



PARTNERSHIP FOR CLEAN INDOOR AIR

PCIA Bulletin - 2009 Results Reporting

August 2010 Issue 24

This quarterly newsletter provides updates on the activities of the Partnership for Clean Indoor Air (PCIA) and its Partners to improve health, livelihood and quality of life by reducing exposure to indoor air pollution, primarily among women and children, from household energy use. Currently, over **380** governments, public and private organizations, and multilateral institutions are working together to increase the use of affordable, reliable, clean, efficient, and safe home cooking and heating practices. Visit www.pciaonline.org to join!

We're excited to share with you the collective results of Partner's efforts in 2009. PCIA Partners' annual results reports provide a snapshot of their ongoing hard work and dedication. So far 54 Partners working in 61 countries have submitted reports on their 2009 activities. Issue 24 of the PCIA Bulletin highlights their progress manufacturing, selling, and testing stoves, accessing carbon finance, scaling operations, and much more. 2009 results show how, as a global partnership, we are making significant progress in reducing exposure to indoor air pollution (IAP) from cooking and heating practices, and improving the health, livelihood, and quality of life for millions of people living in the developing world.

As seen in their results from 2009 and goals for 2010, reporting Partners are undertaking a diverse range of activities that includes: manufacturing and/or selling approx. 1.4 million appliances; assisting the start up of local stove factories and production facilities; conducting promotional campaigns to increase stove marketability; setting up regional testing centers; promoting alternative fuels such as ethanol, Jatropha and briquettes from waste materials; preparing certification protocols; and pursuing carbon finance.

Even if you did not submit your 2009 results in time for this publication, your achievements and goals can still be counted. Visit <http://www.pciaonline.org/results/2009/submit> to fill out a report on behalf of your organization. Partner results will be presented at the 2011 PCIA Forum, and complete results reporting is required of all organizations requesting consideration for

financial support to attend the Forum. In addition, the results reports are helping us: identify speakers and case studies for the 2011 Forum; recognize Partner achievements at the Forum; and guide future PCIA work.

Ultimately, the collective efforts of the Partners and the Partnership have had profound impacts on improved health, family economics, and quality of life; reduced poverty and impact on the global and local environment; and increased job opportunities. However, we still have much more to do. Join us for the 5th Biennial Partnership for Clean Indoor Air Forum in February, 2011 in Lima, Peru, where more than 300 household energy and health leaders will convene to share their successes, and leverage resources and expertise to generate even greater results. We hope to see you there!

In This Issue

- Feature Articles (Partner Highlights) p. 2
 - StoveTec at Scale p. 2
 - SNV's National Biogas Programmes ... p. 3
 - SCA Promoting Integrated Cooking.... p. 4
 - TWP Supporting Haiti Relief p. 7
 - Aprovecho: Stove Design & Testing.... p. 8
 - Berkeley Air: Science Based M&E p. 9
- Partner Profile Update Campaign..... p. 12
- Happenings p. 15
 - KPT Training Update p. 16
 - Conducting the WBT and CCT p. 17
 - EPA's Second Round of Stove Testing p. 18
 - A New Global Alliance p. 19
 - Stove Camp 2010 p. 20
- Map: Countries of Implementation p. 22

1.38 million stoves were manufactured and/or sold by reporting Partners **in 2009**. Look inside for **charts, graphs and statistics** from 2009 results reporting!

☀ FEATURE ARTICLES - *Partner Highlights from 2009 Results Reporting*

We chose 6 of the 54 Partners that submitted results reports for in-depth interviews about their 2009 results and goals for 2010. The organizations were selected based on particularly interesting details provided in their results reports, and the fact that they represent a geographic and thematic cross section of PCIA Partners. StoveTec is manufacturing and selling stoves at scale, SNV is working on biogas digesters and national-level standards in addition to improved stoves, while Solar Connect Association promotes both solar cookers and biomass stoves. Berkeley Air Monitoring Group provides field-based monitoring services, Aprovecho Research Center focuses on stove design and testing, and Trees, Water, and People is participating in the relief effort in Haiti and building regional partnerships to scale up their operations. In the following pages you'll hear from each of these organizations individually.

StoveTec

Ben West; ben@stovetec.net

<http://www.pciaonline.org/stovetec>

StoveTec reports that Shengzhou Stove Manufacturer (SSM) manufactured and sold 100,000 stoves in 2009, impacting over 500,000 people. How has the factory developed the capacity to manufacture this high volume of stoves?

StoveTec is in a joint venture with SSM in China with the ability to mass produce high quality, low cost Rocket type stoves designed by Dr. Larry Winiarski. The factory can currently manufacture over 60,000 stoves per month with easy ability to extend manufacturing to make over a million stoves a year.

The factory uses a total quality management production and operations process for continued improvement in the manufacturing of the stove. The factory has developed several innovative techniques to manufacture large numbers of stoves via proper clay mixing, extrusion, drying, firing and finishing.

All of this is possible because of the work of the Aprovecho Research Center (ARC), which worked with the factory owners through various stove iterations and set up a new laboratory at the factory to test the stoves for emissions and fuel efficiency, using internationally approved standard testing protocols.

StoveTec has been proactive in testing its stoves. What have you learned from testing, and what tangible improvements in technology, or in other areas of your business, has testing made possible? How have you incorporated test results into your marketing materials?

Testing allows StoveTec to make continuous product improvements not only for our base product line, but also to make specific improvements for specific cooking circumstances. For example, cooking pots can be very regionally specific. Pots used in Haiti have a very rounded bottom that reduces the efficiency a cook would see with the flat bottom pot that our stove was designed for. With

lab testing we can make quick improvements to our products to accommodate the needs of our clients and projects around the world.

How important is carbon finance for scaling up your stove sales and manufacturing? What progress have you made towards obtaining carbon finance?

Carbon financing is very important for scaling up our initiatives. It is well documented through third party market testing that while a good portion of a local market in a developing country (approximately 20% of the market) can pay for the full landed cost of our stove ('landed' includes shipping costs), stove subsidization via carbon financing can help reduce the cost of the stove \$2 -\$5 and dramatically improve a cooks ability to purchase a stove (approximately 50% - 70% of the market). We have a dozen partners pursuing stove projects that will utilize carbon financing. All of these stove projects are in the early stages and have not yet received carbon financing.



Training users of StoveTec stoves

What role do you see public-private partnerships playing in expanding the reach of your stoves? Are you interested in partnering with country governments? What challenges and successes have you experienced to date?

Although we've had various discussions with this stakeholder group, public-private partnerships (PPP) have not had a role in projects to date. These partnerships are

(Continued on page 3)

(Continued from page 2)

increasingly of interest as we continue to develop breadth and capacity. StoveTec and our partners have specific needs and ideas that we believe PPP groups would find beneficial to their metrics, therefore we are very



Another satisfied customer

SNV

Prakash Ghimire; pghimire@snvworld.org
<http://www.pciaonline.org/snv>

You have worked with three stove testing organizations to evaluate your biogas digesters' performance. Describe your experience with testing, what you learned, and how you used the results to improve your product.

SNV commissioned three institutes, Chengdu Energy Environment International Cooperation (CEEIC), Department of Renewable Energy Sources (DRES), Maharana Pratap University of Agriculture and Technology, India; and Kiwa Gastec Certification (GASTEC), Apeldoorn, The Netherlands; to test samples of biogas stoves and lamps. Samples of stoves were obtained from eight countries: Bangladesh, Cambodia, Ethiopia, India, Lesotho, Nepal, Rwanda and Vietnam; and lamps were supplied from four countries: Cambodia, Ethiopia, India and Nepal.

The test results provided information on physical appearance, air tightness, biogas consumption (heat rate), flame transmission, combustion stability, thermal efficiency, concentration of carbon monoxide in smoke, wind resistance, fire resistance, surface temperature, noise, durability, structure, and material and surface finishing, in addition to marking/branding, packaging and instructions for users of appliances.

On the basis of thermal efficiency, the stoves from Bangladesh and Cambodia met the prescribed minimum efficiency of 55% under both the Chinese and the Indian standards. The stove from Rwanda was very close to the prescribed efficiency. None of the stoves and lamps met standards for carbon monoxide concentration in smoke/flue gas.

interested in partnering with country governments as well as other stakeholders.

StoveTec's mission is to deliver the best available cook stoves to cooks around the world that need them. We are interested in any partnerships that will help us work toward achieving our mission.

StoveTec has an interest in becoming more than simply a stove manufacturing company. What are some of StoveTec other strengths, and what is your long term vision for the organization?

StoveTec currently embodies reasonably good business skills. In the future we would like to strengthen our business skill set and work harder to help our partners develop and expand their projects. Within the mission of our organizations we imagine that StoveTec will be able to pursue synergistic social ventures or stove related business functions such as brokering project funding, assisting with and developing carbon credit projects, or setting up micro finance opportunities as a few examples.

