

R8021 - Smoke, Health and Household Energy

Theme: E4 Household Energy

Duration: January 2002 - December 2004

Project Description

Poor people, especially women and children, are exposed to excessive levels of indoor air pollution when they cook on open fires using biomass in poorly designed kitchens and with poorly designed stoves. This pollution causes sickness and mortality from respiratory ailments, especially in young children.

This research project worked in partnership with three communities to find ways that are accessible, acceptable and affordable, and which effectively alleviate smoke. The three communities share the problem of indoor air pollution, but have very different characteristics in other ways; an urban situation in Kisumu, Kenya, where fuel is scarce and often bought; a community of displaced people near Kassala, Sudan, suffering the effects of a conflict; and a community requiring space heating as well as energy for cooking in Gatlang, Nepal.

Important aspects of the project were the empowerment of women through knowledge about the dangers of smoke, support in finding ways to alleviate it and the skills to do so. The project identified comfort factors which could influence the widespread adoption of smoke-reduction technologies in the future, and which also improve the quality of life.

Objectives

The objective of the work is to reduce the major health risks, especially to women and children, caused by smoke inhalation from biomass-burning fires used for cooking.

Methodologies

The study looked at the impact of smoke reduction both quantitatively, using smoke monitors, and through discussions with people, especially women, on how they feel that smoke alleviation has affected their lives and those of their families. Methods included:

- questionnaires on household cooking practices and energy use
- monitoring for respirable particulates and carbon monoxide
- group and individual discussions on ideas for smoke alleviation and preferences for the methods adopted
- participatory design, development and installation of smoke alleviating interventions
- dissemination through journals, networks and exchange visits.

Results and Conclusions

Kenya

Raised expectations within the wider community around Kisumu town provides solid base for planned expansion under project R8345. Initial attempts at reducing smoke hood cost through cheaper materials led to efficiency reductions and further development has now restored the quality of smoke removal. All low-cost interventions, though less effective, are proving cost-effective and well received.

Nepal

Reductions achieved in Nepal, but not good enough for project staff. Wall insulation popular and stoves improved resulting in less fuel use reported - these interventions successful. The smoke hoods have been re-designed (based on successful hood), including attributes identified with the Gatlang community. This improved design is being scaled up.

Sudan

Sudan has been a major success in every respect. Smoke reduction substantial, for room and woman, cost savings and time-savings substantial, ~ 1000 households with LPG stoves bought without direct subsidy. Implications: need to train more Women Development Association personnel in business skills, and to persuade the gas companies to provide loans for purchase or seed capital for LPG stoves purchase as growing waiting list.

Conclusions

There have been major benefits accrued from this project, and it is evident that the participatory process is a robust tool for community engagement and sustainability.

Perhaps what is needed in the future, however, is to start this participatory process even earlier in the project cycle. To quote from one of the field staff – ‘It has been a strange experience to see households taking such drastic steps to alleviate smoke and yet still not able to assure food security - kitchens with technologically sound interventions but underutilized due to basic food insecurity’.

If participatory development is to be truly effective, it could be argued that the first approach is to ask the question ‘What is it that is the greatest constraint to your well-being that we as an organization can support you to change?’ Health, in the wider sense, is perhaps the most important indicator of a decent quality of life. Most people spend most of their lives in their homes – this is particularly true of women and children. In the current project, the focus of the work was smoke alleviation, but this could be part of a wider context – creating ‘healthy homes’, building the work around the felt needs of the communities, such as energy (or infrastructure) for food security or income generating activity. Within some societies, this can be done on a household basis, whilst with others; the community can provide a stronger foundation for change, as in the case study above.

Overall, the greatest positive impact of this project is that, by working with women on this serious problem, the project has both raised their awareness and supported them in their capacities to alleviate it. What is needed now is an international policy and economic environment conducive to large numbers of households being able to adopt these technologies.

