



CleanAirSIG e-conference

16 – 27 July 2007

*“Taking ACTION to rid the world of Indoor
Air Pollution”*

www.hedon.info/goto.php/CleanAirSIGConferenceJuly2007

Conference Proceedings

"Taking ACTION to rid the world of Indoor Air Pollution"

HEDON CleanAirSIG held an online conference from 16 to 27 July 2007.

The conference was moderated by Liz Bates.

As part of the launch of the CleanAirSIG, HEDON and Practical Action held a two-week online conference on kitchen smoke alleviation. The topics covered included: Community projects & Integrated programmes Monitoring and evaluation Technology development, commercialisation & enterprise Policy action Knowledge sharing and networking What are the next steps?

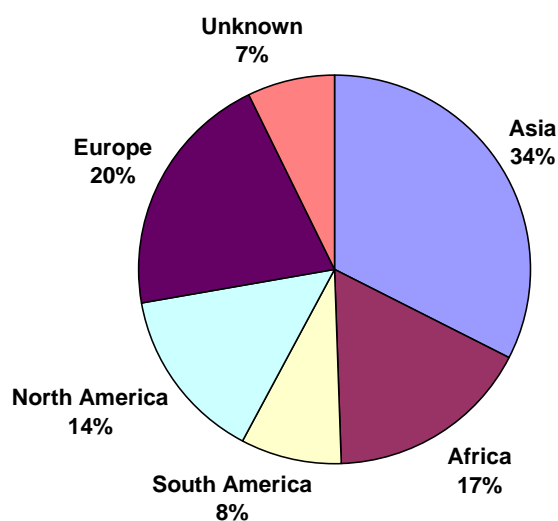
This conference is an output from a project 'Researching pathways to scaling up sustainable and effective kitchen smoke alleviation' funded by the UK Department for International Development (DFID) to whom we express our thanks. The views expressed are not necessarily those of the DFID.

An e-conference is one which will be held online via the internet (without any travelling or meeting face to face). While a physical meeting is certainly to be preferred, the online format allows for greater flexibility, much lower costs, and wider involvement of stakeholders. Another advantage is that people can 'attend' the conference while continuing their normal work, dedicating an hour or two to the conference early morning or each evening for example. Our e-conference took place by email, supported by papers and other documentation to be made available on our website. After the conference, proceedings were prepared and circulated via the CleanAirSIG web pages. Participation in our e-conferences is free, and no travelling or accommodation was needed. We invited submission of short relevant papers, and we welcomed contributions (in the form of notes/questions/suggestions) during discussions.

Conference Statistics

84 subscribers, 347 messages, 45 contributors

Conference Participants by Region



Programme

July 16-17 Community projects & integrated programmes

Introduction

Eva Rehfuss & Bruce Gordon Exploring the potential synergies of household-based interventions to improve drinking water quality and indoor air quality

Ms Tabassum Dana Study on Indoor Air Pollution/Bangladesh

Ron Larsen Positive Charcoal = Negative Carbon? Why adding charcoal to the earth's soils will also address climate change.

July 18-19 Monitoring and evaluation

Introduction

Fiona Lambe IAP Monitoring in a Refugee Setting: The Experience of Gaia Association at Kebribeyah Refugee Camp, Eastern Ethiopia

Hellen Owalla Impact monitoring and interventions acquisition

Philip Lloyd Some thoughts on indoor air quality

July 20-21-22-23 Technology development, commercialisation & enterprise

Introduction

Min Malla Choosing technologies in the high hills of Nepal for kitchen smoke alleviation

Priyadarshini Karve 'Commercialisation' of Improved Biomass Stoves for Low Income Rural Households

Charles Oloo Parabolic Solar Cookers

July 24-25 Knowledge sharing and networking

Introduction

Vincent Okello The role of awareness creation in igniting interest in smoke alleviating technologies; a study in mobilization and community involvement

Karabi Dutta ARTI and their role in knowledge sharing and networking

July 26-27 Policy action - What are the next steps?

Introduction

Kirk R Smith The Big Picture

Agnes Klingshirn Case Study: Addressing Policy Makers– is it useful or not?

Rodolfo Gomes [representative] A global clean cooking fuel initiative

Resumé Day 1: Community projects & Integrated Programmes

Three very diverse papers and some really interesting letters were presented in Day 1:

1. Tabassum Dana provided an excellent overview of the problems associated with indoor air pollution, and described the particular situation in Bangladesh, where indoor air pollution has emerged as one of the key factors in respiratory diseases. This has led the WHO, in collaboration with Columbia University, to undertake a study on biomass fuel combustion and the options available for women and children to reduce exposure. The study asks the questions: - How do women perceive health issues? -How do women perceive the existing health care system and access to services? - What do women know about the health effects of indoor air pollution?

2. Eva Rehfuess and Bruce Gordon have requested feedback on a concept note on integrated development activities focused on water and energy within the household environment. The paper specifically targeted point-of-use water treatment and interventions to improve indoor air quality, in order to have substantial impact on the Millennium Development Goals. They ask whether, within the household situation, integrated approaches would increase the effectiveness of health initiatives.

There were two responses: Rodolfo Gomes (International Energy Initiative) drew attention to work that had been done some years ago by the Asian office of the International Energy Initiative (IEI), in Bangalore (India), called "Rural Energy and Water-supply Utility (REWSU)". The project report for this study is available for download at: <http://www.iei-asia.org/ruralenergy.htm>

Theo Schilderman (Practical Action UK) highlighted the decision made recently by Practical Action to adopt an integrated approach called 'Healthy Homes' for which some lessons had been learnt in the last year from a study in Nepal. He grouped what could be done into 'hardware' (water filters, smoke hoods) and 'software' (building capacity, empowerment, savings and credit). Whilst a simultaneous integrated approach may make financial sense to the implementer, it may put too large a burden on the beneficiary. Finally he asked 'Why water and energy' as there may be other combinations – why not ask the beneficiary?

3. Ron Larsen's paper started the 'charcoal debate' running by suggesting a gasifier-type stove which runs on the gases from fuelwood, and which can provide charcoal for use in soil-improvement and thus grow better crops. He also raised the point that gasifier stoves which burn cleanly could well be candidates for carbon funding, particularly if the charcoal they produce is put back in the ground as soil improver rather than burnt – producing greenhouse gases.

Priya Karve (Appropriate Rural Technology Institute) responded that some of the improved stoves that they have been promoting burn up all the fuel and people complain that they do not have the residual charcoal for selling to local goldsmiths and ironsmiths. Priya described two technologies that use charcoal cleanly. Perhaps the 'charcoal issue' will reappear on the technology days, for which Priya has written a paper.

4. Dr Philip Lloyd discussed findings in South Africa. He postulated that 'if you truly meet needs, then the cost is almost immaterial'...do you agree? That using bulk fuels (such as coal) provides employment - what happens to this employment when people stop burning 'dirty' fuels? A house is not a home without a chimney...is this true in most cultures (it is for me!) Can we save 'top burning ignition as a means of emission reduction' for Friday please? LPG is used for special occasions as a status symbol...is this the case in most societies on a low income? Cooking energy needs 1000MJ/month per household, whilst cooking and heating

requires a minimum of 2 500MJ/month/household. Have we got similar data that we could compile for other countries?...or is there a compilation somewhere out there?