What advice do you have for other organizations just beginning to test their products?

Many developing countries are promoting fixed dome biodigesters. Considering high but variable gas pressure, and high content of methane in biogas, questions have been raised about the suitability of existing standards being used in China and other countries. Therefore, there is a need to develop specific standards for appliances suited to fixed dome biodigesters. Each country should formulate its own standard specification after considering factors, such as cooking vessels, food habits, cooking environment etc. Expertise should be sought for drafting standard specification in consultation with local manufacturers and technical institutions.



Construction of a fixed dome biodigester

Your results report mentioned working to comply with national standards in 14 countries in Africa and Asia. What challenges and successes have you had? What steps could be taken to create a more favorable regulatory environment for your work?

(Continued on page 4)

(Continued from page 3)

In most of the countries where SNV is supporting biodigester programmes there are no existing national standards related to biogas appliances. This is why CEEIC followed a testing procedure prescribed in the Chinese standard specifications; DRES used the procedure described in the Indian standard specification, and GASTEC developed its own methodology for both stove and lamp. However, keeping in view the wide differences in test results for the same sample, SNV believes that there is need to have national standards that take into account the national/local context while formulating such standards. SNV, through the national biodigester programmes, is supporting the formulation of standards related to biogas appliances. These standards are used as the yardstick in all the national programmes. However, little progress has been made so far to brand them as national standards. Willingness as well as commitments from government standardization authorities to work with biodigester programmes in branding the programme standards as national standards is vital.

SNV reported almost 55,000 biodigesters manufactured in 2009. What systems do you have in place to track the number of digesters manufactured? Do you track their use in the field after installation? If so, what have you learned about digesters' long term performance, use and maintenance needs?

SNV supported the construction of 53,617 family sized biodigesters in 2009. Till the end of 2009, a total of 299,908 biodigesters have been supported under the framework of SNV supported biodigester programmes in Asia and Africa. SNV puts special emphasis on building the capacity of implementing partners to monitor the functional status as well as effects of biodigesters on users. Maintaining quality is always the top priority. Biodigester construction companies and mason teams who wish to cooperate with a national biodigester programme and benefit from the subsidy scheme, will be required to seek recognition from the national programme office. Such recognition is subject to a series of strict conditions.

Quality control on plants in operation and under construction is a key aspect of quality enforcement and the long-term success of the programme. An inspection form is filled out for each plant inspected, and the resulting data is entered in a central database to monitor results over time. Each year Biogas User Surveys are conducted for at least 100 randomly sampled biodigesters to monitor the functional status as well as effects of biodigesters on users. Likewise, periodic technical audits are carried out to monitor technical performance of biodigesters. Routine evaluation of the programme from third parties is an integral part of the programme cycle.



Cooking with biogas in the home

What steps are you taking to ensure the sustainability of country level biogas programs after SNVs direct involvement is over? In particular, how do you encourage the development of local technical expertise and build the capacity of small businesses?

The ultimate objective of all activities undertaken in the framework of national biodigester programmes supported by SNV is to arrive at a commercial biogas sector that can be sustained by capable stakeholders and financed without any Official Development Assistance (ODA). SNV believes that building viable domestic biogas programmes evolves around three important aspects: programmatic sustainability, technical sustainability, and financial sustainability.

Aiming for programmatic sustainability, SNV follows an integrated approach to optimize institutional arrangements and to strengthen the capacities of all actors in the sector. The role of the private sector is crucial. SNV aims to build on organizational and institutional capacities already available in the country and to strengthen these assets through local capacity building organizations. Hence, SNV does not implement activities directly, limiting its permanent deployment of manpower to a small number of biogas advisers per programme. Technical sustainability is pursued by introducing a rigorous, research and development as well as quality management component to the programme which ensures that supply-side actors remain fully accountable to their customers. Quality management does not limit itself to technical aspects only, but includes a promotional message, user satisfaction, and after-sales service. The financial sustainability of large-scale domestic biogas programmes is more complex to achieve, foremost requiring national governments to contribute to the costs. Carbon benefits need to become a sustainable source of income for biogas sectors.

SNV believes that sector development is a long-term commitment and cannot be achieved overnight. A long-term effort of between 7 to 20 years may be required to create the required 'critical business mass' in the biogas sector.

Solar Connect Association

Kawesa Mukasa; scacooking@yahoo.com

<http://www.pciaonline.org/solarconnect>

Solar Connect Association reports selling both household solar cookers and improved stoves. How did you decide to sell both, and how did the decision affect your business? What differences do you notice between customers who purchase improved stoves versus those who purchase solar cookers? How many households purchase both?

We decided to sell solar cookers and improved cook stoves because prospective solar cooker users always asked "What if there is no sun?", "What if it rains?", "How will we cook at night?", etc. We decided to market integrated cooking where it would be preferable to use solar cookers and hay baskets during sunshine, and improved wood/charcoal stoves when it is not possible to use solar cookers. This decision increased sales for solar cookers but also required more space for the storage and sale of improved cook stoves which are picking up now. We sell on average 120 cook stoves per month.

More educated customers easily purchase solar cookers and need little explanation, while the less educated readily purchase improved cook stoves because they easily relate them to firewood and charcoal savings. Solar cookers are also easily purchased by people with more income while improved cook stoves are purchased by all levels of society. 1,070 households purchased both solar cookers and improved stoves in 2009.



Mrs. Mariam makes a hay basket, arranging different layers of grass, plastic, newspaper, cotton, sponge and old newspaper inside the basket.

What is your approach to marketing? How do you inform households about the dangers of IAP and benefits of solar cooking and integrated cooking?

We go directly to the villages and trading centers using local women (Marketers) selected from targeted villages. We demonstrate at our Production and Resource

Center located in the village of Kikokwa. We also have a shop in Mbarara where demonstrations take place every day throughout the year. We do home visits and home parties where awareness campaigns result in sales.

We ask women and girls how they feel being in smoke filled cooking places. Many are not happy with the smoke as it irritates their eyes, makes them cough, and causes throat diseases especially affecting pregnant mothers and children. Households are informed of the benefits of integrated cooking including saving money and time, cleanliness, improved health, and saving wood and charcoal given our big families in Uganda.

How many production and distribution points do you operate in Uganda? What are your plans to expand in the future?

We have one production unit in Mbarara District and we are trying to increase its capacity to serve the whole of Uganda. We have 14 distribution points in villages. Each home of a marketer is a distribution point and we have 14 local women Marketers in 14 villages in Mbarara District.

In the future we plan to increase production capacity and quality of our products and then market the products throughout the country starting with Kampala District and the nearby districts. We will recruit more competent staff and collaborate with other stakeholders interested in the type of products we distribute. The problem is that banks here are not well sensitized to give soft loans to energy businesses like ours which is an obstacle to expansion.

SCA reported selling 1,460 biomass stoves, 1,980 solar cookers, and 980 hay baskets in 2009. What systems do you have in place to track sales? Do you track their ongoing use in the field? If so, how long do they remain in use?

Sales are tracked by the marketer in each village and at our Resource Center in Kikokwa village near Mbarara town. We record how many units are produced and sold using an Excel spreadsheet.

We track their ongoing use in the field by making an evaluation report at end of every year. The evaluation asks questions about levels of satisfaction, number of times the product is used per week, family size, amount of money and quantity of firewood/charcoal saved, and comparison of efficiency of different stoves (we acquire from different suppliers). Marketers who live amongst end-users also monitor on-going use frequently (about 2 times a month). During home visits and home parties in beneficiary households, we hear the opinions, remarks and questions of end users, and through all the information gathered we are able to know the degree of use of the products we distribute in the villages. Solar

(Continued on page 6)

(Continued from page 5)

cook kits remain in use for about a year, while parabolic solar cookers we get from China are used for about 4 years. Box Cookers work for many years and Lorena stoves need repairs after 2 years, while rocket stoves need repairs after 1 -2 years of use.

SCA is working on opening a new distribution point in Kampala to serve clients throughout Uganda. How will you transport products to the point of sale? What challenges are you encountering as you set up the distribution point and develop supply chains for materials and finished stoves?

We shall transport products from the production unit in Mbarara to a new distribution point in Kampala using

public transport (buses and lorries) which is cheap. For transportation of products to clients in the villages, we shall have to slowly raise funds and purchase a pick-up truck.

