

Pilot Study to Reduce Emissions, Improve Health, and Offset BC Emissions through Distribution of Improved Cookstoves in Nepal

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Indoor air pollution ranks tenth among preventable risk factors contributing to the global burden of disease. Household use of biomass as fuel for cooking and home heating is the most widespread source of indoor air pollution worldwide. The World Health Organization estimates worldwide exposure to solid fuel smoke produces 1.6 million deaths annually. In Nepal 75% of household still depends on biomass as a cooking fuel.

Most traditional cookstoves, such as those widely used in Nepal, have very inefficient combustion, resulting in the emission of large quantities of black carbon into the indoor air. Cookstoves account for almost half of all black carbon emitted in South Asia.



Traditional cookstove



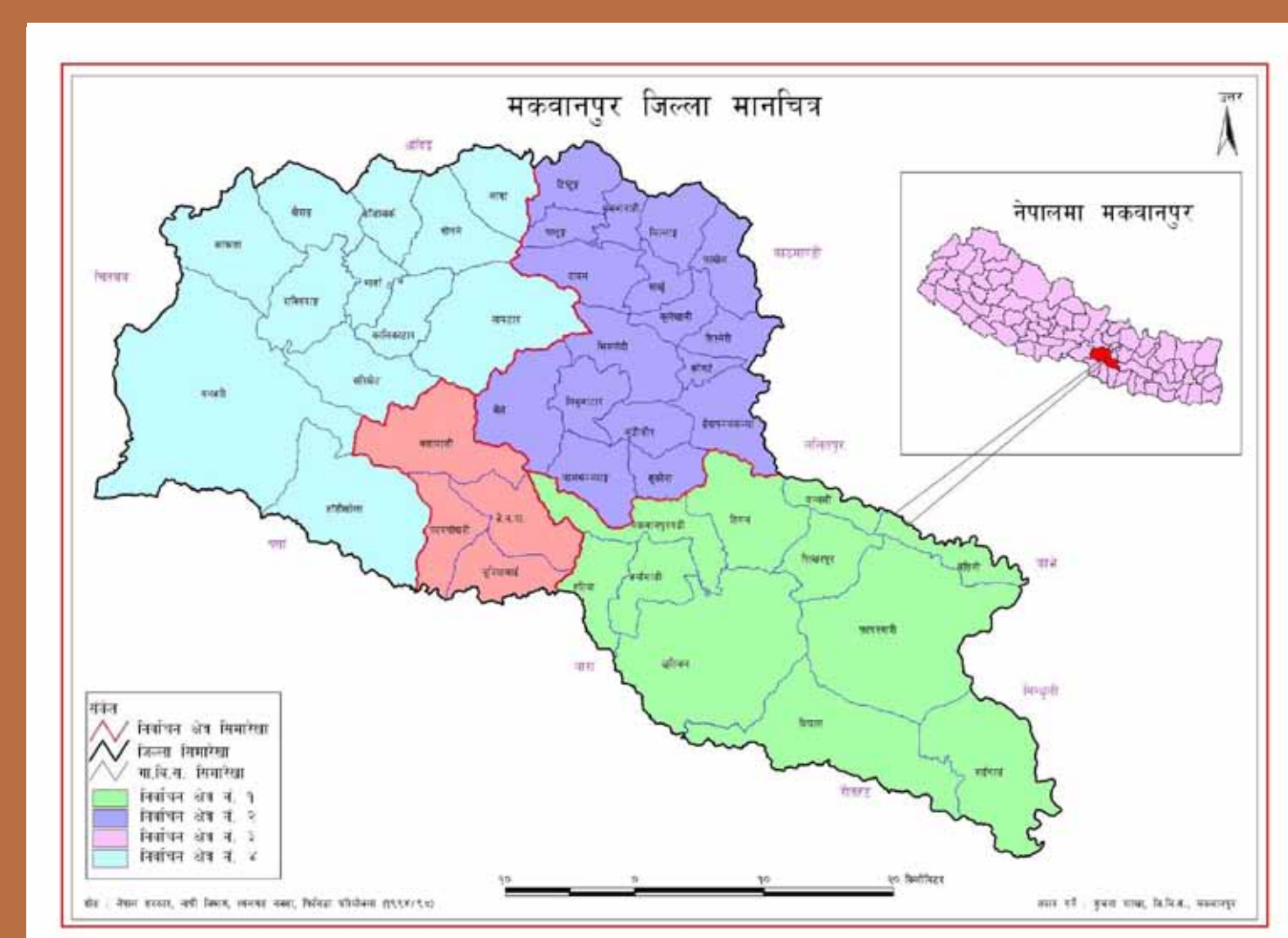
Fan-assisted improved cookstove



Bajrabarahi



Study area



Makwanpur District



Bajrabarahi VDC

The use of biomass fuels in Nepal is likely to remain stable or even increase in the near future, because only few household can afford fuels that are higher on the energy ladder, which are cleaner but more expensive. Hence, an approach to reduce the health burden related to biomass fuel is to replace the existing traditional cooking stoves with low-cost, improved wood-burning stoves. These relatively simple and cost-efficient technologies can enhance the energy efficiency of their traditional counterparts and reduce indoor air pollution.

Nepal recently launched an initiative for an 'Indoor Air Pollution Free Nepal by 2017', with the aim of substituting all 4 million remaining traditional cookstoves with improved cookstoves, including models that send the smoke outside through a chimney. Very little research has been done within Nepal to assess what models of improved cookstoves actually reduce emissions of black carbon.

Studies elsewhere in the world have found that black carbon emissions from cooking can be reduced significantly by replacing traditional biofuel cookstoves with redesigned biofuel cookstoves that include a built-in fan that improves airflow to the flame, resulting in more complete combustion of the fuelwood.

Project Overview