Resumé Day 2: Community projects & Integrated Programmes

Dr Philip Lloyd's email joined the list of papers on the website today. Particularly interesting are his observations on people's perceptions of smoke. Karabi Dutta also noted that people reminisce about the taste of food cooked using biomass.

Grant Ballard-Tremeer noted the stark contrast between those who regard smoke as a sign of being warm and at home, tasting 'real' food with those who complain bitterly about the real suffering caused by smoke and the food whose flavour is so masked by smoke that it is unrecognisable. He asks whether others have experienced each side of this apparent contradiction, and how one deals with it in a project situation.

Priya Karve responded to further enquiries from Ron Larsen about stoves that produce charcoal that can then be sold. She stated that the cost of the stoves she described was about \$15US – most people aspire to use LPG, in which case the break-even is around 5-6 months whereas others are replacing woodfuel, gathered at no financial cost. As charcoal is not regularly used as a fuel in the district, using it for cooking and for soil improvement are both innovative. A gender issue might be that the wood used for fuel or income will benefit the woman, whilst put on the farm is more likely to benefit the man. ARTI are promoting the carbonisation of leaf litter in the towns – perhaps this char powder could be used for soil improver?

Ron Larsen replied that although it might mean that the cook would need to collect more wood, she would make more money selling the charcoal, or through improved farm yield, or perhaps from climate-conscious organisations. This type of efficient stove would also use less fuel.

Karabi Dutta responded to the paper by Eva Rehfuess and Bruce Gordon by agreeing that integrated programmes were a good thing, but highlighting some of the problems: Lack of sufficient staff in NGOs, and lack of understanding among hired staff Lack of the range of specialisms within a given NGO Problems arising from conflicting understanding of priorities between medical and NGO staff, and between medical staff and communities demanding treatment Getting a project of sufficient length and with sufficient resources Karabi mentioned a project financed by GOAL in Calcutta that was adopting an integrated approach with commendable results.

Liz Bates asked whether integrated schemes could be made more manageable by being very focused about whether they were to provide data or to scale up at the greatest speed for any given budget – even if this meant that large-scale handouts (such as for bed-nets) should even be considered to speed up the process? Where would WHO priorities lie?

Karabi Dutta felt that pilot schemes to measure impacts followed by scaling up activities answered the need.

Rodolfo Gomes asked about financial schemes that would allow people to make repayments over a period of time in order to provide sustainable solutions.

Liz Bates pointed out the additional cost of paying over a period of time through collection of payments etc. and described the findings in each country of the Practical Action smoke project when requested to explain in more detail.

Rodolfo Gomes made a clear statement that 'A shift back to the "smoke" is a drawback that shouldn't be allowed' and that it must be addressed at international and national level to ensure this does not happen – not just leaving it to NGOs. Rodolfo admitted to not knowing much about Terra Preta – and was directed to the Stoves website for more information.

Karabi Dutta and Rodolfo Gomes agreed in two emails that it takes a concerted effort from all parties to stop the slide back to smoke. Without strong political will and unless there are people of goodwill making an effort, then poverty is likely to get worse, not better.

Ron Larsen rejoined the discussion by suggesting that charcoal created by a charcoal-producing stove could be bartered for the loan of that stove to the cook.

Liz Bates questioned whether this would be a commercially viable approach if one considered the outlay to provide the stove and the time costs involved, or whether it would have to remain as an NGO activity.

Ron Larsen responded that he felt that her model exaggerated the differential needed to make the system work. He felt that if the stoves were bought wholesale (at half the market price) then provided the cook paid back the price of the stove any subsequent charcoal would be hers to sell – and perhaps benefit from Kyoto money, and NGOs or local councils could profit from ratifying the CO2 savings. Further, if wood could be acquired at no cost there would be a big profit for the woman. Ron agreed that making the whole thing economically viable was the key to success.

Rodolfo Gomes indicated that the Board of Directors of IEI is trying hard to put forward a global effort called Global Clean Cooking Fuels Initiative, which seeks to bring about a worldwide shift to clean fluid fuels for cooking and heating by 2020, with an emphasis on the poorest households gaining access to clean fuels.

Ron Larsen challenged the wisdom of a switch to liquid fuels, suggesting that many of those advocating this switch were unaware of how biomass fuels could be made to burn cleanly particularly, and with the oil crisis looming, but mused that perhaps gasifier type stoves could be included in 'gaseous fuels.

Resumé Day 3: Monitoring and evaluation

Today saw the presentation of three new papers and discussions around them.

Fiona Lambe described the work being done with the Kebribeyah Refugee Community in Ethiopia by the Gaia Association to introduce and monitor the impact of ethanol fuelled cooking stoves.

Philip Lloyd presented a paper describing various occasions when levels of CO were very high and flagged up a paper on emissions from gel fuels and ethanol stoves.

In response, Fiona described the CleanCook stove design and how it differed from other alcohol stoves, and the modifications that had been made on the stove to pot geometry to improve the burn characteristics.

Philip felt that there was still some concern about emissions when the stove was being used to simmer – Fiona assured him that tests are continuing to ensure that the burn quality is consistently high. Philip requested further information about the de-naturing of ethanol to make it unpalatable.

Rodolfo Gomes asked about the other toxic air pollutants exclusively from ethanol burning such as aldehydes (acetaldehyde, formaldehyde), volatile organic compounds (VOC) and nitrous oxides (NO_x)? – and also about supply chains for fuel. Karabi Dutta stated that she felt that liquid fuels might need other emissions monitored and would welcome discussion on which parameters are important – also for charcoal.

Fiona reported some tests done in South Africa on other pollutants, but explained that on a limited budget, the main pollutants to be tested had to be PM and CO. With regard to fuel supply, the project is working with the Addis Ababa city government, whilst working to establish a manufacturing base for the stove within the town itself. They had also had the stoves tested at the Aprovecho Institute. Rodolfo suggested using petrol stations and retail outlets for supplying the fuel – as was the case in Brazil.

James Robinson joined the discussion to suggest that laboratory testing of emissions for liquid fuels should be adequate provided that the ambient conditions are accounted since both the stove and the fuel are ‘manufactured’ so should provide more uniformity than locally produced biomass stoves. He agreed with Rodolfo on the need for monitoring for other pollutants for liquid fuels having suffered eye discomfort with ethanol testing in less-than-perfect ethanol stoves in the past. He asked Fiona about how to make headway with getting ethanol for household use when it can be used as a transport fuel....and where would he get stoves tested. David Whitfield cited the Aprovecho Institute ...at which point (well nearly!)...

Nordica MacCarty, who works for Aprovecho, is currently at a Stoves Camp in Oregon, along with around 25 other stove experts. She explained that Aprovecho tests 200-300 stoves per year, evaluating CO, CO₂ and PM, as well as greenhouse gases. She described a new portable emissions monitor (currently \$US10K but hoping to be nearer \$US5K in future) and asked for feedback on having regional centres where such equipment would be available. Rodolfo said that IEI might well be interested in setting up this sort of centre in Brazil and India. Nordica also offered that she and her Stove Camp colleagues would field questions on stoves through the conference. She mentioned a book on Comparing Stoves to be published by PCIA at the end of the month.

