet.lk	<b>Secondary Contact</b>	Mr. S.D.Abeywardana idea@sltnet.lk
<b>Address</b>	Integrated Development Association (IDEA) Galmaduwatte Road Kundasale, Kandy District	<b>Website</b>	Under Construction
		<b>Phone</b>	94 81 2423396
		<b>Fax</b>	94 81 4470649
		<b>Calling/Fax</b>	

20167  
Sri Lanka

**Instructions**