Follow-up Activities

Follow-up work, supported by DFID, is looking at sustainable ways to scale up effective smoke alleviation methods. Revolving funds, further awareness raising, training of entrepreneurs and seeking to influence the policy community through Forums form an integral part of this study. A health study, funded by WHO, also forms a part of this study

Publications

The main output of the work is a book ‘Smoke, health and household energy – Participatory methods for design, installation monitoring and assessment of smoke alleviation technologies’. Available in hard copy from Practical Action, or as a large file on the Practical Action website http://www.practicalaction.org/?id=smoke_health_household_energy

Other publications, some of which also form part of the follow-up study are listed below:

Title	Author	Journal / Event	Date
Books and journals			
What should we be doing about kitchen smoke?	Liz Bates et al	<i>Energy for Sustainable Development Vol. IX No 1</i>	Mar 2005
Alleviating Kitchen Smoke	Liz Bates	<i>DFID Energy</i>	May 2004
Participatory approaches for alleviating indoor air pollution in rural Kenyan kitchens	Liz Bates	<i>Boiling Point 48</i>	2002
Smoke, health and household energy	Liz Bates	<i>DFID Energy</i>	Nov 2003
Reducing indoor air pollution	Liz Bates et al	<i>Footsteps (Tearfund)</i>	undated
Case study in <i>LP Gas and microfinance</i>	Compiled from paper by Dr Ahmed Hood	World LP Gas Association	2004
Smoke-reduction technologies in developing countries	Liz Bates	Accepted for 'Municipal Engineer'	June 2005
Participatory approaches for alleviating indoor air pollution in rural Kenyan kitchens	– Liz Bates et al	<i>Boiling Point journal 48,</i>	2002
Indoor smoke, health and household energy	Pramod Amatya		March 2004
Smoke Awareness Survey in Rashuwa District	SEARCH Nepal	ITDG Nepal	Mar-04
Indoor Air Pollution Monitoring and Reduction - ITDG Nepal's Effort	Min Bikram Malla	National Workshop on Household energy, Indoor Air Pollution, and Health in Nepal	27-Aug-04
Report on National Workshop on Household energy, Indoor Air Pollution, and Health in Nepal	Winrock	Nepal	Sep-04
Smoke Monitoring and its reduction effort in High Hills of Nepal	ITDG Nepal	Poster Demonstration at BAQ 2005 workshop, India	2005
Smoke Monitoring and its reduction effort in High Hills of Nepal	ITDG Nepal	Submitted to BAQ 2005 organizing committee	2005
Smoke, health and household energy - video	NEFEJ	Rashuwa district	Mar-05
Indoor smoke, health and household energy	Pramod Amatya	Indoor smoke, household energy, health, National Forum	March 2004
Strengthening community partnerships	Hellen Owala	<i>Boiling Point journal 50</i>	2005
Smoke alleviation – an NGO view (interview)	Christoph Steffen	WHO/UNEP Health and Environment Linkages Initiative	June 2004
Reductions in indoor air pollution achieved through low-cost participatory technology development in rural Kenya.	Bruce N, Gitonga S, Bates E, Kithinji J, Doig A et al.	Proc Indoor Air 2002, Monterey, CA.	June 2002
Smoke, health and household energy; Volume 1; Participatory methods for design, installation, monitoring and assessment of smoke alleviation technologies	Smoke project team. Liz Bates [ed.]		May 2005

Websites			
How to monitor smoke	Liz Bates	HEDON website	November 2003
Towards a policy agenda for Indoor Air Pollution best practice	Liz Bates	HEDON website	November 2003
Elements in sustainability - alleviating smoke	Liz Bates	HEDON website	Dec 2003

Smoke awareness campaign			
<i>Smoke – the killer in the kitchen</i>	Hugh Warwick Alison Doig	ITDG Publishing	2004
Smoke – the killer in the kitchen – review		<i>DFID Energy</i> – book review	May 2004
Smoke in the Kitchen -	Eva Rehfuess, WHO		February 2005
Series of seminars entitled Smoke in the Kitchen - Health Impacts of Indoor Air Pollution in Developing Countries	Alison Doig Alison Doig	UNDP – New York USEPA - Washington	Feb 2005
	Eva Rehfuess Hellen Odhiambo Owala	House of Commons	Feb 2005
Articles in New Scientist, New Internationalist, Sci-Dev, several press articles in Sudan, Nepal and Kenya, BBC-online, BBC news, BBC-5live and World Service			

Participating Countries

The countries involved in the project are Kenya, Nepal and Sudan.

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