Hellen Owalla’s paper looks at how real people run their lives in Kisumu, Kenya, and how care has to be taken if research action is not to have an impact on their plans. She describes how family priorities and cultural values can mean that people do not make changes over a short time frame, but rather they plan and wait until the time is right. Even those on a good income will use polluting fuels in their homes after they are aware of the risks whilst they work out the best way to suit their family needs. Hellen questioned how projects with clear time lines can look at natural growth patterns; how we can enable those who are very poor to alleviate smoke; and whether believing that only the poor suffer from IAP is a false premise. Karabi Dutta asked what can be done for those who cannot even afford a stove. With email links down to Kisumu, Liz Bates described the approach used by the Kisumu team to ensure that nobody ever felt unable to start the process at the time when they are excited by a new understanding of the dangers of smoke and the need to take action.

Marlis Kees described the work done by GTZ in alleviating smoke. She described how Mirte stoves have reduced emissions in Ethiopia for those baking ‘injera’ the local staple pancake. GTZ have also introduced 200, 000 Rocket Lorena Stoves in Uganda [‘rocket’ defines a set of principles for improved combustion and heat transfer that can be built into many stove types – ed.] Rather than measuring reductions in pollutants and health using monitoring equipment, questionnaires have identified very positive impacts in reduction of health symptoms such as coughs, burns etc. GTZ would like to learn about current easier techniques for smoke monitoring.

David Whitfield asked for more precise data on how the monitoring was done and the time lapse between the stoves being introduced and monitoring, particularly with regard to smoke leakages once the stoves began to show signs of wear.

Rodolfo sent an open invitation to any of the participants to submit articles to the journal Energy for Sustainable Development, published by IEI. He asked if there was evidence that the link between IAP and ill-health had been proven. Liz Bates pointed him towards the raft of evidence coming out of the Guatemala study at the present time, flagging up several new publications circulated by Professor Kirk Smith on these topics.

Professor S K Sharma discussed Philip Lloyds findings on high levels of CO, postulating that it might be due to the plume effect of CO coming from the stove. He mentioned the benefits of chimney stoves and improved ventilation on IAP. He also described improvements in women's lung condition six months after stoves had been installed. David Whitfield replied that it was the second study showing improved lung health for women following the introduction of improved cooking stoves.

Resumé Day 4: Monitoring and evaluation

A new paper was added to the conference by Marlis Kees on work done by GTZ /PAHO WHO on the links between Improved Stoves and Health. This data seems to provide very important findings on the clean air / health relationships. David Whitfield highlighted the study on how it indicated an immediate improvement in health with the introduction of improved stoves. He said that Professor Sharma's report the day before was the second linking health directly with improved stoves and would like more formal references.

Fiona Lambe responded on the denaturing of Bittrex by explaining that in Ethiopia there had been no problems associated with the ethanol being distilled for drinking purposes. She provided Rodolfo with information on the Gaia project in Brazil and later corrected the website to www.projetogaia.org

She replied to James Robinson's question about lobbying the government by describing a wide range of measures arguing from every angle - economic, environmental, social - that the government must prioritise the household market when it comes to ethanol production in Ethiopia.

Lazarous Chew joined the discussion to say he was finding them interesting and endorsed James' views on emissions monitoring.

Dr Jacob Kithinji joined the discussions to inform Nordica that the Department of Chemistry, University of Nairobi is currently set up to measure PM and CO and would like to extend its range of options. Philip Lloyd suggested the use of a commercial analyser, used in the car industry for CO, CO₂, NO_x and unburned hydrocarbons.

Karabi Dutta asked about emissions of monitoring coal as used in some parts of India. Philip Lloyd responded that PM is the most important, during the ignition and cooling phases it is highest. Benzene is a good indicator for the volatiles. Philip gave some useful tips for burning coal effectively, and highlighted the need for standards in testing equipment to Nordica.

Nordica McCarty asked whether Philip Lloyd's measurements on the CleanCook differed from those at Aprovecho due to the extent that the cooker had been turned down – their tests were water maintained at 97C for 45 minutes. She had a series of offers for setting up testing locations using the Aprovecho equipment in various parts of the world.

David Whitfield asked whether fireless cookers had been tried to reduce the need for simmering. Liz Bates pointed out that Vincent Okello, who will be presenting later in the conference, had written a good piece. David recommended the article.

Fiona replied to David's good wishes by describing work done in Addis and recognising that his suggestion of mobilizing the grass roots should be further investigated. She gave details of work in urban Addis Ababa working with poor, and mainly female-headed households.

Liz noted that the discussions had been largely technology and project led, and requested more information from those working at practitioner level on the opinions of those communities with whom people are working.

In response to a question to Fiona Lambe on the opinions of the refugee community in Ethiopia to the ethanol stove emissions discussed at some length during Day 3, Fiona responded that although people in the community tended to trade goods in the market when they were short of cash, not one report had been cited of the stove being traded – it was too important to them.

Liz also asked whether our colleagues in stove camp could look at the residual CO when simmering. Fiona endorsed the view that any help to reduce emissions as far as possible would be welcome.

James Robinson pointed out the wide diversity of backgrounds for the 65 attendees at the conference, but lamented that only one quarter had been active. He urged the rest to share their knowledge – even if they only have a little!...and to get a few more people to join in and take part. Were all the people with field knowledge in the field.

James Murren responded that the Project Gaia team in Brazil was attending a multiple day workshop on microdistillery--know how, set-up, technology, costs, inputs, recovering costs timeframe, etc. He noted that there is no internet and few speak English. The work to date is going well.

Karabi Dutta sent warm greetings to Professor Sharma and described work done on IAP monitoring using personal monitors on the cooks, and also on the babies' cradles. The infants were exposed to more pollutant than the woman, and because she was crouched down, she experienced less eye irritation than others nearby. Eaves spaces in the traditional houses drew out much of the smoke, but chimney stoves sent the smoke to where it blew back in – people abandoned them in favour of traditional stoves.

Resumé Day 5-6-7: Monitoring and evaluation

There were three new papers added on Friday. Min Malla presented a paper on the findings from the DFID-funded Practical Action smoke alleviation study which is drawing to a close. Priya Karve discussed a range of household technologies which are being promoted by ARTI. These comprise a range of 'off the shelf' products and technologies for building into the home – such as biogas plants. Later in the day, Charles Oloo described his introduction to solar cookers and the changes made by his company to make them more user friendly and accessible.

Pawan Shrestha joined the meeting and introduced ICS Nepal that is working in the high hills.

Karabi Dutta thanked Philip Lloyd for his explanation of coal combustion which will help a local entrepreneur with a coal stove that needs further development to reduce emissions.

Vincent Okello was finally able to join the discussion (internet problems) and directed Fiona to the article he had written, suggesting more interaction on this topic. Vincent replied in detail on the need to involve people - getting people to make their own decisions rather than being passive recipients. He stressed the importance of people understanding the technologies and the thinking behind them so that they could make informed choices. For many women, the key impacts may not be smoke, which mainly affects themselves, but the comfort of their families; timely meals, child comfort – it is through improving the comfort of her family that she rates her own success. To achieve this, practitioners must be at one with the world of those with whom they are working.

Philip Lloyd stressed the need for a thorough baseline study to address these issues.