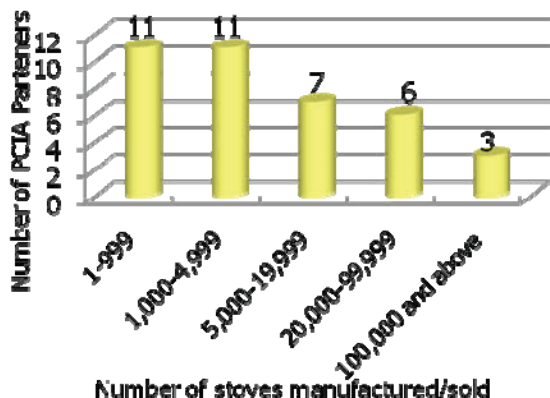
Hiring a big enough depot is still expensive for us. Prices of materials change often due to inflation yet it is difficult to increase prices for customers. The products we have been selling in Mbarara were subsidized by Wild Geese and Solar Cooking Foundation –Netherlands, but there will be no subsidy for products sold to the rest of the country from the distribution point in Kampala. This means the price of products in Kampala and other parts of the country will be different from that of Mbarara. Potential clients elsewhere know how much we sell in Mbarara but are not aware of the European subsidy we received to reduce prices there.

Partners “By the Numbers”

This issue features six “By the Numbers” boxes that give quick facts about the impact PCIA Partners are having around the world. The organizations featured submitted complete, timely results reports, and are noteworthy for the scale or type of their activities. Ugastove is an Africa-based organization manufacturing at scale; Relief International sold over 80,000 biomass stoves in 2009; and Wana Energy Solutions promotes LPG stoves and fuel. Proyecto Mirador is a smaller organization accessing carbon finance in Honduras; EnDev Bolivia is working with Government and local stakeholders to develop a national level stove program; and Asho Jati Gore is promoting biomass stoves and household bigogas digesters in Bangladesh. As you read this issue, keep an eye out for “By the Numbers” boxes like the one here to learn more about these organizations’ great work.

Partners Reaching Scale

Partner organizations vary in manufacturing and sales capacity. More than 50% of Partners who reported manufacturing and/or selling appliances, are working with a volume of less than 5,000 per year; but others manufacture and/or sell hundreds of thousands. We’ll get tips from these top producers in future issues!



Uganda Stove Manufacturers Limited (UGASTOVE LTD)

By the Numbers



Uganda Stove Manufacturers Ltd (UGASTOVE LTD), formally called Urban Community Development Agencies Ltd (UCODEA), is engaged in production of energy saving stoves for households & institutions or organizations (both fixed and portable) in Uganda. They also build incinerators, charcoal briquettes, fireless box cookers and many more.

UGASTOVE’s mission is to promote socio-economic development among the urban poor by engaging them in innovative environmentally friendly economic activities. This is reflected in current projects, the staff employed, and future plans. In 2010 UGASTOVE is planning to continue mechanizing the manufacturing processes and eliminating the use of hand tools to reduce drudgery and improve product quality.

Primary goal: Fuel savings (with improved biomass energy saving stoves)

Manufactured: 22,823 household biomass stoves, 55 institutional biomass stoves and 18 biomass baking ovens in 2009

Beneficiaries: 283,615 people throughout Uganda

2010 Goal: More than 55% thermal efficiency on the stoves and plan to manufacture 155,000 stoves by the end of 2010

Trees, Water & People

Sebastian Africano; sebastian@treeswaterpeople.org
<http://www.pciaonline.org/twp>

You have worked with two stove testing organizations to evaluate your stoves' performance. What have you learned from stove testing? How have you used the test results to promote stoves to other organizations? What technical improvements have you been able to make as a result of testing?

We have conducted both cross-sectional Kitchen Performance Tests and paired-sample Controlled Cooking Tests on our stoves in Central America, and have thus been able to validate the fuel and carbon savings that they generate for users in the field. The most important information that we gleaned from repeated testing, however, was how flexible we have to be with stove design when dealing with different populations - even regionally, or within the same country. Different cooks have different needs, and our stoves need to respond to those needs. As a result of testing in the field we've been able to adjust and improve features of the stoves over time, and increase usage rates as a result. The more end-users you connect with during testing, the more you learn about the products you are putting into the field, and how those products can serve a broader swath of the population.



Commercial tortilla producers are one of the principally targeted beneficiary groups for Justa Stoves and other TWP Ecostoves in Central America.

What type of biomass stove do you promote? How long do the stoves last in the field, and what steps are you taking to improve their durability?

Most of the 40,000+ stoves we have built in the past 12 years have been brick & mortar griddle stoves with chimneys, built into a family's home. I have seen stoves last between 3 -7 years, and can last longer with proper maintenance and refurbishment. These are completely different to implement than the less-expensive one or two-pot-cookers that you see around the world. One reason is their increased cost, which is higher due to the amount of materials required, and another reason is

because it's a significant switch from cooking over an open fire. When you put a griddle between the pot and the flame, heat-transfer efficiency goes down, and cooking times increase. If a cook is switching from using a traditional griddle stove for everything, the change is minimal, but if the cook is switching from an open fire, the adaptation almost always takes longer. The other reason is that a team of 2 builders can only install 2-3 in a day, making scale more challenging to reach. The benefits, however, are over 80% reductions in IAP, clean pots, an aesthetically pleasing and complete cooking solution, and a sanitary kitchen environment. The value that the cook places on these benefits, which are tangible and immediately visible, makes all the difference in quick adaptation to the stove.

What role is Trees, Water & People playing in the relief effort in Haiti? How do household energy and improved biomass stoves support the relief and reconstruction effort?

TWP was able to send 432 two-door StoveTec stoves to Haiti immediately following the quake, and recently donated a container of 1,344 more of these stoves to International Lifeline Fund. We had been working on stoves in Haiti since 2007, and were on our way to Haiti to co-host a national conference on biomass stoves when the earthquake hit. What we learned during our 4 week trip there in April/May 2010, was that stoves need to be safe, portable and able to cook for larger groups of people (10+) if they are to find success in the current emergency environment. Life in the camps for the internally displaced is congested - tents literally touch one another, and people cook both between tents, and inside their tents. These factors are important to consider when thinking about what stove to implement, as we need to provide a safe environment for families cooking several times a day. We were able to train a team of 8 monitors, along with our project leads, Elizabeth Sipple and Calito Ambois, who have worked with TWP since 2007. Currently our plans include partnering with International Lifeline Fund to construct a stove factory and team in Haiti that will provide employment to a host of Haitian workers, appropriate products for both firewood and charcoal users, as well as training, monitoring and coordination services for other organizations implementing stoves in the country.

TWP is currently pursuing carbon finance. How will carbon finance help scale up your cook stove activities?

Carbon finance will allow us to increase the impact of our programs in a variety of ways. Primarily I see carbon finance as a vehicle to increasing stove durability and longevity in the field. Repair and refurbishment of stoves is a challenge for all stove programs, in terms of the institutional capacity required to do it successfully over a

(Continued on page 8)

(Continued from page 7)

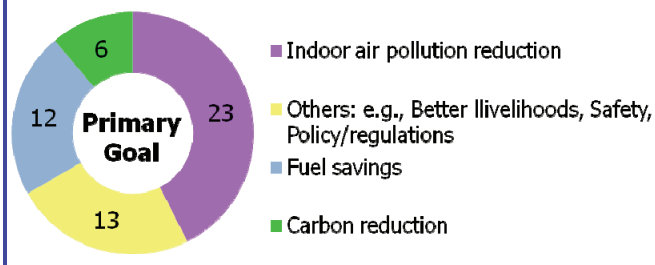
broad geographical area, and in a timely fashion. If a combustion chamber needs replacing after three years, and no one is there to replace it, and the user doesn't feel confident enough to replace it themselves, the stove can quickly fall out of use. Using carbon finance to create regional stove centers, with qualified personnel to repair and refurbish stoves locally, or to provide replacement parts for communities of stove users will greatly increase the longevity of the stoves, and by extension the continued reduction of CO₂ emissions. This is a virtuous cycle that could fill a very important gap for stove programs and beneficiaries alike, and which would be made possible with funds secured through the carbon market.

TWP reports working on building stronger regional partnerships. What types of organizations are you interested in partnering with? How will these partnerships support your long term goals, including manufacturing 8,000 stoves in 2010?

We like to partner with forward-thinking organizations who are passionate about transferring skills and technology to their beneficiary base. Our programs have always revolved around developing self sufficiency in the communities where we work, and we seek partners who have innovative ideas and approaches to accomplishing this. An example would be the FORCUENCAS project - a watershed protection project funded by the EU in

collaboration with the Honduran government. FORCUENCAS worked with our Honduran partner AHDESA to develop an integrated strategy for building over 8,000 of our open source Justa Stoves. Because of their 10 years of experience and proven track record in implementing Justa Stove projects, AHDESA was placed in a supervisory position on the project, and trained over 100 builders from several organizations in the proper installation and socialization process involved in making a stove intervention successful. Building local capacity is paramount to our operations, and we look for partners that value a similar approach.

