



# Cleaner Cooking, Cleaner Air

**Activity:** Reduction of Exposure to Indoor Air Pollution through Household Energy and Behavioral Improvements

**Countries:** Peru, Bangladesh

**Implementers:** Winrock International

**Duration:** 2003-2007

**Problem:** Indoor air pollution caused by smoke from poor cooking and ventilation practices is a leading cause of death in many developing countries—especially for children under 5

**Solution:** Develop replicable and scalable indoor air pollution reduction models utilizing improved technologies and behavior change strategies



**A Peruvian family with their new Inkawasina stove**

## **Objective**

USAID is promoting the adoption of improved household cooking devices, fuels and behaviors with the goals of reducing indoor air pollution (IAP) and improving health.

## **Background**

Over 2.5 billion people, mostly poor in the developing countries, depend on biomass sources to meet their household energy requirements. Burning of biomass in poorly ventilated kitchens creates high

concentrations of carbon monoxide, particulate matter and other pollutants. Women and children are most vulnerable to exposure from IAP, which results in a death approximately every 20 seconds.

The potential health benefits of improved cookstoves have been neglected by previous donor and government programs, which traditionally focused on fuel efficiency gains (as a means to conserve forest resources). Overemphasis on technology, without concurrent work on behavioral change, market access and health impacts, resulted in limited results and unsustainability of many projects. The Winrock program is designed to consider all of these factors and create integrated models that will produce sustainable impacts.

## **Activities**

The program, implemented by Winrock International, is currently undertaking full-scale pilots in Bangladesh and Peru. Previous exercises in the Philippines and Kenya have informed the pilots, by focusing on indoor air quality monitoring and behavior change communications, respectively.



In Bangladesh, the pilot project brings together two strong local partners--Concern Bangladesh and Village Education Resource Center—to develop an integrated energy and health intervention. Bangladesh relies largely on biomass fuels to meet its domestic cooking needs. The country also has one of the highest under-5 mortality rates in the world, with 88 deaths per every 1000 births - about 325,000 deaths every year. Baseline data recorded in August 2005 reveals that families participating in the indoor air monitoring study are being exposed to extremely high levels of pollution—levels of particulate matter were 8-9 times the 24 hour average set by the USEPA (for ambient air quality). During cooking periods, levels of carbon monoxide also reached levels exceeding WHO and USEPA guidelines.

The pilot project is being implemented in two urban municipalities, Saidpur and Parbatipur, located in the Northwest of the country. The project is targeting 400 urban slum households with two main types of interventions: dissemination of improved stoves; and dissemination of behavior change messages, such as improved ventilation and child care practices, which can lead to further reduction in exposure to indoor air pollution. Coupled with these efforts are an entrepreneurship development component and a product-based social marketing component. Potential entrepreneurs are receiving training and it is expected that at least 10 of the trainees will receive seed funding through micro-credit to launch their improved stove businesses.

The stove models are being identified through VERC's innovative Methodology for Participatory Assessment (MPA), which has been adopted by the Asia Regional Cookstove Program (ARECOP) for improved stove programs. Behavior change messages are being disseminated by Concern Bangladesh, primarily through their existing network of health committees and volunteers, which were

originally established to disseminate maternal and child health messages for USAID-funded health programs. The focus of this activity is to work through the local government and make the community take ownership of the tasks. As an example, indoor air pollution as an issue will be included in the annual action plans of each of the health committees. It is expected that area concentrations of indoor air pollution will be reduced by at least 50%.

An advisory committee comprised of government, NGO, and donor stakeholders has been established to provide further guidance to the project.

The pilot project in Peru is designed to reduce indoor air pollution in a typical high-Andean district, Inkawasi, in the department of Lambayeque, through access to improved technologies and information on healthy practices. Over 30% of Peru's population, or roughly 8 million people, lives in impoverished rural areas, where they depend almost exclusively on fuelwood, agricultural residue, and dung for cooking. In the Andes, cooking is done over open fires in kitchens with minimal ventilation, resulting in dense smoke and a significant accumulation of creosote on the kitchen ceilings and walls. For the indigenous population, death rates for children under 5, who are most susceptible to acute respiratory infections, are as high as 100 per 1000 live births, well over twice the national average. Evidence exists that chronic obstructive pulmonary disease (COPD) among women is also a significant problem within this population. Results of the baseline survey showed that levels of particulates and carbon monoxide released by the open fires far exceed Peru's standards.

The trial intervention focuses on developing community "promoters," who educate the public on the relationship between health and indoor air pollution, and inform them about the improved



stoves. “Healthy Kitchen” competitions among households are organized by the promoters to provide further awareness raising and incentive for participation in kitchen improvements. Radio spots, murals and posters have been developed and disseminated at strategic times and places to reach a maximum audience.

To maximize access to the improved stoves across the Inkawasi district of 6000 families, the project incorporates an unusual micro-credit scheme into the local barter system. The project provides families with animals (chickens, ducks, or guinea pigs) to raise; the families must return twice as many animals to the project in order to purchase a stove. When USAID assistance ends, the promoter’s associations will take over the micro-credit scheme. To further

ensure sustainability of the project, local micro-entrepreneurs are being taught to build and install the stoves. The “Inkawasina” stove was adapted from a “Justa” sunken-pot stove design by Winrock’s Peruvian partner, Centro de Género y Ecología (Gender and Ecology Center).

### **Results**

The programs will directly benefit 1,000 households while laying the groundwork for scalable and sustainable models to address the growing problem of IAP in the developing world. The Peruvian government and regional arm of the WHO in Latin America have already expressed interest in expanding upon the Inkawasi pilot.

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