Rodolfo Gomes commended what Vincent had said. He agreed that lack of understanding of people's lives has led to a lot of failed programmes, and asked for comments from other participants. Rodolfo flagged up improved tests that he developed with colleagues. He noted that one type of stove showing 17% efficiency using the Baldwin tests achieved 35% fuel saving in kitchen performance test. Karabi Dutta asked for more details

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Priya Karve discussed the problems associated with trying to promote an improved stove which had been benchmarked when the community preferred a less efficient stove. That stoves did not always work as well in practice. Philip Lloyd agreed – and mentioned that this might be the reason why solar cookers were not as popular as the technology would suggest. That they missed the 'involvement factor' - the taste, smell, feel etc.needed psychologically. André Seidel agreed - that there needed to be a 'human factor'

David Whitfield countered by describing dissemination in Ethiopia, Bolivia and Kenya, where there has been a greater emphasis on the sociological side and less on the technical. He also described a really effective chimney stove which has an estimated demand of 20,000 in Bolivia. It is a rocket, 2-burner chimney stove. Here are some links if you want to check the stove out. Links: <http://www.bioenergylists.org/en/cedesolsaipina07> - using corn cobs for fuel and <http://www.bioenergylists.org/en/taxonomy/term/169> - for videos and training.

André Seidel suggested that certain cultures respond more positively to solar cooking, and that the way it is promoted, as one of a range of options, rather than the only one, could help it gain ground. This is why the Bolivian experience was so positive.

Ahmed Hood joined the discussion, indicating that solar cookers had failed in Sudan because solar cookers demand some staying at home during the day with cooking habits adapted to suit the cooker operation. People in the IDP camps eat early in the morning and their main meals after sunset. During the day they may be away from home. On laboratories, he pointed out that having stoves evaluated in a laboratory can give an idea of their potential, so that when they are used in houses, people have some idea of what they can achieve. Finally, his description of an encounter with a chimney stove would frighten even the most enthusiastic supporter of this technology.

Karabi described stove technology as a mixture of science, sociology and psychology, able to create goods for which there is a market and able meet performance standards in emissions, design and aesthetics until the stove reaches benchmark standards. Having been approved by the lab, the stove should then be extensively field tested.

Liz Bates suggested that laboratory tests would provide data on stoves for those who cooked in the laboratory, but went on to say that she felt that laboratories were useful for looking at

changes. She expressed concern that benchmarks might take the cook and the process of development out of the equation.

Liz asked for opinions on chimney stoves – do they work in practice? If so, what makes a good chimney stove?

Priya Karve, responding to a message from Fiona Lambe, suggested that ‘distortions’ caused by other sources of pollution may be useful indicators of what else needs to be done. Priya described the very enthusiastic uptake of the Philips stove, despite its price tag of \$50US. On other occasions, people will be keen on an appliance but become uninterested when they hear the price, so it is hard to say what will succeed.

On chimney stoves, Priya thought that they are unlikely to succeed in the longer term unless there is a committed NGO to ensure that they are properly maintained. Cement chimneys are better than metal if one is to reduce corrosion. Getting a chimney that can be cleaned from inside the house is more successful as people do not have to climb on the roof. In high rainfall areas there tends to be opposition to anything that gets rid of smoke, which is felt to be an asset. Lanny Henson agreed that making cleaning easy was vital, and suggested a ‘clean-out’ tee which can be easily made in the field. Another way is to make the flue removable. There are problems if the flue is too long as it is difficult to see if it needs cleaning and can cause too much of a draught. Lanny gave a link to a film he had made about low cost chimney stoves <http://www.youtube.com/watch?v=YbN5xhV8Auo> . Choppalli Venkata Krishna thought it was excellent.

Lanny pointed out that a 1m chimney will give a good draught, so why not this with a funnel above. Liz pointed him to the smoke hoods in Nepal. Grant asked for a good description of a smoke hood as he did not have good internet access. Liz did her best and pointed him to the front cover of the latest Boiling Point.

Choppalli Venkata Krishna agreed that chimney stoves have largely failed in India as the woman will wait till the flue blocks, then someone climbs on the roof to clear it, and breaks through the thatch – or else monkeys attack it, the pipe or cowl gets broken and there is no one to fix it – sustainability is missing. However, she highlighted a few noteworthy exceptions, including the stoves designed by Professor Sharma of Punjab University, Ramakrishna Mission & ARTI. Nepal has a flue made of bricks that can be cleaned from the inside. Professor Sharma, to whom Choppalli had referred, stated that properly made chimney stoves do work with a soot hole and plug so that they can be cleaned from below. In Haryana state, 75% of all this type of stove are still in use after 5 years. Philip Lloyd declared that chimneys in old houses have been working for centuries, but metal flues can be a problem as they are expensive to replace when they burn out. Later he circulated a diagram for an old-style chimney. Liz Bates clarified what she had meant by a chimney stove (rather than a chimney and a stove) but felt it would be useful for our colleagues in Nepal in dealing with blowback on windy days. Tom Miles suggested looking at a windvane to resolve the same problem. He agreed that getting rid of the smoke is important, but trying to stop it happening by good combustion must be the first step.

Vinay Tandon asked why not move from woodfuel to charcoal that can be made from agri-waste, using up a waste resource through methods that could be promoted by incentive-based mechanisms for charcoal manufacture. The benefits would include reduced IAP and greenhouse gases. Liz Bates questioned the benefits from a greenhouse gas standpoint, and was concerned that new evidence was beginning to emerge on the dangers of CO. She asked for others knowing more to respond.

Andre Seidel provided the numeric data on the high levels of CO produced in traditional kilns, but improved ones are available. The same is true for stoves. Professor Sharma also felt

that charcoal wasted a lot of energy in driving off the otherwise combustible volatiles. (Charcoal recovery in a traditional kiln is only 16% and in the improved kiln it is about 20%). Priya reminded everyone of Ron Larsen's gasifier stove which burnt the volatiles and left the char for burning in a clean-burning charcoal stove.

Anil Raut joined the discussion from Nepal. Anil told us that the results from a large-scale study on chimney stoves and IAP was soon to be published, which would supply further evidence.

Sarath Guttikunda provided a really enlightening description of the process by which the Anagi stove became a huge success in Sri Lanka. It benefits both the cook and the manufacturer alike and is still the standard stove in Sri Lanka.

Nordica returned to the discussions by thanking Karabi for her clear explanation of the links between laboratory and field – that they need to be collaborative and complementary. Nordica stated 'Lab tests are not meant to substitute or predict field tests, but to ensure that a given stove design is able to transfer heat into the cooking vessel and burn the fuel as cleanly as possible' and that small changes can make a very big difference to their effectiveness. Nordica described her vision of field and laboratory testing centres providing state-of-the-art equipment, for high quality, unbiased low-cost data worldwide – so that appliances are likely to gain acceptance by cooks – the most important judges. That way, one can be sure of providing improved technologies and can get on with the job of scaling up.

Ernestine A. Tangang Yuntewi is doing work on moisture content of fuel and how it responds differently in three types of stove. Key findings (hot off the press!) : Preliminary results show that more PM and CO were emitted for the open fire at 15% than at 5% with more wood fuel use. For the Chinese Rocket Stove, there was more or less no difference in both moisture contents in terms of emissions and wood fuel use. There was an increase in CO emission than PM emission for the modified Vita stove at 15% than 5%, however the fuel used was almost the same. Ernestine asked why so little work is done in West and Central Africa.