While most reporting Partners listed IAP reduction as their primary goal, Partners have diverse reasons for the work they do, including "other" responses, such as better livelihoods, safety and policy/regulations.



Aprovecho Research Center

Dean Still; dstill@epud.net

<http://www.pciaonline.org/aprovecho>

Aprovecho's goals for this year include developing 90% emission reduction stoves, improved charcoal stoves, improved pots, and decreased black carbon stoves. Please describe your efforts to achieve these goals.

Responding to requirements for stoves that protect health and for stoves that address climate change, Aprovecho has been testing and developing various new cooking technologies. Improving heat transfer to the pot means that less energy is needed to boil and simmer. Improved pots and pot skirts, submerging pots, etc. dramatically reduce wood used and emissions. Improving heat transfer often does not add cost to the stove. Then by improving mixing of air, gases, and smoke 90% emission reductions are possible. Black carbon can be reduced by lowering the temperature of the flames. It's great that nature made fire easy to clean!

Aprovecho also collaborates with regional testing centers. What roles do regional testing centers currently play in the assessment and development of improved stoves?

Without the portable emissions monitoring system (PEMS), an emissions hood in a suitcase developed by Nordica MacCarty at Aprovecho, we wouldn't be able to quantify emissions and develop better cooking technologies. That's why the regional testing centers with PEMS are important to us, so that folks can have the tools to make regionally appropriate low fuel use, low emission stoves.

What vision do you have for global and regional testing centers? What would you like Partner organizations to know about the services, equipment and expertise of Aprovecho and other stove testing centers?

The PEMS, an emissions hood, and the IAP box, that measures CO and PM in a house or at the nose and mouth of the cook, are relatively inexpensive. Our hope is that we can help partners to use both instruments to accurately measure emissions using the Water Boiling Test (WBT) and the Controlled Cooking Test (CCT). Our staff can help folks to know how to improve both heat transfer and combustion efficiency. A Regional Testing Center like Zamarana University in Honduras can do the same.

(Continued on page 9)

(Continued from page 8)

What recommendations do you have for Partner organizations which have not tested their stoves to get started with the process? What are the advantages and disadvantages of engaging a third party for testing?

This is a complicated question. I think that it's better for partners to do their own testing leading to better stoves in use. However, it is necessary to know how to operate the equipment and then how to change stoves to use less wood, make less smoke, carbon monoxide, etc. We can test and improve a stove here for \$3,000 and send back drawings of what was done. But we can't ask the cooks if the changes are ok with them. Cooks need to give at least 50% of the input into the design process. So, the improvement process can go back and forth between lab and field, sometimes.

Berkeley Air Monitoring Group

Simone Brant; sbrant@berkeleyair.com
<http://www.pciaonline.org/berkeleyair>

Berkeley Air lists key goals of providing high quality, scientific monitoring and evaluation of appropriate household energy technologies and approaches for developing countries and helping clients "identify and replicate successful projects". In your experience, what common characteristics do successful household energy interventions have?

Most importantly, a successful project has a stove that is really ready to be disseminated. This means that the distributor has done its homework on what people cook and want in a stove and the stove has been through a comprehensive testing and design cycle incorporating user feedback. Additionally, successful programs will have mechanisms in place so that the customer invests in the stove, but does not have to bear the entire cost burden. Use of smart subsidies or microfinance allows a higher quality stove with lasting impacts to reach lower income households.

What would you like Partner organizations to know about the services, equipment and expertise of Berkeley Air Monitoring Group?

Berkeley Air is a social venture based in California, USA, with affiliates in several African and Asian countries, founded by David Pennise and Dana Charron with support from the University of California Berkeley. We are invested in protecting global health and climate by providing high quality, scientific monitoring and evaluation of appropriate household energy technologies and approaches for developing countries. We provide the

What is the business case for investing in stove testing? What other benefits have you found? What have organizations learned by investing in testing that has allowed them to improve their product or better meet end users' needs?

Carbon credits and other sources of funding require real savings verified by third party analysis. I hear that GTZ is thinking that a new charcoal stove has to be at least 40% better than the traditional stove for a project to start. Doesn't any project want at least 40% improvement? To get this level of improved performance requires testing with the WBT and CCT, hopefully before the new stove is introduced. Luckily, testing can be done at little or no cost when only fuel savings are being considered! If Aprovecho can help, please let us know. We look forward to seeing so many of our good friends at the PCIA Forum in Peru!

expertise and skills required to critically assess the effects of household energy practices on indoor air pollution and health, greenhouse gas emissions (carbon credit generation), household fuel use, socioeconomic indicators and time-activity patterns, and technology adoption and usage.

Our services include study design, field sampling, data analysis, report writing, presentation and training. We often provide these services together with regional or local partners to build local monitoring capacity and keep costs affordable. We also sell the UCB particle monitor, a portable, datalogging monitor for use in indoor environments and will soon begin offering stove use monitors (SUMS) for sale. As adoption is often a complex process, these logging temperature sensors allow us to measure stove use by tracking the temperature of the stove over time.

Many PCIA Partners are interested in the types of indicators that Berkeley Air measures but lack the resources to engage a third party. What initial steps can these organizations take to monitor and evaluate the impact of their programs? What resources, equipment, and training are available for these organizations?

A good place to find basic information on monitoring and evaluation is the PCIA website [see <http://www.pciaonline.org/testing>]. Over the past several years, Berkeley Air and others have conducted several training sessions including regional Indoor Air Pollution and Household Energy Monitoring Workshops, sessions at the PCIA Forum, and a recent webinar on Kitchen Performance Tests. The WHO Catalogue of Methods is another excellent resource that covers methods for qualitative assessments of household energy impacts.

(Continued on page 10)

(Continued from page 9)

An organization that wanted to start evaluating on its own might begin with conducting focus groups, interviews, and/or Water Boiling Tests to get initial feedback on fuel usage and costs and impressions of the stove. These pilot results will help the organization determine what indicators they could measure and what samples sizes would be required to document impacts.

For a more complex evaluation, one option is to find third party funding. For example, the PCIA is currently funding KPT and CCT training for several organizations. It is also possible for organizations with similar stoves in adjacent locations to jointly fund an evaluation. One of Berkeley Air's goals is to build local capacity, and we would be happy to help support PCIA Partners in their evaluations.



Berkeley Air staff monitoring emissions from a 2-pot traditional mud stove in Tamil Nadu, India

What are the advantages and disadvantages of engaging a third party organization for monitoring and evaluation?

An experienced monitoring organization brings a consistent and proven methodological approach, fit-for-purpose instruments, and advanced quantitative analysis skills. A third-party organization also brings follow-through. Often organizations get excited about collecting data, but don't have time or capacity to analyze and report it.

Independent third-party program evaluation is increasingly viewed as best practice by many grant-makers and investors since it produces high quality, credible information that supports sound data-driven decision-making. We have heard from our clients that having independent results has facilitated the verification process for carbon offsets from cookstoves.

Of course, the major disadvantage is cost. Additionally, an organization seeking to build in-house monitoring capacity will want to integrate a monitoring consultant into their operations in a way that also builds internal capacity.

What changes would you like to see to existing methodologies for developing carbon offsets from improved cook stoves?

Many cookstove projects are currently using the Gold Standard methodology to document voluntary emission reductions credits. We have suggested three amendments to this methodology.

1. Include more guidance to ensure representative sampling, appropriate application of adjustment factors, and an improved approach to uncertainty and the application of conservativeness.
2. Use field-based emissions measurements either measured specifically for individual projects or via more credible field-based defaults.
3. Implement a more credible, transparent, consistent non-renewable biomass approach and methods. We would also like to see more opportunities for cookstove projects in the Clean Development Mechanism (CDM), particularly through a methodology that uses a more realistic baseline than the current fossil-fuel one and requires some field measurements.

Finally, all cookstove carbon initiatives would benefit from increased capacity among auditors to validate and verify stove projects efficiently and effectively.

At what stage in carbon project development is it most appropriate for organizations to engage Berkeley Air?

Berkeley Air's work in the field begins once there have been some initial sales or dissemination. However, it is good to contact us earlier in the planning process, so we can begin monitoring as soon as the program is ready.



Indoor air pollution sampling equipment including a UCB Particle Monitor

(Continued on page 11)

(Continued from page 10)

What is the business case for investing in monitoring and evaluation? What other benefits have you found? What have organizations learned by investing in monitoring that has allowed them to improve their program or better meet end users' needs?

We live in a results-oriented society. Development organizations, philanthropists and commercial investors all want to know that the stoves they are supporting perform as advertised on the ground. Over and over

again, we observe that field results are very different from lab test results. Investing in monitoring and evaluation from the outset allows a program to know what is happening on the ground, avoid nasty surprises, and use the proof of their success to attract financial support.

