

Exposure Measurements to Cooking Technology Emissions and Household Ecology in Orissa, Andhra Pradesh, & Karnataka, India

Biomass is used by over 2 billion people in the developing world as the primary source of household energy for cooking, water boiling, heating, and agriculture related activities. The burning of biomass (e.g., wood gathered from the countryside) is associated with severe human health problems. Extraction of biomass for fuel from local forests and wastelands contributes to deforestation and represents a large commitment of a household's time and labor. Hence, there is a great need to find ways to consume wood fuels more efficiently and sustainably. New and improved cooking technologies are routinely dispersed as a rural development intervention to replace traditional fuel wood stoves that are less energy efficient and produce harmful emissions. In this respect, these interventions aim to reduce harmful health effects in poor households, and increase ecological conservation.

Improved cooking technology dispersal programs have had mixed success in persuading households to adopt such technologies. Where households have adopted, they have not always used improved technologies in a way that achieves the intended outcomes. Reluctance to adopt energy efficient technologies and inability to maintain and use them appropriately stem from a mix of challenges that are in part technological, social-cultural, economic, and ecological. Therefore, in our study, we aim to answer the overarching question of how can improved, more energy-efficient cooking technologies (stoves – commercial and household) incorporate the needs and realities of rural households and still be energy efficient and yield reductions in harmful emissions?

From May to August 2008, we collected data in Orissa, Andhra Pradesh, and Karnataka, India around households' and small restaurants' use of cooking technology and biomass energy. Data collected is of two central varieties: (1) cookstove emissions readings and (2) behavioral/economic household survey data. Emissions samples were taken with a variety of instruments in households and small restaurants, some of which had not been used in field in any previous study. Household surveys asked questions regarding household composition, household livelihood strategies, cooking technology adoption, use and attitudes, household energy consumption, and village institutions protecting common lands. This data will be aggregated and analyzed on a number of levels in order to contribute to academic, policy, and programmatic understandings of improved cooking technology interventions. Using a household ecology perspective, we will draw conclusions about the technical, socio-cultural, economic, political, and ecological dimensions of cooking technology adoption and dissemination in order to make recommendations for the design of improved cooking technology and the implementation of improved cooking technology dissemination programs.