Tom Miles felt it would be useful to have 3 or 4 labs able to do the same tests, comparing procedures and results. He described a market that, apart from those in dire poverty, wants a good choice. Labs can confirm that a stove can meet certain criteria, then it is a compromise on both sides, with the cook adapting a bit to get better properties, and modifying the most technically sophisticated to suit her needs.

David Whitfield provided a nice short remark: Lab tests give us comparison benchmarks, but are really not the last word. He cited The HELPS stove in Guatemala that has an excellent record for folks keeping the chimney clean and they have installed close to 30,000 in the last 4 years. However, he warned that the first line of defence **MUST BE GOOD COMBUSTION!** - chimneys are not a substitute for this.

Tom Miles asked David whether most of their presentation of cooking technologies was community-based to raise awareness and interest – along with follow up activities. Was this the case? David responded that this was the case. He listed many of the activities that involve people – mainly village and community groups. They encourage combinations of technologies for reducing the amount of fuel used – up to 80 – 90% and with massive time savings. He indicated that it is a good way to share knowledge, not just to provide it.

Teo Sanchez joined the discussion by commenting on the conservatism often seen in societies living in poverty. He cited his own personal experience and said that people will not take a risk for a 5% or 10% fuel reduction – but that Rocket stoves, with substantial reductions, may make it worthwhile. Teo felt that as well as the sociological dimension, there were

weaknesses in the technologies and asked a number of questions about the effectiveness of the solar box cooker. Will people use two completely different technologies, one in the sunlight and one after dark?

On indoor air pollution he felt that people were not convinced because they did not perceive the effects and needed proof, without which a great deal of education would be needed. [I don't really agree with you on this one Teo!].

Philip Lloyd agreed with many of the points Teo had made - one issue, he felt, was to convince people that it was useful to field staff if people would complain rather than be polite.

David Whitfield felt that those living in poverty have to take less risks because the odds are too high. He echoed Vincent Okello's comment that one has to live and experience the situation in order to address it. He reflects that both he and his wife only came to solar cooking once they had tried it out. He felt that people are aware of the problems; eyes, coughs etc. but need convincing that there are ways to resolve these issues.

Choppalli Venkata Krishna summed up what she felt was the perfect stove: an efficient cookstove, with local fuel and some fuel saving that can be built by the user. A locally available chimney that can be cleaned by the user/replaced by her Good ventilation Appropriate to the cook Awareness campaigns and good medical information Maintenance by builders and NGOs until the design is acceptable.. Patience, so that success can be measured by the number of acceptors and users and not by the numbers installed.

Rodolfo pointed James Murren (from an earlier posting) and felt that IEI and Project Gaia Brazil could collaborate in promoting ethanol as a cooking fuel.

Resumé Day 8: Monitoring and evaluation

No new papers today, but some really interesting discussions.

Rodolfo Gomes opened proceedings by agreeing with Ron Larsen that there are still places where biomass is likely to be the most appropriate fuel and thanking him for setting him on the discovery of a new area of interest 'terra preta'.

Choppalli Venkata Krishna provided a very clear description of how a natural draft is produced and the dimensions and conditions necessary to achieve it.

Pawan Shrestha responded to Lanny and Krishna about the material used in the stove and flue, and described how the flue was made with two interlocking parts to make cleaning easy. He described a smoke hood to Grant and said that he felt that the first thing to get right was the stove efficiency. He asked Liz about various aspects of the stove: cooking behaviour, smoke removal, cost, size, dirt falling on food, and durability. He described the ceramic-lined stove that he was designing and asked about the relative merits. Liz responded to the questions he had posed, but felt that it really depended on the cook - that is is probably more productive to have both hoods and stoves being developed.

Min Malla further explained the smoke hood, and highlighted the other interventions which have been introduced with it to address some of the problems mentioned by Pawan. Pawan expressed his interest in the levels of smoke and fuel reduction that had been achieved to both Malla and Liz. He requested Min Malla to provide drawings and specifications and asked Liz about the sustainability with subsidy and what to do about different size pots and vessels. We need to be producing goods that really work if our reputation is not going to be compromised. Liz agreed that there if people wanted to cook several dishes at once it would be a problem,

but felt that the material was sufficiently thick not to buckle, and invited Pawan to keep asking the questions. David Whitfield endorsed Pawan's comment about improving the combustion as the first requirement – then deciding what to do with the remaining smoke. Pawan responded that although he feels that the Practical Action approach is good, it is necessary to do more than just what people want or in the future they will blame us for not making sufficient change.

Mr Rajashree Rajagopal joined the conference, expressing his interest in an area which is new to him and his enjoyment of the meeting. Welcome – I hope you continue to enjoy the discussions.

David Whitfield has had problems with an overzealous g-mail filter and replied to Eva Rehfuess and Bruce Gordon today, with information on a programme for health through improved hygiene, IAP, food security and community relations, along with associated 'hardware' water filters, rocket stoves with chimney, retained heat cookers and solar cookers, working through local NGOs. He suggested to Theo Schilderman that they would welcome working with Practical Action in Bolivia.

Ron Larsen responded to Rodolfo later in the day, saying that availability of wood is a key factor. Ron felt that conditions for growing wood fuel in Brazil still lead him to favour wood lest oil prices rise. Ron re-iterated the benefits of charcoal-producing stoves based on small-scale gasification and combustion of the woodfuel volatiles to leave charcoal.

An interesting discussion between Krishna and Priya ensued around LPG and its role in India. Krishna was describing the problem where the first gas cylinder is subsidised, people buy the stove, cannot afford the LPG and so sell on the stove. Priya responded that she felt that we should look at why people find LPG so attractive and incorporate those attributes into solid fuel stove design. She pointed out that each participant has a field constrained by where they live and what they do – so there is a need to share. Tom Miles pointed out that many people use LPG for 'quick' cooking and biomass for main cooking.

Paul Anderson arrived at the conference, having just left stoves camp. Paul said he was interested in the work being done by Rodolfo and would like to be involved. He described a 'Lily Burner' for burning liquid alcohol, that can be produced at low cost. The results are similar to those of the CleanCook stove. Paul stated that he is interested in both the commercial and not-for-profit side of alcohol stove dissemination. He felt that for further development of alcohol stoves, collaboration is needed.

Resumé Day 9 Knowledge sharing and networking

An interesting day – though not too much to do with knowledge sharing and networking except that we were all doing it very well.

Tom Miles had mentioned the use of multiple stoves the day before. Priya Karve responded that LPG is the fuel of choice in India, even for those who have little money. The main problem is erratic supply. Although wood may be easily available women would prefer to buy gas for a stove which they maintain by setting it on a table or platform. David Whitfield asked if it could be the 'clean' aspect as well as the ease of use. That in Bolivia, where LPG is the main fuel, foods that require long cooking will be done on a three-stone fire.

Pawan agreed that the same happened in Nepal where LPG is kept for quick cooking and where people may have up to four different cooking technologies: improved cookstove for cooking food, a traditional stove for brewing alcohol and cooking animal food, LPG or electric stove for cooking tea and milk and a kerosene stove for emergency use.