Through our evaluations, several organizations have learned that their stoves were either not ready for distribution or not performing at the level they had hoped in terms of indoor air pollution reductions. Both stoves are currently being redesigned, and we expect this will lead to long-term success.

Asho Jati Gore

By the Numbers

Asho Jati Gore (AJAG) works to empower poor and vulnerable people, especially women, by making them capable, self-sufficient, and self-governed. AJAG does this through building the capacity of local institutions, promoting the utilization of local resources, and creating need based problem solving programs involving skilled, trained and experienced staff. Focus areas include disposal of household solid waste and garbage, renewable energy, ICS, and biogas implementation.

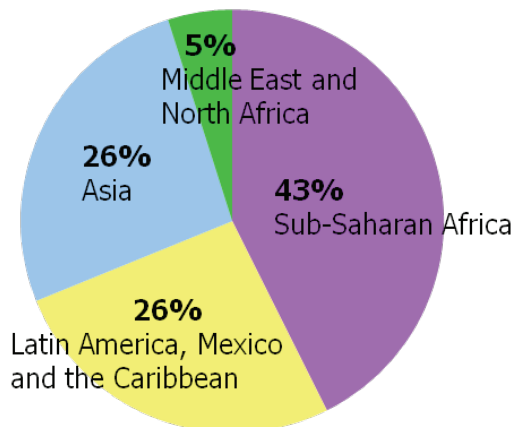
- Primary goal:** Indoor air pollution reduction
- Sold:** 717 household biomass stoves and 11 institutional biomass stoves in 2009
- Beneficiaries:** 5,950 people in Bangladesh
- Thermal Efficiency:** Targeting 90%
- 2010 Goal:** Sell 3,050 stoves



Where do PCIA Partners work?

Reporting partners work in a total of 61 countries throughout the globe. See page 22 for a map!

Regions of Implementation



Relief International & Enterprise Works/VITA (EWW)

By the Numbers

Relief International/EWW combats poverty by helping small producers and other entrepreneurs build sustainable businesses that create jobs and increase productivity, market opportunities and incomes. They achieve this by expanding access to appropriate technologies, technical assistance knowledge and finance. Relief International/EWW has a demonstrated track record of mass sales of consumer-oriented designed stoves that use less biomass, reduce indoor air pollution, last longer, and are safer than traditional stoves.

In 2009, EnterpriseWorks/VITA merged with Relief International further expanding the range of services it offers to those that need them most. The merged organization is currently working in more than 30 countries.

- Primary goal:** Indoor air pollution reduction
- Sold:** 80,655 household biomass stoves in 2009
- Stoves reduce:** CO by 36%, particulate matter by 54%
- Beneficiaries:** Over 500,000 in 2009
- 2010 Goal:** Sell 150,000 stoves



PARTNER PROFILE UPDATE CAMPAIGN

Success So Far

Thank you to everyone who has updated their profile so far as part of our first ever Partner Profile Update campaign. Since launching the PCIA in 2002, membership has grown from a handful of founding organizations to currently more than 380 organizations spanning the globe. While it's always been a challenge maintaining an up-to-date database of Partner contacts and activities, it's more important than ever today. Our goal is to keep 100% of Partner Profiles current within the past year. As of August 1, 116 organizations (30% of Partners) have up-to-date profiles (within the past 12 months). We encourage all Partners who haven't made updates since August of 2009 to log in to the PCIA website and let us know what you've been up to. If your organization has not updated its profile in the past 12 months, you will need to do so prior to applying for airfare support to the 2011 Forum. Please read the instructions below for updating your organization's profile.

Prize Winners

Since we launched our Partner Profile update campaign early this year, we've announced three rounds of prizes for those Partners who made substantive updates. The winners of these prizes were announced on the PCIA website.

1st Round Winners

(Each has won round trip airfare for a member of their organization to attend the 2011 PCIA Forum)

- [Impact Carbon](#)
- [Solar Household Energy, Inc.](#)

2nd Round Winners

(various prizes, see below)

- [Proyecto Mirador](#)
Lodging expenses for one participant at the 2011 PCIA Forum
- [Mfaminyen Conservation Society](#)
An organizational profile in *this* PCIA Bulletin (see pg. 13)
- [Odey Renewable Energy Technology Company Limited](#)
Highlighted profile status on the PCIA homepage
- [The Charcoal Project](#)
Highlighted profile status on the PCIA homepage

3rd Round Winners

(Each as won an organizational profile in *this* PCIA Bulletin; see pg. 14)

- [Foundation for Sustainable Technologies \(FoST\)](#)
- [China Agricultural University's Energy Engineering and Low Carbon Technology Lab/ Renewable Resources Lab](#)

(Continued on page 13)

(Continued from page 12)

Updating your Partner Profile

If you already have a username and password:

1. Log in to the PCIA Web site using the username and password you set up when you registered. If you have forgotten your password, please click on the "Request new password" link on the homepage.
2. Once logged in, you can edit your organization's profile. If you have trouble logging in, please contact us at moderator@pciaonline.org.

If you do not have a username and password: (or can't remember your username)

1. Email us with your desired username, initial password, first and last name, and the organization name.
2. You will receive a confirmation email with detailed instructions. Be sure follow instructions to change your password so that only you know it.
3. Log in to the PCIA website to update your profile and add your colleagues as secondary contacts.

Organizational Profiles for Partner Profile Update Winners

Mfaminyen Conservation Society

The Mfaminyen Conservation Society (MCS) is a Nigerian community-based organization with the mission to promote the cultural heritage in the Mfaminyen communities' land and their environment through fostering the spirit of communal participation in conservation and the sustainable use of cultural and biological resources with equal involvement of men, women, and youths. The Mfaminyen communities are in Akamkpa and Etung Local Government Areas in Cross River State, and have a common boundary with the neighboring Ejagham Forest in Cameroon that links with the Korup National Park.

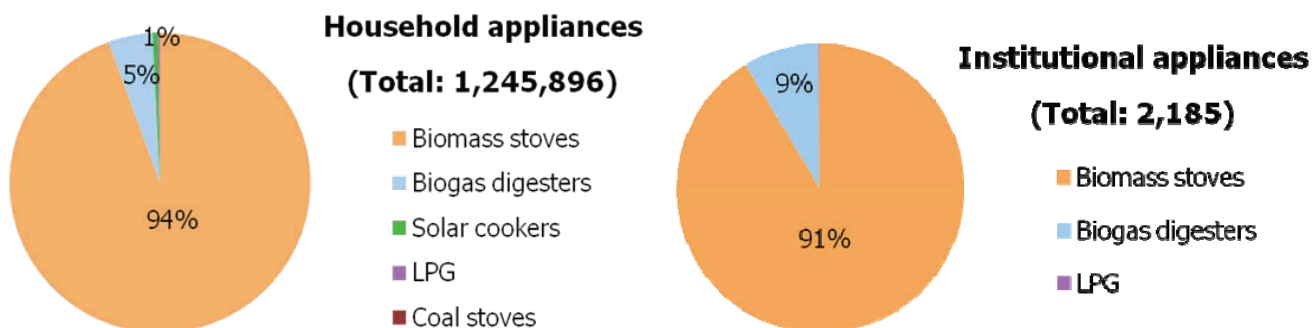
MCS completed the pilot phase of its "Nigerian Improved Cook Stove Program," using the Ekwuk stove developed by Mfaminyen's Linus Ita, and is looking to scale up. A summary report from this pilot is available for download from their Partner Profile on the PCIA website under "Relevant Publications." A series of Ekwuk stove

construction training workshops were held in these communities as part of the pilot. Five months after the workshops, over one hundred women and men who built and used the stoves were interviewed. Their feedback prompted a second edition of the training manual and VCDs of these interviews were made and distributed throughout the rainforest communities to increase the stature of both the stove and the people who use it. The interviews were complemented by a quantitative survey which found that the average Ekwuk stove saved at least 2,610 lbs or 14 cubic meters of fire wood per year. A monitoring visit to all eight communities 14 months after the initial workshops estimated over 4,500 Ekwuk stoves had been built. Roughly speaking, these stoves have the potential to reduce firewood usage and CO₂ emissions by over 10,000 tons/year. However, the impact is perhaps best described by the stove users themselves in the pilot summary report.

Please see Mfaminyen Conservation Society's PCIA profile for more information, including the pilot summary report and a construction manual for the Ekwuk Stove: <http://www.pciaonline.org/mfaminyen-conservation-society>.

Breakdown of Household and Institutional Appliances Sold in 2009

For those Partners who reported **manufacturing/constructing** appliances in 2009, the overwhelming majority (for both Household and Institutional appliances) are Biomass stoves. Below is a breakdown by percentage of the types of appliances reported. Appliances that made up less than 1% are not included.