In partnership with Alternative Energy Promotion Centre, Nepal, and Patan Academy of Health Sciences (PAHS), ICIMOD has launched an integrated study of the impact on air quality (both indoor and outdoor) and on human health and wellbeing of substituting traditional cookstoves with the best-available fan-assisted cookstoves.

Features of the study:

- Work in two valleys that are very similar geographically and socioeconomically.
- In both valleys PAHS is conducting a long-term health study of the entire population.
- In both valleys multiple stations have been set up to monitor indoor and outdoor air pollution, measuring black carbon, PM2.5, PM10, and CO.
- The project maintains one valley (Chitlang) as control, while all 700 traditional cookstoves are being substituted with modern fan-assisted ones in the other valley (Bajrabarahi).
- A private sector donor is sponsoring the cookstoves to enable us to distribute them at a subsidized price.
- Additional studies are being carried out to examine the gender, social, cultural, economic, ergonomic, and sustainability aspects of substituting manufactured fan-assisted biofuel cookstoves for traditional cookstoves.



Medical students of P AHS



Discussion with women's group



Partnership with private sector



Women's group during cookstove marketplace

About ICIMOD

The International Centre for Integrated Mountain Development (ICIMOD) is a regional intergovernmental learning and knowledge sharing centre serving the eight regional member countries of the Hindu Kush Himalayan (HKH) region – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan. Mountains are important global ecosystems facing especially rapid socioeconomic and environmental changes, particularly the impacts of climate change. ICIMOD's aim is to influence policy and practices to meet the associated challenges emerging in the Hindu Kush Himalayan region. To do this ICIMOD brings together top researchers from the region and around the globe to generate and disseminate state-of-the-art knowledge in the physical and social sciences, including traditional knowledge, for evidence-based decision making; and we provide a neutral meeting point for transboundary research, knowledge sharing, and collaboration. Working to deliver impacts in five Regional Programmes across four Thematic Areas – Water and Air; Ecosystem Management; Livelihoods; and Geospatial Solutions – supported by knowledge management and communication, ICIMOD seeks to improve the lives and livelihoods of mountain women and men, now and for the future.