Anil Raut added to the collection with electric heating stoves (expensive) and biogas. He stated that we need to work on variety of technologies, depending upon need, economic level, culture, practice, and fuel availability, but that if we look for a perfect technology, we might just end up debating its performance and IAP will still be major cause of respiratory illness. Tabassum agreed, and suggested short, medium and long term options. Tabassum urged the group to come up with positive suggestions whilst the discussions are going so well.

Pawan felt that although short term solutions were needed, most effort should go into the longer term as it will be next century before most people see the benefits of hydropower in Nepal. A new arrival to the meeting, Martin Obermaier (welcome!), described the situation in Brazil where, till 2008, all households will be connected to the grid at no cost and subsidized tariffs. He asked why the links between rural electrification and health are not more evident. Liz suggested that most rural electrification is small-scale power which cannot cook meals.

Karabi did an excellent job of summing up – we need low-cost short term solutions to make things happen now! – whilst looking at more substantial levels of smoke. She suggested eaves spaces with mesh, outdoor cooking, fireless cookers and chimney hoods – not only those produced by Practical Action in Nepal. Karabi endorsed the use of multiple stoves but pointed out that whilst urban families look at Kerosene, LPG and electricity, those living in poverty in rural areas start with dung cakes, wood and kerosene, and only opt for the more expensive fuels for emergencies and fast cooking. Biogas stoves need a higher initial investment, but the ones run on food waste can be very useful for community plants, where credit may be feasible. David Whitfield flagged up a good weblink for instructions for this device – very useful in the tropics where there is a lot of waste fruit.

Finally, Karabi discussed charcoal and asked if charcoal stoves can be considered a good option in the light of their environmental damage. Ron Larsen commented that unless the stove made charcoal rather than burned charcoal it was environmentally very bad. Liz replied that although environmentally they are very damaging, the reduced particulates can be better for respiratory health. With many households in Sudan not using LPG, Liz preferred the idea of them using charcoal in terms of health. Ron Larsen replied that he would still prefer to see renewable liquid fuel or clean biomass stoves. Professor Sharma felt that CO was equally damaging but that in Cambodia, people were also reverting to wood. Liz asked for further information on CO and its risks as a topic of increasing interest. Professor Sharma provided some key data on the dangerous emissions from wood.

Liz endorsed Anil and Karabi's comments and Pawan and Tabassum agreed that we need to work out how to make a better wheel rather than re-inventing it.

Theo Schilderman returned to the meeting to welcome David Whitfield's invitation to explore co-operation. He has set up links with the Peru office as Practical Action has plans to be more active in Bolivia, and felt there could be co-operation, particularly in the fields of energy, water and food security.

Choppalli Venkata Krishna described the way 33 Community biogas plants had been installed in India. Only three institutional ones still work, the rest have failed due to lack of payments from users to maintain the plant, poor management, no tariff, real problems in sharing caused by the 'caste' system, and the need for cow ownership. In response to Karabi described the approach taken by the Grameen Shakti Bank in Bangladesh which had proved more successful.

Liz flagged up three more papers to read – two from Sarath Guttikunda on stove technology development, and one from Agnes Klingshirn – a really interesting case study - for the 'policy' days.

Professor Sharma urged that awareness should be instilled into young people. He felt that it was high time.... ‘... that the practitioners of IAQ should move from just measurements to action oriented holistic approach to kitchen design which should take all components like cookstove, ventilation, fuel, ergonomics and functionality. Concentrating alone on cookstove and fuel will not make much headway as the experience of last 30 years has shown.’

Karabi responded that work is currently taking place in Maharashtra to see the effects of ventilators on IAP and design model kitchens. Liz discussed work on eaves spaces in Kenya and highlighted some of the pitfalls. Grant directed the conference to experiments reported by Nordica and Dean in Boiling Point.

Karabi shared an interesting outcome from drawings done by rural children in India when each picture of a clean kitchen clearly showed an LPG stove. Tom Miles shared the link for some videos done by HELPS international on disseminating to children. The documentation and report are available from PCIA. David Whitfield said that they too are looking at education within a cultural perspective, and involving school children so that they educating the coming generation get the children to teach their parents.

...and so in the end we finally made it to knowledge sharing – there is still all day tomorrow.

Resumé Day 10: Knowledge sharing and networking

Priya started the day by highlighting the interesting pictures provided by children of ‘clean’ kitchens, replete with LPG stove, and stating that an LPG stove was something to which women aspire. She suggested that the key might be its modern image – the Philips stove is the same – is it just the name, or the smart appearance? Is this the way to promote other stoves? Referring to biogas, Priya felt that wet garbage was infinitely better than dung as a feeder, and mentioned that ARTI will provide training for a consultancy fee to cover expenses. Priya put a new paper about this technique on the website.

Krishna came back to earlier discussions on community biogas and said that now that the management problems had been resolved, they had become a success. The good news is that we can learn from our mistakes.

Ahmed Hood agreed that LPG is the stove of preference, with very large demand when Practical Action started up revolving finance. Even though some of the women find it hard to save for a refill, none wish to return the LPG set. He feels that improved access to LPG sets through microfinance and more involvement of the private sector to improve access is the key. Philip Lloyd has succeeded where we failed in getting the gas supplier to realise that his profits lie in the gas, not the appliance. The supplier has provided 10K low cost sets – but the project failed as they were sold on for profit.

Ahmed Hood responded that this had happened in Sudan until an awareness programme and safety training was part of the package – through a participatory approach with demonstrations, the beneficiaries selected the stove and they pay for it – so they don’t wish to sell it on. David Whitworth felt that with rising oil prices, there are signs that many are looking to biomass for the future.

Pawan expressed interest in the electricity scheme from Brazil, and noted that only 1% of Nepal’s potential for hydropower was used. Is there information available? Pawan mentioned a light from power stove that is being disseminated in Rasuwa district, including Gatlang, which was mentioned in Boiling Point 24 (??). He is happy to provide further information. Martin directed Pawan to <http://ren21.net/iap/commitment.asp?id=34> and other publications.

On ventilation he mentioned a workshop on ventilation organised by ARECOP. With many people living in one room in the high hills, he felt it was an important aspect. He mentioned the dangers of suffocating in unventilated rooms with wood fires. He has found badly positioned chimneys and the effect of wind can make indoor air pollution a big problem. Tabassum agreed that the same issues are important in Bangladesh. Professor Sharma mentioned the workshop and described a simple method for a rough estimate for optimising ventilation. Wind is tricky and what it gets up to just outside the house can have a big effect. Liz asked about it being on line. Professor Sharma said that there were no plans for an on-line edition, but he would send a copy. It includes a simple visualisation method for describing ventilation in the kitchen – for a smoke hood situation, the ventilation should be higher. David asked for a copy of the manual – could it go on the HEDON site?

Ahmed Hood rejoined the discussions to agree with Tom that it is very common for people to use several different stove/ fuel combinations.

Welcome Dr Reddy who described a very hands-on scheme for teaching around 100 children, getting them to collect fuels and details of stoves, and spending two days collecting flora, visiting local kitchens, creating awareness through art and drama and demonstrations. Finally constructing 100 good stoves, using the rocket stove principles. As this is an ongoing activity, he would like feedback on how to make it even better.....it sounds like making learning fun!