The Foundation for Sustainable Technologies (FoST)

FoST is a Nepal-based non-governmental organization working in several countries including Afghanistan, Cambodia, India and Nepal since 2002, with the mission to: provide education on renewable and alternative energy sources; create awareness on the application of energy efficient technologies for cooking; promote the utilization of solar energy for cooking, water pasteurization and space heating; and empower women through fuel briquette making.

FoST's achievements include training 300 families in solar cooking, 200 students in solar cooker building from paper and sheet metal with reflective materials, 500 families on solar water pasteurization to protect from water-borne diseases, 200 families in solar drying food stuff, 200 families in energy efficiency including heat retaining technologies, 600 families in firewood efficient stoves, and about 1,000 families in making fuel briquettes from waste materials.

FoST's targets for 2010 include training 100 families on briquette making, 50 families on solar cooking and solar cooker building, 40 on solar drying, 40 on solar water pasteurization, and 50 families on mattress weaving using waste materials such as grasses, straws, corn wastes, video/cassette tapes, plastics from packaged food, shopping bags etc. FoST encourages older community members (60+) to share their experiences and transfer skills to the young generation. Our strategy is to support this older age group to show their talents in public so that they can be empowered and their products can be easily

marketed. We want to show their hidden skills to their own families, and neighbors. In Nepal, people over 60 feel they are a burden because they cannot support to the family.

In January 2010 FoST organized a week-long camp to bring together various skilled weavers to transform their skills into environmentally-sound items such as mattresses, mobile phone bags, water bottle bags, caps, shopping bags, curtains, and musical instruments.

Please see FoST's profile for more information: <http://www.pciaonline.org/FoST> including a list of media highlights of their work such as the BBC video "Cooking without Gas" which was a runner up for the World Challenge Award in 2007.

China Agricultural University's Energy Engineering and Low Carbon Technology Lab (EELC)/ Renewable Resources Lab (RRL)

The EELC and RRL of China Agricultural University focus on various technologies including bioenergy, solar energy, animal manure treatment and recycling, plant residues, and village organic wastewater treatment among others. Two special laboratories have also been set up: the Biogas Engineering Lab for technology innovation and testing; and the Biomass Stove Combustion Lab which assesses combustion, emissions, efficiency, convenience and overall design. These labs aim to assist farmers and low-income people in China and Africa.

(Continued on page 15)

Wana Energy Solutions

By the Numbers

In 2005 Wana Energy Solutions Uganda Ltd (WeS) was established as an international energy and environmental consulting firm dedicated to promoting responsible, sustainable and integrated development of energy and environmental services, technologies, policies and practices that safeguard the environment and improve the quality of life.

WeS has established itself as a one stop shop company which installs and distributes liquefied petroleum gas (LPG) to organized and private homes, hotels, hostels, prisons, and institutions of higher learning within and around Kampala area.

It is estimated that more than 90% of the population in Uganda use fuelwood as a source of energy for cooking. The company strives to replace firewood and charcoal as a source of energy for domestic and business use in Uganda with Liquefied Petroleum Gas (LPG). We envision supplying cleaner energy with a view of meeting the current need of supplying a cost effective, efficient, clean and reliable form of power to all Ugandans.

- Primary goal:** Indoor air pollution reduction
- Sold:** 1,500 household LPG stoves and supplied 10 institutional LPG stoves in 2009
- Beneficiaries:** 7,500 people throughout Ghana
- 2010 Goal:** Sell 6,000 stoves



(Continued from page 14)

Current initiatives in biogas include: co-fermentation; affordable technology extension; digestates treatment; GHG emission monitoring and reduction; and clean/convenient energy for cooking and lighting in villages and livestock farms. Current initiatives in biomass stove technology include: family-scale gasification; gasification of organic residues (kitchen waste, plant residues etc.); clean/convenient energy for cooking, heating and lighting; and indoor air quality monitoring and improvement at the village and family levels.

Other initiatives include algal biomass production (for use in cooking/heating/lighting, and waste water treatment) as small-scale production units, and strategic planning for biomass based energy development at regional and national levels.

For more information on these initiatives, and on the labs themselves, please visit their Partner Profile on the PCIA website: <http://www.pciaonline.org/china-agricultural-university-EELC-RRL>.

The Top 10 over 10,000

A big congratulations to the 10 PCIA Partners below. Listed in rank order, each of these organizations reported manufacturing and/or selling at least 10,000 stoves in 2009!

1. [Deutsche Gesellschaft für Technische Zusammenarbeit \(German Technical Cooperation\) GTZ](#)
2. [Groupe Energies Renouvelables Environnement et Solidarités - GERES Cambodia](#)
3. [Relief International/EnterpriseWorks-VITA](#)
4. [Alternative Energy Promotion Center/Energy Sector Assistance Programme](#)
5. [China Association of Rural Energy Industry](#)
6. [SNV - Netherlands Development Organisation](#)
7. [Uganda Stove Manufacturers limited](#)
8. [HELPS International](#)
9. [En Dev Bolivia](#)
10. [StoveTec](#)

HAPPENINGS

Recent Partner Activity...

Partners Learned About Monitoring Fuel Use for Carbon Finance during PCIA Webinar

On June 8, 2010, 51 Partners participated in PCIA's Monitoring Fuel Use Using the Kitchen Performance Test webinar to learn more about designing and implementing a monitoring study to quantify the fuel savings of their improved cook stoves. Researchers and carbon finance developers presented case studies from China and Ghana to characterize fuel use patterns and measure fuel use to compare traditional and improved cooking technologies.

We wish to thank our outstanding panel of speakers: Michael Johnson and Todd Wofchuck of Berkeley Air Monitoring Group, Jimmy Tran from the University of California at Berkeley, Evan Haigler of Impact Carbon, and Erik Wurster of E+Co. You can listen to the webinar and download their presentation and question and answers at <http://www.pciaonline.org/proceedings/webinar-monitoring-fuel-use-kitchen-performance-test>.

The webinar successfully demystified stove performance testing; equipped participants with sufficient basic knowledge to develop a stove performance testing plan; inspired Partners to implement a performance testing plan; and motivated additional Partners to commit to share stove performance test results and lessons learned with others through PCIA. In a follow-up evaluation of participants, 42% of respondents indicated that as a result of this webinar they intend to develop a stove

testing plan. Thirty eight percent will incorporate new information from the webinar into their existing stove testing plan and 17% will incorporate new information into their household energy and health program.

Participants contributed to the success of the webinar by providing valuable feedback on ways to utilize KPT data, such as collecting and posting KPT results on the PCIA website. In addition, they generated a list of topics for future webinars including additional KPT studies, stove design and performance, overcoming stove adoption and use challenges, improving our understanding of Gold Standards, and examples of KPT results presented against CCT and WBT data. PCIA is working to schedule these topics in upcoming webinars. If you would like to share your experience on one of these topics with a worldwide audience, or if you have additional topics to propose, please contact us at Moderator@PCIAonline.org.

Let Your Voice Be Heard at the 2011 PCIA Forum

Do you have ideas for the 2011 Forum agenda, or know of Partners doing noteworthy work in support of the PCIA mission? Keep watching the Forum website in the current weeks. Agenda item and award nomination submission forms will be available soon!

<http://www.pciaonline.org/2011Forum>

Proyecto Mirador

By the Numbers

The objective of Proyecto Mirador is to create a fuel-efficient stove building project that utilizes carbon finance to provide a market based financial solution to address the problems of deforestation, indoor air pollution, global warming and slow economic development in rural Honduras. If successful in securing The Gold Standard certification, this project can serve as a model for other stove projects by monetizing certified carbon savings, as well as greatly accelerate the dissemination of fuel-efficient stoves in rural Central America where degraded conditions of forests, indoor air pollution and rural poverty exceed acceptable levels.

Primary goal:	Indoor air pollution reduction
Installed:	2,500 household biomass stoves in 2009
Beneficiaries:	11,250 in 2009
2010 goal:	Sell 4,000 stoves
Carbon finance:	Registered with the Voluntary Gold Standard



Kitchen Performance Test Training Update

Michael Johnson, Dana Charron, David Pennise,
info@berkeleyair.com
[Berkeley Air Monitoring Group](#)

PCIA and Berkeley Air Monitoring Group have been working on a project funded by the USEPA to train Partners in conducting Kitchen Performance Tests (KPTs), with the aim of producing more field data on improved stove fuel savings. The project is part of a broader effort to increase stove performance assessment capacity for Partner organizations, with a complimentary project being undertaken for Controlled Cooking Test and Water Boiling Test training (see *Evaluating and Improving the Performance of Stoves: Conducting the Water Boiling and Controlled Cooking Tests* on pg. 17 of this bulletin). This training may also serve a step towards carbon financing for these projects as fuel savings estimates from the KPT can be used within the Gold Standard method.

We are currently planning the trainings and field campaigns for projects in Peru, Nepal, and India, corresponding to the three Partners selected for this training opportunity:

- In Peru, GTZ-EnDeV and the Peruvian government (SENSICO) are collaborating in the dissemination of the Inkawasi improved stove. The program has installed over 12,000 Inkawasi stoves, which have shown promising fuel savings and reductions in indoor air pollution levels during controlled cooking tests.

- The Center for Rural Energy in Nepal has been working on the Improved Stove Component of the Alternative Energy Promotion Centre/Energy Sector Assistance programme. The program has disseminated improved stoves across Nepal at the rate of 50,000 per year.

- In India, we are planning the KPT training with First Energy, who manufactures and distributes the Oorja improved stove. The Oorja is an advanced combustion, forced air stove and is specifically designed to burn processed fuel pellets made from agricultural residues. Over 400,000 Oorjas have been sold to date in Western and Southern India.



Inkawasi improved stove in Peru

You can read the announcement and selection criteria at <http://www.pciaonline.org/news/usepa-request-applications-kpt-training>. The training and field campaigns are slated to happen in August through September 2010. A Berkeley Air Lead Trainer will visit each program, during which there will be a week of training followed by two weeks of data collection in homes. The week of training will consist of presentations, training exercises, practice conducting questionnaires, and fuel weighing in homes.

(Continued on page 17)

(Continued from page 16)

In order to make maximum use of the time available for data collection, a cross-sectional study design is planned for the two week field campaign, in which separate samples of traditional stove users and improved stove users will be monitored. To also obtain before and comparisons in the same homes, which is the preferable study design for statistical purposes, a follow-up monitoring period is also planned and will be conducted independently by the Partners. For the follow up monitoring, fuel consumption will be measured in homes that used traditional stoves during the cross-sectional

study but then transitioned to an improved stove after the initial two-week field campaign.

The resulting data will provide key information on baseline fuel consumption in Asia and South America, as well as estimates for potential fuel savings achieved by these stove programs. Data from the three projects is planned to be published in peer reviewed journals and will be presented at the PCIA Forum in Lima, Peru in February 2011.

Evaluating and Improving the Performance of Stoves: Conducting the Water Boiling and Controlled Cooking Tests

Plans are underway to improve the fuel efficiency and reduce pollutant emissions of improved stoves in Rwanda, Lao and Bangladesh. The U.S. Environmental Protection Agency is funding Aprovecho Research Center to assist three Partner organizations to conduct the Water Boiling Test (WBT) and/or Controlled Cooking Test (CCT) to evaluate and improve the performance of their stoves.

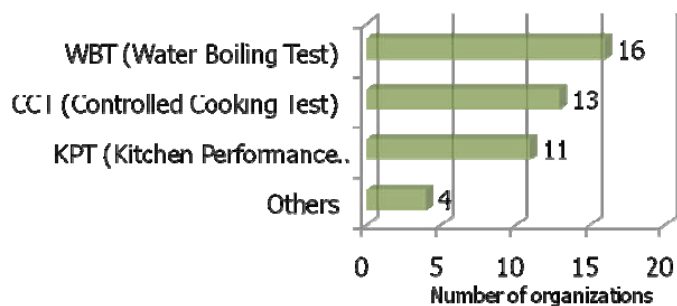
The three Partner organizations competitively selected for this training and technical assistance, CARE Rwanda, SNV Lao and VERC Bangladesh, have well established stove programs; are committed evaluating and improving their stove's performance; and have sufficient organizational capacity to implement the testing. In addition, each of these organizations will partner with a university or other organization who has the potential to use the knowledge gained from this consultancy to provide stove testing services to other stove programs in the region. You can read the announcement and selection criteria at www.pciaonline.org/news/opportunity-learn-how-conduct-water-boiling-and-controlled-cooking-tests.

(Continued on page 18)

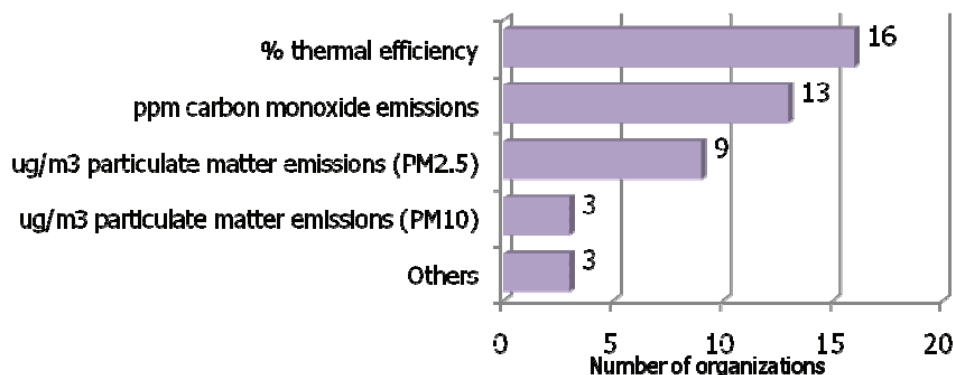
Stove Performance Testing by PCIA Partners

Of the Partners who reported testing their stoves, the main test they've used is the **Water Boiling Test (WBT)**, followed closely by the Controlled Cooking Test (CCT) and the Kitchen Performance Test (KPT). More reporting Partners have measured **% thermal efficiency** than any other performance indicator, although many are also testing emissions. At the time of publication only 27 Partners reported having tested their stoves. PCIA is working to address this by providing capacity building workshops and technical assistance related to the WBT (pg. 17) and KPT (pg. 15-16), and through other events including the upcoming the PCIA Forum in Lima, Peru.

Stove Performance Tests conducted



Performance Indicators used for measurement



(Continued from page 17)

The interactive and collaborative trainings will take place over the next six months. They will involve presentations, discussions, hands-on testing, data analysis exercises, and qualitative/survey exercises. By the end of the technical assistance phase, each organization will have the capacity to conduct stove performance testing, perform the necessary data

analysis, and make design modifications which improve the performance, safety and durability of their stove.

The results of these WBT and CCT studies will be published in a peer reviewed journal and presented at the upcoming PCIA Forum in Lima, Peru in February 2011. Stay tuned for updates!

Stove Performance Tests

The WBT is a laboratory test that evaluates stove performance while completing a standard task (boiling and simmering water) in a controlled environment to investigate the heat transfer and combustion efficiency of the stove. The WBT is the easiest, quickest, and cheapest test to conduct. It reveals the technical performance of a stove, not necessarily what it can achieve in real households.

The CCT is a field test that measures stove performance in comparison to traditional cooking methods when a cook prepares a local meal. The CCT is designed to assess stove performance in a controlled setting using local fuels, pots, and practice. It reveals what is possible in households under ideal conditions but not necessarily what is actually achieved by households during daily use.

The KPT is a field test that assesses qualitative aspects of stove performance through household surveys and compares the quantitative impacts of improved stoves by measuring daily cooking fuel consumption in the kitchens of real households. This is the only stove performance test that measures actual fuel use in homes.

You can learn more about these stove performance tests and download the test protocols at www.pciaonline.org/testing.

EPA's Second Round of Cook Stove Testing

Jim Jetter; jetter.jim@epamail.epa.gov

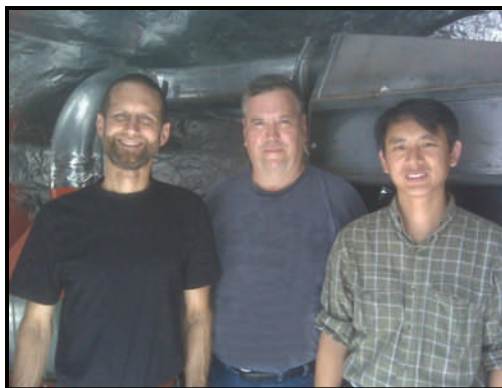
[U.S. Environmental Protection Agency](http://www.epa.gov)

Researchers at U.S. EPA's laboratories in Durham, North Carolina are conducting a second round of cook stove testing in support of PCIA. Results from the first round of testing were published in the scientific journal, *Biomass and Bioenergy*, Vol. 33, 294-305, 2009, and results are available at PCIA's web site at: www.pciaonline.org/research

The second round of testing includes new, innovative stoves that are now being disseminated in the field. Stoves are being tested for performance, fuel efficiency, and air pollutant emissions using the latest revision of the WBT (Water Boiling Test) protocol. Testing includes evaluation of pollutants that affect global climate change, as well as human health. Pollutants being measured include carbon dioxide, carbon monoxide, methane, hydrocarbons, particulate matter, black carbon, elemental carbon, and organic carbon. Light absorption and scattering of particle emissions are being measured in real time with a specialized instrument (one of eleven in the world) called the PASS-3 (Photoacoustic Soot Spectrometer, 3-wavelength). Stoves are being tested with fuels with two different moisture levels.