Philip Lloyd also uses learners to gather data, training the older ones to gather data on their way home from school. The older ones get paid for doing the questionnaires, and the schools get some soccer balls. News travels, more volunteers can be found, and not only is good data received (as people respond well to children) but the children themselves learn about the topic for life. David Whitfield asked for more details.

Liz asked Martin Obermaier whether there was a risk that once people had electric cookers, if the subsidy was removed they could be left with a costly appliance and no money for fuel. Liz flagged up an interesting article on the relative costs of various fuels showing that electricity is generally cheaper and better for lighting. Krishna flagged up the pollution caused by kerosene lighting and suggested that we should be looking to solar, which is available to rural populations and could help boost income. Philip Lloyd responded that although it is very polluted, the levels of energy used in lighting are much less than those used in cooking.

Martin replied that 2008 was only the first date, and as the number of people needing connection to the grid was much more than had been thought it was likely to continue – and so was the rural subsidy. He noted that there is nevertheless a big demand for LPG. Liz responded that maybe people prefer LPG and / or do not want to spend on a different appliance.

Professor Sharma observed that lack of evident smoke does not make a fuel clean. That charcoal and even LPG emit pollutants – so ventilation should still be used.

David Whitfield felt that generally the cost of cooking with electricity will deter most people living in poverty.

A new discussion started on the ratio of CO/CO₂ and whether this can determine clean burning. [Note: Philip has put up a very interesting article on this subject on days 3-4). He explained that this ratio gives a clear idea of changes in performance. The levels set, however, will give adequate results with high emissions where there are very high ventilation rates. Professor Sharma said the same tolerance was used with the MNES stoves programme in India; when the poor combustion of the wood-burning stoves was noted, the programme was stopped. Tom Miles thought that they were thinking about this testing at the stoves workshop

but recalled some problem. He requested Nordica's response. Nordica replied that they test CO/CO₂ with no problems and similar results to other labs – and gave values for various fuels. Her preference for 'tasks completed' tests stems from the need to measure heat transfer as well as combustion efficiency. Nordica feels that this ratio is important when measuring other emissions. More will, she hopes, appear on the bioenergy bioenergylists.org website when complete. Tom responded that he felt that watching the burn in real time made CO/CO₂ ratio interesting. Would PCIA be publishing a pdf of the Comparing Cookstoves book?

Lanny joined the discussions to seek advice about window positioning to optimise clean air. Liz replied that Practical Action had found eaves spaces above where the smoke stained the wall useful, but lower windows let in air, they did not generally let out smoke. Professor Sharma stated they are useful only if they are perpendicular to wind direction and on the leeward side of the window. Liz said she had noted that with a smoke hood, where the stove could 'see' the window, the suction can pull the smoke out of the hood and towards the window. Lanny felt that windows on all four sides were the answer – but set in the corners. What role does dust play? We need to think more about roof vents.

Krishna painted a picture of poverty, poor health and indoor air pollution and suggested that we should all be looking to pool our thoughts and come up with a fool proof design for kitchen ventilation, layout, stove position – and come up with a concrete proposal.

Eva Rehfuss joined the discussions (welcome!) to thank people for the ideas on integrated programmes. With the WHO team they were thinking along two possible lines; adding a second component to a successful programme doing one of the two activities in which they were interested (water & IAP) and/or (?) Using the health system to deliver key messages (along with possible vouchers). Eva asked if those interested or with comments could feed back to the team. Theo replied to Eva that Practical Action had some experience in integrated working, but more on integrated programmes across a broad range. He mentioned a small pilot that had provided good insights, and discussed a Healthy Homes programme with several options that is currently being planned. Would it be a good idea to have a similar meeting to this with a wider group.

Resumé Day 11: Policy and the way forward

The last topic in this first e-conference for the CleanAirSIG is looking at the bigger picture, how can we make it happen on a large scale. Perhaps it says something about policy-makers and conferences that the day was largely occupied with discussions on project level activities ...despite me nagging...but some really inspiring and interesting stories as well.

Pawan thanked Martin for his information on rural electrification in Brazil, but asked if he also had implementation information. Martin said he would send it at a later date.

Nordica responded to two comments. She agreed that CO/ CO₂ measures were really interesting and pointed to this method being used to show the number of times a fire is tended [presumably leading to more emissions through cooling the fire?]. Philip Lloyd said it was good for biomass as it told you how much energy you were getting for your dose of pollutant.

The Aprovecho 'Comparing Cookstoves' book will come out at the end of the month. Tom said it will be useful for baseline categories, criteria and performance indicators.

Firewot Mengesha thanked everyone – he's found it interesting.

Karabi asked whether people felt that it was possible to introduce exhaust fans in rural houses as another intervention option for improving IAQ, using electricity, biogas or solar? A very

mixed response ensued...Vinay Tandon thought (in capital letters) that it was a very good idea – Pawan felt that in Nepal, lack of electricity could prevent them working – same in Bangladesh, according to Tabassum. Pankaj agreed – that natural ventilation was a more realistic option.

Liz flagged up that even those who are not poor often suffer the ill-effects of IAP. Philip Lloyd was much more positive about fans – yes it is possible with small solar power system, but not if you want to watch TV, and don't use with a hood or you'll get a chimney fire. Anil wants to experiment on fans and asked for basic figures – he likes the idea. Tom Miles suggested a 'domestic ventilator' and we all said 'What's one of those?' Tom got on the web and came back with the following websites;

http://www.windmaster.co.za/tornado_domestic.htm

http://www.edmonds.com.au/html/products/vent_a_room_system_250mm.htm

<http://www.engnetglobal.com/c/c.aspx/WIN015/products> Thanks Tom

Vinay Tandon came up with the cost of a fan \$10-\$12 – he believes that there is so much electrification going on that the bigger issue is to win the hearts and minds (particularly of men). For those in poverty we need a pro-poor policy shift for some finance, and give the fan manufacturers a really useful role. Martin felt that it was more realistic where there was electrification, which certainly saves money in lighting in Brazil – money which could be spent on extraction.

Back to fans again, Krishna felt that fans were not a viable idea in poor rural communities as there was not enough energy for other things, solar is expensive and you need a lot of cows for this amount of biogas – one only had to look. The Indian government is not supplying enough electricity for a fan. Karabi replied that she spent many hours of her life looking – and thought it sufficiently viable to ask the question. She works with simple farming folk who cook nutritious meals that have lots of smoke – it would be necessary to persuade them to abandon the TV in favour of cleaner air.

Lanny felt they were not needed, roof vents would do the job. Liz felt it was really interesting, but asked about where the outside temperature was greater than the inside one – would natural ventilation work? – then complained that the discussion was not on track for policy day!

Professor Sharma referred back to the previous day to tell Lanny that the best way to handle the formation of eddies is to offset the opposite windows and make the inlet window smaller than outlet thus increasing the inlet wind velocity.

Vinay Tandon started a policy discussion (thank you!) pointing out that NGOs are good at reaching the poor, so more initiatives should be run through them. He gave several useful suggestions: strong dissemination of success stories to politicians; lobbying the private sector – eg for cheap gas cylinders through NGOs etc. Grant flagged up that HEDON has made a start at listing donor and government schemes – is there a volunteer who could keep this up-to-date?

Lisa, from Arecop, asked if anyone felt that Participatory Assessment tools would be useful for IAP situations. She cited the benefits as: engaging all members of communities (not just the women) ; exploring the range of different technologies ; providing a quantitative assessment of qualitative data. She felt that it would be very useful, albeit time consuming, to develop a methodology for participatory assessment for IAQ improvement projects

Sujoy responded to Eva's letter describing the integrated work they are doing in the slums of Kolkata. Having described the problems, she felt that a person's health in this situation is the product physical, social and economic factors requiring an integrated approach encompassing

the entire range of infrastructure changes to improve the overall health status & thus productivity.

Liz, still trying desperately to have the policy days, suggested some goals – try to get IAP into the PRSPs, into the schools and clinics, into the press, and get governments keen on soft loans. Karabi said that jingles on radio and articles in the local press are good. BP's Oorja stove is doing really well through its jingles [can we have a jingles competition on line please, Grant?]

Theo responded that one of the problems of integrated working is that ministries like to keep to their own patch with their own pots of money – which brings the argument full circle and back to the perils and advantages of integrated working.

David Whitfield said that SCI are always trying to get people to mobilise policy makers in ways described by Agnes. We can go further faster with the government behind us – as witnessed by the man on a motorbike funded by the local government who goes round in the town of Saipina disseminating information on the dangers of IAP. Win one battle at a time – get policy-makers involved and engaged.

Priya ! you cannot really be that pessimistic. Priya feels that governments are uninterested and that the press is run by urban-ites that are not interested in such issues. Are there funds anywhere for a big press campaign? Vinay asked if it would work to get women to campaign like the farmers did over free electricity. Priya agreed that it might – to get votes.

Karabi has just learnt that the HSBC bank is offering green loans for environmentally friendly technologies in India for solar panels or biogas.

<http://www.hedon.info/goto.php/view/977/news.htm>

Philip provided several policy thoughts: S Africa produced a great policy paper on the right to energy; but how to make it happen? It did yield good energy census figures though: www.statssa.gov.za/census01/html/C2001Interactive.asp Kerosene was subsidised, but until the process was banned, it was used to make diesel cheaper. A study in SA suggested that a low-cost restricted access electrification policy would be best for those living in poverty, but it came too late, and the free 50KW/month for low income houses is challenging to implement. One thing leads to another in SA, an electricity shortage led to LPG promotion till that ran out due to some problems with automotive fuel - but great while it lasted, with 100 000 homes equipped with LPG at great speed.

Grant flagged up the need for a concerted effort to reach the media with key messages and flagged up a useful training submodule on communicating project results which he did as part of the TIE-ENERGIA project on Gender and Energy in Africa. Look to Energia for building policy and media interest. He also mentioned two further useful documents.

Professor Sharma wrote a wonderful account of how he got the late Mrs Indira Gandhi to endorse the need for an improved chulha programme in India. After that, it all started happening in fifteen days. The same sort of thing happened in China. He suggests a big initiative is needed in the case of IAQ, integrated with housing for those living in poverty....'otherwise IAQ programmes will remain as small efforts of the NGOs till the funds from some donors are available'. Krishna, who was also involved, entirely agreed that without it the Indian stoves programme would not have happened.

Enjoy the last day folks....

Resumé Day 12: Policy and the way forward

The day started with an early contribution from Tom Miles reinforcing Grant's comment that putting items on the website is sometimes the only way to provide access for people, and the same goes for weblinks. People have been able to access support through having their work showcased in this way.

Vincent Okello from Kisumu described the very positive effects of working with the District Public Health Office to start awareness in the next district. The DPHO is now something of a focal point championing IAQ. The Medical Officer of Health has also been very involved through visiting households, and has answered questions during a radio show. They are now both factoring IAQ into their line ministry budgets.

Firewot Mengesha lamented that it is hard to get the Ethiopian government to take an interest in IAP – he feels that governments need to take the lead with soft loans, support to NGOs, and setting up carbon financing for such projects.

Eva provided a link to the WHO statistical data on IAP and health that could be used as a lobbying tool: http://www.who.int/indoorair/health_impacts/burden_national/en/index.html. Firewot replied that it was first necessary to get the government interested in the subject at all...Pawan got so excited about the publication that when he emailed to thank Eva he spelt his name wrong :)

Eva Rehfuess responded to Sujoy's description of their integrated work in Kolkutta, asking for more details on selection, subsidy, scale etc. She felt that Theo's idea of a resource pool through a separate e-conference, workshop or case studies on the HEDON website would be valuable.

Vincent replied with a description of the occasions when integrated working was being urged on the team by the community itself during the smoke project. Though he agrees with Theo that different departments may not wish to work closely, in Kisumu there is a local cross-sectoral District Environment Committee to which Practical Action has recently been nominated for membership. Project interactions have led to much goodwill on which other activities could be build. Vincent would like to continue discussions on integrated work beyond the conference [How's this for a topic Karabi?].

Pankaj agreed with Professor Sharma that he felt that strong political patronage was often key to making things happen and reported on an interesting case study in Nepal.

Agnes broke her holiday to respond to many of the issues (thank you Agnes). Agnes felt that the tobacco scenario and that of IAP (described by Kirk) differ in that there were strong economic arguments for keeping the tobacco industry going – not the case for IAP. She is less convinced that everyone's best interest is served by clean fuels.

She felt that the article by Goldenberg et al needs further discussion outside the conference....that we should be exploring now how to achieve sustainable cooking fuels, in the light of conflicting demands for food and fuel that seem to be becoming more acute. Karabi agreed, and described how SE Asia is having land clearance for biodiesel production, sugarcane being grown for fuel not food, whilst in Maharashtra state, farmers are going for sugar cane rather than rice as it yields a better profit margin.

Veena Joshi flagged up the need to ensure that practice follows policy, and suggested that a strong service network and monitoring system is needed.

Karabi gave an outline of plans to continue discussions going at a slower rate through ongoing discussions on the CleanAirSIG. She asked for suggestions.

David Whitfield felt that we should be looking to advocacy, advocacy tools and pooling our knowledge resources so that through step-by-step packages; trial and error at local and national level, and feedback, we all increase our knowledge of what works successfully.

Ujwal Nanda Vaidya arrived late at the meeting (nevertheless, you are most welcome). Ujwal is involved in the manufacture of metal ICS and found the technical bits most interesting. [Ujwal – the best way to continue discussions is to join the CleanAirSIG, because these emails are now closed].

Agnes summed up that whatever activities are involved, they are under national supervision and therefore also responsibility. In fact, it is absolutely mandatory that local/national political powers are involved and take over at least some responsibility. The actions will be dependent on the local situation. Ownership is a powerful instrument of change and unless it is there, there will be no sustainability in whatever actions are taken.

Grant felt that it is very difficult to influence governments as they change all the time, so meaningful involvement at the political level is compromised. Involvement of civil servants can be more effective, and mechanisms to encourage cross-party support, such as Eco is trying within a UNDP-GEF Kenya institutional stoves programme, are essential.

Agnes agreed and indicated that it is often the civil servants who do the work too, and they are there whatever the political party....unless you live in Bolivia, David Whitfield informed us – but the teachers and the health workers do not change.

Thank you everyone for the kind words, and for coming to the meeting.