Mutagenicity potential of particulate emissions is being evaluated in collaboration with EPA's National Health and Environmental Effects Research Laboratory.

Results from the second round of testing are expected to provide important information on potential climate change impacts and sustainability, as well as health aspects of cook stoves. Laboratory testing is not a substitute for field testing, but the lab tests will complement field studies being conducted by PCIA and Partners. Results from the testing will be published in journal articles and will be posted on the PCIA web site as soon as they are available.



Stove testing crew: Jim Jetter, EPA; Jerry Faircloth and Dr. Yongxin Zhao, both Arcadis, a contractor to EPA. Emissions testing equipment in background.

A New Global Alliance for Clean Cookstoves

Leslie Cordes; lcordes@unfoundation.org
[United Nations Foundation](http://www.unfoundation.org)

In late March, the Global Alliance for Clean Cookstoves (Alliance) convened leading technical and development experts, stove manufacturers, and donors to explore the design of global, sustainable, and market-based solution to the problems posed by the use of inefficient and polluting cookstoves. The Alliance is a new global effort led by the United Nations Foundation, the Shell Foundation, and agencies within the German and US governments to scale-up efforts to deploy clean cookstoves in the developing world. Since the March meeting, the UN Foundation has been working aggressively to get the Alliance off the ground and are planning a formal launch in New York this September.

A global alliance committed to a common vision is critical in addressing the barriers to the development of clean cooking solutions. With the recent growth and success of innovative business and carbon finance models, advances in stove design, compelling new research on the harmful impacts on health, and the mounting need for effective near-term climate solutions, the time is right to coalesce around a common strategy to meet the core needs of the field and support solutions that can help place millions of clean stoves in households around the world.

The Alliance is seeking to spur the deployment of 100 million clean cookstoves by 2020. Together with private, non-profit, UN, and public sector partners, the Alliance

will work to increase awareness of the issue in donor and developing countries, support health and climate research, advance the development of innovative finance mechanisms, catalyze development of supply and distribution chains, help reduce tariffs and other trade barriers, and work to develop international standards and field testing protocols.

To learn more about the Alliance, please contact Leslie Cordes, UNF's Director of Partnerships for Energy and Climate, by email or at (202) 862-6307.

2011 PCIA Forum Registration Now Open!

Registration has begun for the 5th Biennial PCIA Forum, which will take place in Lima, Peru from February 21-February 26, 2011. Register here:

<http://www.pciaonline.org/2011Forum/register/> to join more than 300 household energy and health leaders in sharing experiences and developments in the fields of technologies, fuels, monitoring and evaluation, commercialization, carbon financing, awareness raising, research and more. For the 2011 event, we have also opened up a Spanish-language registration form: <http://www.pciaonline.org/2011Forum/register/es>.

If you have any questions, or trouble with the registration form, please email moderator@pciaonline.org.

EnDev Bolivia

By the Numbers

EnDev works to enable access to modern energy for as many Bolivians as possible. EnDev works in 4 lines of work:

- 1) Energy for illumination, grid densification, mobile solar appliances/lamps
- 2) Energy for cooking - biomass stoves for households and institutions, connection and installation of natural gas appliances for schools
- 3) Energy for social infrastructure (schools, health centers) - photovoltaic systems, solar water heating, connection and installation of natural gas appliances for schools
- 4) Energy for productive uses including crop transformation, micro irrigation, biogas.

In 2010 EnDev is working to refine stove designs to improve performance, strengthen a newly organized testing center in La Paz, building the capacity of local businesses to manufacture the Malena stove, and working with the Ministry of Housing to improve national stove dissemination campaigns.

Primary goal:	Indoor air pollution reduction
Installed:	10,000 household and 916 institutional biomass stoves in 2009
Beneficiaries:	96,000 people in Bolivian households and institutions
2010 goal:	Install 30,000 stoves in 2010
Efficiency:	Targeting better than 40% efficiency and 85% emission reductions



**ETHOS/Aprovecho Research Center
Stove Camp 2010**

Dean Still; dstill@epud.net
[Aprovecho Research Center](http://Aprovecho.com)

Fifty two high energy participants attended Stove Camp this year at Colgan's Island, camping near the river, making and testing stoves, listening to Fred's Big Band harmonize so beautifully. Fred and his volunteers cooked breakfast every morning and dinners at night time parties on Rocket and TLUD institutional stoves. Two \$250 prizes were awarded:

- Best Corn Stalk Burning Stove for Malawi (sponsored by StrawJet www.strawjet.com)
- Best Charcoal Stove for Haiti

Stove Camp provides a venue for a gathered scientific community to advance knowledge. Participants made new stoves and tested them daily for fuel use and emissions. Every morning the data was shared and new better informed stoves were constructed.

This year a great deal of progress was made on charcoal stoves using Haitian type pots and Haitian type charcoal. A longer term water boiling test was designed to mimic how food is made in Haiti. Many participants had worked in Haiti which added a lot, of course. Charcoal stoves were made (or found) that used about 50% of the fuel



Stove Camp 2010 Participants

and made something like 35% less Carbon monoxide compared to traditional Haitian stoves. Nick Salmons from International Lifeline Fund made a very successful Haitian charcoal stove that was voted "Best in Class" by his peers.

Both Rocket and TLUD stoves were made that could burn bundled sticks of corn stalks made by Straw Jet in Malawi. The sticks are 2' in diameter and could add another renewable fuel source for farming villages! The zero cost tall combustion chamber Rocket stove built by Jon Anderson won this prize.

A report on Stove Camp will be available soon at www.aprovecho.org Aprovecho staff will be continuing to evolve best performing charcoal stoves for a couple of months and, as always, we invite serious folks to join us in the iterative design process in lab and field.

Register Now!

The 2011 PCIA Forum will be held in

Lima, Peru

February 21-26, 2011

<http://www.pciaonline.org/2011Forum/register>

Your Comments are Welcome!

This newsletter is published by Winrock International on behalf of the Partnership for Clean Indoor Air. To share comments, suggestions, news, and article contributions please email moderator@pciaonline.org. The deadline for contributions to next quarter's Bulletin #25, the topic of which is "The 2011 Forum," is September 1, 2011.

DISCLAIMER: Unless otherwise stated, information contained in this Bulletin is not necessarily the opinion of and/or endorsed by all Partners.

Mark Your Calendar: Important PCIA Forum Deadlines!

October 4, 2010 - 1st deadline for airfare financial support applications

October 29, 2010 - Decisions announced for 1st round of airfare financial support applications

November 15, 2010 - FINAL deadline for airfare financial support applications

December 10, 2010 - Decisions announced for 2nd round of airfare financial support applications

January 17, 2011 - Registration closes: January 17, 2011

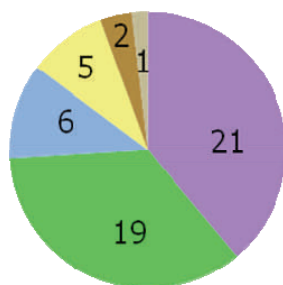
In Memoriam: Ken Goyer

The household energy and health community lost a great friend and colleague recently, with the death of Aid Africa Founder and Director Ken Goyer in June, after a 2-year battle with cancer. During that time, he lobbied his doctors to let him return to the Gulu area of Uganda as frequently as possible to continue his important work of providing education, medical care and mud-brick rocket stoves to displaced families in IDP camps. Memorial services were held in June in both Gulu and California, and a celebration of Ken's life was held in Eugene, OR in July. For more information, or to send your condolences, thoughts, or memories of Ken to be shared with family, friends and colleagues, please visit http://web.me.com/rfhadley/Memories_of_Ken/Ken_Memorial.html.



Partners' Experience with Carbon Finance

85% of reporting PCIA Partners have either received, are currently pursuing, or are interested in Carbon Finance. "Other" experience with carbon finance includes: publishing a guidebook for carbon finance operators; writing simple language Gold Standard translation; and providing measurements of carbon savings for carbon financing. We'll use this data to help in developing carbon finance training for the 2011 Forum!



Number of organizations

- A is interested in CF, but not pursuing
- B pursuing CF
- C received CF
- D has other experience with CF
- E provided CF
- F not interested in CF

Visit the PCIA Website

Have you visited our website lately? Point your browser to pciaonline.org to explore profiles of more than 380 Partners, as well as information on stove testing, cutting edge research, news, and upcoming events:

<http://www.pciaonline.org>



On average, **Partners** who reported **goals for 2010** are working to **more than double** their manufacturing and/or sales capacity!

